APPENDICES

APPENDIX AIR

CALEEMOD FILES

Mooretown FTT EA

Butte County AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	200.00	Space	0.62	27,000.00	0
Other Asphalt Surfaces	270.08	1000sqft	6.20	270,080.00	0
Other Non-Asphalt Surfaces	71.00	1000sqft	1.63	71,000.00	0
Parking Lot	41.80	1000sqft	0.96	41,800.00	0
Arena	1.50	Acre	0.82	36,000.00	0
Golf Course	77.00	Acre	77.00	3,354,120.00	0
Apartments Low Rise	64.00	Dwelling Unit	0.47	20,500.00	183
Congregate Care (Assisted Living)	60.00	Dwelling Unit	0.46	20,000.00	172
Single Family Housing	40.00	Dwelling Unit	1.97	86,000.00	114
User Defined Commercial	28.00	User Defined Unit	0.64	28,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	71
Climate Zone	3			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Modified based on grading plans. User Defined = event center. Estimated roadway based on grading plans. Golf Course = ag land

Construction Phase - No demolition proposed.

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Grading - Cut/Fill based on grading sheets.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	110.00	10.00
tblConstructionPhase	NumDays	1,550.00	200.00
tblConstructionPhase	NumDays	155.00	10.00
tblConstructionPhase	NumDays	110.00	10.00
tblConstructionPhase	NumDays	60.00	20.00
tblConstructionPhase	PhaseEndDate	8/8/2031	12/12/2024
tblConstructionPhase	PhaseEndDate	10/4/2030	11/15/2024
tblConstructionPhase	PhaseEndDate	10/25/2024	2/9/2024
tblConstructionPhase	PhaseEndDate	3/7/2031	11/28/2024
tblConstructionPhase	PhaseEndDate	3/22/2024	1/26/2024
tblConstructionPhase	PhaseStartDate	3/8/2031	11/29/2024
tblConstructionPhase	PhaseStartDate	10/26/2024	2/10/2024
tblConstructionPhase	PhaseStartDate	3/23/2024	1/27/2024
tblConstructionPhase	PhaseStartDate	10/5/2030	11/15/2024
tblGrading	AcresOfGrading	30.00	465.00
tblGrading	AcresOfGrading	30.00	90.00
tblGrading	MaterialExported	0.00	268,163.00
tblGrading	MaterialImported	0.00	288,630.00
tblLandUse	LandUseSquareFeet	80,000.00	27,000.00
tblLandUse	LandUseSquareFeet	65,340.00	36,000.00
tblLandUse	LandUseSquareFeet	64,000.00	20,500.00
tblLandUse	LandUseSquareFeet	60,000.00	20,000.00
tblLandUse	LandUseSquareFeet	72,000.00	86,000.00
tblLandUse	LandUseSquareFeet	0.00	28,000.00
tblLandUse	LotAcreage	1.80	0.62
tblLandUse	LotAcreage	1.50	0.82

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblLandUse	LotAcreage	4.00	0.47
tblLandUse	LotAcreage	3.75	0.46
tblLandUse	LotAcreage	12.99	1.97
tblLandUse	LotAcreage	0.00	0.64

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					
2024	2.6006	9.8841	7.5598	0.0433	2.3918	0.1508	2.5426	0.6598	0.1423	0.8021	0.0000	4,080.8282	4,080.8282	0.1187	0.4941	4,231.0384
Maximum	**2.6006**	**9.8841**	**7.5598**	**0.0433**	**2.3918**	**0.1508**	**2.5426**	**0.6598**	**0.1423**	**0.8021**	**0.0000**	**4,080.8282**	**4,080.8282**	**0.1187**	**0.4941**	**4,231.0384**

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					
2024	2.6006	9.8841	7.5598	0.0433	2.3918	0.1508	2.5426	0.6598	0.1423	0.8021	0.0000	4,080.8279	4,080.8279	0.1187	0.4941	4,231.0380
Maximum	**2.6006**	**9.8841**	**7.5598**	**0.0433**	**2.3918**	**0.1508**	**2.5426**	**0.6598**	**0.1423**	**0.8021**	**0.0000**	**4,080.8279**	**4,080.8279**	**0.1187**	**0.4941**	**4,231.0380**

	ROG	**NOx**	**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**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2024	3-31-2024	6.4899	6.4899
2	4-1-2024	6-30-2024	1.7022	1.7022
3	7-1-2024	9-30-2024	1.7209	1.7209
		Highest	6.4899	6.4899

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	20.2129	0.3804	24.8361	0.0427		3.3150	3.3150		3.3150	3.3150	314.0829	126.3005	440.3834	0.2833	0.0247	454.8338
Energy	0.0177	0.1537	0.0805	9.7000e-004		0.0123	0.0123		0.0123	0.0123	0.0000	294.8983	294.8983	0.0227	5.5600e-003	297.1222
Mobile	0.8200	1.1690	6.2159	0.0106	0.9851	0.0122	0.9973	0.2640	0.0115	0.2755	0.0000	980.2779	980.2779	0.0786	0.0624	1,000.846 0
Waste						0.0000	0.0000		0.0000	0.0000	39.9831	0.0000	39.9831	2.3629	0.0000	99.0565
Water						0.0000	0.0000		0.0000	0.0000	4.0306	38.2934	42.3240	0.4202	0.0105	55.9650
Total	**21.0506**	**1.7030**	**31.1325**	**0.0542**	**0.9851**	**3.3394**	**4.3245**	**0.2640**	**3.3387**	**3.6027**	**358.0966**	**1,439.770 1**	**1,797.866 7**	**3.1677**	**0.1033**	**1,907.823 4**

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	20.2129	0.3804	24.8361	0.0427		3.3150	3.3150		3.3150	3.3150	314.0829	126.3005	440.3834	0.2833	0.0247	454.8338
Energy	0.0177	0.1537	0.0805	9.7000e-004		0.0123	0.0123		0.0123	0.0123	0.0000	294.8983	294.8983	0.0227	5.5600e-003	297.1222
Mobile	0.8200	1.1690	6.2159	0.0106	0.9851	0.0122	0.9973	0.2640	0.0115	0.2755	0.0000	980.2779	980.2779	0.0786	0.0624	1,000.8460
Waste						0.0000	0.0000		0.0000	0.0000	39.9831	0.0000	39.9831	2.3629	0.0000	99.0565
Water						0.0000	0.0000		0.0000	0.0000	4.0306	38.2934	42.3240	0.4202	0.0105	55.9650
Total	**21.0506**	**1.7030**	**31.1325**	**0.0542**	**0.9851**	**3.3394**	**4.3245**	**0.2640**	**3.3387**	**3.6027**	**358.0966**	**1,439.7701**	**1,797.8667**	**3.1677**	**0.1033**	**1,907.8234**

	ROG	NOx	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	1/1/2024	1/26/2024	5	20	
2	Grading	Grading	1/27/2024	2/9/2024	5	10	
3	Building Construction	Building Construction	2/10/2024	11/15/2024	5	200	

4	Paving	Paving	11/15/2024	11/28/2024	5	10	
5	Architectural Coating	Architectural Coating	11/29/2024	12/12/2024	5	10	

Acres of Grading (Site Preparation Phase): 90

Acres of Grading (Grading Phase): 465

Acres of Paving: 9.41

Residential Indoor: 256,163; Residential Outdoor: 85,388; Non-Residential Indoor: 96,000; Non-Residential Outdoor: 32,000; Striped Parking Area: 24,593 (Architectural Coating – sqft)

OffRoad Equipment

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

Trips and VMT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	7.30	6.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	69,599.00	7.30	6.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	1,709.00	645.00	0.00	7.30	6.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	7.30	6.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	342.00	0.00	0.00	7.30	6.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2284	0.0000	0.2284	0.1045	0.0000	0.1045	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0266	0.2718	0.1834	3.8000e-004		0.0123	0.0123		0.0113	0.0113	0.0000	33.4571	33.4571	0.0108	0.0000	33.7276
Total	**0.0266**	**0.2718**	**0.1834**	**3.8000e-004**	**0.2284**	**0.0123**	**0.2407**	**0.1045**	**0.0113**	**0.1158**	**0.0000**	**33.4571**	**33.4571**	**0.0108**	**0.0000**	**33.7276**

3.2 Site Preparation - 2024

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	5.3000e-004	3.4000e-004	3.7500e-003	1.0000e-005	9.6000e-004	1.0000e-005	9.6000e-004	2.5000e-004	1.0000e-005	2.6000e-004	0.0000	0.7812	0.7812	3.0000e-005	3.0000e-005	0.7906
Total	**5.3000e-004**	**3.4000e-004**	**3.7500e-003**	**1.0000e-005**	**9.6000e-004**	**1.0000e-005**	**9.6000e-004**	**2.5000e-004**	**1.0000e-005**	**2.6000e-004**	**0.0000**	**0.7812**	**0.7812**	**3.0000e-005**	**3.0000e-005**	**0.7906**

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					0.2284	0.0000	0.2284	0.1045	0.0000	0.1045	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0266	0.2718	0.1834	3.8000e-004		0.0123	0.0123		0.0113	0.0113	0.0000	33.4570	33.4570	0.0108	0.0000	33.7275
Total	**0.0266**	**0.2718**	**0.1834**	**3.8000e-004**	**0.2284**	**0.0123**	**0.2407**	**0.1045**	**0.0113**	**0.1158**	**0.0000**	**33.4570**	**33.4570**	**0.0108**	**0.0000**	**33.7275**

3.2 Site Preparation - 2024

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	5.3000e-004	3.4000e-004	3.7500e-003	1.0000e-005	9.6000e-004	1.0000e-005	9.6000e-004	2.5000e-004	1.0000e-005	2.6000e-004	0.0000	0.7812	0.7812	3.0000e-005	3.0000e-005	0.7906
Total	**5.3000e-004**	**3.4000e-004**	**3.7500e-003**	**1.0000e-005**	**9.6000e-004**	**1.0000e-005**	**9.6000e-004**	**2.5000e-004**	**1.0000e-005**	**2.6000e-004**	**0.0000**	**0.7812**	**0.7812**	**3.0000e-005**	**3.0000e-005**	**0.7906**

3.3 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3082	0.0000	0.3082	0.0479	0.0000	0.0479	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0161	0.1619	0.1386	3.1000e-004		6.6800e-003	6.6800e-003		6.1400e-003	6.1400e-003	0.0000	27.2598	27.2598	8.8200e-003	0.0000	27.4802
Total	**0.0161**	**0.1619**	**0.1386**	**3.1000e-004**	**0.3082**	**6.6800e-003**	**0.3148**	**0.0479**	**6.1400e-003**	**0.0541**	**0.0000**	**27.2598**	**27.2598**	**8.8200e-003**	**0.0000**	**27.4802**

3.3 Grading - 2024

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	0.0853	4.8417	1.0027	0.0205	0.5876	0.0445	0.6321	0.1618	0.0426	0.2044	0.0000	1,969.712 1	1,969.712 1	3.6100e-003	0.3096	2,062.059 6
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-004	1.9000e-004	2.0800e-003	0.0000	5.3000e-004	0.0000	5.4000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4340	0.4340	2.0000e-005	2.0000e-005	0.4392
Total	**0.0856**	**4.8418**	**1.0047**	**0.0205**	**0.5881**	**0.0445**	**0.6326**	**0.1620**	**0.0426**	**0.2045**	**0.0000**	**1,970.146 1**	**1,970.146 1**	**3.6300e-003**	**0.3096**	**2,062.498 8**

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					0.3082	0.0000	0.3082	0.0479	0.0000	0.0479	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0161	0.1619	0.1386	3.1000e-004		6.6800e-003	6.6800e-003		6.1400e-003	6.1400e-003	0.0000	27.2597	27.2597	8.8200e-003	0.0000	27.4801
Total	**0.0161**	**0.1619**	**0.1386**	**3.1000e-004**	**0.3082**	**6.6800e-003**	**0.3148**	**0.0479**	**6.1400e-003**	**0.0541**	**0.0000**	**27.2597**	**27.2597**	**8.8200e-003**	**0.0000**	**27.4801**

3.3 Grading - 2024

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	0.0853	4.8417	1.0027	0.0205	0.5876	0.0445	0.6321	0.1618	0.0426	0.2044	0.0000	1,969.712 1	1,969.712 1	3.6100e-003	0.3096	2,062.059 6
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-004	1.9000e-004	2.0800e-003	0.0000	5.3000e-004	0.0000	5.4000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4340	0.4340	2.0000e-005	2.0000e-005	0.4392
Total	**0.0856**	**4.8418**	**1.0047**	**0.0205**	**0.5881**	**0.0445**	**0.6326**	**0.1620**	**0.0426**	**0.2045**	**0.0000**	**1,970.146 1**	**1,970.146 1**	**3.6300e-003**	**0.3096**	**2,062.498 8**

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1472	1.3444	1.6167	2.7000e-003		0.0613	0.0613		0.0577	0.0577	0.0000	231.8491	231.8491	0.0548	0.0000	233.2198
Total	**0.1472**	**1.3444**	**1.6167**	**2.7000e-003**		**0.0613**	**0.0613**		**0.0577**	**0.0577**	**0.0000**	**231.8491**	**231.8491**	**0.0548**	**0.0000**	**233.2198**

3.4 Building Construction - 2024

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	0.0815	2.8883	0.9359	0.0110	0.3473	0.0179	0.3651	0.1006	0.0171	0.1176	0.0000	1,056.5701	1,056.5701	3.9100e-003	0.1572	1,103.5160
Worker	0.5048	0.3186	3.5575	8.0900e-003	0.9094	5.4700e-003	0.9148	0.2421	5.0400e-003	0.2471	0.0000	741.7279	741.7279	0.0330	0.0270	750.5931
Total	**0.5863**	**3.2069**	**4.4934**	**0.0191**	**1.2566**	**0.0233**	**1.2800**	**0.3426**	**0.0221**	**0.3647**	**0.0000**	**1,798.2980**	**1,798.2980**	**0.0369**	**0.1842**	**1,854.1091**

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	0.1472	1.3444	1.6167	2.7000e-003		0.0613	0.0613		0.0577	0.0577	0.0000	231.8488	231.8488	0.0548	0.0000	233.2195
Total	**0.1472**	**1.3444**	**1.6167**	**2.7000e-003**		**0.0613**	**0.0613**		**0.0577**	**0.0577**	**0.0000**	**231.8488**	**231.8488**	**0.0548**	**0.0000**	**233.2195**

3.4 Building Construction - 2024

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	0.0815	2.8883	0.9359	0.0110	0.3473	0.0179	0.3651	0.1006	0.0171	0.1176	0.0000	1,056.570 1	1,056.570 1	3.9100e-003	0.1572	1,103.516 0
Worker	0.5048	0.3186	3.5575	8.0900e-003	0.9094	5.4700e-003	0.9148	0.2421	5.0400e-003	0.2471	0.0000	741.7279	741.7279	0.0330	0.0270	750.5931
Total	**0.5863**	**3.2069**	**4.4934**	**0.0191**	**1.2566**	**0.0233**	**1.2800**	**0.3426**	**0.0221**	**0.3647**	**0.0000**	**1,798.298 0**	**1,798.298 0**	**0.0369**	**0.1842**	**1,854.109 1**

3.5 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.9400e-003	0.0476	0.0731	1.1000e-004		2.3400e-003	2.3400e-003		2.1600e-003	2.1600e-003	0.0000	10.0133	10.0133	3.2400e-003	0.0000	10.0942
Paving	9.3800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0143**	**0.0476**	**0.0731**	**1.1000e-004**		**2.3400e-003**	**2.3400e-003**		**2.1600e-003**	**2.1600e-003**	**0.0000**	**10.0133**	**10.0133**	**3.2400e-003**	**0.0000**	**10.0942**

3.5 Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2000e-004	1.4000e-004	1.5600e-003	0.0000	4.0000e-004	0.0000	4.0000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3255	0.3255	1.0000e-005	1.0000e-005	0.3294
Total	**2.2000e-004**	**1.4000e-004**	**1.5600e-003**	**0.0000**	**4.0000e-004**	**0.0000**	**4.0000e-004**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.3255**	**0.3255**	**1.0000e-005**	**1.0000e-005**	**0.3294**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.9400e-003	0.0476	0.0731	1.1000e-004		2.3400e-003	2.3400e-003		2.1600e-003	2.1600e-003	0.0000	10.0133	10.0133	3.2400e-003	0.0000	10.0942
Paving	9.3800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0143**	**0.0476**	**0.0731**	**1.1000e-004**		**2.3400e-003**	**2.3400e-003**		**2.1600e-003**	**2.1600e-003**	**0.0000**	**10.0133**	**10.0133**	**3.2400e-003**	**0.0000**	**10.0942**

3.5 Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2000e-004	1.4000e-004	1.5600e-003	0.0000	4.0000e-004	0.0000	4.0000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3255	0.3255	1.0000e-005	1.0000e-005	0.3294
Total	**2.2000e-004**	**1.4000e-004**	**1.5600e-003**	**0.0000**	**4.0000e-004**	**0.0000**	**4.0000e-004**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.3255**	**0.3255**	**1.0000e-005**	**1.0000e-005**	**0.3294**

3.6 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.7178					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.0000e-004	6.0900e-003	9.0500e-003	1.0000e-005		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004	0.0000	1.2766	1.2766	7.0000e-005	0.0000	1.2784
Total	**1.7187**	**6.0900e-003**	**9.0500e-003**	**1.0000e-005**		**3.0000e-004**	**3.0000e-004**		**3.0000e-004**	**3.0000e-004**	**0.0000**	**1.2766**	**1.2766**	**7.0000e-005**	**0.0000**	**1.2784**

3.6 Architectural Coating - 2024

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	5.0500e-003	3.1900e-003	0.0356	8.0000e-005	9.1000e-003	5.0000e-005	9.1500e-003	2.4200e-003	5.0000e-005	2.4700e-003	0.0000	7.4216	7.4216	3.3000e-004	2.7000e-004	7.5103
Total	**5.0500e-003**	**3.1900e-003**	**0.0356**	**8.0000e-005**	**9.1000e-003**	**5.0000e-005**	**9.1500e-003**	**2.4200e-003**	**5.0000e-005**	**2.4700e-003**	**0.0000**	**7.4216**	**7.4216**	**3.3000e-004**	**2.7000e-004**	**7.5103**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.7178					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.0000e-004	6.0900e-003	9.0500e-003	1.0000e-005		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004	0.0000	1.2766	1.2766	7.0000e-005	0.0000	1.2784
Total	**1.7187**	**6.0900e-003**	**9.0500e-003**	**1.0000e-005**		**3.0000e-004**	**3.0000e-004**		**3.0000e-004**	**3.0000e-004**	**0.0000**	**1.2766**	**1.2766**	**7.0000e-005**	**0.0000**	**1.2784**

3.6 Architectural Coating - 2024

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	5.0500e-003	3.1900e-003	0.0356	8.0000e-005	9.1000e-003	5.0000e-005	9.1500e-003	2.4200e-003	5.0000e-005	2.4700e-003	0.0000	7.4216	7.4216	3.3000e-004	2.7000e-004	7.5103
Total	**5.0500e-003**	**3.1900e-003**	**0.0356**	**8.0000e-005**	**9.1000e-003**	**5.0000e-005**	**9.1500e-003**	**2.4200e-003**	**5.0000e-005**	**2.4700e-003**	**0.0000**	**7.4216**	**7.4216**	**3.3000e-004**	**2.7000e-004**	**7.5103**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 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	0.8200	1.1690	6.2159	0.0106	0.9851	0.0122	0.9973	0.2640	0.0115	0.2755	0.0000	980.2779	980.2779	0.0786	0.0624	1,000.8460
Unmitigated	0.8200	1.1690	6.2159	0.0106	0.9851	0.0122	0.9973	0.2640	0.0115	0.2755	0.0000	980.2779	980.2779	0.0786	0.0624	1,000.8460

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	468.48	520.96	401.92	1,033,809	1,033,809
Arena	50.00	0.00	0.00	57,012	57,012
Congregate Care (Assisted Living)	156.00	175.80	189.00	362,451	362,451
Enclosed Parking with Elevator	0.00	0.00	0.00		
Golf Course	287.98	287.98	287.98	389,319	389,319
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Single Family Housing	377.60	381.60	342.00	826,850	826,850
User Defined Commercial	0.00	0.00	0.00		
Total	1,340.06	1,366.34	1,220.90	2,669,441	2,669,441

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	7.30	3.00	7.90	35.00	17.00	48.00	86	11	3
Arena	6.00	6.00	6.00	0.00	81.00	19.00	66	28	6

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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
Congregate Care (Assisted	7.30	3.00	7.90	35.00	17.00	48.00	86	11	3
Enclosed Parking with Elevator	6.00	6.00	6.00	0.00	0.00	0.00	0	0	0
Golf Course	6.00	6.00	6.00	33.00	48.00	19.00	52	39	9
Other Asphalt Surfaces	6.00	6.00	6.00	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	6.00	6.00	6.00	0.00	0.00	0.00	0	0	0
Parking Lot	6.00	6.00	6.00	0.00	0.00	0.00	0	0	0
Single Family Housing	7.30	3.00	7.90	35.00	17.00	48.00	86	11	3
User Defined Commercial	6.00	6.00	6.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.483154	0.055228	0.190002	0.148740	0.046106	0.008769	0.010590	0.015505	0.000749	0.000411	0.034241	0.001163	0.005341
Arena	0.483154	0.055228	0.190002	0.148740	0.046106	0.008769	0.010590	0.015505	0.000749	0.000411	0.034241	0.001163	0.005341
Congregate Care (Assisted Living)	0.483154	0.055228	0.190002	0.148740	0.046106	0.008769	0.010590	0.015505	0.000749	0.000411	0.034241	0.001163	0.005341
Enclosed Parking with Elevator	0.483154	0.055228	0.190002	0.148740	0.046106	0.008769	0.010590	0.015505	0.000749	0.000411	0.034241	0.001163	0.005341
Golf Course	0.483154	0.055228	0.190002	0.148740	0.046106	0.008769	0.010590	0.015505	0.000749	0.000411	0.034241	0.001163	0.005341
Other Asphalt Surfaces	0.483154	0.055228	0.190002	0.148740	0.046106	0.008769	0.010590	0.015505	0.000749	0.000411	0.034241	0.001163	0.005341
Other Non-Asphalt Surfaces	0.483154	0.055228	0.190002	0.148740	0.046106	0.008769	0.010590	0.015505	0.000749	0.000411	0.034241	0.001163	0.005341
Parking Lot	0.483154	0.055228	0.190002	0.148740	0.046106	0.008769	0.010590	0.015505	0.000749	0.000411	0.034241	0.001163	0.005341
Single Family Housing	0.483154	0.055228	0.190002	0.148740	0.046106	0.008769	0.010590	0.015505	0.000749	0.000411	0.034241	0.001163	0.005341
User Defined Commercial	0.483154	0.055228	0.190002	0.148740	0.046106	0.008769	0.010590	0.015505	0.000749	0.000411	0.034241	0.001163	0.005341

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	119.4946	119.4946	0.0193	2.3400e-003	120.6762
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	119.4946	119.4946	0.0193	2.3400e-003	120.6762
NaturalGas Mitigated	0.0177	0.1537	0.0805	9.7000e-004		0.0123	0.0123		0.0123	0.0123	0.0000	175.4037	175.4037	3.3600e-003	3.2200e-003	176.4460
NaturalGas Unmitigated	0.0177	0.1537	0.0805	9.7000e-004		0.0123	0.0123		0.0123	0.0123	0.0000	175.4037	175.4037	3.3600e-003	3.2200e-003	176.4460

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	873409	4.7100e-003	0.0403	0.0171	2.6000e-004		3.2500e-003	3.2500e-003		3.2500e-003	3.2500e-003	0.0000	46.6085	46.6085	8.9000e-004	8.5000e-004	46.8854
Arena	745200	4.0200e-003	0.0365	0.0307	2.2000e-004		2.7800e-003	2.7800e-003		2.7800e-003	2.7800e-003	0.0000	39.7667	39.7667	7.6000e-004	7.3000e-004	40.0030
Congregate Care (Assisted Living)	706829	3.8100e-003	0.0326	0.0139	2.1000e-004		2.6300e-003	2.6300e-003		2.6300e-003	2.6300e-003	0.0000	37.7191	37.7191	7.2000e-004	6.9000e-004	37.9433
Enclosed Parking with Elevator	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
Golf Course	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
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	961502	5.1800e-003	0.0443	0.0189	2.8000e-004		3.5800e-003	3.5800e-003		3.5800e-003	3.5800e-003	0.0000	51.3094	51.3094	9.8000e-004	9.4000e-004	51.6143
User Defined Commercial	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		**0.0177**	**0.1537**	**0.0805**	**9.7000e-004**		**0.0122**	**0.0122**		**0.0122**	**0.0122**	**0.0000**	**175.4037**	**175.4037**	**3.3500e-003**	**3.2100e-003**	**176.4460**

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					
Apartments Low Rise	873409	4.7100e-003	0.0403	0.0171	2.6000e-004		3.2500e-003	3.2500e-003		3.2500e-003	3.2500e-003	0.0000	46.6085	46.6085	8.9000e-004	8.5000e-004	46.8854
Arena	745200	4.0200e-003	0.0365	0.0307	2.2000e-004		2.7800e-003	2.7800e-003		2.7800e-003	2.7800e-003	0.0000	39.7667	39.7667	7.6000e-004	7.3000e-004	40.0030
Congregate Care (Assisted Living)	706829	3.8100e-003	0.0326	0.0139	2.1000e-004		2.6300e-003	2.6300e-003		2.6300e-003	2.6300e-003	0.0000	37.7191	37.7191	7.2000e-004	6.9000e-004	37.9433
Enclosed Parking with Elevator	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
Golf Course	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
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	961502	5.1800e-003	0.0443	0.0189	2.8000e-004		3.5800e-003	3.5800e-003		3.5800e-003	3.5800e-003	0.0000	51.3094	51.3094	9.8000e-004	9.4000e-004	51.6143
User Defined Commercial	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		**0.0177**	**0.1537**	**0.0805**	**9.7000e-004**		**0.0122**	**0.0122**		**0.0122**	**0.0122**	**0.0000**	**175.4037**	**175.4037**	**3.3500e-003**	**3.2100e-003**	**176.4460**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	264386	24.4620	3.9600e-003	4.8000e-004	24.7039
Arena	309960	28.6787	4.6400e-003	5.6000e-004	28.9623
Congregate Care (Assisted Living)	236687	21.8992	3.5400e-003	4.3000e-004	22.1158
Enclosed Parking with Elevator	146880	13.5899	2.2000e-003	2.7000e-004	13.7243
Golf Course	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	14630	1.3536	2.2000e-004	3.0000e-005	1.3670
Single Family Housing	318958	29.5112	4.7700e-003	5.8000e-004	29.8031
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000
Total		**119.4946**	**0.0193**	**2.3500e-003**	**120.6762**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	264386	24.4620	3.9600e-003	4.8000e-004	24.7039
Arena	309960	28.6787	4.6400e-003	5.6000e-004	28.9623
Congregate Care (Assisted Living)	236687	21.8992	3.5400e-003	4.3000e-004	22.1158
Enclosed Parking with Elevator	146880	13.5899	2.2000e-003	2.7000e-004	13.7243
Golf Course	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	14630	1.3536	2.2000e-004	3.0000e-005	1.3670
Single Family Housing	318958	29.5112	4.7700e-003	5.8000e-004	29.8031
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000
Total		**119.4946**	**0.0193**	**2.3500e-003**	**120.6762**

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	20.2129	0.3804	24.8361	0.0427		3.3150	3.3150		3.3150	3.3150	314.0829	126.3005	440.3834	0.2833	0.0247	454.8338
Unmitigated	20.2129	0.3804	24.8361	0.0427		3.3150	3.3150		3.3150	3.3150	314.0829	126.3005	440.3834	0.2833	0.0247	454.8338

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	0.1718					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8020					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	19.2019	0.3664	23.6126	0.0426		3.3082	3.3082		3.3082	3.3082	314.0829	124.2990	438.3819	0.2813	0.0247	452.7838
Landscaping	0.0372	0.0141	1.2235	6.0000e-005		6.7700e-003	6.7700e-003		6.7700e-003	6.7700e-003	0.0000	2.0014	2.0014	1.9400e-003	0.0000	2.0500
Total	**20.2129**	**0.3804**	**24.8361**	**0.0427**		**3.3150**	**3.3150**		**3.3150**	**3.3150**	**314.0829**	**126.3005**	**440.3834**	**0.2833**	**0.0247**	**454.8338**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1718					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8020					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	19.2019	0.3664	23.6126	0.0426		3.3082	3.3082		3.3082	3.3082	314.0829	124.2990	438.3819	0.2813	0.0247	452.7838
Landscaping	0.0372	0.0141	1.2235	6.0000e-005		6.7700e-003	6.7700e-003		6.7700e-003	6.7700e-003	0.0000	2.0014	2.0014	1.9400e-003	0.0000	2.0500
Total	**20.2129**	**0.3804**	**24.8361**	**0.0427**		**3.3150**	**3.3150**		**3.3150**	**3.3150**	**314.0829**	**126.3005**	**440.3834**	**0.2833**	**0.0247**	**454.8338**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	42.3240	0.4202	0.0105	55.9650
Unmitigated	42.3240	0.4202	0.0105	55.9650

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	4.16986 / 2.62882	4.2618	0.1364	3.2700e-003	8.6438
Arena	2.01923 / 0.128887	1.6933	0.0660	1.5700e-003	3.8116
Congregate Care (Assisted Living)	3.90924 / 2.46452	3.9955	0.1278	3.0600e-003	8.1036
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Golf Course	0 / 91.7441	29.7098	4.8100e-003	5.8000e-004	30.0036
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	2.60616 / 1.64301	2.6636	0.0852	2.0400e-003	5.4024
User Defined Commercial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**42.3240**	**0.4202**	**0.0105**	**55.9649**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	4.16986 / 2.62882	4.2618	0.1364	3.2700e-003	8.6438
Arena	2.01923 / 0.128887	1.6933	0.0660	1.5700e-003	3.8116
Congregate Care (Assisted Living)	3.90924 / 2.46452	3.9955	0.1278	3.0600e-003	8.1036
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Golf Course	0 / 91.7441	29.7098	4.8100e-003	5.8000e-004	30.0036
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	2.60616 / 1.64301	2.6636	0.0852	2.0400e-003	5.4024
User Defined Commercial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**42.3240**	**0.4202**	**0.0105**	**55.9649**

8.0 Waste Detail

8.1 Mitigation Measures Waste

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	39.9831	2.3629	0.0000	99.0565
Unmitigated	39.9831	2.3629	0.0000	99.0565

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	29.44	5.9761	0.3532	0.0000	14.8054
Arena	0.13	0.0264	1.5600e-003	0.0000	0.0654
Congregate Care (Assisted Living)	54.75	11.1138	0.6568	0.0000	27.5339
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Golf Course	71.61	14.5362	0.8591	0.0000	36.0128
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	41.04	8.3308	0.4923	0.0000	20.6391
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000
Total		**39.9831**	**2.3629**	**0.0000**	**99.0565**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	29.44	5.9761	0.3532	0.0000	14.8054
Arena	0.13	0.0264	1.5600e-003	0.0000	0.0654
Congregate Care (Assisted Living)	54.75	11.1138	0.6568	0.0000	27.5339
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Golf Course	71.61	14.5362	0.8591	0.0000	36.0128
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	41.04	8.3308	0.4923	0.0000	20.6391
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000
Total		**39.9831**	**2.3629**	**0.0000**	**99.0565**

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 BIO

BIOLOGICAL RESOURCE REPORT

BIOLOGICAL RESOURCE REPORT

MOORETOWN RANCHERIA OF MAIDU INDIANS
FEE-TO-TRUST AND HOUSING, AG,
AND COMMERCIAL PROJECT

Prepared for: **MOORETOWN RANCHERIA OF MAIDU INDIANS**

Prepared by: **MONTROSE ENVIRONMENTAL SOLUTIONS, INC.**

December 2024

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FIGURES

ATTACHMENTS

1 INTRODUCTION

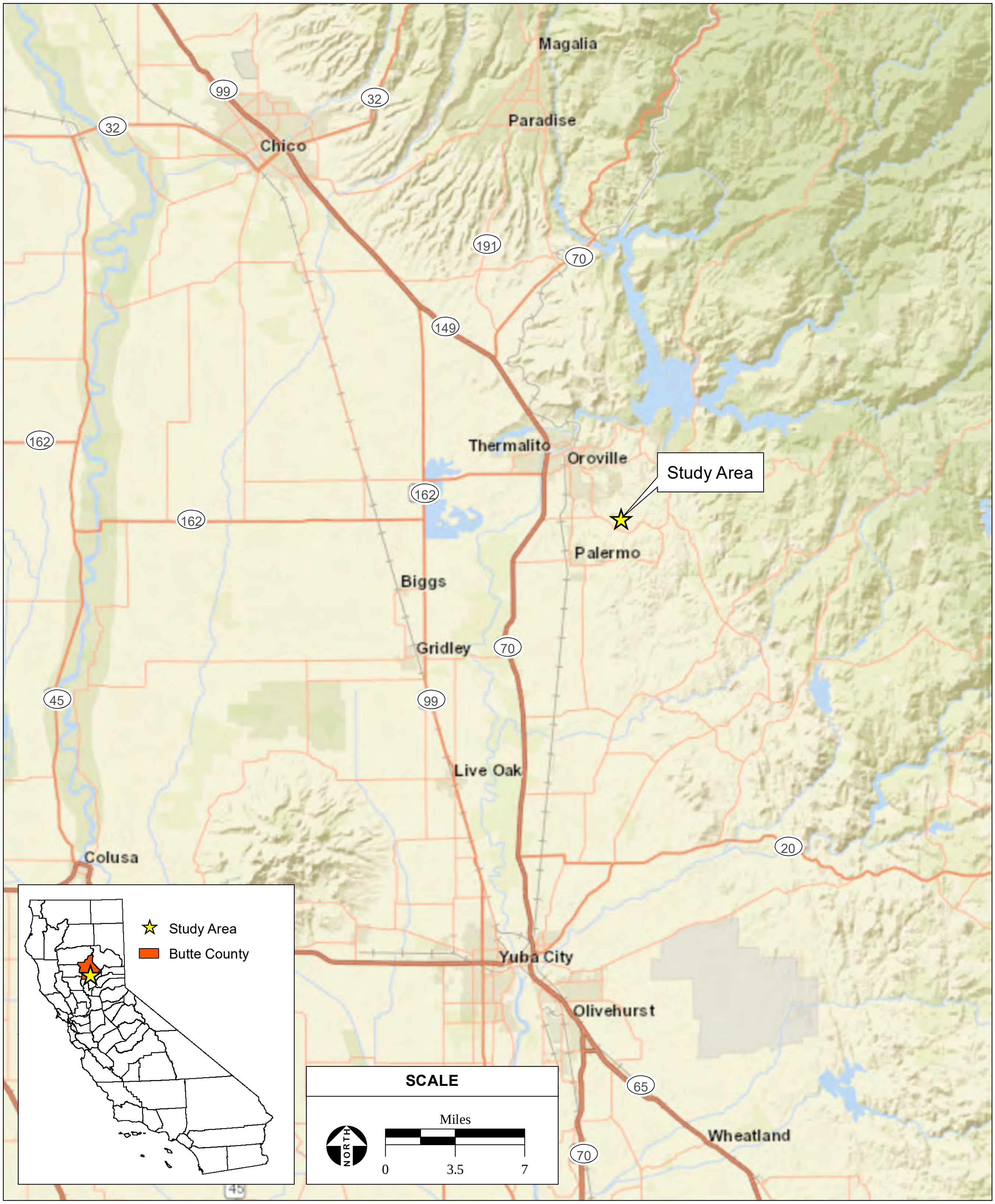
This Biological Resources Report analyzes the current conditions of a 360.6-acre area (Study Area) located within Butte County, California. The Study Area consists of five parcels: Assessor's Parcel Numbers 079-230-003 (44.95 acres), 079-230-004 (8.46 acres), 079-230-005 (140 acres), 079-230-006 (22 acres), and 079-260-001 (139.07 acres). The purpose of this report is to identify and assess any sensitive biological resources within the Study Area that could be affected by the proposed Mooretown Rancheria of Maidu Indians Fee to Trust and Housing, Agriculture, and Commercial Project (Project). For the purposes of this assessment, "sensitive biological resources" are defined as those that are of management concern to federal resource agencies. A brief description of State and/or locally protected resources is also provided; however, they are not generally afforded special protection once land is placed into trust.

This report has been prepared to support Project review under the National Environmental Policy Act (NEPA). Methodologies and results are discussed, and where applicable, mitigation measures are provided to reduce potential impacts to special status species and their habitats.

1.1 PROJECT LOCATION AND DESCRIPTION

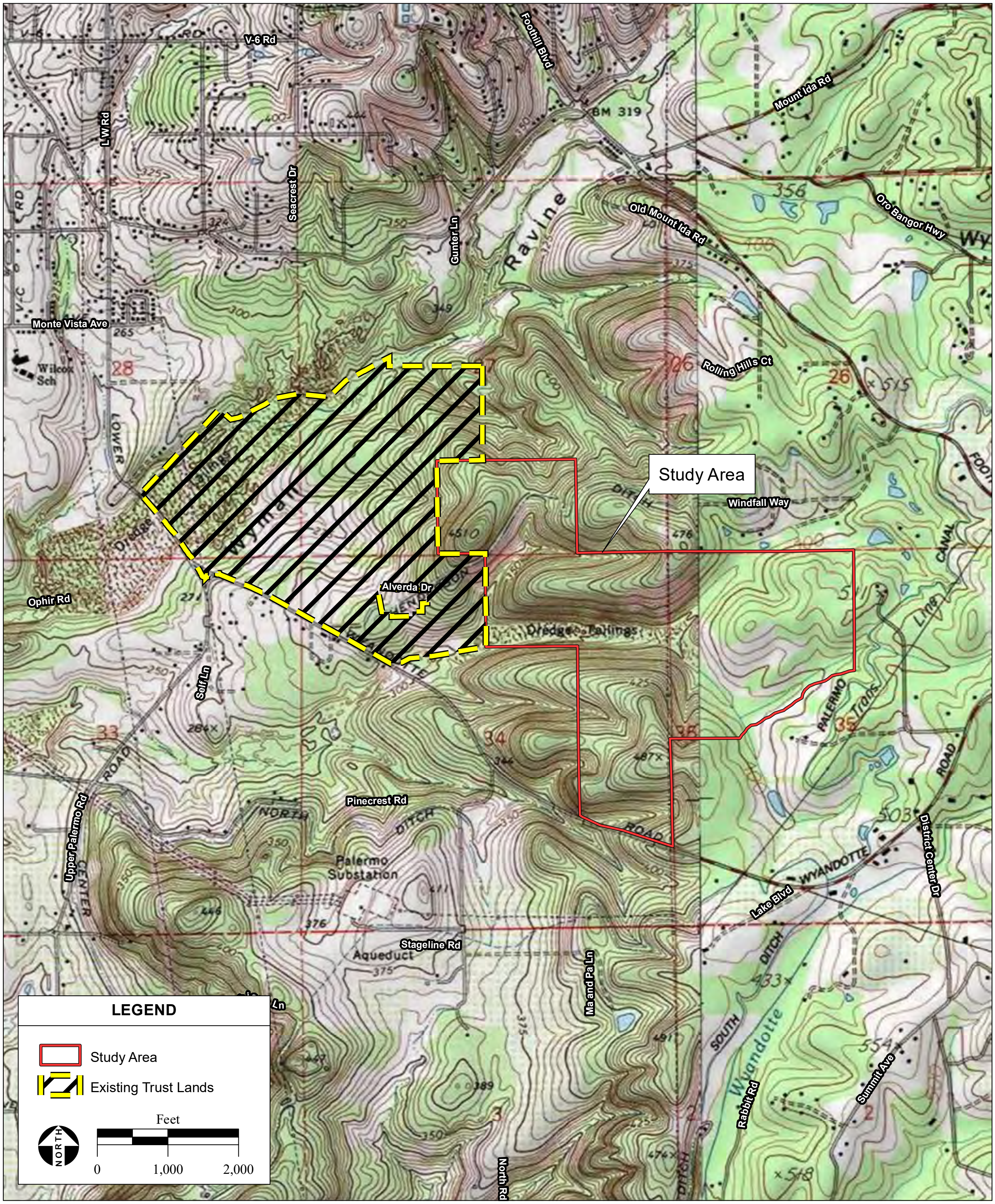
The Study Area is located east of SR-70, adjacent to the City of Oroville (approximately 6 miles southeast of downtown Oroville) in Butte County, and adjacent to the existing lands to the east, held in trust of the Mooretown Rancheria of Maidu Indians (Tribe) and developed with the Feather Falls Casino and Lodge, located in Oroville, CA (**Figures 1** and **2**). The Study Area is primarily vacant and undeveloped, with the exception of several ranch buildings located on APN 079-230-003, a house on APN 079-230-004, and one building located on APN 079-230-006 (**Figure 3**). Representative photographs are included in **Attachment 1**. The Study Area is situated in Section 27, 34, and 35 of Township 19 North, Range 4 East (Mount Diablo meridian) and can be found on the U.S. Geological Survey (USGS) "Palermo" and "Bangor" 7.5-minute topographic quadrangles. Elevations within the Study Area range from approximately 308 to 492 feet above mean sea level.

The proposed Project includes Trust acquisition of the land, followed by the subsequent construction of 164 housing and apartment units, an event center/tasting room, an amphitheater, an agricultural area, and remodeling of an existing 2,000-square foot building.



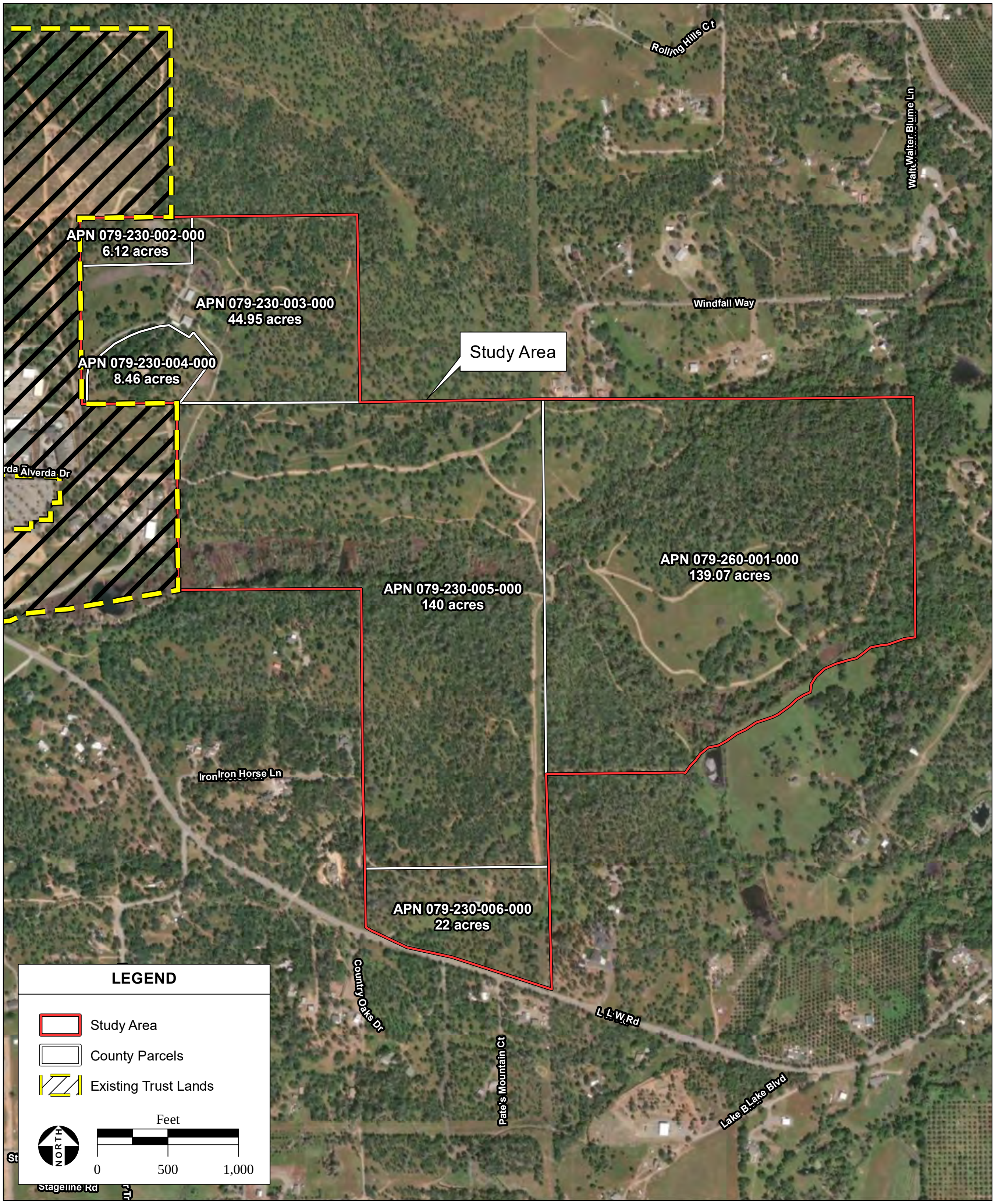
SOURCE: ESRI, 2024; Montrose Environmental, 10/9/2024

Figure 1
Regional Location



SOURCE: "Palermo, CA" & "Bangor, CA" USGS 7.5 Minute Topographic Quadrangles, T19N R4E, Sections 27, 34 & 35, Mt. Diablo Baseline & Meridian; ESRI, 2024; Montrose Environmental, 10/9/2024

Figure 2
Site and Vicinity



SOURCE: Maxar aerial photograph, 4/25/2023; Butte County GIS, 2020;
ESRI, 2024; Montrose Environmental, 10/9/2024

Figure 3
Aerial Photograph

2 METHODOLOGY

2.1 PRELIMINARY DATA REVIEW

Existing information on biological resources in the region was obtained from the following sources:

- United States Fish and Wildlife Service (USFWS) list from the Information for Planning and Conservation (IPaC) system (USFWS 2024a) ;
- California Natural Diversity Database (CNDDB) query of Oroville, Oroville Dam, Forebestown, Palermo, Bangor, Rackerby, Honcut, Loma Rica, and Oregon House CA 7.5-minute quadrangles (CDFW 2024);
- California Native Plant Society (CNPS) query of listed plant species known to occur in the Oroville, Oroville Dam, Forebestown, Palermo, Bangor, Rackerby, Honcut, Loma Rica, and Oregon House CA 7.5-minute quadrangles (CNPS 2024);
- USFWS Critical Habitat Mapper (USFWS 2024b);
- USFWS National Wetlands Inventory (USFWS 2021); and
- Natural Resources Conservation Service (NRCS) soils map of the Study Area, last updated January 6, 2021, (NRCS 2021).

Copies of the species lists obtained through IPAC, CNDDB, and CNPS are included under **Attachment 2**.

2.2 FIELD SURVEYS

Montrose[1] biologists Josh Goodwin, Cedrick Villaseñor, and Kathleen Sholty conducted a biological resources survey of the Study Area on January 18th, 19th, and 20th, 2021. An additional survey was conducted by biologist Montrose biologist David Pfuhler on March 29, 2022. The objective of the surveys was to identify habitat types, including potential wetlands and waters of the State and U.S., and to determine presence of special-status species or their appropriate habitat within the Study Area. The surveys consisted of walking meandering transects throughout the Study Area. Potentially jurisdictional waters of the U.S. were also mapped. Representative areas of each habitat type were reviewed with the aid of an aerial photograph (refer to Figure 3) and through identification of dominant species cover within each vegetation community.

2.2.1 PLANTS

During the surveys conducted in January 2021 and March 2022, transects were walked with the goal of identifying the potential for special-status plant species to occur within the Study Area. Biologists compiled a list of all plants identified and made note of areas with suitable habitat for potentially occurring rare plant species obtained from the preliminary data review (refer to Section 2.2). Typically, plants are the most identifiable when in bloom; however, other methods can be utilized to identify plants outside of the bloom season. Vegetative morphology, dried flower or fruit morphology, and skeletal remains from previous seasons can also be used as these features may persist after the bloom period. Not all species flower each year, or may only flower at maturity, and therefore must be identified by vegetative characteristics. Certain tree and shrub species may possess unique vegetative characteristics, often making flower identification unnecessary. Habitat is also a key characteristic for consideration of special-status species presence. Many special-status species are rare in nature due to

[1] Formerly AES-Montrose, a Montrose Environmental Group Company

specific and often narrow habitat or environmental requirements. Presence is sometimes limited by specific environmental constraints such as hydrology, microclimate, soils, nutrients, and competition.

2.2.2 Wildlife

Animals were identified in the Study Area by sight, sign, or call and through evidence such as scat or tracks. Field techniques consisted of surveying the Study Area with binoculars and walking transects throughout. Existing site conditions were used to identify habitats that have the potential to support special-status animal species. Trees within a minimum of 500 feet of the Study Area were surveyed to determine whether occupied raptor nests were present. Surveys consisted of scanning the trees with binoculars to search for nests or bird activity as well as locating any droppings or nest scatter that may be present. Aerial photos were reviewed to examine the habitat surrounding the Study Area as a means to identify the potential for wildlife movement, or wildlife corridors from adjoining areas. Field methodology for identifying corridors for movement included searching for game trails or habitat that would favor movement of wildlife or potential gene flow. Barriers were also looked for as they could prevent movement or direct movement to particular areas.

2.2.3 Habitats

Terrestrial habitats and aquatic habitat types and locations were documented during the field surveys. Mapped locations of terrestrial habitats were refined using a review of aerial imagery. Terrestrial habitats are classified based on dominant vegetation.

3 ENVIRONMENTAL SETTING

The Study Area is largely undeveloped, with the exception of two rural residences, two barns, and three sheds in the northern Study Area and an unoccupied house and metal shop building in disrepair in the southern portion of the Study Area. Existing surrounding land uses vary, with commercial developments (Casino) to the west, and undeveloped and rural residential properties on the north, east, and south.

The Study Area is predominated by oak savanna and oak woodland habitats. Existing on-site natural drainages consist of a large riparian corridor along a perennial stream that runs east to west along middle of the Study Area, as well as ephemeral streams, wetlands, ponds. Manmade ditches are also present, including Henderson Ditch located within the northwestern portion of the Study Area and the Palermo Canal near the eastern edge of the Study Area. Most of the Study Area is accessible via network of unpaved dirt and gravel roadways. Evidence of historical mining activities is present in the form of altered land, man-made canals, and dredge tailings. Representative photographs of the Study Area are included in **Attachment 1.**

3.1 SOIL TYPES

The following soil series are present within the Study Area (NRCS 2021; **Attachment 2** and **Figure 4):**

- 118, Xerorthents, tailings and 0-50% slopes (13.18% of the Study Area);
- 317, Thomsonflat loam, 2-15% slopes (2.82% of the Study Area);
- 331, Thompsonflate loam, 15-30% slopes (10.64% of the Study Area);
- 550, Dunstone-loafercreek complex, 1-15% slopes (41.83% of the Study Area);
- 551, Dunstone-Lomarica-Argonaut taxadjunct, 15-30% slopes (26.13% of the Study Area);
- 557, Mounthope-Hartsmill, 15-30% slopes (2.89% of the Study Area);
- 565, Dunstone-Argonaut taxadjunct-Sunnyslope, 2-15% slopes (2.01% of the Study Area);
- 566, Dunstone-Loafercreek-Katskillhill, 2-15 % slopes (0.50% of the Study Area).

Xerorthents: This soil series is found in floodplains with a parent material of dredged spoil piles from gravelly alluvium derived from igneous, metamorphic and sedimentary rock. This soil series occurs on slopes ranging from 0 to 50 percent slopes. The depth to the water table is about 60 to 80 inches. This soil type is somewhat excessively drained with low a water capacity. This soil type is not considered hydric**.**

Thomsonflat loam: This soil series is found within terraces with a parent material of loamy alluvium over clayey alluvium over non-cemented to very weakly cemented sandy and gravelly alluvium from igneous and metamorphic rock. This soil series occurs on slopes ranging from 2 to 15 percent slopes. The depth to the water table is about 40 to 81 inches. This soil type is moderately well drained with a low water capacity and is not considered a hydric soil.

Dunstone: This soil series is found on hills with a parent material of loamy residuum weathered from metavolcanics. This soil series occurs on slopes ranging from 1 to 15 percent slopes. The depth to the water table is more than 80 inches. This soil type is well drained with a low water capacity and not considered a hydric soil.

Mounthope-Hartsmill: This soil series is found on hills with a parent material of loamy residuum and/or colluvium derived from metavolcanics. This soil series occurs on slopes ranging from 15 to 30 percent slopes. The depth to the water table is more than 80 inches. This soil type is well drained with a moderate available water capacity and is not considered a hydric soil.

3.2 SPECIAL-STATUS SPECIES

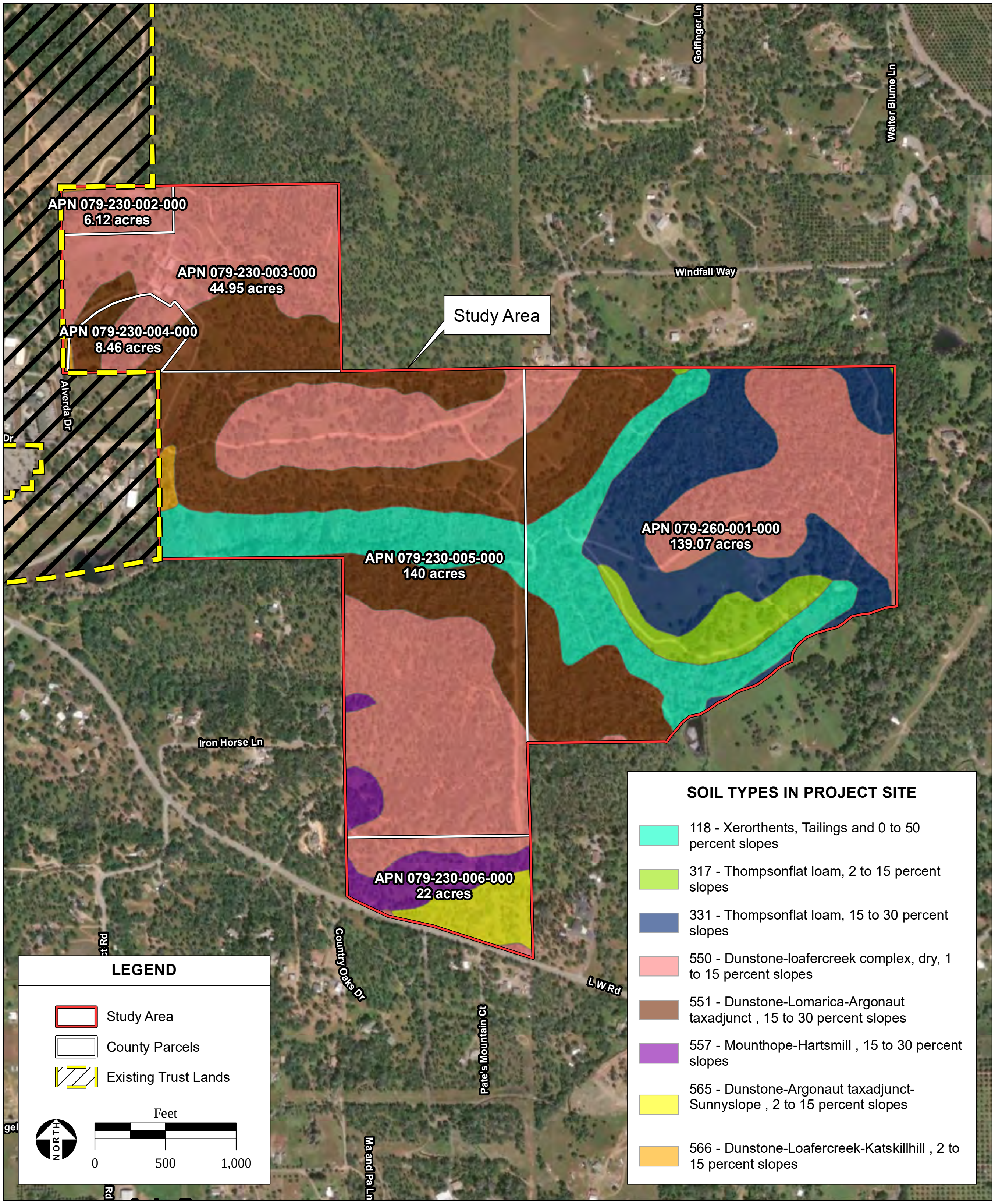
Preliminary data review and special-status species searches list 4 special-status plant species and 14 special-status animal species with the potential to occur in the region of the Study Area (**Attachment 3**). Species with no potential to occur in the Study Area were ruled out based on lack of suitable habitat, soils, elevation, necessary substrate, and negative results during the survey.

3.3 CRITICAL HABITAT

No critical habitat for any species occurs within the Study Area or within the near vicinity of the Study Area (USFWS 2024b).

3.4 WILDLIFE MOVEMENT

The Study Area occurs within a rural area surrounded by either open space or large parcel residences. The riparian corridor habitat with perennial waters within the Study Area, serves as a valuable wildlife movement corridor within the Study Area and for the surrounding areas, as this feature spans over 250 feet at its widest point and offers a variety of vegetation stratum and plant species suitable to support a wide range of wildlife species. Along the margins of the western half of this riparian habitat, supports dense riparian vegetation with wetlands occurring internally within pockets of the meandering dredge spoils. Inclusions of willows occurs throughout this this habitat west of the bifurcation. East of the bifurcation, this area supports dense riparian canopy cover. Dispersal habitat for various wildlife species occurs throughout this habitat and surrounding areas. Barbed wire surrounds much of the Study Area but does not pose as a major barrier to wildlife species as they can jump over it or crawl under.



SOURCE: USDA NRCS Soil Survey of Butte County, updated 5/20/2020; Maxar aerial photograph, 4/25/2023; Butte County GIS, 2020; ESRI, 2024; Montrose Environmental, 10/10/2024

Figure 4
Soil Types

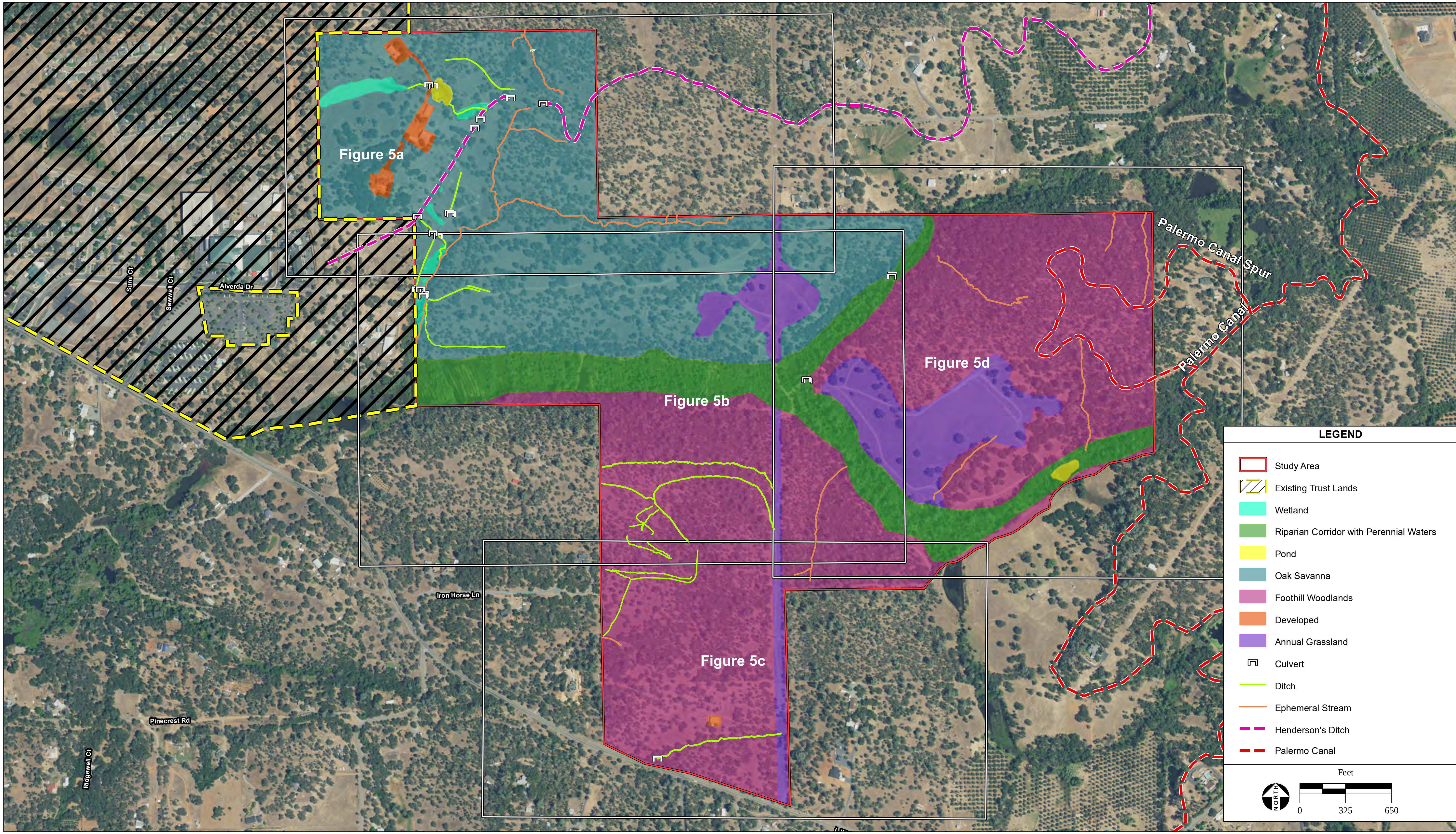
4 RESULTS

4.1 HABITAT TYPES

A total of nine habitat types were documented within the Study Area (**Figures 5-5d**). These habitat types include riparian corridor with perennial waters, ditch, foothill woodland, oak savanna, annual grassland, pond, wetland, ephemeral stream, and developed. Habitats present within the Study Area are further described in the following subsections.

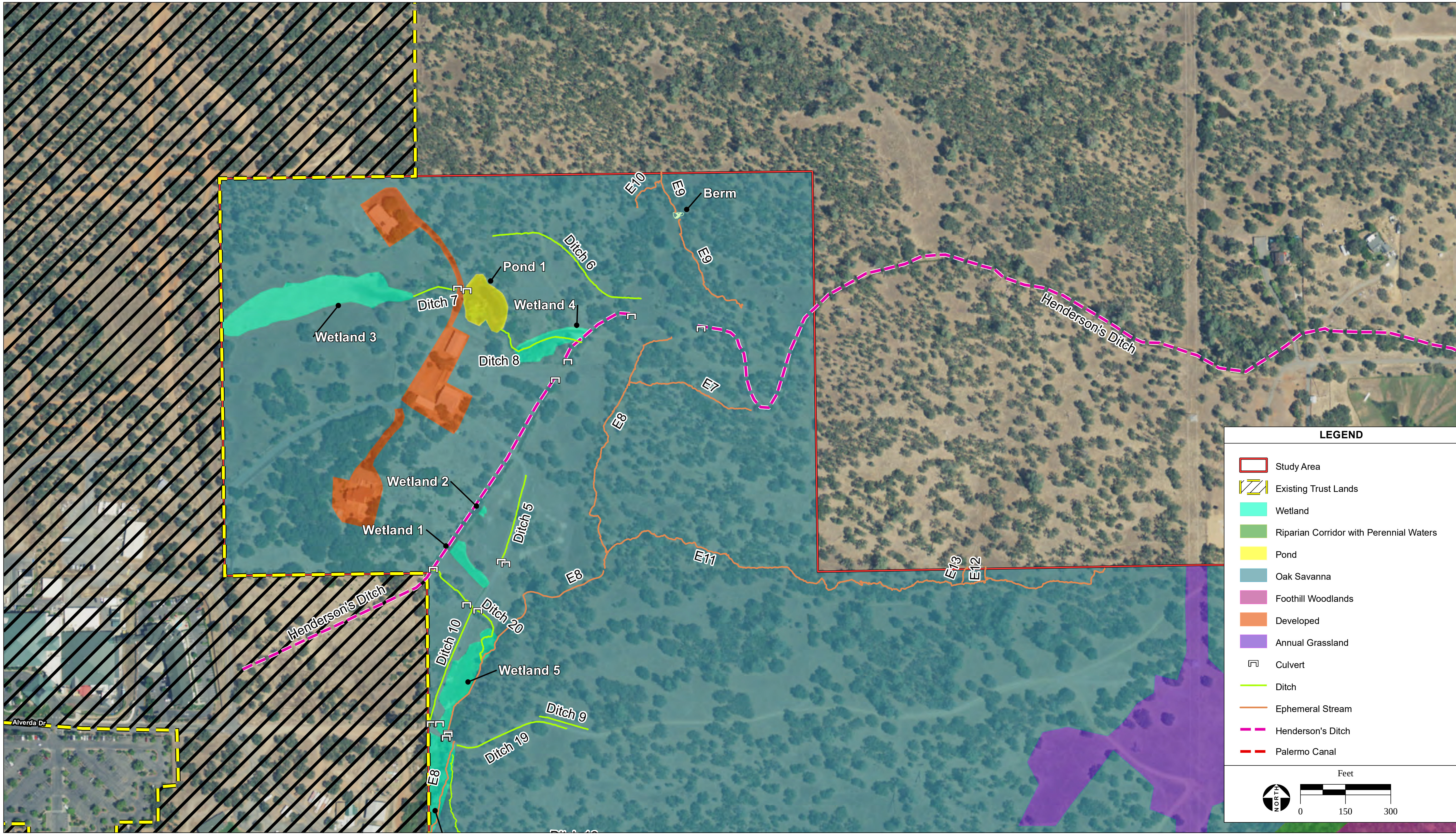
4.1.1 RIPARIAN CORRIDOR WITH PERENNIAL WATERS

Approximately 36 acres of Riparian Corridor with Perennial Waters is present within the Study Area, occurring along two unnamed streams that converge into one larger stream near the center of Study Area. Flowing water was present within this feature at the time of January 2021 surveys, flowing in a westerly direction. The western half of this feature was historically a traditional stream with a bed, bank, and channel but has been highly altered due to past mining activities in the form of dredging; despite the prior disturbance, the channel still functions as a water conveyance feature. Evidence of extensive mining activity includes the presence of meandering dredge tailings throughout this portion of the feature. These dredge tailings have created a network of open water features intermixed with wetlands. The stream re-channelizes outside of the Study Area to the west. The vegetative makeup within the western portion of this feature consists of riparian vegetation concentrated along the outer margins with wetland associated vegetation occurring within the dredge tailings. Stands of willows were observed growing on top of some of the dredge spoils. Riparian vegetation along the margins of this feature were dominated by red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), sandbar willow (*Salix exigua*), Himalayan blackberry (*Rubus armeniacus*), and interior live oak (*Quercus wislizeni*). The open canopy areas within the dredge tailings are dominated by wetland associated vegetation such as cattails (*Typha* sp.), tule (*Schoenoplectus acutus* var. *occidentalis*), rush (*Juncus* sp.), fiddle dock (*Rumex pulcher*), and pennyroyal (*Mentha pulegium*). The two stream branches east of the bifurcation are extremely dense with riparian vegetation and inaccessible in most areas. Dominant vegetation within these areas consisted of riparian vegetation similar to the riparian vegetation observed growing within the western half of this riparian corridor.



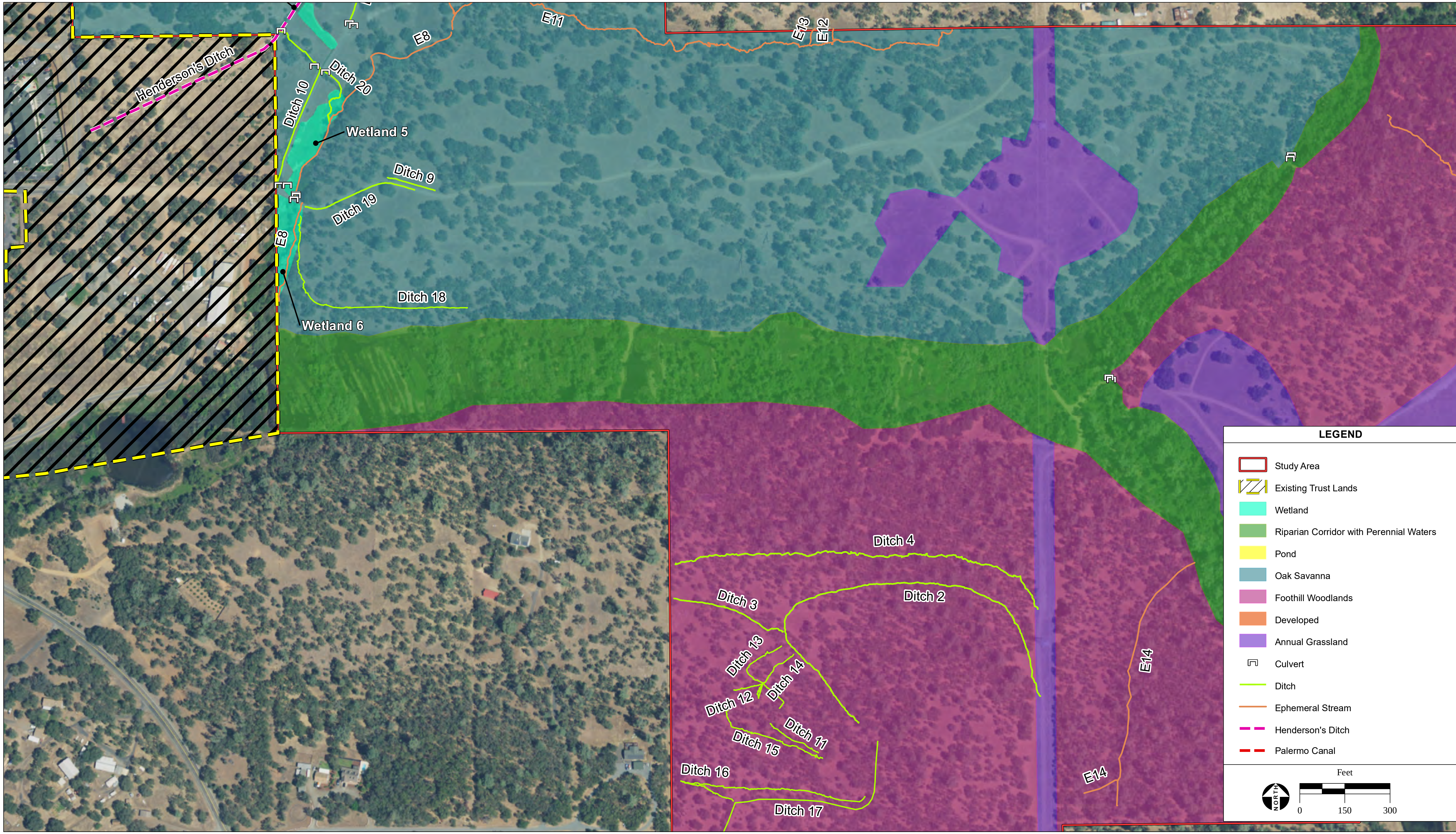
SOURCE: USDA NAIP aerial photography, 7/10/2020; ESRI, 2024; Montrose Environmental, 10/10/2024

Figure 5
Habitat Types



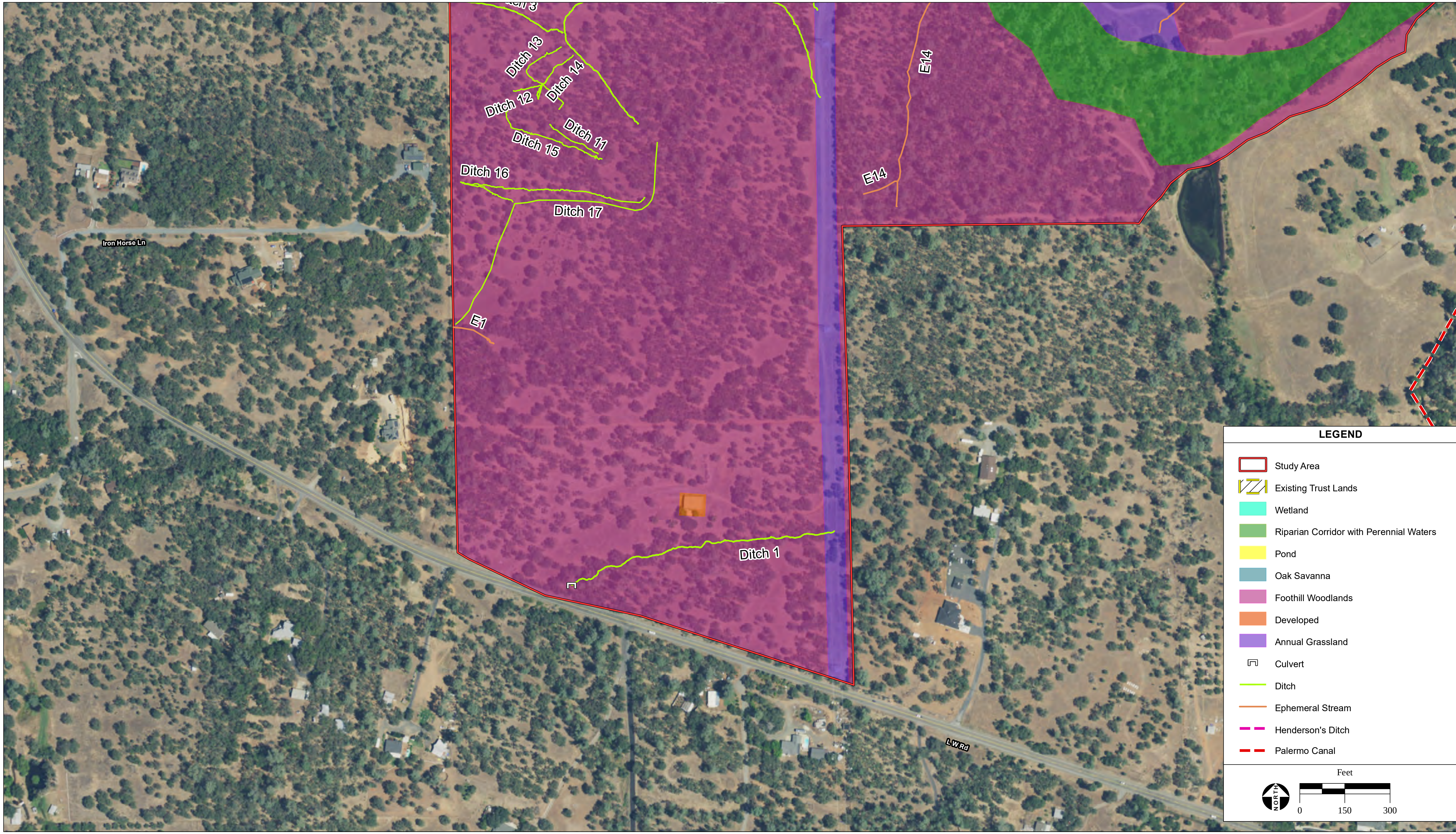
SOURCE: USDA NAIP aerial photography, 7/10/2020; ESRI, 2024; Montrose Environmental, 10/10/2024

Figure 5a
Habitat Types



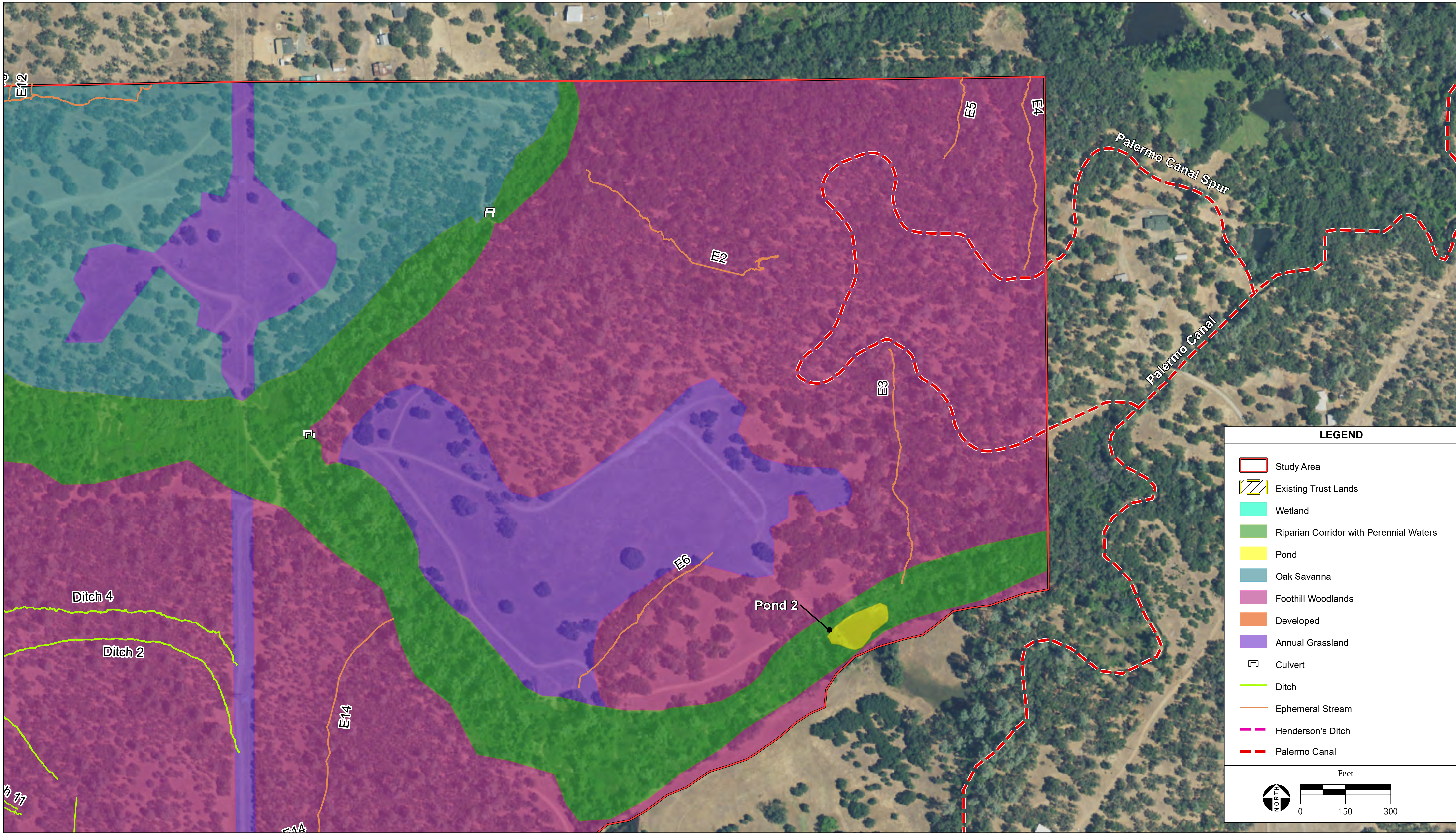
SOURCE: USDA NAIP aerial photography, 7/10/2020; ESRI, 2024; Montrose Environmental, 10/10/2024

Figure 5b
Habitat Types



SOURCE: USDA NAIP aerial photography, 7/10/2020; ESRI, 2024; Montrose Environmental, 10/10/2024

Figure 5c
Habitat Types



SOURCE: USDA NAIP aerial photography, 7/10/2020; ESRI, 2024; Montrose Environmental, 10/10/2024

Figure 5d
Habitat Types

4.1.2 Ditch

A total of 21 man-made ditches were observed throughout the Study Area. The ditch determination was made based on evidence of being a man-made feature created by mechanical manipulation causing unnatural sloping of the ditch sides and bottom of channel. Many of these ditch features came to an unnatural abrupt end or the flow channel of the inlet and/or outlet to the ditch feature gradually faded out into the surrounding habitat, clearly indicating a man-made feature (photo 1 of **Attachment 1**). The majority of ditches documented within the Study Area, including Palermo Canal, were made from uplands composed of upland vegetation and showed no sign of recent conveyance of water. Ditches that were observed to have flowing water at the time of the 2021 surveys include Ditch 7, Ditch 8, Ditch 10, Ditch 20, and Henderson Ditch. These ditches were composed of wetland associated vegetation dominated by hyssop loosestrife (*Lythrum hyssopifolia*), slender willow herb (*Epilobium ciliatum*), and fiddle dock. The upland ditch features appeared to have been created to assist in historic mining operations. Vegetation within the upland ditch features were dominated by little rattlesnake grass (*Briza minor*), wild oat (*Avena fatua*), bedstraw (*gallium aparine*.), stork's bill (*Erodium* sp.), wild geranium (*Geranium dissectum*), and Italian thistle (*Carduus pycnocephalus*). The Henderson Ditch and the Palermo Canal (**Figure 4**) appear to be parts of larger manmade features which run onto and off the site.

Henderson Ditch is a man-made ditch feature that is approximately three to five feet measuring from top of bank to top of bank (photo 12 of **Attachment 1**). Flowing water was present within this feature at the time of the 2021 surveys and contained wetland-associated vegetation. This feature occurs within the northern portion of the Study Area, entering on the eastern side of the site. The ditch continues in a southwest trajectory where it briefly goes underground at two locations before exiting the Study Area to the west. Dominant vegetation observed within Henderson's ditch include rush, pennyroyal, fiddle dock, cattails, and slender willow herb.

Palermo Canal Spur, located along the eastern boundary of the Study Area (**Figure 4**), is a ditch feature that appeared to be constructed for the purpose of assisting previous mining operations in the area. This feature had constructed berms that were elevated with a flow channel present, occurring within the foothill woodland habitat. Vegetation within this feature was consistent with the surrounding upland vegetation. This feature did not contain water at the time of the 2021 surveys. The channel itself contained downed branches and an assortment of upland grasses dominated by little rattlesnake grass, wild oat, and bedstraw.

4.1.3 Foothill Woodland

Foothill woodland habitat type occurs within the southern portion of the site, south of the riparian corridor with perennial waters (photo 2 of **Attachment 1**) and consists of approximately 163.5 acres. This habitat type has a denser canopy than the oak savanna habitat within the northern portion of the site. Foothill pines (*Pinus sabiniana*), interior live oaks (*Quercus wislizeni*), and blue oaks (*Quercus douglasii*) are the dominant trees within this habitat type. The understory is dominated by rattlesnake grass, wild oat, medusa head (*Elymus caput*-medusae), Italian thistle, and coyote brush (*Baccharis pilularis*). Several ephemeral streams and ditch features occur within this habitat. Dirt access roads occur throughout this foothill woodland habitat.

4.1.4 Oak Savanna

The oak savanna habitat type occurs north of the riparian corridor habitat with perennial waters. This habitat type is similar to foothill woodland habitat but the trees are far less dense (photo 15 of **Attachment 1**). This habitat type consists of approximately 120 acres in the Study Area. This habitat also lacks foothill pines. . Dominant tree species within this habitat type include blue oaks and interior live oaks. Understory vegetation is dominated by grassland species such as rattlesnake grass, wild oat, medusa head, and soft chess (*Bromus hordeaceus*). Several ephemeral streams and ditches occur within this area. Dirt access roads occur throughout the oak savanna habitat.

4.1.5 Annual Grassland

This habitat type consists of approximately 30 acres in the Study Area. It occurs within large open canopy areas, located east of where the riparian corridor habitat branches. It also occurs just north of the riparian corridor (photo 9 of **Attachment 1**), as well as under an electric transmission line that runs north-south through the Study Area. The vegetative composition of this habitat type is similar to the understory of the oak savanna habitat. This habitat type was dominated by non-native grasses consisting of rattlesnake grass, medusa head, wild oat, and soft chess. Dirt access roads occur throughout this annual grassland habitat.

4.1.6 Developed

Developed areas occur within both the northern and southern portions of the Study Area. A residence, asphalt and gravel roads, a barn, and associated structures occur within the northwest corner of the Study Area. This developed area is actively being used and maintained. Near the southern boundary of the Study Area, a warehouse and small vacant residence were observed. The small residence appeared to be in disrepair and not in active use. The areas immediately surrounding these developed areas consisted of ruderal vegetation within the greater foothill woodlands and oak savanna habitats.

4.1.7 Pond

Two ponds were identified within the Study Area. Pond 1 is approximately 0.41 acre and is a man-made feature located near the northern boundary of the Study Area. Pond 2 is approximately 0.44 acre and is an instream pond located within the southeast branch of the riparian corridor habitat.

Pond 1 is supplied year-round water via a PVC pipe that originates from an offsite source. This pond consists of mostly open water that spans approximately 80 feet by 160 feet, with dense cattails (*Typha* sp.) present along the margins. Due to the year-round supply of water, the pond overflows at the northwest and southeast ends of the pond. The overflowing water is initially confined to narrow channels and is allowed to alluviate into the adjacent habitats further from the pond. This pond feature is positioned at a higher elevation than the surrounding areas allowing for the water to travel down slope at either end. Overflowing water at the northwest end of the pond is channelized, then fed through a culvert that travels under a road, and then is allowed to discharge into the area to the west. This discharge has resulted in the formation of Wetland 3 (**Figure 4**; photo 14 of **Attachment 1**). Water overflow at the southeast end of the pond is channelized by a discrete ditch (ditch 8) where the water has overflowed the soft banks of the ditch forming Wetland 4.

Pond 2 is an instream pond feature located within the southeast branch of the riparian corridor habitat (Photo 7 of **Attachment 1**). This feature appears to be man-made, based on the densely vegetated earthen dam located at the west end (downstream side) which allows water to pond. Perennial waters flow into Pond 2 at the east end and exit the feature to the west, continuing downstream. Pond 2 consists mostly of open water, with some emergent vegetation present within the shallow water areas. The pond spans approximately 100 feet by 200 feet. Vegetation was concentrated along the margins of the pond dominated by cattails, rush (*Juncus* sp.), and willows (*Salix* sp.).

4.1.8 WETLANDS

A total of six wetlands, totaling 2.8 acres, have been identified within the Study Area, concentrated within the northwest portion of the site. Wetlands in the Study Area are dominated by toad rush (*Juncus bufonius*), a large species of rush (*Juncus* sp.), annual beard grass (*Polypogon monspeliensis*), and Himalayan blackberry. Wetlands 5 and 6 also had low growing arroyo willows (*Salix lasiolepis*) within these features. Both Wetland 1 and Wetland 2 are formed due to overflow from the adjacent Henderson Ditch. Wetland 3 and Wetland 4 were formed due to overflow of Pond 1. Wetland 5 is a stream-adjacent wetland that was formed due to overflow of Henderson Ditch into Ditch 10 (**Figure 4**). Some flow continues down Ditch 10 with some flow diverting into Ditch 20, which then flows into Ephemeral Stream 8 (E8) contributing to the formation of stream adjacent Wetland 5 (refer to photo11 of **Attachment 1**). Wetland 6 is also a stream adjacent wetland positioned further downstream along E8.

4.1.9 EPHEMERAL STREAM

There is a total of 14 ephemeral streams within the Study Area. These features were distinguished from the ditch features based on whether it appeared to be a natural feature with a bed and bank with no apparent mechanical alteration. and also whether it exhibited natural erosional patterns. These stream features were heavily incised and varied in width ranging from 3 to 15 feet measured from top of bank to top of bank. These ephemeral streams convey water for only a brief period of time and then return back to dry conditions. These ephemeral streams, which occur throughout the Study Area within the foothill woodland and oak savanna habitats, were dominated by upland grass and forb species, with the exception of E8 due to the overflow of water within Henderson Ditch. Dominant vegetation within the ephemeral streams, with the exception of E8, consisted of wild oat, rattlesnake grass, Ajuga hedge nettle (*Stachys ajugoides*), stork's bill, Italian thistle, and wild geranium. Given the overflow of water within Henderson ditch, eventually making its way into E8, wetland characteristics have developed adjacent to the lower half of E8. Dominant vegetation observed within E8 include toad rush, a large species of rush (*Juncus* sp.), annual beard grass, and Himalayan blackberry.

4.2 SPECIAL-STATUS SPECIES

Preliminary data review and special-status species record queries produced a list of four special-status plant species and 14 special-status animal species with the potential to occur in the region of the Study Area. Special-status species in this report are defined as those that are of management concern to federal resource agencies. The name, regulatory status, distribution, habitat requirements, period of identification, and potential to occur on the Study Area for each special-status species are listed in Table 1 of **Attachment 3**.

4.2.1 SPECIAL-STATUS PLANTS

Based on the conditions identified in the Study Area it was determined that none of the four special status plant reviewed from the region have potential to occur in the Study Area due to the lack of appropriate habitats and specific hydrology and substrate requirements of those species. A list of all plant species documented in the Study Area is included under **Attachment 4**.

4.2.2 Special-status Wildlife

Of the 14 special-status wildlife species known from the region, it was determined that the Study Area is capable of supporting six. The remaining eight wildlife species were ruled out based on lack of suitable habitat, restricted species range, or impediments to migration into the Study Area (see **Attachment 3**). Species with the potential to occur within the Study Area are discussed below.

Foothill Yellow-legged Frog (*Rana boylii*) – North Feather DPS

Federal Status – Threatened
State Status – Threatened

Foothill yellow-legged frog (FYLF: North Feather Distinct Population Segment [DPS]) is named for its abdomen and hind legs, which are distinctively yellowish in color. The species range includes most of northern California, west of the Cascades and south along the coast to the San Gabriel Mountains, and south along the western side of the Sierra Nevada Mountains and into Kern County. The species is divided into six genetic clades. The North Feather River DPS range extends from the southern Cascades to northern Sierra Nevada transition zone in Butte and Plumas (USFWS 2023a). This species occurs in partially shaded, rocky streams at low to moderate elevations in areas of chaparral, cismontane woodland, and broadleaf upland forest habitats. This species' ideal habitat consists of open slow-moving perennial streams with rocky or bedrock substrates and small deeper pools. However, it can also occur in smaller perennial streams that have cobble-sized rocks and riffles. FYLF breeds from March through May in pools within perennial streams and attaches its eggs to gravel or rocks at the edges or along the banks. As described in the 2023 Species Status Assessment (USFWS 2023a), the common factor at breeding sites across the species' range is a rocky substrate that is stable (i.e., does not readily shift during bank-full conditions), has interstitial spaces, and provides shelter from ambient or occasional high flows. Outside of the breeding season, individuals of the species travel to other tributaries or portions of the stream. The three nearest CNDDB occurrence records are located between 6.6 to 7.1 miles from the Study Area; however, all are considered extirpated (CNDDB 2024). Due to the noted extirpation of the nearest FYLF occurrences, it is unlikely the species is presents in the Study Area. Nonetheless, the riparian corridor and perennial waters within the project may provide suitable habitat for FYLF, although areas of rocky or bedrock substrates are limited. Therefore, there is a low potential for FYLF to occur in the Study Area.

California Red-legged Frog (*Rana draytonii*)

Federal Status – Threatened
State Status – Species of Special Concern

The California red-legged frog (CRLF) requires a variety of habitat elements with aquatic breeding areas embedded within a matrix of riparian and upland dispersal habitats. Breeding sites occur in aquatic habitats including pools and backwaters within streams and creeks, ponds, marshes, springs, sag ponds, dune ponds and lagoons. CRLF also breed in artificial impoundments including stock ponds.
The breeding period is from November to March. During periods of wet weather, starting with the first rains of fall, some individuals may make overland excursions through upland habitats. Most of these overland movements occur at night. CRLF may move distances up to 1.6 kilometers throughout a wet season. CRLF rest and forage in riparian vegetation. Summer habitats include spaces under boulders or rocks and organic debris, such as downed trees or logs; industrial debris; and agricultural features, such

as drains, watering troughs, abandoned sheds, or hay-ricks. CRLF requires 11 to 30 weeks of permanent water for larval development.

Habitat suitable to support this species occurs within the riparian corridor habitat with perennial waters, the two ponds, and the wetland habitat present within the Study Area. No CNDDB occurrences have been documented within 15 miles of the site. No CRLF were observed during field surveys in January 2021 and March 2022. Given that there are no occurrences of this species within the near vicinity of the Study Area but suitable habitat is present within the riparian corridor with perennial waters, there is a low potential for CRLF to occur.

Western Spadefoot Toad (*Spea hammondii*)

Federal Status – Proposed Threatened
State Status – Species of Special Concern

The western spadefoot toad (WST) occurs throughout the Central Valley and adjacent foothills (including the Sierra foothills). It also occurs in the Southern Coast Range from Santa Barbara County to the Mexican border. This species primarily inhabits lowlands. The toad is almost completely terrestrial, entering water only to breed. Most of the species' life is spent underground in small mammal burrows, within dispersal distance of breeding sites. Dispersal distance has been reported up to 650 meters (USFWS 2023c). Preferring areas of short grasses where soil is sandy or gravelly, it can be found in valley and foothill grasslands, open chaparral, and pine-oak woodlands. Though some surface activity may occur in any month between October and April, it typically becomes surface-active following relatively warm rains in late winter. The WST breeds in temporary pools, such as vernal pools, seasonal ponds, or pools in ephemeral waterways. In order for young to successfully metamorphose, breeding pools must lack exotic predators, such as fish, bullfrogs, and crayfish. Breeding occurs between January and May.

Suitable breeding pools for WST may occur along the ditches and ephemeral streams interspersed throughout the Study Area, or along the periphery of the perennial streams. Seasonal aquatic habitat may also be present adjacent to the Study Area, within upland dispersal distance. Most of the upland habitat in the Study Area, with the exception of developed areas and dense riparian habitat, provides suitable non-breeding habitat for the species. The CNDDB has listed two occurrences of this species within five miles of the Study Area. The closest occurrence (occurrence #389) is located approximately 3.5 miles to the south, documented in 1956. The second closest occurrence (occurrence #492) is located approximately 4.5 miles to the northwest, documented in 1978. Although there are no recent occurrences of the species reported by the CNDDB in close proximity to the Study Area, suitable breeding and upland habitat are present, and there is a moderate potential for WST to occur.

Yellow-billed Cuckoo (*Coccyzus americanus*)

Federal Status - Threatened
State Status – Endangered

Yellow-billed cuckoo is a medium sized bird that is grayish-brown above and white below. It is typically differentiated from other cuckoos by its yellow lower mandible (i.e., bill), though juveniles may show little to no yellow coloration. This species occurs in valley/foothill and desert riparian communities. Yellow-billed cuckoo requires dense riparian thickets (especially willow and salt-cedar) and slow-moving watercourses. West of the continental divide, the range of this species includes California, Arizona, and New Mexico. It also occurs in northern and western Mexico and in the southern tip of Baja California. Yellow-billed cuckoo has been sighted in all counties of Arizona and within Tehama, Glenn, Butte, Colusa, Sutter, Riverside, Inyo, Imperial, San Bernardino, Lake, San Benito, Ventura, Los Angeles, San Diego, Ventura, Los Angeles, Kern, San Luis Obispo, Fresno, Yuba, Yolo, Sonoma, Siskiyou, and San Joaquin counties in California. Yellow-billed cuckoo is present in this part of its range during the spring and summer months and typically nests from June through September.

Habitat suitable to support this species occurs within the riparian corridor habitat with perennial waters. Dense riparian vegetation occurs throughout this habitat type that forms a belt that spans the width of the entire Study Area, from east to west, positioned near the center of the site. The nearest reported occurrence of nesting yellow-billed cuckoo is approximately 19.4 miles west, where there are several records of the species nesting along Butte Creek (CNDDB 2024a). Due to the Study Area providing suitable habitat to support this species but a lack of nearby CNDDB occurrences within the vicinity of the Study Area, this species has a low potential to occur.

Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*)

Federal Status – Threatened
State Status – None

The valley elderberry longhorn beetle (VELB) is completely dependent on its host plant, elderberry (*Sambucus* spp.), in and around California's Central Valley during its entire life cycle (USFWS 2018). VELB larvae live within the soft pith of the elderberry where they feed for 1-2 years. Adults are short-lived and emerge from exit holes created by the larva just prior to pupation. The adults feed on the elderberry foliage up until they mate. Females lay their eggs in the crevices of elderberry bark. Upon hatching the larvae then tunnel into shrub stems and feed there. VELB typically utilize stems that are greater than one inch in diameter at ground level (USFWS 2017). The nearest reported occurrence of VELB is from approximately 6.7 miles west of the Study Area where larvae were documented several clumps of blue elderberry (*Sambucus mexicana*) growing along the Feather River (CNDDB 2024). Elderberry shrubs were not documented during January 2021 or March 2020 surveys for the Study Area; however, the shrubs are deciduous and can be overlooked in the winter. The riparian corridor that bisects the Study Area provides suitable habitat for elderberry shrubs and in turn, VELB. Due to multiple occurrences within 10 miles of the presence of suitable habitat for its host plant, VELB has a moderate potential to occur in the Study Area.

Northwestern Pond Turtle (*Actinemys marmota*)

Federal Status – Proposed Threatened
State Status – Species of Special Concern

The northwestern pond turtle is known from California, Oregon, Washington, and an outlying population in Nevada. Within California, its range is considered to include the San Joaquin Valley and all populations in north of the middle of Monterey Bay (USFWS 2023b). The species was recently split from the southwestern pond turtle, whose range lies to south of these areas. Habitat includes permanent to semi-permanent aquatic habitats and adjacent uplands for nesting and aestivation. These turtles are found along ponds, marshes, rivers, streams, and irrigation ditches. The species prefers habitats with stable banks and open areas to bask in, as well as underwater cover provided by logs, large rocks, bulrushes, or other vegetation. Northwestern pond turtles generally leave aquatic habitat only to reproduce and to hibernate. Hibernation typically takes place from October or November to March or April. Upland habitat occupied for overwintering and aestivation varies greatly across the range but has been documented up to 500 meters (USFWS 2023b). Egg-laying typically occurs in May and June, in close proximity to aquatic habitat in areas characterized as having sparse vegetation with short grasses and forbs and little or no canopy cover to allow for exposure to direct sunlight (USFWS 2023b).

Suitable aquatic and upland habitat to support northwestern pond turtle is present in the Study Area. The species may occur within the perennial streams and associated riparian habitat, the perennial ponds, and may utilize upland habitats in proximity to perennial streams and ponds for nesting, overwintering/aestivation, and dispersal. Eggs and hatchlings may be present in underground burrows throughout most of the year and often cannot be located through visual surveys. The nearest reported occurrence of northwestern pond turtle is approximately 1.7 miles northwest of the Study Area (CDWF 2024). During one of the surveys conducted in 2021, an unidentified turtle species was observed basking on a log within Pond 2 (**Figure 4**) and then quickly dove into the water before a positive Identification could be made. Given the presence of a CNDDB occurrence within the vicinity of the Study Area, suitable habitat, and the observation of an unidentified turtle species within Pond 2, there is a high potential for northwestern pond turtle to occur in the Study Area.

4.3 CRITICAL HABITAT

No critical habitat for any species occurs within the Study Area or within five miles of the Study Area.

4.4 NESTING MIGRATORY BIRDS

Migratory birds and their nests are protected from "take" by the Migratory Bird Treaty Act (16 U.SC. 703-711), which makes it unlawful to "*pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess or any part, nest, or egg of any such bird"* (50 CFR 10). Migratory birds and other special-status or protected birds have the potential to nest within or adjacent to the Study Area.

4.5 BALD AND GOLDEN EAGLES

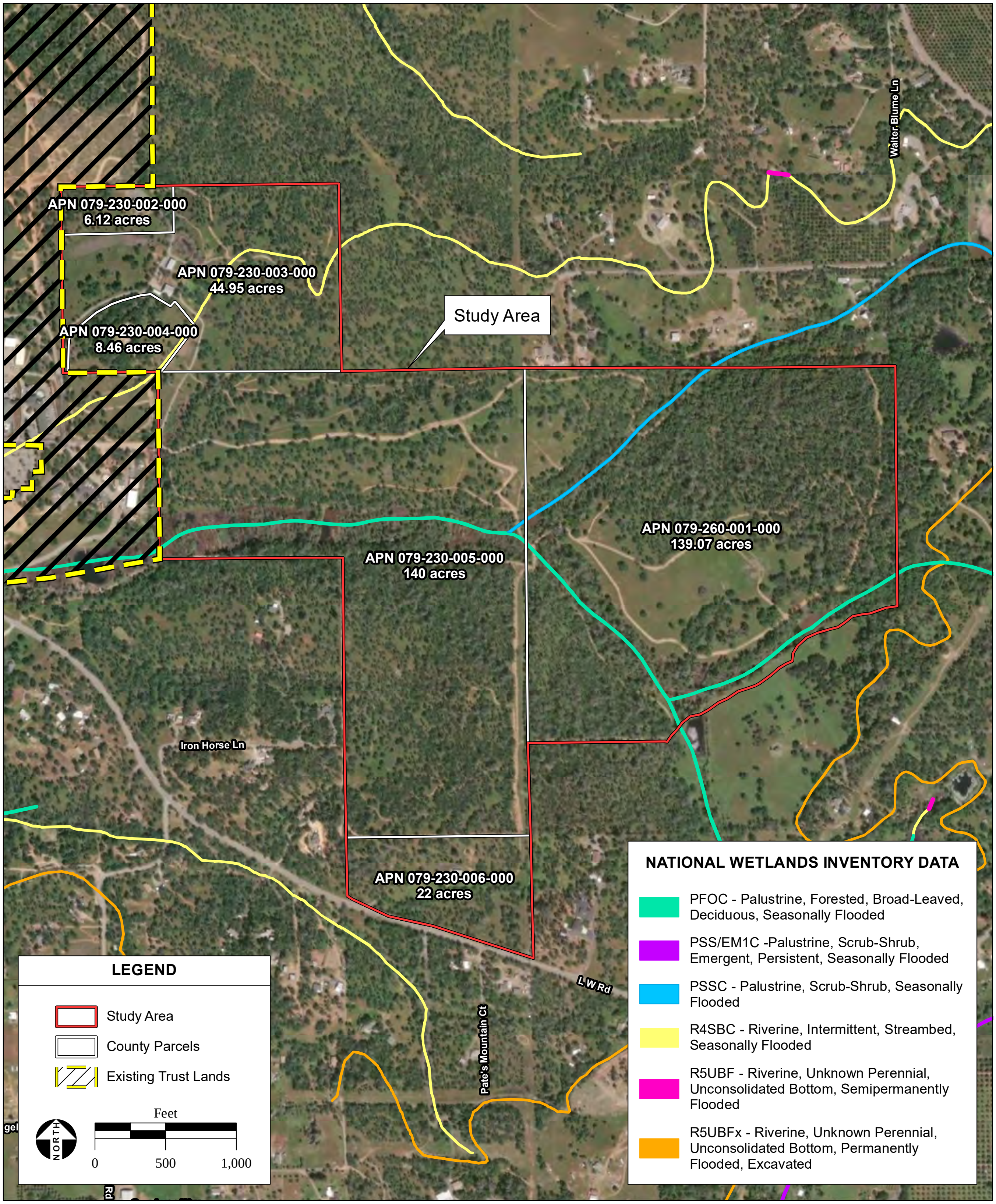
The Bald and Golden Eagle Protection Act (BGEPA) prohibits anyone without a permit issued by the Secretary of the Interior, from "taking" bald or golden eagles, including their parts (including feathers), nests, or eggs. The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." Regulations further define "disturb" as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

Both bald and golden eagles exhibit high nest site fidelity, and nesting territories are often used year after year. In addition to the active nest, bald eagle territories may include one or more alternate nests (nests built or maintained by the eagles but not used for nesting in a given year) (USFWS 2007). The BGEPA prohibits removal or destruction of both active and alternate nests.

Bald and golden eagles are known to occur in the general region on a year-round basis, and large mature trees in the riparian corridor and foothill woodland habitats may provide suitable nest sites for both species. However, no potential eagle nests (e.g., large stick nests) were identified within the Study Area during 2021 and 2022 surveys, and there are no documented occurrences of eagles nesting within or immediately adjacent to the Study Area, therefore there is a low potential for either species to nest in the Study Area.

4.6 WETLANDS AND WATERS OF THE U.S.

The National Wetlands Inventory database was queried to determine previously mapped wetlands and other waters within and adjacent to the Study Area. As shown in **Figure 6**, NWI has identified a palustrine, forested, broad-leaved deciduous, seasonally flooded system (PFOC) that occurs near the middle of the study area. A second palustrine system (PSSC) was identified as branching off from the previously mentioned palustrine area, to the northeast. Lastly, a riverine, intermittent, streambed, seasonally flooded system has been identified by NWI as occurring within the northern portion of the Study Area. This feature is known as Henderson Ditch. Site specific investigation of the mapped NWI features confirmed that these features do in fact occur within the Study Area, as described in section 4.1. . Based on the site survey, there are an additional 14 ephemeral streams, 20 ditches, two ponds, and six wetlands that were identified.



SOURCE: National Wetlands Inventory data, 2021; Maxar aerial photograph, 9/7/2021; Butte County GIS, 2020; ESRI, 2024; Montrose Environmental, 10/10/2024

Figure 6
National Wetlands Inventory

5 IMPACTS AND MITIGATION MEASURES

The Study Area currently consists of mostly undeveloped lands with a few locations where infrastructure occurs. No designated critical habitat occurs within or adjacent to the Study Area. A total of 20 ditches, 14 ephemeral streams, two ponds, and a large riparian corridor with perennial waters are present within the Study Area. Potentially jurisdictional aquatic features include Pond 1, Pond 2, all ephemeral streams, Henderson Ditch, ditch 7, ditch 8, ditch 10, ditch 20, Palermo Canal, and all identified wetlands within the Study Area. A total of six special-status wildlife species were identified as having a potential to occur within the Study Area; no special-status plant species are expected to occur. Suitable habitat for migratory nesting birds is also present. Nesting bald and golden eagles are not known to occur in the Study Area but suitable nesting habitat is present. Based on preliminary site plans, the Proposed Project may impact potentially jurisdictional waterways and suitable habitat for special-status species (**Figure 7**). Additionally, activities conducted during the nesting bird season may impact nesting migratory birds. Although unlikely, the proposed project may also impact nesting bald or golden eagles if they are present in or adjacent to site.

The following Mitigation Measures are recommended to avoid and minimize impacts of the Proposed Project to known and potentially-occurring federally protected biological resources:

<u>Mitigation Measure 1 – Protect wetlands, waterways, and riparian habitat</u>
The following measures shall be implemented to protect aquatic habitats and associated wildlife species:

1) Project components, including roadways, utilities, and structures shall be designed to avoid grading or placement of fill in wetlands, waterways, or riparian habitat.
2) Where wetland or waterway crossings are unavoidable, crossing design shall consider use of a free span bridge with footings and abutments located outside of the wetland or channel to avoid direct impacts to aquatic habitats.
3) No construction activities shall occur within any potentially jurisdiction waterway without prior consultation with the U.S. Army Corps of Engineers. If impacts to potentially jurisdictional aquatic features are unavoidable, required permits shall be obtained from the U.S. Army Corps of Engineers.
4) Prior to the start of construction, wetlands and waterways, including Pond 1; Pond 2; Wetlands 1 through 16; Henderson Ditch; Ditches 7, 8, 10, and 20; Palermo Canal Spur; ephemeral and perennial streams on the property; and riparian habitat along streams shall be designated as Environmentally Sensitive Areas (ESAs). These areas, with the exception of any permitted work locations, shall be protected by minimum 25-foot no-entry buffers, measured from the ordinary high-water mark or edge of riparian habitat. ESAs and protective buffers shall be shown on all grading and construction plan sets. Buffers shall be marked in the field with highly visible flagging and/or fencing prior to the start of any ground or vegetation disturbance activities. Signage shall be placed around the ESA that states "Sensitive Resource Area – NO ENTRY." This measure does not apply to Ditches 1 through 6, 9, or 11 or 19, which exhibit upland characteristics.
5) Agricultural development shall be prohibited within 50 feet of the outer edge of riparian habitat along perennial waterways.

6) Livestock shall be prevented from accessing perennial waterways and associated riparian habitat. Fencing, cattle guards, or other appropriate exclusion structures shall be in place prior to initiating livestock grazing. These structures shall be routinely inspected and maintained for the duration of all livestock grazing activities.

Mitigation Measure 2 – Mitigate for impacts to jurisdictional wetlands and waterways
If the project is deemed to impact jurisdictional wetlands and/or waterways mitigation shall be conducted at a minimum 1:1 ratio. A mitigation plan shall be developed by a qualified biologist or restoration specialist and shall describe the project impact amount (square feet and linear feet), type (permanent or temporary), mitigation approach, methods, monitoring methodology, and reporting requirements.

Mitigation Measure 3 – Conduct pre-construction surveys for nesting migratory birds
If construction activities (e.g., building, grading, ground disturbance, removal of vegetation) are scheduled to occur during the general nesting season (February 1 - September 15), a preconstruction nesting bird survey shall be conducted by a qualified biologist throughout accessible areas of suitable habitat within 500 feet of proposed construction activity. The survey shall occur no more than 7 days prior to the scheduled onset of construction. If construction is delayed or halted for more than 7 days, another preconstruction survey for nesting bird species shall be conducted. If no nesting birds are detected during the preconstruction survey, no additional surveys or mitigation measures are required.

If nesting bird species are observed within 500 feet of construction areas during the survey, appropriate “no entry” buffers shall be established. The size and scale of nesting bird buffers shall be determined by a qualified biologist and shall be dependent upon the species observed and the location of the nest. The nesting bird buffers shall be avoided during construction activities. The buffers may be removed when the qualified biologist confirms that the nest(s) is/are no longer occupied, and all birds have fledged. A copy of the survey report(s) shall be provided to the Tribe and Pacific Region BIA within 30 days of survey completion.

Mitigation Measure 4 – Conduct pre-construction surveys for nesting bald and golden eagles
If construction activities (e.g., building, grading, ground disturbance, removal of vegetation) are scheduled to begin during the bald or golden eagle nesting season (January 1 – August 30), a preconstruction survey for nesting eagles shall be conducted by a qualified biologist. The survey shall cover the complete project footprint, as well as a 500-foot buffer. The qualified biologist shall have experience surveying for nesting eagles. If no eagle nests or eagles displaying courtship behavior are observed, no further action is required. If an eagle nest or eagle courtship behavior is detected, the project proponent shall contact the U.S. Fish and Wildlife Service (USFWS) for guidance. Nest buffers shall follow USFWS recommendations in *Recommended Buffer Zones for Human Activities around Nesting Sites of Bald Eagles in California and Nevada* and *Recommended Buffer Zones for Ground-based Human Activities around Nesting Sites of Golden Eagles in California and Nevada* and may only be reduced in consultation with the USFWS. A copy of the survey report(s) shall be provided to the Tribe and Pacific Region BIA within 30 days of survey completion.

<u>Mitigation Measure 5 – Complete a Site Assessment for California red-legged frog prior to work within 100 feet of perennial streams and associated riparian habitat</u>
Prior to conducting any construction activities within 100 feet of perennial streams or associated riparian habitat, a site assessment for California red-legged frog shall be completed according the USFWS *2005 Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog*. Per the Guidance, two procedures are recommended to accurately assess the likelihood of CRF presence in the vicinity of a project site: (1) an assessment of locality records and potential habitat in and around the project area and, (2) focused field surveys of breeding pools and other associated habitat to determine whether California red-legged frogs are likely to be present. As stated in the Guidance, completed site assessments shall be submitted to the appropriate U.S. Fish and Wildlife Service office for review in order to obtain further guidance before conducting surveys. If California red-legged frog is detected on the proposed project property, project activities within 100 feet of perennial streams or riparian habitat may not proceed without prior consultation with the U.S. Fish and Wildlife Service. A copy of the site assessment and focused survey results shall be provided to the Tribe and Pacific Region BIA within 30 days of survey completion.

<u>Mitigation Measure 6 – Complete Visual Encounter Surveys for foothill yellow legged frog prior to work within 100 feet of perennial streams and associated riparian habitat</u>
Prior to conducting any construction activities within 100 feet of perennial streams or associated riparian habitat, a Visual Encounter Survey (VES) shall be completed by a qualified biologist. There is no established protocol for foothill yellow-legged frog surveys, therefore the qualified biologist shall determine number and timing of surveys. At a minimum, the survey shall include at least one VES during the spring-summer breeding period. If foothill yellow legged frog is detected during the VES, project activities within 100 feet of perennial streams or riparian habitat may not proceed without prior consultation with the U.S. Fish and Wildlife Service. Results of the VES shall be provided to the Tribe and Pacific Region BIA within 30 days of survey completion.

<u>Mitigation Measure 7 – Conduct pre-activity surveys for northwestern pond turtle</u>
Pre-activity surveys for northwestern pond turtle shall be completed by a qualified biologist within 24 hours prior to initial ground or vegetation disturbance activities located within 100 feet of perennial streams and associated riparian habitat. Surveys may be staggered to coincide with project phasing. If northwestern pond turtle is not detected, work may proceed. If northwestern pond turtle is detected, the following additional measures shall be implemented:

1) A biological monitor shall conduct daily pre-activity surveys in all active work areas within 100 feet of perennial streams and associated riparian habitat. Work may not begin in a given area until the area has been cleared by the biologist.
2) A biological monitor shall be present during all work within 25 feet of perennial streams.
3) The biological monitor(s) shall have stop work authority in the event that a northwestern pond turtle is discovered during work activities.
4) Northwestern pond turtles shall be left to move out of the work area on their own accord. If necessary, the biological monitor may relocate the animal out of harm's way.

Results of the pre-activity survey(s) shall be provided to the Tribe and Pacific Region BIA within 7 days of survey completion.

Mitigation Measure 8 – USFWS Consultation on Northwestern Pond Turtle

To minimize potential impacts to northwestern pond turtle, consultation shall be initiated with the USFWS before any ground-disturbing activities commence. This consultation will guide further actions and measures to ensure the protection of western pond turtles and their habitat in accordance with regulatory requirements.

Mitigation Measure 9 – Monitor initial ground disturbance within 25 feet of Pond 1 and Pond 2

Western spadefoot may potentially be present in small mammal burrows surrounding Pond 1 and Pond 2. If ground disturbance activities will occur within 25 feet of Pond 1 or Pond 2 a biological monitor shall be present during initial disturbance activities to inspect for western spadefoot. If no western spadefoot are detected during initial ground disturbance, work may proceed. If western spadefoot is detected, the following additional measures shall be implemented:

1) A biological monitor shall be present during all work within 25 feet of Pond 1 or Pond 2.
2) The biological monitor shall have stop work authority in the event that a western spadefoot is discovered during work activities.
3) Any western spadefoot toads requiring relocation out of harms way shall only be handled by the qualified biological monitor.
4) Biological monitors shall follow *The Declining Amphibian Task Force Fieldwork Code of Practice* to minimize the spread of disease or parasites among amphibians.

Mitigation Measure 10 – Avoid impacts to elderberry shrubs

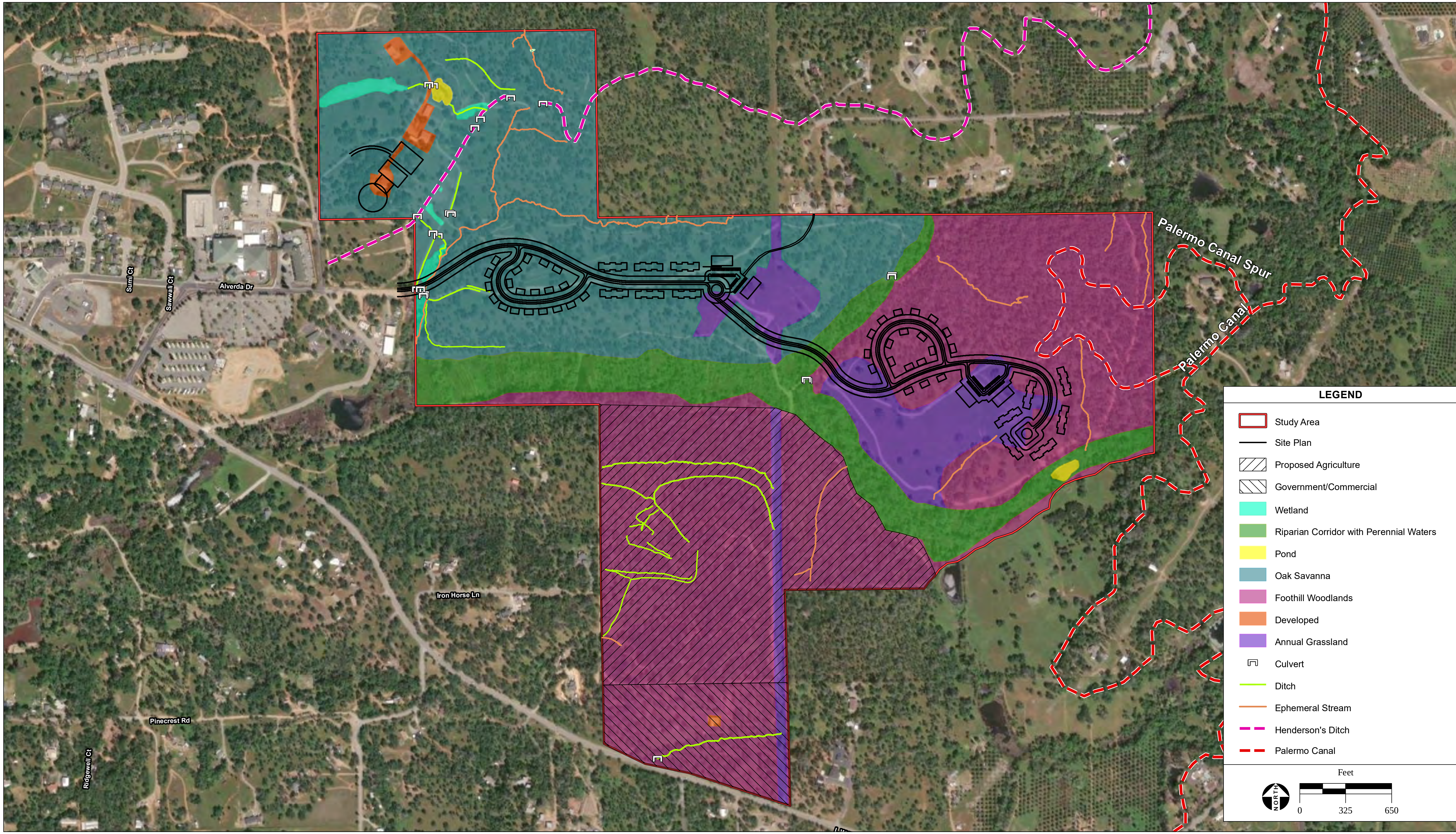
Prior to the start of construction, all proposed impact areas plus a 25-foot surrounding buffer shall be surveyed for elderberry (*Sambucus* spp.) shrubs. If no elderberry shrubs are present, no further action is required. If elderberry shrubs are located within the survey area, they shall be designated as Environmentally Sensitive Areas (ESAs) and shall be protected by minimum 25-foot no-entry buffers, or as recommended by the qualified biologist. The ESAs and protective buffers shall be shown on all grading and construction plan sets. Buffers shall be marked in the field with highly visible flagging and/or fencing prior to the start of any ground or vegetation disturbance activities. Signage shall be placed around the ESA that states “Sensitive Resource Area – NO ENTRY. Results of the survey for elderberry shrubs shall be provided to the Tribe and Pacific Region BIA within 30 days of completion.

If elderberry shrubs cannot be avoided (including removal or trimming) the shrubs shall be evaluated by a qualified biologist according to the *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*)* (USFWS May 2017). The evaluation shall include whether or not the shrub shows evidence of past or current use by Valley longhorn beetle (VELB). If the shrub is found to be occupied or potentially occupied by VELB the project proponent shall consult with the U.S. Fish and Wildlife Service prior to any trimming or removal of the shrub.

Impacted elderberry shrubs, regardless of VELB occupancy, shall be mitigated for at a minimum 3 to 1 replacement to impact ratio. Proposed locations for mitigation plantings shall be selected in coordination with a qualified biologist and shall be shown on restoration and/or landscape plan sets. A copy of the plan sets shall be provided to Tribe and Pacific Region BIA within 60 days of the initiation of construction.

Mitigation Measure 11 – Conduct worker environmental training

During the construction phase of the Project all personnel working on site shall receive an environmental training by a qualified biologist. Workers shall receive the training prior to beginning any work at the site. The training shall include information on protected habitats and special-status species that may occur in the site, including identification, legal status, and project-specific protective measures. Copies of training sign-in sheets shall be provided to the Pacific Region BIA and other agencies as needed on a monthly basis during construction.



SOURCE: Montrose Environmental, 7/21/2022; Vivid Maxar aerial photography, 4/25/2023; ESRI, 2024; Montrose Environmental, 10/10/2024

Figure 7
Site Plan and Impact Overview

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ATTACHMENTS

ATTACHMENT 1

SITE PHOTOS


PHOTO 1: Ditch 1 within foothill woodland habitat.


PHOTO 2: Ephemeral stream 1 within the foothill woodland habitat.


PHOTO 3: Showing the remnant dredge tailings within the riparian corridor habitat with perennial waters.


PHOTO 4: Riparian corridor habitat with inclusions of wetlands between dredge tailings.


PHOTO 5: Southeast branch of the riparian corridor habitat.


PHOTO 6: Northeast branch of the riparian corridor habitat.

PHOTO 7: Pond 2 with emergent vegetation along the fringe of the pond.

PHOTO 8: Ephemeral stream 5.

PHOTO 9: Showing the annual grassland habitat within the eastern portion of the Study Area.

PHOTO 10: Water within a section of Henderson Ditch is overflowing, forming wetland 2.

PHOTO 11: Showing ephemeral stream 8 with an instream wetland (wetland 5).

PHOTO 12: A section of Henderson Ditch goes underground and reemerges downslope.

PHOTO 13: Pond 1 with cattails present.

PHOTO 14: Overflow from the west side of pond 1 is contributing to the formation of wetland 3.

PHOTO 15: The upper portion of ephemeral stream 10 within the oak savanna habitat.

PHOTO 16: Two sheds occurring within the southern portion of the Study Area.

ATTACHMENT 2

SPECIAL-STATUS SPECIES LISTS, NRCS CUSTOM SOILS REPORT, AND NWI

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: 10/08/2024 22:54:13 UTC
Project Code: 2025-0003588
Project Name: MOORETOWN RANCHERIA OF MAIDU INDIANS FEE-TO-TRUST AND HOUSING, AG, AND COMMERCIAL PROJECT

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

PROJECT SUMMARY

Project Code:	2025-0003588
Project Name:	MOORETOWN RANCHERIA OF MAIDU INDIANS FEE-TO-TRUST AND HOUSING, AG, AND COMMERCIAL PROJECT
Project Type:	Tribal Construction
Project Description:	Acquisition of the Project Site into trust for the Tribe pursuant to the Secretary of the Interior's authority under the Indian Reorganization Act, 25 USC § 5108, and subsequent development of 164 housing and apartment units, an event center/tasting room, an amphitheater, and parking structure, an agricultural area that may include a garden, grazing areas, vineyards, and olive orchards, and conversion of an existing building for use by the Tribe's housing department.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@39.46365395,-121.50018516436042,14z

Counties: Butte County, California

ENDANGERED SPECIES ACT SPECIES

There is a total of 9 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

BIRDS

NAME	STATUS
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

REPTILES

NAME	STATUS
Northwestern Pond Turtle *Actinemys marmorata* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

AMPHIBIANS

NAME	STATUS
Foothill Yellow-legged Frog *Rana boylii* Population: North Feather Distinct Population Segment (North Feather DPS) No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5133	Threatened
Western Spadefoot *Spea hammondii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5425	Proposed Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7850	Threatened

CRUSTACEANS

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

FLOWERING PLANTS

NAME	STATUS
Slender Orcutt Grass *Orcuttia tenuis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1063	Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Mooretown Rancheria of Maidu Indians of California
Name: Lisa Herrera
Address: 1 Kaiser Plaza, Suite 340
City: Oakland
State: CA
Zip: 94612
Email
Phone: 6502005098

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Bureau of Indian Affairs

Element_Type	Scientific_Name	Common_Name	Federal Status	State Status	CDFW Status	CA Rare Plant Rank
Animals - Amphibians	Rana boylii pop. 2	foothill yellow-legged frog - Feather River DPS	Threatened	Threatened	-	-
Animals - Amphibians	Rana boylii pop. 3	foothill yellow-legged frog - north Sierra DPS	None	Threatened	-	-
Animals - Amphibians	Rana draytonii	California red-legged frog	Threatened	None	SSC	-
Animals - Amphibians	Spea hammondii	western spadefoot	Proposed Threatened	None	SSC	-
Animals - Birds	Accipiter atricapillus	American goshawk	None	None	SSC	-
Animals - Birds	Aquila chrysaetos	golden eagle	None	None	FP | WL	-
Animals - Birds	Buteo swainsoni	Swainsons hawk	None	Threatened	-	-
Animals - Birds	Haliaeetus leucocephalus	bald eagle	Delisted	Endangered	FP	-
Animals - Birds	Ardea alba	great egret	None	None	-	-
Animals - Birds	Ardea herodias	great blue heron	None	None	-	-
Animals - Birds	Egretta thula	snowy egret	None	None	-	-
Animals - Birds	Nycticorax nycticorax	black-crowned night heron	None	None	-	-
Animals - Birds	Falco mexicanus	prairie falcon	None	None	WL	-
Animals - Birds	Falco peregrinus anatum	American peregrine falcon	Delisted	Delisted	-	-
Animals - Birds	Progne subis	purple martin	None	None	SSC	-
Animals - Birds	Riparia riparia	bank swallow	None	Threatened	-	-
Animals - Birds	Agelaius tricolor	tricolored blackbird	None	Threatened	SSC	-
Animals - Birds	Pandion haliaetus	osprey	None	None	WL	-
Animals - Birds	Laterallus jamaicensis coturniculus	California black rail	None	Threatened	FP	-
Animals - Birds	Athene cunicularia	burrowing owl	None	None	SSC	-
Animals - Birds	Strix nebulosa	great gray owl	None	Endangered	-	-
Animals - Birds	Strix occidentalis occidentalis	California Spotted Owl	Proposed Endangered; Proposed Threatened	None	SSC	-
Animals - Crustaceans	Branchinecta lynchi	vernal pool fairy shrimp	Threatened	None	-	-
Animals - Crustaceans	Linderiella occidentalis	California linderiella	None	None	-	-
Animals - Crustaceans	Lepidurus packardi	vernal pool tadpole shrimp	Endangered	None	-	-
Animals - Fish	Acipenser medirostris pop. 1	green sturgeon - southern DPS	Threatened	None	SSC	-
Animals - Fish	Cottus gulosus	riffle sculpin	None	None	SSC	-
Animals - Fish	Mylopharodon conocephalus	hardhead	None	None	SSC	-
Animals - Fish	Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	Threatened	None	SSC	-
Animals - Fish	Oncorhynchus tshawytscha pop. 11	chinook salmon - Central Valley spring-run ESU	Threatened	Threatened	-	-
Animals - Fish	Oncorhynchus tshawytscha pop. 13	chinook salmon - Central Valley fall / late fall-run ESU	None	None	SSC	-
Animals - Insects	Bombus crotchii	Crotchs bumble bee	None	Candidate Endangered	-	-
Animals - Insects	Bombus pensylvanicus	American bumble bee	None	None	-	-
Animals - Insects	Desmocerus californicus dimorphus	valley elderberry longhorn beetle	Threatened	None	-	-
Animals - Mammals	Erethizon dorsatum	North American porcupine	None	None	-	-
Animals - Mammals	Eumops perotis californicus	western mastiff bat	None	None	SSC	-
Animals - Mammals	Antrozous pallidus	pallid bat	None	None	SSC	-
Animals - Mammals	Corynorhinus townsendii	Townsends big-eared bat	None	None	SSC	-
Animals - Mammals	Lasionycteris noctivagans	silver-haired bat	None	None	-	-
Animals - Mammals	Lasiurus cinereus	hoary bat	None	None	-	-
Animals - Mammals	Lasiurus frantzii	western red bat	None	None	SSC	-

Animals - Mammals	Myotis yumanensis	Yuma myotis	None	None	-	-
Animals - Mollusks	Gonidea angulata	western ridged mussel	None	None	-	-
Animals - Reptiles	Actinemys marmorata	northwestern pond turtle	Proposed Threatened	None	SSC	-
Animals - Reptiles	Thamnophis gigas	giant gartersnake	Threatened	Threatened	-	-
Animals - Reptiles	Phrynosoma blainvillii	coast horned lizard	None	None	SSC	-
Community - Terrestrial	Great Valley Cottonwood Riparian Forest	Great Valley Cottonwood Riparian Forest	None	None	-	-
Community - Terrestrial	Great Valley Mixed Riparian Forest	Great Valley Mixed Riparian Forest	None	None	-	-
Community - Terrestrial	Great Valley Valley Oak Riparian Forest	Great Valley Valley Oak Riparian Forest	None	None	-	-
Community - Terrestrial	Great Valley Willow Scrub	Great Valley Willow Scrub	None	None	-	-
Community - Terrestrial	Northern Basalt Flow Vernal Pool	Northern Basalt Flow Vernal Pool	None	None	-	-
Community - Terrestrial	Northern Hardpan Vernal Pool	Northern Hardpan Vernal Pool	None	None	-	-
Plants - Bryophytes	Fissidens pauperculus	minute pocket moss	None	None	-	1B.2
Plants - Vascular	Allium sanbornii var. sanbornii	Sanborns onion	None	None	-	4.2
Plants - Vascular	Perideridia bacigalupii	Bacigalupis yampah	None	None	-	4.2
Plants - Vascular	Calycadenia oppositifolia	Butte County calycadenia	None	None	-	4.2
Plants - Vascular	Calycadenia spicata	spicate calycadenia	None	None	-	1B.3
Plants - Vascular	Hesperevax caulescens	hogwallow starfish	None	None	-	4.2
Plants - Vascular	Microseris sylvatica	sylvan microseris	None	None	-	4.2
Plants - Vascular	Packera layneae	Laynes ragwort	Threatened	Rare	-	1B.2
Plants - Vascular	Azolla microphylla	Mexican mosquito fern	None	None	-	4.2
Plants - Vascular	Cryptantha rostellata	red-stemmed cryptantha	None	None	-	4.2
Plants - Vascular	Plagiobothrys glyptocarpus var. modestus	Cedar Crest popcornflower	None	None	-	3
Plants - Vascular	Paronychia ahartii	Aharts paronychia	None	None	-	1B.1
Plants - Vascular	Bulbostylis capillaris	thread-leaved beakseed	None	None	-	4.2
Plants - Vascular	Carex xerophila	chaparral sedge	None	None	-	1B.2
Plants - Vascular	Arctostaphylos mewukka ssp. truei	Trues manzanita	None	None	-	4.2
Plants - Vascular	Astragalus pauperculus	depauperate milk-vetch	None	None	-	4.3
Plants - Vascular	Lupinus dalesiae	Quincy lupine	None	None	-	4.2
Plants - Vascular	Trifolium jokerstii	Butte County golden clover	None	None	-	1B.2
Plants - Vascular	Juncus leiospermus var. ahartii	Aharts dwarf rush	None	None	-	1B.2
Plants - Vascular	Juncus leiospermus var. leiospermus	Red Bluff dwarf rush	None	None	-	1B.1
Plants - Vascular	Wolffia brasiliensis	Brazilian watermeal	None	None	-	2B.3
Plants - Vascular	Fritillaria eastwoodiae	Butte County fritillary	None	None	-	3.2
Plants - Vascular	Lilium humboldtii ssp. humboldtii	Humboldt lily	None	None	-	4.2
Plants - Vascular	Limnanthes floccosa ssp. californica	Butte County meadowfoam	Endangered	Endangered	-	1B.1
Plants - Vascular	Limnanthes floccosa ssp. floccosa	woolly meadowfoam	None	None	-	4.2
Plants - Vascular	Fremontodendron decumbens	Pine Hill flannelbush	Endangered	Rare	-	1B.2
Plants - Vascular	Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	None	None	-	1B.2
Plants - Vascular	Sidalcea gigantea	giant checkerbloom	None	None	-	4.3
Plants - Vascular	Clarkia biloba ssp. brandegeeae	Brandegees clarkia	None	None	-	4.2
Plants - Vascular	Clarkia gracilis ssp. albicaulis	white-stemmed clarkia	None	None	-	1B.2
Plants - Vascular	Clarkia mosquinii	Mosquins clarkia	None	None	-	1B.1
Plants - Vascular	Castilleja rubicundula var. rubicundula	pink creamsacs	None	None	-	1B.2
Plants - Vascular	Erythranthe filicifolia	fern-leaved monkeyflower	None	None	-	1B.2
Plants - Vascular	Erythranthe glaucescens	shield-bracted monkeyflower	None	None	-	4.3
Plants - Vascular	Orcuttia tenuis	slender Orcutt grass	Threatened	Endangered	-	1B.1
Plants - Vascular	Poa sierrae	Sierra blue grass	None	None	-	1B.3

Plants - Vascular	Leptosiphon aureus	bristly leptosiphon	None	None	-	4.2
Plants - Vascular	Brodiaea rosea ssp. vallicola	valley brodiaea	None	None	-	4.2
Plants - Vascular	Brodiaea sierrae	Sierra foothills brodiaea	None	None	-	4.3

Quads: Oroville, Oroville Dam, Forebestown, Palermo, Bangor, Rackerby, Honcut, Loma Rica, Oregon House
Queried October 8, 2024

CALIFORNIA NATIVE PLANT SOCIETY

CNPS Rare Plant Inventory

Search Results

3 matches found. Click on scientific name for details

Search Criteria: 9-Quad include [**3912144**]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	CA ENDEMIC	DATE ADDED	PHOTO
Brodiaea sierrae	Sierra foothills brodiaea	Themidaceae	perennial bulbiferous herb	May-Aug	None	None	G3	S3	4.3	Yes	2012-11-20	 © 2006 George W. Hartwell
Calycadenia oppositifolia	Butte County calycadenia	Asteraceae	annual herb	Apr-Jul	None	None	G3	S3	4.2	Yes	1974-01-01	No Photo Available
Clarkia biloba ssp. brandegeeae	Brandegee's clarkia	Onagraceae	annual herb	(Mar)May-Jul	None	None	G4G5T4	S4	4.2	Yes	2001-01-01	No Photo Available

Showing 1 to 3 of 3 entries

Suggested Citation:
California Native Plant Society, Rare Plant Program. 2024. Rare Plant Inventory (online edition, v9.5). Website https://www.rareplants.cnps.org [accessed 9 October 2024].

U.S. Fish and Wildlife Service

National Wetlands Inventory

Moorefield Rancheria

January 6, 2021

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Butte Area, California, Parts of Butte and Plumas Counties

January 6, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

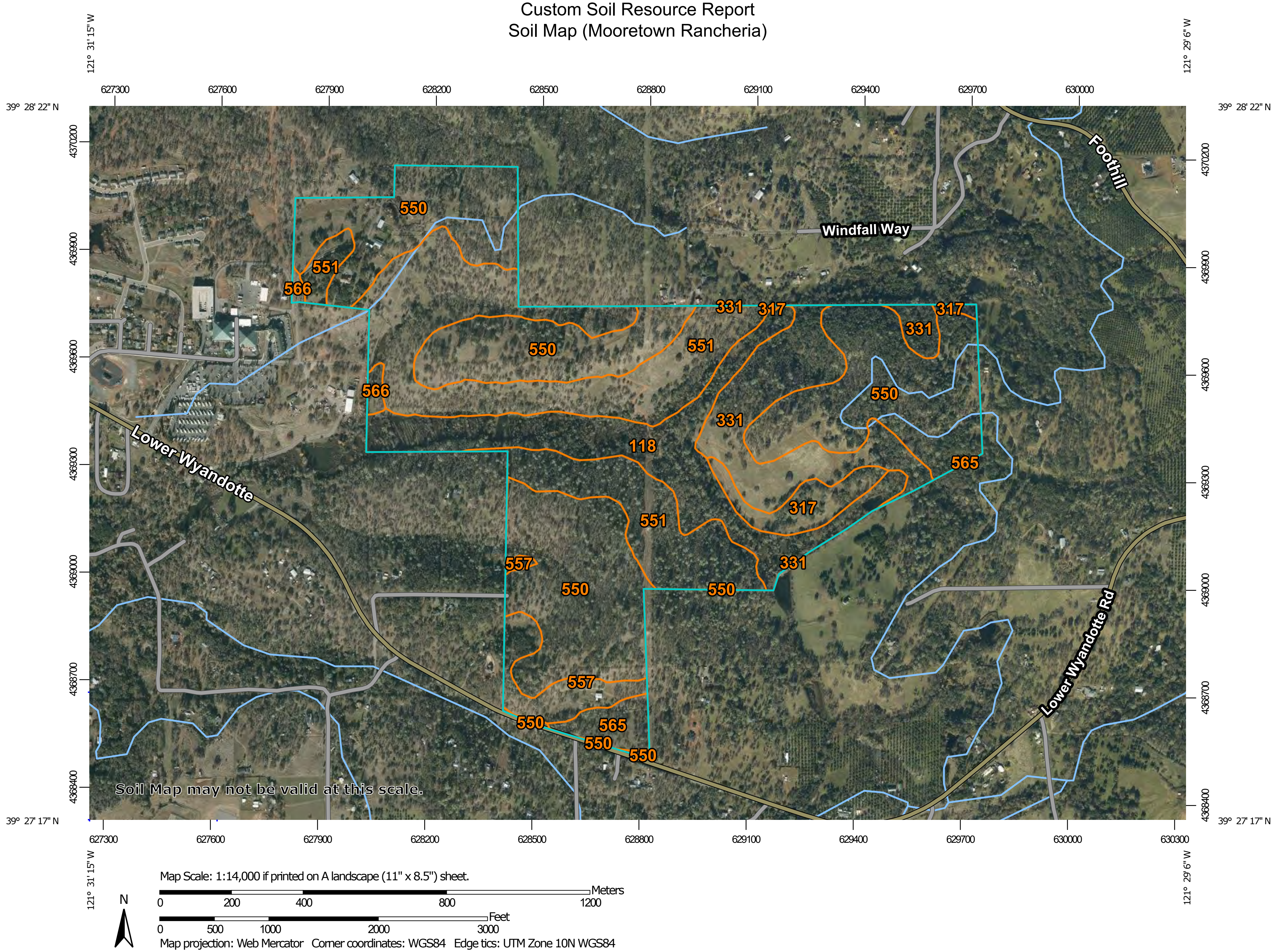
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map (Mooretown Rancheria)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Butte Area, California, Parts of Butte and Plumas Counties
Survey Area Data: Version 17, Jun 1, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 6, 2018—Dec 12, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND	MAP INFORMATION
	imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Mooretown Rancheria)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
118	Xerorthents, Tailings and 0 to 50 percent slopes	47.0	12.9%
317	Thompsonflat loam, 2 to 15 percent slopes	10.8	3.0%
331	Thompsonflat loam, 15 to 30 percent slopes	36.9	10.1%
550	Dunstone-loafercreek complex, dry, 1 to 15 percent slopes	155.9	42.8%
551	Dunstone-Lomarica-Argonaut taxadjunct , 15 to 30 percent slopes	93.2	25.6%
557	Mounthope-Hartsmill , 15 to 30 percent slopes	11.9	3.3%
565	Dunstone-Argonaut taxadjunct-Sunnyslope , 2 to 15 percent slopes	6.5	1.8%
566	Dunstone-Loafercreek-Katskillhill , 2 to 15 percent slopes	2.1	0.6%
Totals for Area of Interest		**364.2**	**100.0%**

Map Unit Descriptions (Mooretown Rancheria)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Butte Area, California, Parts of Butte and Plumas Counties

118—Xerorthents, Tailings and 0 to 50 percent slopes

Map Unit Setting

National map unit symbol: hgxl
Elevation: 90 to 1,340 feet
Mean annual precipitation: 21 to 50 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 240 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Xerorthents and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Xerorthents

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Dredged spoil piles from gravelly alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

A - 0 to 3 inches: very gravelly sandy loam
AC - 3 to 8 inches: extremely gravelly sandy loam
C1 - 8 to 21 inches: loamy sand
C2 - 21 to 26 inches: loamy sand
C3 - 26 to 35 inches: loamy sand
C4 - 35 to 48 inches: loamy coarse sand
C5 - 48 to 59 inches: loamy sand
C6 - 59 to 81 inches: loamy sand

Properties and qualities

Slope: 0 to 50 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 4.25 in/hr)
Depth to water table: About 60 to 80 inches
Frequency of flooding: RareNoneOccasional
Frequency of ponding: None
Available water capacity: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A

Hydric soil rating: Yes

Minor Components

Unnamed, riparian areas

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

Pits, water-filled

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

Xeropsamments, tailings

Percent of map unit: 3 percent
Landform: Flood plains
Hydric soil rating: Yes

Xerofluvents, tailings

Percent of map unit: 3 percent
Landform: Flood plains
Hydric soil rating: Yes

Haploxeralfs, terrace

Percent of map unit: 2 percent
Landform: Stream terraces
Hydric soil rating: No

Unnamed, duripan

Percent of map unit: 2 percent
Landform: Terraces
Hydric soil rating: Yes

317—Thompsonflat loam, 2 to 15 percent slopes

Map Unit Setting

National map unit symbol: sdr4
Elevation: 160 to 500 feet
Mean annual precipitation: 22 to 30 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 260 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Thompsonflat, loam, and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Thompsonflat, Loam

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium over clayey alluvium over noncemented to very weakly cemented sandy and gravelly alluvium derived from igneous and metamorphic rock

Typical profile

A - 0 to 2 inches: loam
Bt1 - 2 to 5 inches: gravelly loam
Bt2 - 5 to 12 inches: gravelly loam
Bt3 - 12 to 19 inches: gravelly loam
Bt4 - 19 to 29 inches: gravelly clay loam
2Bt5 - 29 to 35 inches: very gravelly clay
3Bq1 - 35 to 43 inches: extremely gravelly sandy clay loam
3Bq2 - 43 to 80 inches: extremely gravelly sandy clay loam

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.09 to 0.23 in/hr)
Depth to water table: About 40 to 81 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 0.5 mmhos/cm)
Available water capacity: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Oroville

Percent of map unit: 10 percent
Landform: Terraces
Hydric soil rating: No

Unnamed, fine-loamy, duripan 20 to 40 inches

Percent of map unit: 5 percent
Landform: Terraces
Hydric soil rating: No

Unnamed, loamy, duripan 10 to 20 inches

Percent of map unit: 5 percent
Landform: Terraces
Microfeatures of landform position: Swales

Hydric soil rating: No

Unnamed, fine, bedrock (densic) 40 to 60 inches

Percent of map unit: 2 percent
Landform: Terraces
Hydric soil rating: No

Rock outcrop, mudflow or tuff

Percent of map unit: 2 percent
Landform: Hills
Hydric soil rating: No

Vertisols, duripan 20 to 40 inches

Percent of map unit: 1 percent
Landform: Terraces
Hydric soil rating: Yes

331—Thompsonflat loam, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: sdr7
Elevation: 260 to 500 feet
Mean annual precipitation: 22 to 30 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Thompsonflat, loam, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Thompsonflat, Loam

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Riser
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy alluvium over clayey alluvium over noncemented to very weakly cemented sandy and gravelly alluvium derived from igneous and metamorphic rock

Typical profile

A - 0 to 2 inches: loam
Bt1 - 2 to 5 inches: gravelly loam
Bt2 - 5 to 12 inches: gravelly loam
Bt3 - 12 to 19 inches: gravelly loam
Bt4 - 19 to 29 inches: gravelly clay loam
2Bt5 - 29 to 35 inches: very gravelly clay

3Bq1 - 35 to 43 inches: extremely gravelly sandy clay loam
3Bq2 - 43 to 80 inches: extremely gravelly sandy clay loam

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.09 to 0.23 in/hr)
Depth to water table: About 40 to 81 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 0.5 mmhos/cm)
Available water capacity: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Oroville

Percent of map unit: 9 percent
Landform: Terraces
Hydric soil rating: No

Escarpments

Percent of map unit: 3 percent
Landform: Terraces
Hydric soil rating: No

Unnamed, fine-loamy, duripan 20 to 40 inches

Percent of map unit: 3 percent
Landform: Terraces
Hydric soil rating: No

550—Dunstone-loafercreek complex, dry, 1 to 15 percent slopes

Map Unit Setting

National map unit symbol: hh4p
Elevation: 250 to 1,200 feet
Mean annual precipitation: 28 to 40 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 230 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Dunstone, loam, dry, and similar soils: 60 percent

Loafercreek, silt loam, dry, and similar soils: 20 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dunstone, Loam, Dry

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy residuum weathered from metavolcanics

Typical profile

A - 0 to 2 inches: loam
BAt - 2 to 7 inches: loam
Bt1 - 7 to 10 inches: loam
Bt2 - 10 to 16 inches: loam
Cr - 16 to 26 inches: bedrock

Properties and qualities

Slope: 1 to 15 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.43 to 1.56 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F018XI201CA - Moderately Deep Thermic Foothills 22-31 PZ
Hydric soil rating: No

Description of Loafercreek, Silt Loam, Dry

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy residuum and/or colluvium derived from metavolcanics

Typical profile

A1 - 0 to 2 inches: silt loam
A2 - 2 to 4 inches: silt loam
BAt - 4 to 11 inches: loam
Bt1 - 11 to 20 inches: loam
Bt2 - 20 to 29 inches: loam

Crt - 29 to 39 inches: bedrock

Properties and qualities

Slope: 1 to 15 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.43 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F018XI201CA - Moderately Deep Thermic Foothills 22-31 PZ
Hydric soil rating: No

Minor Components

Auburn, loam

Percent of map unit: 9 percent
Landform: Hills
Hydric soil rating: No

Unnamed, loamy-skeletal, bedrock 10 to 20 inches

Percent of map unit: 5 percent
Landform: Hills
Hydric soil rating: No

Unnamed, clayey, bedrock (paralithic) 10 to 20 in

Percent of map unit: 2 percent
Landform: Hills
Hydric soil rating: No

Lomarica

Percent of map unit: 2 percent
Landform: Hills
Hydric soil rating: No

Rock outcrop, greenschist

Percent of map unit: 2 percent
Landform: Hills
Hydric soil rating: No

551—Dunstone-Lomarica-Argonaut taxadjunct , 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: hh4n
Elevation: 200 to 1,600 feet
Mean annual precipitation: 28 to 40 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 230 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Dunstone, loam, dry, and similar soils: 35 percent
Lomarica, loam, and similar soils: 15 percent
Argonaut taxadjunct, loam, and similar soils: 15 percent
Minor components: 35 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dunstone, Loam, Dry

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy residuum weathered from metavolcanics

Typical profile

A - 0 to 2 inches: loam
BAt - 2 to 7 inches: loam
Bt1 - 7 to 10 inches: loam
Bt2 - 10 to 16 inches: loam
Cr - 16 to 59 inches: bedrock

Properties and qualities

Slope: 15 to 30 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.43 to 1.56 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): 6e

Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Lomarica, Loam

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Clayey colluvium and/or residuum weathered from metavolcanics

Typical profile

A - 0 to 1 inches: loam
BAt - 1 to 5 inches: loam
Bt1 - 5 to 9 inches: clay loam
Bt2 - 9 to 12 inches: clay loam
2Bt3 - 12 to 25 inches: extremely gravelly clay loam
2Btss - 25 to 32 inches: extremely gravelly clay
2Cr - 32 to 59 inches: bedrock

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.09 to 0.12 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Argonaut Taxadjunct, Loam

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey colluvium and/or residuum weathered from metavolcanics

Typical profile

A - 0 to 2 inches: loam
Bt1 - 2 to 8 inches: clay loam
Bt2 - 8 to 14 inches: clay
Bt3 - 14 to 20 inches: clay
BCt1 - 20 to 26 inches: clay

BCt2 - 26 to 30 inches: clay loam
Cr - 30 to 59 inches: bedrock

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.11 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F018XI201CA - Moderately Deep Thermic Foothills 22-31 PZ
Hydric soil rating: No

Minor Components

Loafercreek

Percent of map unit: 8 percent
Landform: Hills
Hydric soil rating: No

Katskillhill

Percent of map unit: 8 percent
Landform: Hills
Hydric soil rating: No

Unnamed, clayey-skeletal bedrock paralithic >40in

Percent of map unit: 5 percent
Landform: Hills
Hydric soil rating: No

Unnamed, clayey-skeletal bedrock paralithic <20in

Percent of map unit: 5 percent
Landform: Hills
Hydric soil rating: No

Auburn, loam

Percent of map unit: 5 percent
Landform: Hills
Hydric soil rating: No

Rock outcrop, greenschist

Percent of map unit: 4 percent
Landform: Hills
Hydric soil rating: No

557—Mounthope-Hartsmill , 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: hh57
Elevation: 1,200 to 2,000 feet
Mean annual precipitation: 40 to 45 inches
Mean annual air temperature: 57 to 59 degrees F
Frost-free period: 240 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Mounthope, loam, and similar soils: 50 percent
Hartsmill, gravelly loam, and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mounthope, Loam

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum and/or colluvium derived from metavolcanics

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 3 inches: loam
Bt1 - 3 to 7 inches: loam
Bt2 - 7 to 15 inches: loam
Bt3 - 15 to 22 inches: gravelly clay loam
Bt4 - 22 to 26 inches: gravelly clay loam
Bt5 - 26 to 31 inches: very gravelly clay loam
Bt6 - 31 to 42 inches: very gravelly clay loam
Bt7 - 42 to 52 inches: gravelly clay loam
Cr - 52 to 62 inches: bedrock

Properties and qualities

Slope: 15 to 30 percent
Surface area covered with cobbles, stones or boulders: 20.0 percent
Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.28 to 0.57 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Hartsmill, Gravelly Loam

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy residuum and/or colluvium derived from metavolcanics

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 3 inches: gravelly loam
Bt1 - 3 to 6 inches: very gravelly loam
Bt2 - 6 to 13 inches: very gravelly loam
Bt3 - 13 to 24 inches: very gravelly loam
BCt1 - 24 to 35 inches: very cobbly clay loam
BCt2 - 35 to 62 inches: extremely cobbly clay loam
Crt - 62 to 72 inches: bedrock

Properties and qualities

Slope: 15 to 30 percent
Surface area covered with cobbles, stones or boulders: 4.0 percent
Depth to restrictive feature: 60 to 80 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R018XI105CA - Mesic Steep Convex Slopes 31-40 PZ bordering thermic
Hydric soil rating: No

Minor Components

Dunstone, gravelly loam

Percent of map unit: 2 percent
Landform: Hills
Hydric soil rating: No

Rock outcrop, greenschist

Percent of map unit: 2 percent
Landform: Hills
Hydric soil rating: No

Unnamed, loamy-skeletal bedrock 20 to 40 inches

Percent of map unit: 2 percent
Landform: Hills
Hydric soil rating: No

Unnamed, fine-loamy, bedrock (paralithic) >60 in.

Percent of map unit: 2 percent
Landform: Hills
Hydric soil rating: No

Unnamed, fine-loamy bedrock paralithic 20 to 40in

Percent of map unit: 2 percent
Landform: Hills
Hydric soil rating: No

565—Dunstone-Argonaut taxadjunct-Sunnyslope , 2 to 15 percent slopes

Map Unit Setting

National map unit symbol: hh4z
Elevation: 200 to 1,600 feet
Mean annual precipitation: 28 to 35 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 230 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Dunstone, loam, dry, and similar soils: 35 percent
Argonaut taxadjunct, loam, and similar soils: 30 percent
Sunnyslope, loam, and similar soils: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dunstone, Loam, Dry

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy residuum weathered from metavolcanics

Typical profile

A - 0 to 2 inches: loam
BAt - 2 to 7 inches: loam
Bt1 - 7 to 10 inches: loam
Bt2 - 10 to 16 inches: loam
Cr - 16 to 26 inches: bedrock

Properties and qualities

Slope: 2 to 15 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.43 to 1.56 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Argonaut Taxadjunct, Loam

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey residuum weathered from metavolcanics

Typical profile

A - 0 to 2 inches: loam
Bt1 - 2 to 8 inches: clay loam
Bt2 - 8 to 14 inches: clay
Bt3 - 14 to 20 inches: clay
BCt1 - 20 to 26 inches: clay
BCt2 - 26 to 30 inches: clay loam
Cr - 30 to 40 inches: bedrock

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.11 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Sunnyslope, Loam

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy residuum weathered from metavolcanics

Typical profile

A - 0 to 2 inches: loam
Bt1 - 2 to 6 inches: gravelly loam
Bt2 - 6 to 10 inches: very cobbly loam
Bt3 - 10 to 14 inches: extremely gravelly clay loam
Crt - 14 to 24 inches: bedrock

Properties and qualities

Slope: 2 to 15 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.43 to 2.41 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Unnamed, fine, bedrock (paralithic) 20 to 40 in.

Percent of map unit: 5 percent
Landform: Hills
Hydric soil rating: No

Loafercreek

Percent of map unit: 4 percent
Landform: Hills
Hydric soil rating: No

Auburn, loam

Percent of map unit: 2 percent
Landform: Hills

Hydric soil rating: No

Rock outcrop, greenschist

Percent of map unit: 2 percent
Landform: Hills
Hydric soil rating: No

Unnamed, abrupt clay layer, bedrock 20 to 40 in.

Percent of map unit: 2 percent
Landform: Hills
Hydric soil rating: No

566—Dunstone-Loafercreek-Katskillhill , 2 to 15 percent slopes

Map Unit Setting

National map unit symbol: hh7l
Elevation: 300 to 900 feet
Mean annual precipitation: 28 to 40 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 230 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Dunstone, loam, dry, and similar soils: 45 percent
Loafercreek, silt loam, dry, and similar soils: 20 percent
Katskillhill, loam, and similar soils: 15 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dunstone, Loam, Dry

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy residuum weathered from metavolcanics

Typical profile

A - 0 to 2 inches: loam
BAt - 2 to 7 inches: loam
Bt1 - 7 to 10 inches: loam
Bt2 - 10 to 16 inches: loam
Cr - 16 to 59 inches: bedrock

Properties and qualities

Slope: 2 to 15 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent

Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.43 to 1.56 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F018XI200CA - Low Elevation Foothills 18-25 PZ
Hydric soil rating: No

Description of Loafercreek, Silt Loam, Dry

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy residuum weathered from metavolcanics

Typical profile

A1 - 0 to 2 inches: silt loam
A2 - 2 to 4 inches: silt loam
BAt - 4 to 11 inches: loam
Bt1 - 11 to 20 inches: loam
Bt2 - 20 to 29 inches: loam
Crt - 29 to 59 inches: bedrock

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.43 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F018XI201CA - Moderately Deep Thermic Foothills 22-31 PZ
Hydric soil rating: No

Description of Katskillhill, Loam

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy residuum over clayey residuum weathered from metavolcanics

Typical profile

A - 0 to 2 inches: loam
BAt - 2 to 8 inches: loam
Bt1 - 8 to 12 inches: very gravelly loam
2Bt2 - 12 to 19 inches: clay
2Btss1 - 19 to 29 inches: clay
2Btss2 - 29 to 42 inches: clay
2R - 42 to 52 inches: bedrock

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: 40 to 60 inches to lithic bedrock
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.11 to 0.13 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F018XI201CA - Moderately Deep Thermic Foothills 22-31 PZ
Hydric soil rating: No

Minor Components

Auburn, loam

Percent of map unit: 5 percent
Landform: Hills
Hydric soil rating: No

Unnamed, clayey, bedrock (paralithic) 10 to 20 in

Percent of map unit: 5 percent
Landform: Hills
Hydric soil rating: No

Lomarica

Percent of map unit: 4 percent
Landform: Hills
Hydric soil rating: No

Unnamed, clayey-skeletal bedrock paralithic >40in

Percent of map unit: 3 percent
Landform: Hills
Hydric soil rating: No

Argonaut taxadjunct, loam

Percent of map unit: 3 percent
Landform: Hills
Hydric soil rating: No

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ATTACHMENT 3

REGIONALLY OCCURRING SPECIAL-STATUS SPECIES TABLE

Table 1. REGIONALLY OCCURRING SPECIAL-STATUS SPECIES

SCIENTIFIC NAME COMMON NAME	FEDERAL/ STATE/ CNPS STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR ON-SITE
PLANTS					
Fremontodendron decumbens Pine Hill flannelbush	FE/--/1B.2	Narrow range along the northern Sierra Nevada foothills.	Shrub found in gabbro outcrops in foothill woodland and chapparal communities.	April - July	**No**, the Study Area lacks habitat suitable to support this species.
Limnanthes floccose ssp. californica Butte county meadowfoam	FE/CE/1B.1	Known range of this species is restricted to Butte County. Historic range restricted to the Northeastern Sacramento Valley Vernal Pool Region (USFWS 2005).	Occurs in vernal swales and along margins of vernal pools. Found on alluvial terraces in annual grassland with mima mound topography. Does not persist in pools or swales with prolonged inundation, or with swift water. (USFWS 2005)..	March - May	**No,** vernal pools and seasonal swales are not present and species not observed during march surveys.
Orcuttia tenuis Slender Orcutt grass	FT/CE/1B.1	Known from Butte, Lake, Lassen, Modoc, Plumas, Sacramento, Shasta, Siskiyou, and Tehama counties.	Annual herb found in gravelly vernal pools from 35 to 1760 meters.	May-October	**No**, the Study Area lacks habitat suitable to support this species.
Packera layneae Laynes ragwort	FT/--/1B.2	Central Sierra Nevada foothills.	Grows in open rocky areas within chaparral plant communities, primarily on gabbro soil formations and occasionally on serpentine soils (USFWS 2002).	April-June	**No**, suitable plant communities and soils are lacking in Study Area.

SCIENTIFIC NAME COMMON NAME	FEDERAL/ STATE/ CNPS STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR ON-SITE
ANIMALS					
Amphibians					
Spea hammondii western spadefoot toad	FPT/CSC/--	Known to occur from the north end of California's great central valley near Redding, south, east of the Sierras and the deserts, into northwest Baja California.	Habitat is primarily open treeless grasslands, scrub, or mixed woodland and grassland where aquatic breeding habitat is available (Stebbins and McGinnis). Require both aquatic and terrestrial habitat components in close proximity.	November-March	**Yes**, suitable aquatic breeding habitat and upland habitat present. May use seasonal wetlands and pools for breeding and adjacent uplands during non-breeding season.
Rana boylii foothill yellow-legged frog (North Feather DPS)	FT/CT/--	Species known from California and Oregon. Feather River DPS occurs in Feather River watershed above Oroville, specifically, watershed subbasins (HU 8) North Fork Feather, East Branch North Fork Feather, Middle Fork Feather, Butte Creek, and Honcut Headwaters - Lower Feather in Lassen, Plumas, Butte, and Sierra counties.	Require shallow, flowing water in moderate sized streams with some cobble substrate.	November-March (breeding) June-August (non-breeding)	**Yes**, suitable habitat is present within riparian corridor. Nearby occurrence records are extirpated.
Rana draytonii California red-legged frog	FT/CSC/--	Known to occur along the Coast from Mendocino County to Baja California, and inland through the northern Sacramento Valley into the foothills of the Sierra Nevada mountains, south to eastern Tulare County, and possibly eastern Kern County. Currently accepted range excludes the Central Valley.	Occurs in permanent and temporary pools of streams, marshes, and ponds with dense grassy and/or shrubby vegetation. Elevations range from 0-1160 meters.	November – March (breeding) June - August (non-breeding)	**Yes**, suitable habitat occurs within the riparian corridor, ponds, and wetland habitats.

SCIENTIFIC NAME COMMON NAME	FEDERAL/ STATE/ CNPS STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR ON-SITE
Birds					
Coccyzus americanus yellow-billed cuckoo (Western U.S. DPS)	FT/CE/--	Known to occur throughout much of the eastern and central US. They winter in South America east of the Andes, and migrate through Central America. In the West, much of the Cuckoo's riparian habitat has been developed, leading to possible extirpation of cuckoos from British Columbia, Washington, Oregon, and Nevada.	Prefer isolated woodland riparian corridors surrounded by extensive arid uplands habitat including low, scrubby vegetation, overgrown orchards, abandoned farmland, and dense thickets along streams and marshes. Nests and seeks cover in dense foliage, deciduous trees and shrubs.	May-September	**Yes**, suitable habitat occurs within the riparian corridor.
Strix occidentalis occidentalis California spotted owl Sierra Nevada DPS	FPT/CSC/--	Sierra Nevada Mountain Ranges and foothills in California and western Nevada.	Nest in areas of mature, multistoried forests with complex structure, larger trees, multi-layered high canopy cover, and large amounts of coarse woody debris. In the Sierra Nevada, a majority occur within mid-elevation ponderosa pine (Pinus ponderosa), mixed-conifer, white fir (Abies concolor), and mixed-evergreen forest types, with few occurring in the lower elevation oak woodlands of the western foothills (Gutiérrez et al. 2017).	Year-round	**No,** study Area does not provide multistoried forest with complex structure. Study Area lies outside of known occupancy areas. Nearest occurrence is 8.5 miles northeast.
Fish					
Acipenser medirostris pop. 1 Green Sturgeon [southern DPS]	FT/CSC/--	Southern DPS spawn in the Sacramento, Feather, and Yuba Rivers.	Anadromous fish; spawning and juvenile rearing in rivers followed by migrating to saltwater to feed, grow, and mature then return to spawn. Southern DPS spawn in the Sacramento, Feather, and Yuba Rivers.	Consult Agency	**No,** potentially spawning fish are impeded from reaching Study Area from known barrier (sunset Pump Station rock weir) on Feather River, 16 miles south (NMFS 2023).

SCIENTIFIC NAME COMMON NAME	FEDERAL/ STATE/ CNPS STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR ON-SITE
Oncorhynchus tshawytscha pop. 6 Chinook salmon-Central Valley Spring Run ESU	FT/CT/--	Central Valley spring-run Chinook Salmon ESU includes all naturally spawned populations of spring-run Chinook salmon in the Sacramento River and its tributaries in California, including Churn Creek.	Found in cool, clear, fast-flowing permanent streams and rivers with riffles and ample cover from riparian vegetation or overhanging banks. Spawning: streams with pool and riffle complexes. For successful breeding, require cold water and gravelly streambed.	Consult Agency	**No,** potentially spawning fish are impeded from reaching Study Area from known barrier (sunset Pump Station rock weir) on Feather River, 16 miles south.
Oncorhynchus mykiss irideus pop. 11 Steelhead-Central Valley DPS	FT/CSC/--	Spawn in the Sacramento and San Joaquin rivers and tributaries before migrating to the Delta and Bay Area.	Found in cool, clear, fast-flowing permanent streams and rivers with riffles and ample cover from riparian vegetation or overhanging banks. Spawning: streams with pool and riffle complexes. For successful breeding, require cold water and gravelly streambed.	Consult Agency	**No,** potentially spawning fish are impeded from reaching Study Area from known barrier (sunset Pump Station rock weir) on Feather River, 16 miles south.
Invertebrates					
Branchinecta lynchi vernal pool fairy shrimp	FT/--/--	Vernal pool fairy shrimp are known from a total of 32 populations located in an area extending from Shasta County through most of the length of the Central Valley to Tulare County, and along the central coast range from northern Solano County to Pinnacles in San Benito County. Five additional, disjunctive populations exist near Soda Lake in San Luis Obispo County, in the mountain grasslands of northern Santa Barbara County, on the Santa Rosa Plateau in Riverside County, near Rancho California in Riverside County.	Vernal pools and seasonal ponds in the Central Valley, coast ranges, and a limited number of sites in the Transverse Ranges and Riverside County, California.	December-May	**No**, the Study Area lacks vernal pools or seasonal ponds to support this species.

SCIENTIFIC NAME COMMON NAME	FEDERAL/ STATE/ CNPS STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR ON-SITE
Desmocerus californicus dimorphus valley elderberry longhorn beetle (VELB)	FT/--/--	Restricted to the Central Valley from Redding to Bakersfield. Counties include Amador, Butte, Calaveras, Colusa, El Dorado, Fresno, Glenn, Kern, Madera, Mariposa, Merced, Napa, Placer, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Yolo, and Yuba counties; 0-762 meters elevation.	Riparian forest communities. Exclusive host plant is elderberry (*Sambucus* species), which must have stems ≥ 1-inch diameter for the beetle.	Year-round	**Yes,** riparian habitat in Study Area may provide elderberry host plants for species.
Danaus plexippus pop. 1 California overwintering monarch butterfly	FPT/--/--	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico.	Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	Winter	**No, S**tudy Area does not provide suitable overwintering roost sites. Nearest CNDDB occurrence of overwintering roost is 85 miles southwest (CNDDB 2024a).
Lepidurus packardi vernal pool tadpole shrimp	FE/--/--	Known from 18 populations in the Central Valley, ranging from east of Redding in Shasta County south to the San Luis National Wildlife Refuge in Merced County, also from a single vernal pool complex on the San Francisco Bay National Wildlife Refuge in the City of Fremont.	Life cycle within vernal pools and seasonal pond in valley foothill grasslands.	December-May	**No**, the Study Area lacks vernal pools or seasonal ponds to support this species.
Reptiles					
Actinemys marmorata northwestern pond turtle	FPT/CSC/--	Includes populations from the San Joaquin Valley north, all populations in California north of the middle of Monterey Bay, the Coastal and Cascade Ranges of Oregon and Washington State, and an outlying population in Nevada.	Inhabit rivers, streams, lakes, ponds, reservoirs, stock ponds, and permanent wetland habitats with basking sites.	Year-round	**Yes,** suitable habitat occurs within the lower reaches of the riparian corridor and within the pond habitat. Nearest CNDDB occurrence is 1.7 miles northwest (CNDDB 2024a). Unknown species of turtle observed during site surveys in 2021.

SCIENTIFIC NAME COMMON NAME	FEDERAL/ STATE/ CNPS STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR ON-SITE
Thamnophis gigas giant garter snake	FT/CT/--	Endemic to the San Joaquin and Sacramento Valley floors. Counties include Butte, Colusa, Contra Costa, Fresno, Glenn, Kern, Madera, Merced, Sacramento, San Joaquin, Solano, Sutter, Yolo, and Yuba.	Inhabits agricultural wetlands and other waterways such as irrigation and drainage canals, sloughs, ponds, small lakes, low gradient streams, and adjacent uplands. Requires adequate water during its active season (early spring through mid-fall) to provide food and cover, emergent, herbaceous wetland vegetation for foraging and cover, grassy banks and openings in waterside vegetation for basking, and higher elevation uplands for cover and refuge from flood waters during its dormant season (winter). Inhabits small mammal burrows and other soil crevices with sunny exposure along south and west facing slopes, above prevailing flood elevations when dormant.	March-October	**No,** aquatic and upland habitats on site are not suitable for the species.

Source: USFWS 2024; CDFW 2024; CNPS 2024.

STATUS CODES:

FEDERAL: United States Fish and Wildlife Service
FE Federally Endangered
FT Federally Threatened
FPT Federally Proposed Threatened
FC Candidate for Federal Listing
FR Federal Listing is Under Review
FD Federally Delisted

STATE: California Department of Fish and Game
CE California Listed Endangered
CT California Listed Threatened
CR California Rare
CSC California Species of Special Concern
CFP California Fully Protected Species

CNPS: California Native Plant Society (California Rare Plant Rank (CRPR)
1A Plants Presumed Extinct in California
1B Plants Rare, Threatened, or Endangered in California and Elsewhere
2B Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere

CNPS Threat Ranks:
0.1 – Seriously Threatened in California (Over 80% of occurrences threatened / high degree and immediacy of threat)
0.2 – Fairly Threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
0.3 – Not Very Threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

ATTACHMENT 4

LIST OF VASCULAR PLANTS OBSERVED

Plant Species Observed in Study Area

Scientific Name	Common Name	Wetland Indicator Status
Plants		
Acer negundo	boxelder	FACW
Acer macrophyllum	big leaf maple	FAC
Aesculus californica	California buckeye	NI
*Agrostis exarata**	spike bentgrass	FACW
Alisma triviale	water plantain	OBL
Alnus rhombifolia	white alder	FACW
Amsinckia sp.	fiddleneck	NI
Artemisia douglasiana	California mugwort	FAC
*Avena fatua**	Wild oat	NI
Baccharis pilularis	coyote brush	NI
*Briza maxima**	rattlesnake grass	NI
*Briza minima**	little quaking grass	FAC
*Bromus hordeaceus**	Soft chess	FACU
*Capsella bursa-pastoris**	shepherd’s purse	FACU
*Carduus pycnocephalus**	Italian thistle	NI
Carex sp.	sedge	N/A
Ceanothus cuneatus	buckbrush	NI
*Centaurea melitensis**	Tocalote	NI
*Centaurea solstitialis**	yellow starthistle	NI
Chlorogalum sp.	soap plant	NI
*Cirsium vulgare**	bull thistle	FACU
*Conium maculatum**	poison hemlock	FACW
*Convolvulus arvensis**	field bindweed	NI
*Cornus sericea**	dogwood	NI
Croton setiger	turkey-mullein	NI
Cynosurus echinatus	dogtail grass	FACU
Cyperus eragrostis	tall cyperus	FACW
*Dactylis glomerata**	orchard grass	FACU
Distichlis spicata	saltgrass	FAC
*Dysphania ambrosioides**	Mexican tea	FAC
Baccharis pilularis	coyote bush	NI
*Elymus caput-medusae**	Medusa head	NI
Epilobium ciliatum	slender willow herb	FACW
Erigeron canadensis	Canadian horseweed	FACU
Erodium sp.	Stork’s bill	N/A
*Festuca perennis**	Italian rye grass	FAC
Galium aparine	Common bedstraw	FACU
Geranium dissectum	Wild geranium	NI
Helminthotheca echioides	Bristly ox-tongue	FACU
Hirschfeldia incana *	short podded mustard	NI
Hordeum murinum	foxtail barley	FACU
*Lactuca serriola**	prickly lettuce	FACU
Lathyrus sp. *	pea	NI

Scientific Name	Common Name	Wetland Indicator Status
*Leontodon saxatilis**	Lesser hawkbit	FACU
*Lepidium latifolium**	perennial pepperweed	FAC
*Lotus corniculatus**	Bird's foot trefoil	FAC
*Lythrum hyssopifolia**	Hyssop loosestrife	OBL
Juncus bufonius	toad rush	FACW
Juncus sp.	rush	FACW-OBL
*Medicago polymorpha**	bur clover	FACU
*Mentha pulegium**	pennyroyal	OBL
Nasturtium officinale	watercress	OBL
Pentagramma triangularis	gold back fern	NI
*Phalaris aquatic**	harding grass	FACU
Pinus jeffreyi	Jeffrey pine	NI
Pinus sabiniana	gray pine	NI
*Polypogon monspeliensis**	Annual bear grass	FACW
Polygonum sp.	knotweed	N/A
Quercus douglasii	blue oak	NI
Quercus lobata	valley oak	FACU
Quercus wislizeni	interior live oak	NI
Ranunculus sp.	buttercup	N/A
Rorippa curvisiliqua	curve-pod yellowcress	OBL
*Rubus armeniacus**	Himalayan blackberry	FAC
Rubus ursinus	California blackberry	FAC
Rumex conglomeratus	clustered dock	FACW
*Rumex pulcher**	Fiddle dock	FAC
Salix exigua	narrow-leaf willow	FACW
Salix laevigata	red willow	FACW
Salix lasiolepis	arroyo willow	FACW
Schoenoplectus acutus var. *occidentalis*	Tule	OBL
Sonchus oleraceus *	sow thistle	UPL
Stachys ajugoides	Ajuga hedge nettle	OBL
Trichostemma lanceolatum	vinegarweed	FACU
Typha sp.	cattail	OBL
*Verbascum Thapsus**	woolly mullein	FACU
Verbena hastata	swamp verbena	FAC
*Veronica persica**	birdeye speedwell	NI
*Vicia sativa**	Spring vetch	FACU
Vitis californica	California grape	FACU
*Xanthium spinosum**	spiny cocklebur	FACU

* = Non-native

Wetland Indicator Status (WIS):

OBL = Occurs in aquatic resources >99% of time

FACW = Occurs in aquatic resources 67-99% of time

FAC = Occurs in aquatic resources 34-66% of time

FACU = Occurs in aquatic resources 1-33% of time

N/A = Species name is unknown

UPL = Occurs in aquatic resources 1% of time

APPENDIX CULTURAL

CULTURAL RESOURCES ASSESSMENT

CULTURAL RESOURCES ASSESSMENT REPORT

BOUND SEPARATELY*

***THE CULTURAL RESOURCES ASSESSMENT REPORT HAS BEEN BOUND SEPARATELY TO PROTECT POTENTIALLY SENSITIVE INFORMATION ABOUT THE LOCATION AND NATURE OF CULTURAL RESOURCES**

APPENDIX HAZMAT

PHASE I ENVIRONMENTAL SITE ASSESSMENT

PHASE I ENVIRONMENTAL SITE ASSESSMENT

MOORETOWN RANCHERIA OF MAIDU INDIANS FEE-TO-TRUST PROJECT, BUTTE COUNTY, CA

FEBRUARY 2023

LEAD AGENCY:

U.S. Department of the Interior
Bureau of Indian Affairs
Pacific Region Office
2800 Cottage Way # W2820
Sacramento, CA 95825

PHASE I ENVIRONMENTAL SITE ASSESSMENT

MOORETOWN RANCHERIA OF MAIDU INDIANS
FEE-TO-TRUST PROJECT, BUTTE COUNTY, CA

FEBRUARY 2023

LEAD AGENCY:

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PREPARED BY:

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AES
a Montrose Environmental Group company

SUMMARY

This Phase I Environmental Site Assessment (ESA) was performed to evaluate potential hazardous materials issues on an approximately 360.6-acre property located on the east side of existing trust lands that have been developed as the Feather Falls Casino and Lodge, located in Oroville, CA (Subject Property). The Subject Property is further identified as Butte County Assessor's Parcel Numbers (APN) 079-230-002, 079-230-003, 079-230-005, 079-230-006, and 079-260-001. It was prepared on behalf of the Mooretown Rancheria of Maidu Indians of California (Tribe) to support an application to the Bureau of Indian Affairs (BIA) to acquire the Subject Property into federal trust pursuant to 25 Code of Federal Regulations Part 151 for the benefit of the Tribe. Once in trust, the Tribe intends to build an events center, amphitheater, housing, a tasting center, and have large-scale agriculture on the Subject Property.

This Phase I ESA includes a database search, a field survey, and interviews with Tribal Vice Chairman Alan Archuleta and Butte County Environmental Health Specialist Samuel Viglietti.

Current Use of Subject Property

The subject site is mostly undeveloped, with a large metal workshop and an abandoned residence on APN 079-230-006, a manufactured house with barns and a shed on APN 079-230-003, and a residence on APN 079-230-002.

Site Features of Concern

There was one site listed on the EDR Radius Report within the Subject Property, from the US Clandestine Drug Lab database. The drug lab (CDL) was seized on May 13, 2008 but no additional information regarding the lab could be found. In previous Phase I ESAs prepared for nearby sites, the CDL location appears to be nearby, but not on the Subject Property. On-site investigations did not display any signs of hazardous materials release where the CDL was plotted on this occasion. This site does not appear to have a Recognized Environmental Condition (REC) and does not appear to pose a risk to the environmental quality of the Subject Property.

The abandoned residence on APN 079-230-006 was un-occupied and appeared to be in a state of disrepair, insulation was observed falling from the ceiling, and porch decking had been removed. Aerial photographs indicate that the residence was built sometime between 1973 and 1977, and therefore there is the potential for lead-based paint on the walls. The metal workshop was locked at the time of the survey and could not be entered. Other finds in the Subject Property included tires, and debris, four empty 55-gallon drums, wood piles, and a port-a-pot. There was an RV, farm equipment, and trailers stored in a barn in the northwestern corner of the Subject Property, a shed located on APN 079-230-003 included multiple 2-gallon cans scattered on the floor, one of which was marked as Roundup herbicide, and another of which had a Union 76 logo. The shed was on a concrete pad, no stains were observed, and therefore the contents of the shed do not appear to constitute a REC. A second small shed covered a well and above-ground water storage tank. Two small dirt mounds in the northwestern corner appear to be associated with farm operations. None of the finds appears to be a REC that would affect future use of the Subject Property.

Limiting Conditions and Data Gaps

There were no portions of the Subject Property that were inaccessible, other than the metal shop building. It is presumed to have been used for equipment repair. This has not been confirmed, but is not considered a significant data gap for this Phase I ESA. Due to the location of the Subject Property, Sanborn Fire Insurance Maps were not available. However, aerial photographs and historic topographic maps were available for review of past uses of the Subject Property. Thus, the lack of Sanborn Fire Insurance Maps is not considered a significant data gap for this Phase I ESA.

Activity and Use Limitations

A review of “activity and use limitations” was not within the scope of this ESA but may be obtained through a title search.

Findings

The Phase I ESA of the Subject Property was prepared in conformance with the BIA Guidelines (602 DM Chapter 2) and the scope and limitations of American Society for Testing and Materials (ASTM) Practice E 1527-21. The purpose of this ESA was to gather information to identify RECs as that term is defined in the ASTM 1527-21 Standard. A REC is defined as “the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. *De minimis* conditions are not recognized environmental conditions.” No RECs were identified during this Phase I ESA.

Recommendations

It is recommended that all 55-gallon drums, the assorted solid waste and debris near the metal workshop, the abandoned residence, tires, and debris found on the landscape be removed and properly disposed of.

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PHASE I ENVIRONMENTAL SITE ASSESSMENT
MOORETOWN RANCHERIA, OROVILLE, CALIFORNIA

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1 INTRODUCTION

1.1 PURPOSE

The Mooretown Rancheria of Maidu Indians of California (Tribe) is requesting that the Bureau of Indian Affairs (BIA) acquire five parcels encompassing approximately 360.6 acres of land in Butte County, California (Subject Property) into federal trust for the benefit of the Tribe pursuant to 25 Code of Federal Regulations Part 151. This Phase I Environmental Site Assessment (ESA) was completed as part of the BIA's process for transferring the Subject Property into trust. The purpose of this assessment is to identify Recognized Environmental Conditions (RECs) and other environmental concerns outlined below that may affect future uses of the Subject Property.

This Phase I Environmental Site Assessment (ESA) was prepared to identify Recognized Environmental Conditions (RECs) that may affect future uses of the Subject Property. The term REC refers to the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with relevant laws. The term is not intended to include de minimis conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Additionally, the term Historical Recognized Environmental Conditions (HREC) refers to environmental conditions associated with the Subject Property, including a past release of any hazardous substance or petroleum product that has since been remediated, which would have been considered a REC in the past.

This ESA also includes the analysis of the presence of Controlled Recognized Environmental Conditions (CREC) for hazardous substance releases that have been partially addressed through remediation, but where some contamination remains in place under certain risk-based restrictions or conditions. An analysis of HRECs and CRECs is included in this ESA (ASTM, 2021). In addition, a "Tier 1 (non-intrusive) Vapor Encroachment Screening (VES)" was completed in accordance with the methodology set forth in ASTM E2600-15 "Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions". The purpose of the Tier 1 VES is to conduct an initial screen to identify, to the extent feasible, a potential vapor encroachment concern (VEC) in connection with the Property with respect to chemicals of concern that may migrate as vapors into existing or planned structures on the Property due to contaminated soil and or groundwater on the Property or within close proximity to the Property. An analysis of VECs is also included in this ESA.

1.2 SCOPE OF SERVICES

AES was contracted by the Tribe to conduct an ESA in conformance with the Bureau of Indian Affairs (BIA) Guidelines (602 DM Chapter 2) and the ASTM Standard Practice E 1527-21. As scoped, this ESA includes the approximately 360.6-acre Subject Property and surrounding known sources of contamination, up to a 1.0-mile radius from the Subject Property. The scope of work performed by AES included:

1. Review of previously prepared ESAs (AES, 2013),
2. Review of relevant database listings of hazardous material sites, waste generators, and underground storage tanks (UST),
3. Review of historical topographic maps and aerial photographs of the Subject Property,
4. Interviews with owners, operators, occupants, and/or local government officials.

Physical testing of soil or groundwater or for mold is not within the scope of this ESA. Neither testing for asbestos-containing building materials nor lead-based paint surveys are included as part of this assessment.

1.3 LIMITATIONS AND EXCEPTIONS

No ESA can completely eliminate uncertainty regarding the potential for RECs in connection with a property. Conformance of this assessment to ASTM Standard Practice E 1527-21 will reduce, but not eliminate uncertainty regarding the potential for RECs in connection with the Subject Property. While every effort has been made to discover and interpret available historical and current information on the Subject Property within the time available, the possibility of undiscovered contamination remains. This report is a best effort collection and interpretation of available information consistent with industry standards for the completion of ESAs.

1.4 METHODOLOGY

The following data sources were included in this ESA:

1.4.1 HISTORICAL RECORDS

Previous land uses and the history of the Subject Property were researched in an effort to identify RECs, HRECs, and CRECs on or near the Subject Property.

- Historical aerial photographs (**Appendix A**) and historic topographic maps (**Appendix B**) from different decades were examined for the presence of aboveground storage tanks (AST), industrial buildings, gas station canopies and/or pump islands, as well as other indications of bulk hazardous material storage within the study area.
- Sanborn Fire Insurance Maps document historical property use through abbreviations and map symbols that identify commercial, residential, industrial, residential, and other land uses; because of the rural location, the Subject Property is not included on Sanborn maps (**Appendix C**).
- The City Directory Image Report may also indicate previous land uses of the Subject Property (**Appendix D**).

1.4.2 DATABASE SEARCHES

A database search was conducted utilizing the online search company that provides a Radius Map Report of the results of an Environmental Database Report (EDR). The Radius Map Report (**Appendix E**) provides graphical and tabulated results of the EDR search that includes records of known storage tank sites and known sites of hazardous materials generation, storage, and/or release compiled by federal, state, and local agencies. These compiled records consist of: (a) known or potential hazardous waste sites and landfills; (b) sites currently under investigation for environmental violations; (c) sites that manufacture, generate, use, store, and/or dispose of hazardous materials or hazardous wastes; (d) sites that have USTs and/or ASTs; and (e) sites with recorded violations of regulations concerning USTs and hazardous materials/hazardous wastes. The database search is intended to identify facilities that may have the potential to impact surface and subsurface conditions on the Subject Property.

1.4.3 SITE RECONNAISSANCE

A site reconnaissance inspection was conducted on April 19-20, 2021 to visually examine the Subject Property for obvious physical indications of improper hazardous substance or petrochemical disposal, such as stained soil or asphalt, stressed vegetation, sumps, partially buried drums, bulk USTs and ASTs for fuel, and other obvious signs of hazardous materials involvement. When a small parcel was added to the Subject Property, a second site visit, limited to the new parcel, was completed on March 29, 2022. This is beyond the 6-month standard, however was completed to provide information for the Environmental Assessment being prepared for the Subject Property as part of the fee-to-trust process. A final Phase I, including a new EDR database search and site survey, will be completed when the property is less than six months from being placed into federal trust status.

1.4.4 QUESTIONNAIRES

A questionnaire was issued to and completed by Tribal Vice Chairman Alan Archuleta. This questionnaire was then supplemented with correspondence with Butte County Environmental Health Specialist Samuel Viglietti to elicit specialized knowledge of the property.

1.5 DEVIATIONS AND DATA GAPS

ASTM Standard E 1527-21 requires any significant data gaps, deviations, and deletions from the ASTM Standard to be identified and addressed in the ESA. A significant data gap would be one that affected the ability to identify a REC on the Subject Property or adjacent properties.

There was no access to the metal shop building, it is presumed to have been used for equipment repair. This has not been confirmed, but is not considered a significant data gap for this Phase I ESA.

The EDR report and Phase I site surveys are more than six months old, and one parcel, APN 079-230-002, was added to the Subject Property after the EDR report was obtained. However, the new parcel was captured within the original EDR report, was examined in a site survey in 2022, and no significant change in conditions on the Subject Property are anticipated to have occurred since the original Phase I effort in 2021. A Final Phase I process (new EDR report and site survey) will be completed within the six months prior to the Subject Property being taken into federal trust status. Therefore, the antiquity of information presented herein is not considered a significant data gap for this Phase I ESA.

Due to the location of the Subject Property, Sanborn Fire Insurance Maps were not available (**Appendix C**). However, historical aerial photographs (**Appendix A**) and historic topographic maps (**Appendix B**) were available for review of past uses of the Subject Property. Therefore, the lack of Sanborn Fire Insurance Maps is not considered a significant data gap for this ESA.

After multiple attempts, no adjacent property owner could be reached for an interview. Due to the knowledge provided by local agencies and the property owner and a relative lack of database listings for the Subject Property or adjacent properties, this missing interview is not considered a significant data gap.

2 SITE DESCRIPTION AND RECONNAISSANCE

2.1 LOCATION AND LEGAL DESCRIPTION

The Subject Property is located in Butte County, east of the City of Oroville, California (**Figures 1, 2,** and **3**). The Subject Property encompasses five parcels totaling 360.6 acres (**Table 1**). The parcels are located east of the Feather Falls Casino and southeast of the City of Oroville, east of Highway 70 and south of Lake Oroville. The Subject Property is located within Sections 27, 34, and 35 of Township 19 North, Range 4 East as depicted on the Palermo, CA and Bangor, CA USGS 7.5' quadrangle maps.

TABLE 1. SUMMARY OF ASSESSOR'S PARCEL NUMBERS (APNS)

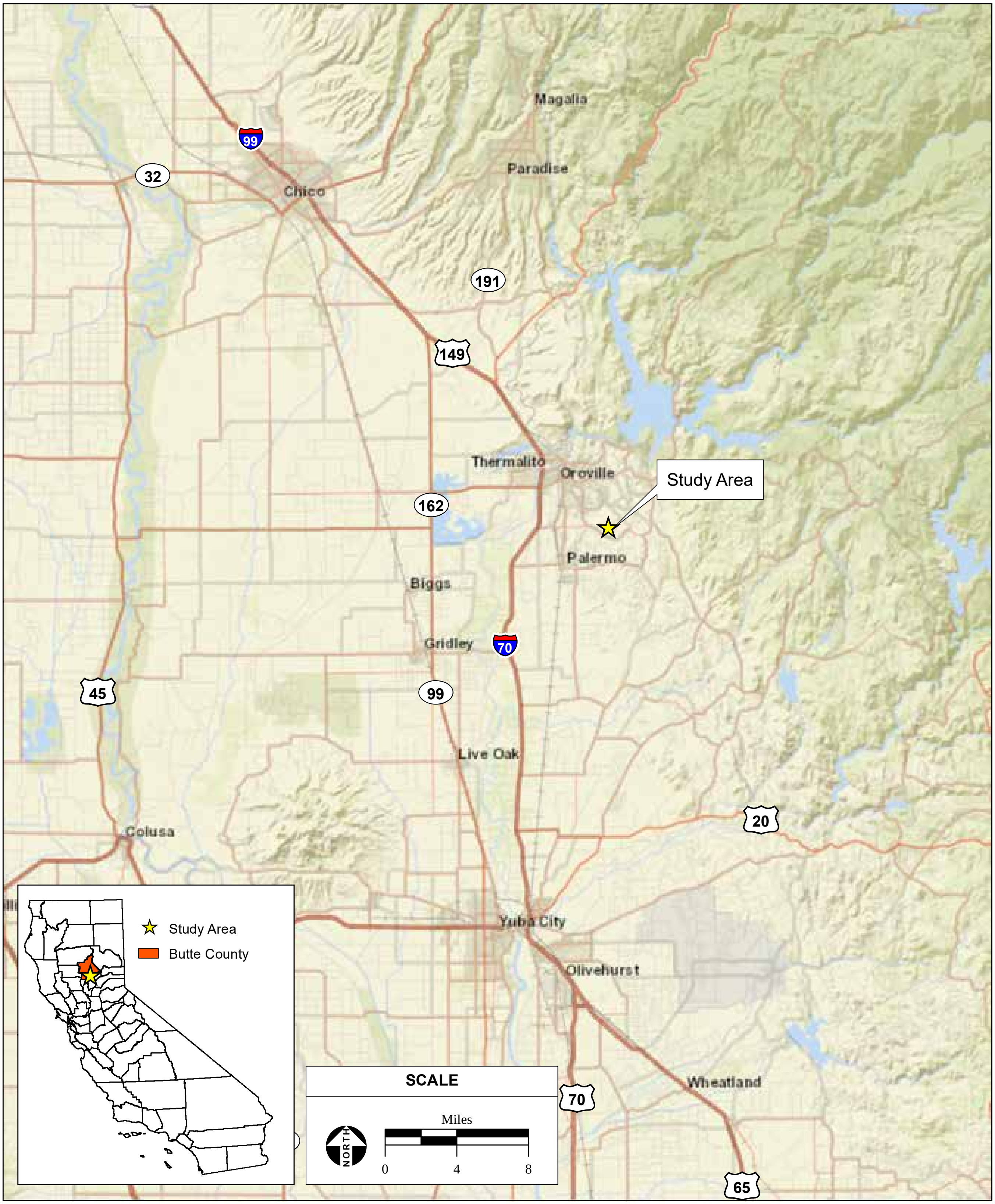
APN	Approximate Acreage
079-230-002	6.12
079-230-003	44.95
079-230-005	140
079-260-001	139.07
079-230-006	22
Total	**360.6**

2.2 SITE AND VICINITY GENERAL CHARACTERISTICS

The Subject Property is located in a rugged region featuring steep hills and deep ravines; the western approximately 60 percent of the Subject Property largely consists of steep slopes, with the contour easing towards the east. The area has been mined, and evidence of mining, including tailings and ditches and exploratory prospect pits, remains visible within the Subject Property; in particular, APN 079-230-005 is bisected by a deposit of mechanical dredger tailings which extend a short distance into APN 079-260-001. Internally, there is a north-south running transmission line road and an east-west dirt road which roughly divide the Subject Property into multiple sections. Vegetation largely consists of open oak woodlands and grasslands. Elevations range from approximately 321 to 546 feet above mean sea level.

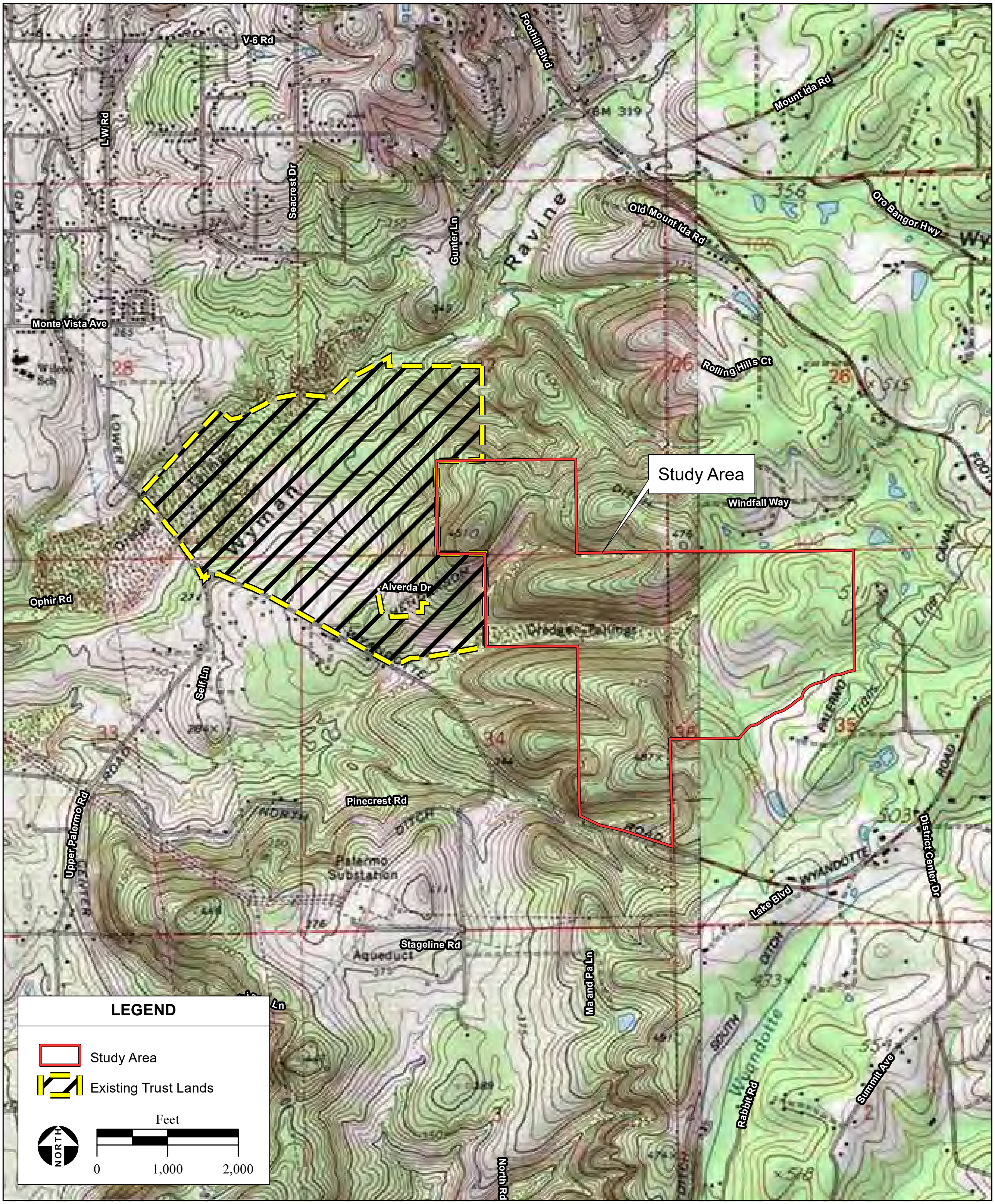
2.3 CURRENT USES OF THE SUBJECT PROPERTY

Historic remains of small-scale mining dot the Subject Property. Currently, the Subject Property is largely unused except for cattle grazing. A cleared transmission line corridor forms part of the border between APN 079-230-005 and APN 079-260-001, and modern buildings in APN 079-230-002, 079-230-003, and APN 079-230-006 sit within larger cleared areas.



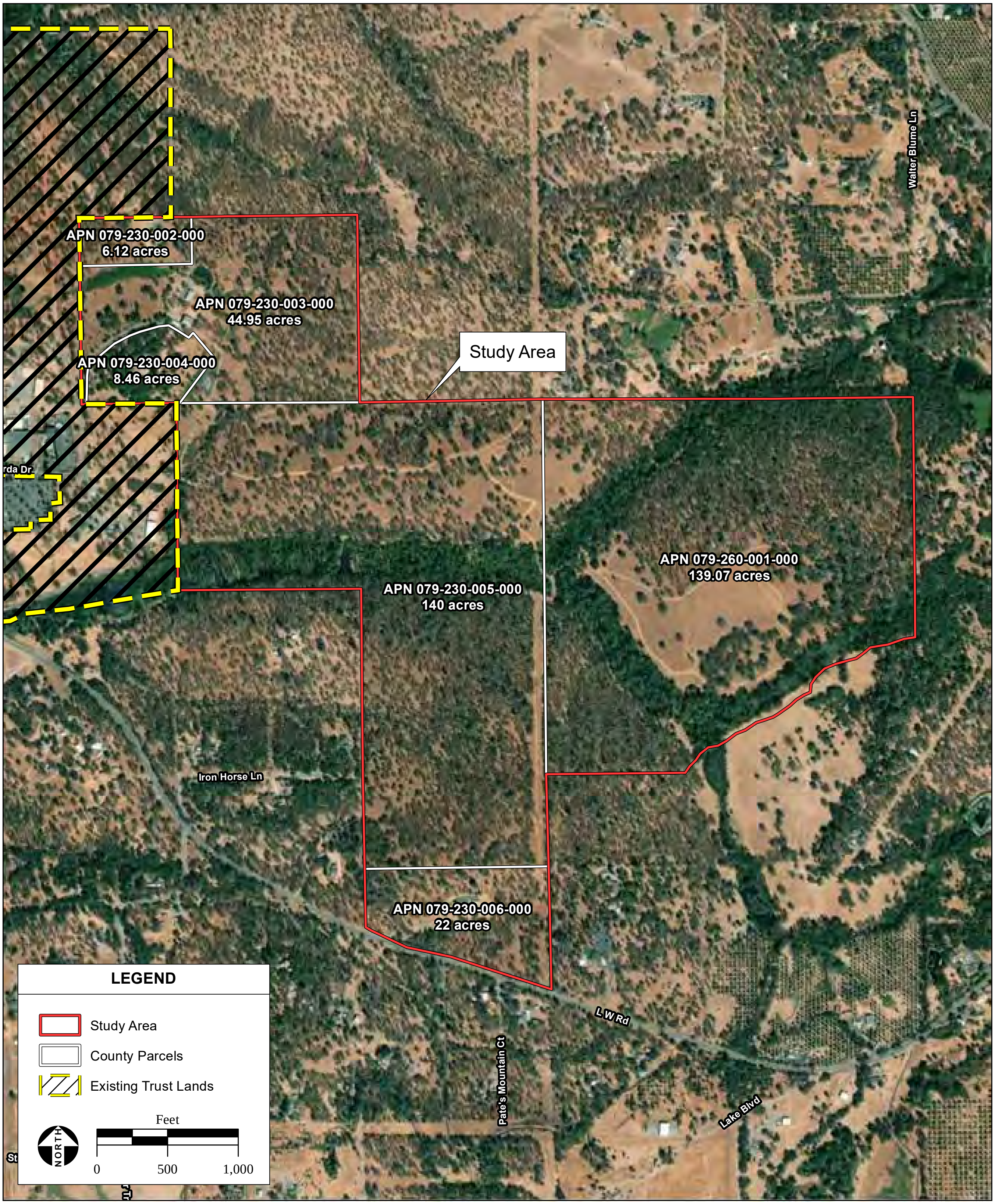
SOURCE: ESRI, 2023; AES, 1/27/2023

Figure 1
Regional Location



SOURCE: "Palermo, CA" & "Bangor, CA" USGS 7.5 Minute Topographic Quadrangles,
T19N R4E, Sections 27, 34 & 35, Mt. Diablo Baseline & Meridian;
ESRI, 2023; AES, 1/27/2023

Figure 2
Site and Vicinity



SOURCE: Vivid Maxar aerial photograph, 9/7/2021; Butte County GIS, 2020; ESRI, 2023; AES, 1/27/2023

Mooretown Rancheria FTT Phase I ESA / 220546

Figure 3
Aerial Photograph

2.4 CURRENT USES OF ADJOINING PROPERTIES

The current adjoining property uses are:

North: Unoccupied or undeveloped rural residential and agricultural
South: Unoccupied or undeveloped rural residential and agricultural. Lower Wyandotte Road is located just beyond the southern border of APN 079-230-006.
East: Unoccupied or undeveloped rural residential and agricultural
West: Feather Falls Casino and Lodge.

2.5 HISTORIC USES OF THE SUBJECT PROPERTY

2.5.1 AERIAL PHOTOGRAPHS

Historic aerial photographs (**Appendix A**) were reviewed for information regarding past uses of the Subject Property and surrounding areas. Aerial photographs from 1937, 1952, 1969, 1973, 1977, 1984, 1998, 2006, 2009, 2012, and 2016 were reviewed; all photographs were at a 1" = 875' scale but were of varying clarity.

Historical aerial images offer detailed review of previous land uses on the Subject Property and adjacent properties; because APN 079-230-002 was added after the EDR report was requested, it does not appear within the project outline. However, it is immediately adjacent to the original Subject Property and is entirely within the EDR search area. In approximately 1937, only part of the Subject Property was photographed. However, what was visible indicated that the site was largely undeveloped land with clearly visible dirt roads and dredger tailings crossing APN 079-230-005 and running into APN 079-260-001; what appears to be a small orchard area is visible near the eastern edge of APN 079-260-001. The entire Subject Property was visible on aerial photographs beginning in 1952; the Subject Property remained undeveloped, with orchards visible on neighboring properties. The transmission line appears on the 1969 photograph, and the metal shop building and residence appear on APN 079-230-006 between 1973 and 1977. In 1984, a small pond and barns are visible in APN 079-230-003. Feather Falls Resort and Casino can be seen just west of APN 079-230-003 in the 1998 aerial photograph. The 2006-2016 aerial photographs show the expansion of the Feather Falls Casino and Lodge footprint and rural residential development surrounding the Subject Property.

2.5.2 HISTORIC TOPOGRAPHIC MAPS

Historic USGS Topographic Quadrangles (**Appendix B**) were reviewed for information regarding past uses of the Subject Property. These include: the 1888 and 1891 30' quadrangles for Marysville and Smartsville; 1892 30' Smartsville quadrangle; 1894 and 1895 30' quadrangles for Marysville and Smartsville; 1912 7.5'Palermo; 1941, 1944 and 1947 15' Bangor; 1949, 1952 7.5' Bangor and Palermo; 1952 15' Gridley; 1969 7.5' Bangor; 1970 7.5' Palermo; 1994 7.5' Bangor; and 2012 7.5' Bangor and Palermo USGS quadrangles. The Subject Property is only partially visible on some maps. Available maps depict no development on or around the Subject Property. A northeast-southwest running drainage crossing most of the parcels can be seen in the 1890s topographic maps, and roadways are depicted surrounding the Subject Property in the earliest maps as well. In 1912, there is a dirt track which appears to represent the dredger tailings crossing APN 079-230-005 and running into APN 079-260-001. In 1941, a water conveyance ditch, the Palermo Canal, is visible in the northeastern portion of APN 079-260-001. The road to the south of the Subject Property is labeled "Lower Wyandotte Road" in the 1994 topographic map. On the 2012 topographic map, the Henderson Ditch runs across APN 079-230-003 on the northwestern portion of the Subject Property. There is no development visible at any time on any of the topographic maps.

2.5.3 SANBORN FIRE INSURANCE MAPS

The Subject Property is unmapped by Sanborn Fire Insurance Maps (**Appendix C**).

2.5.4 The City Directory Image Report

The City Directory may also indicate previous land uses of the Subject Property (**Appendix D**). Images are unavailable prior to 1993, and none indicate ownership of the Subject Property.

2.6 PHYSICAL FEATURES

2.6.1 Hydrology and Geology

The Subject Property is located in a rugged region featuring steep hills and deep ravines; the western approximately 60 percent of the property largely consists of steep slopes, with the contour easing towards the east. The area has been mined extensively, and evidence of mining, including tailings and ditches, remains visible within the Subject Property.

Granite and metamorphic slates are well represented in Butte County, the eastern region being composed of these rocks. Beds of magnetic and chrome iron-ore, limestone and marble, and well-defined and rich quartz-veins are present in the slate strata (Selverston et al. 2005: 38-39; Wells and Chambers 1882: 268). Soils within the Subject Property include Thompsonflat loam on varying slopes, Dunstone-Loafercreek complex, Dunstone-Lomarica-Argonaut taxadjunct, and Mounthope-Hartsmille, largely consisting of weathered metavolcanics and largely found on steep slopes (NRCS, 2019). These are soils found on mountain flanks and consist of residuum weathered from metavolcanics. Topography within the Subject Property generally slopes downward towards the center, and the depth to the water table ranges from approximately 6 feet below surface to at surface elevation depending on the location within the Subject Property.

2.6.2 Floodplain Map

The Federal Emergency Management Agency (FEMA) designates flood risk areas based on a parcel's location with respect to 100-year and 500-year floodplains. A 100-year flood is the flood elevation that has a 1 percent chance of being equaled or exceeded each year and a 500-year flood is the flood elevation that has a 0.2 percent chance of being equaled or exceeded each year. FEMA prepares Flood Insurance Rate Maps (FIRM) that show the flood risk designations of lands throughout the United States.

The Subject Property is located in Flood Zone X (Area of Minimal Flood Hazard). Zone X is identified by FEMA as those areas located outside the Special Flood Hazard Area and above the elevation that has a 0.2-percent-annual-chance of flooding (FEMA, 2021). A copy of the regional floodplain map is included in **Appendix F**.

2.6.3 Wetlands Map

Riverine habitats, including the Henderson Ditch, and freshwater forested/shrub wetland have been mapped on the Subject Property by the U.S. Fish & Wildlife Service (USFWS) National Wetlands Inventory Wetlands Mapper (USFWS, 2021, **Appendix G**).

2.6.4 Roadways

Regional access is provided by SR-70, which travels in a general north-south direction and is located approximately 3 miles west of the Subject Property. Local access to the Subject Property is provided by Lower Wyandotte Road and Alverda Drive. Lower Wyandotte Road is a two-lane paved road that runs in a general north-south direction from Oroville to the unincorporated community of Wyandotte and borders the southern portion of Mooretown Rancheria. Alverda Drive is a two -lane paved road on the Rancheria connecting the Tribal administration building, Feather Falls Casino and other Tribal businesses to Lower Wyandotte Road. A number of dirt roads internally transect the Subject Property.

2.7 SITE RECONNAISSANCE OBSERVATIONS

The objective of the site reconnaissance was to identify current or historic hazardous materials involvement or signature environmental conditions to substantiate or build upon available documentation or resources addressing features of the Subject Property. Hazardous materials involvement or signature environmental conditions include the presence or likely presence of any hazardous materials or petroleum products that indicate an existing release, past release, or a threat of release into structures, soil, or groundwater on the Subject Property. Signs of hazardous materials could include ASTs or USTs; on-site wastewater treatment systems; monitoring wells; stained soils and/or unusual odors; indications of any excavation or removal of soils; patched asphalt; large debris piles; or other obvious signs of hazardous materials involvement.

A site inspection of the bulk of the Subject Property was performed by Kathleen Sholty on April 19-20, 2021. Site reconnaissance included windshield and pedestrian surveys along the roads within the Subject Property, around the buildings on-site, and the areas surrounding the Subject Property. The Subject Property is dominated by foothill woodland, grassland, and a creek running from east to west. Site reconnaissance was limited by the creek and dense vegetation on either side, though at the time of the inspection, the Subject Property was relatively free of undergrowth. APN 079-230-002 was added later, and so was surveyed by Charlane Gross on March 29, 2022. This parcel included a modern residence, sparse oak trees, rolling grasslands, and was edged by Henderson Ditch. No RECS or potential RECs were identified on APN 079-230-002.

An abandoned one-story residential building and adjacent two-story metal shop building, both dating from sometime between 1973 and 1977, were observed on the southern portion of the Subject Property on APN 079-230-006. The abandoned residence on APN 079-230-006 was un-occupied and appeared to be in a state of disrepair, insulation was observed falling from the ceiling, and porch decking had been removed. Aerial photographs indicate that both the metal shop and residence were built sometime between 1973 and 1977, and therefore there is the potential for lead-based paint on the walls. A pole-mounted transformer was observed near the residence. The metal shop building was locked and not accessed at the time of the site reconnaissance. An oil pan, full trash can, gravel pile, tires, two 5-gallon buckets, and a wood debris pile were observed in this area. There were also two long, narrow metal containers that appeared to be empty, no specific use could be discerned.

There were four 55-gallon drums scattered across the Subject Property. One was dug into the ground near the dredge tailings in APN 079-230-005, and most likely used as a privy, or pit toilet during mining activities. One was located north of the metal workshop building on 079-230-005, by a wooden fence. One was located directly east of the metal workshop building with two tires nearby. One was located approximately 200 feet west of the large metal barn on APN 079-230-003.

A manufactured home, a small storage shed, a pump house with an above-ground water storage tank, and barns were observed within the northern portion of the Subject Property on APN 079-230-003. The small storage shed had an unstained concrete floor and contained Polyvinyl chloride (PVC) pipe, a small tire, five approximately 2-gallon metal cans, one of which contained Roundup herbicide and one of which had a Union 76 logo, a 5-gallon bucket containing garbage, a rope, wire, metal, and a glass window frame. A recreation vehicle, a utility trailer, and farm equipment were observed in a covered area near the barns; no stains were observed under the trailers and farm equipment. A pole-mounted transformer was observed providing power to the buildings. One of the barn structures was in use as a workshop and included a radio, dartboard, workbench, hoses, metal cans, rope, wood, and empty bags of “Producer’s Pride” cooked corn. There were random tires scattered within the Subject Property and some debris near the northwest and southeastern corners.

The rest of the property was undeveloped land covered with low-growing to knee-high volunteer vegetation with evidence of grazing. Mining tailings and ditches were visible throughout the Subject Property.

None of the finds appeared to be RECs that would affect use of the Subject Property.

Site observations are summarized in **Table 2**.

TABLE 2. SUMMARY OF SITE OBSERVATIONS

Site Setting	Observations
Current Uses of Property	The Subject Property is mostly vacant land, with a residence, shed, and barns in isolated locations.
Past Uses of Property	The Subject Property was previously used for mining. Evidence of mining, including tailings and ditches, remains visible within the Subject Property.
Current Uses of Adjoining Property	**North:** Unoccupied or undeveloped rural residential and agricultural
	South: Unoccupied or undeveloped rural residential and agricultural. Lower Wyandotte Road is located just beyond the southern border of APN 079-230-006.
	East: Unoccupied or undeveloped rural residential and agricultural
	West: Feather Falls Casino and Lodge.
Current or Past Uses in the Surrounding Area	The area has been used for mining with surrounding rural residential properties.
Geologic, Hydrogeologic, Hydrologic, and Topographic Conditions	The Subject Property is located in a rugged region featuring steep hills and deep ravines; the western approximately 60 percent of the property largely consists of steep slopes, with the contour easing towards the east.
General Description of Structures	An abandoned one-story residential building and adjacent two-story metal shop building, both approximately 30 years old, were observed on the southern border of the property. A manufactured home, barns, and a shed were observed on the north western portion of the property.
Roads	Lower Wyandotte Road runs along the southern boundary of the Subject Property. Alverda Drive runs just south of the Feather Falls Casino and Lodge and ends west of APN 079-230-005.
Potable Water Supply	There are at least two well present on the Subject Property and one registered well was identified within ½ mile of the Subject Property (EDR, 2021). South Feather Water & Power provides water to the surrounding area.
Sewage Disposal System	No sewage disposal systems were observed. However, due to the rural nature of the property, septic systems are expected to be present.
Waste Removal Services	There is no waste removal service at the Subject Property.
Possible Hazardous Substances and Petroleum Products in Connection with Identified Uses	There was an oil pan and an approximately 2-gallon can of Roundup herbicide as well as the Union 76 can.
Storage Tanks and Associated Piping	There is a water storage tank in the pump house on APN 079-230-.003.
Odors	No strong, pungent, or noxious odors were observed.
Pools of Liquid	No pools of liquid were observed.
Drums (5 gal to 55 gal containers should be described)	Four empty 55-gallon drums and two 5-gallon buckets were observed on the Subject Property
Potential Hazardous Substances and Petroleum Products Containers	An approximately 2-gallon can of Roundup, an oil pan, and other metal cans in the shed on APN 079-230-003.
Unidentified Substance Containers	Four unlabeled empty metal cans were observed in the storage shed on APN 079-230-003., and two unlabeled 5-gallon buckets were observed near the barn structure on the northern portion of the Subject Property.

Site Setting	Observations
Polychlorinated Biphenyls (PCB)	A transformer was found on the northern portion of the property near the barn, shed, and storage area on APN 079-230-003. Another transformer was observed near the southern portion of the property providing power to the abandoned residence. The transformers appeared to be in good condition and no stained soil or stressed vegetation was observed.
Pits, Ponds, or Lagoons	Multiple wetland areas were observed on the Subject Property.
Stained Soil or Pavement	No stained soil or pavement was observed.
Stressed Vegetation	No stressed vegetation was observed.
Solid Waste	Drums, buckets, ropes, wires, scattered tools and other household and ranch waste were observed as previously discussed.
Waste Water	No wastewater discharge or standing pools were observed.
Wells	There are a water well and a monitoring well present on APN 079-230-003 by the residence and barns and a third well near the metal workshop on APN 079-230-006.
Septic System	No septic systems were observed, with the exception of the possible 55-gallon drum privy.

2.8 SITE PHOTOGRAPHS

Figure 4 provides photographs that show the site conditions of the Subject Property at the time of the site visit and Figure 5 indicates the locations of the various survey finds.

- Empty 55-gallon drum and tire observed on the southwestern portion of APN 079-230-005 (**Figure 4**, **Photo 1**).
- Former residence near shop building observed on APN 079-230-003 (**Figure 4**, **Photo 2**).
- Debris pile located near the former residence and shop building on APN 079-230-003 (**Figure 4**, **Photo 3**).
- Transformer near the barn area on APN 079-230-003 (**Figure 4**, **Photo 4**).
- 55-gallon drum located near the barn area on APN 079-230-003 (**Figure 5, Photo 5**).
- The content of one of the barns located on APN 079-230-003 (**Figure 5, Photo 6**).
- Tires discarded near the former residence on APN 079-230-006 (**Figure 5, Photo 7**).
- Large unidentified metal container located on APN 079-230-006 (**Figure 5, Photo 8**).

PHOTO 1: Empty 55-gallon drum and tire observed on the south-western portion of APN 079-230-005.

PHOTO 2: Former residence near shop builiding observed on APN 079-230-003.

PHOTO 3: Debris pile located near the former residence and shop building on APN 079-230-003.

PHOTO 4: Transformer near the barn area on APN 079-230-003.

SOURCE: AES, 1/27/2023

Figure 4a
Site Photographs

PHOTO 5: 55-gallon drum located near the barn area on APN 079-230-003.

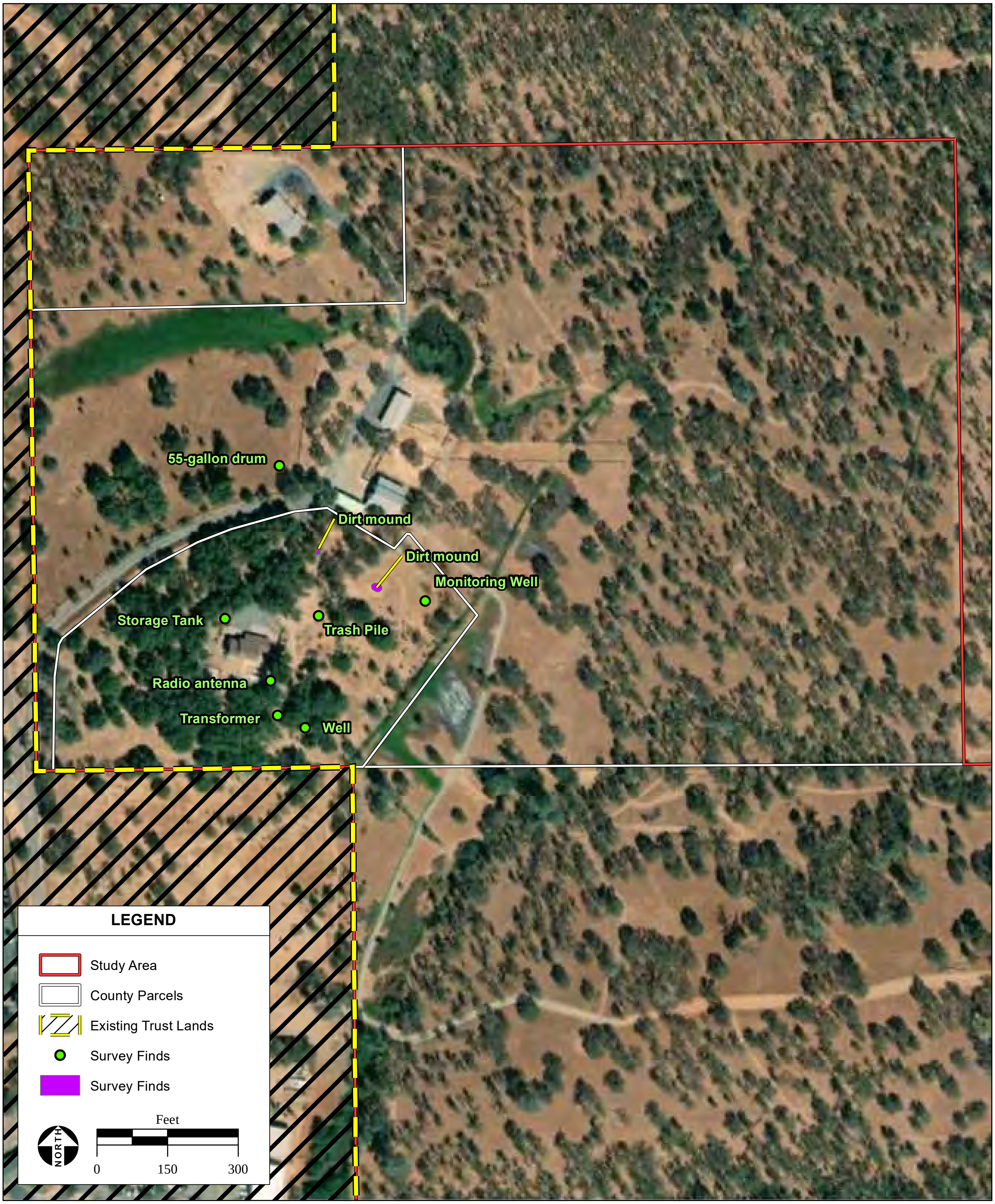
PHOTO 7: Tires discarded near the former residence on APN 079-230-006.

PHOTO 6: The contents of one of the barns located on APN 079-230-003.

PHOTO 8: Large unidentified metal containers located on APN 079-230-006.

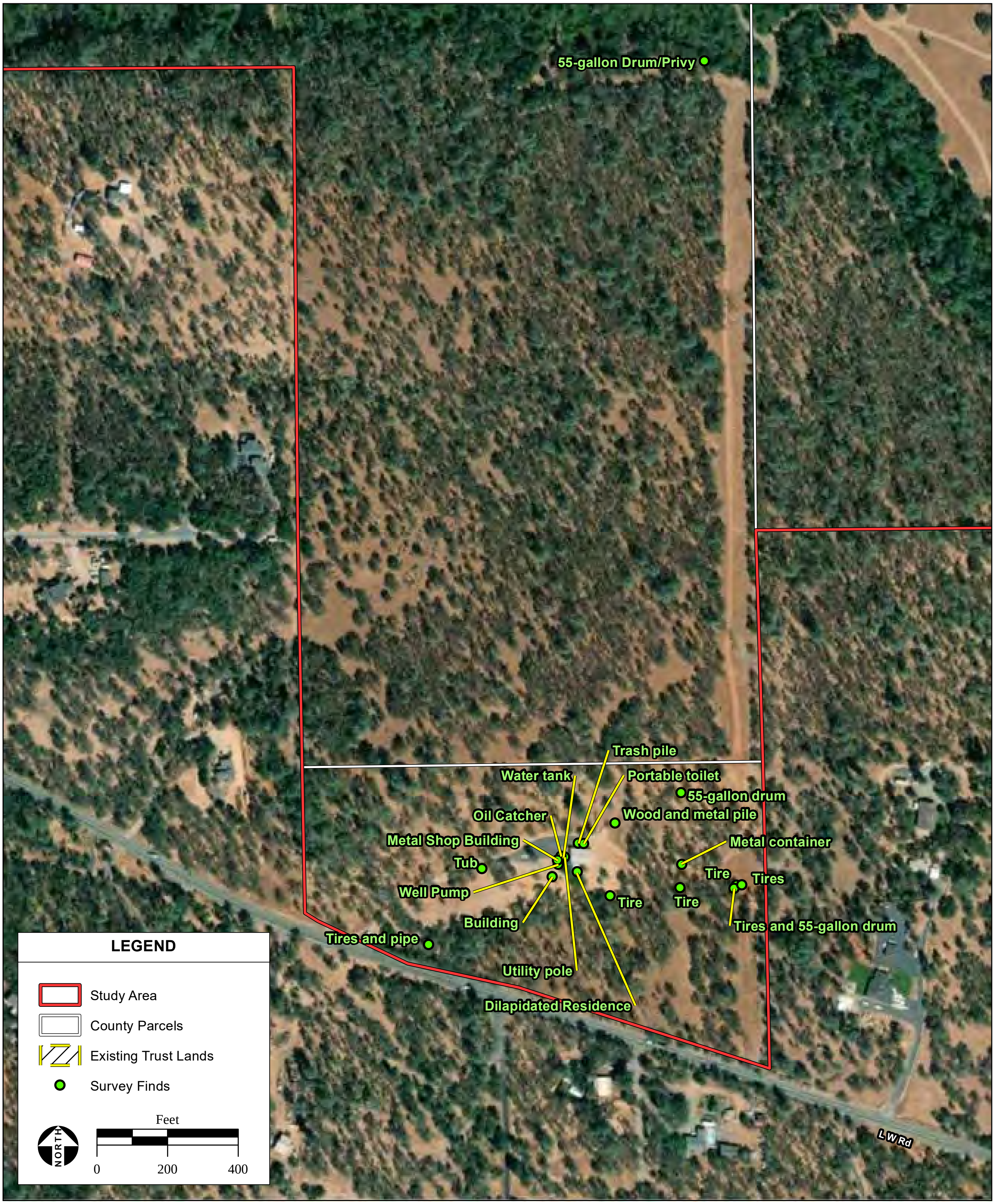
SOURCE: AES, 1/27/2023

Figure 4b
Site Photographs



SOURCE: Vivid Maxar aerial photograph, 9/7/2021; Butte County GIS, 2020; ESRI, 2023; AES, 2/3/2023

Figure 5a
Survey Finds - North



SOURCE: Vivid Maxar aerial photograph, 9/7/2021; Butte County GIS, 2020; ESRI, 2023; AES, 2/3/2023

Mooretown Rancheria FTT Phase I ESA / 220546

Figure 5b
Survey Finds - South

3 INTERVIEWS AND USER-PROVIDED INFORMATION

3.1 LOCAL ENVIRONMENTAL RECORDS SOURCES

3.1.1 LOCAL ENVIRONMENTAL AGENCY

The California State Water Resources Control Board GeoTracker and California Department of Toxic Substances Control EnviroStor databases were examined, but neither included reports from the Subject Property. Butte County Environmental Health Specialist Samuel Viglietti did not find records of any spills reported on the Subject Property.

3.1.2 DEPARTMENT OF PLANNING AND ZONING

Zoning designations on the Subject Property were reviewed through information provided by the Butte County (Butte County, 2021). APN 079-230-003 located on the northern portion of the Subject Property is zoned Medium Density Residential. The rest of the parcels are zoned RR-5, which is Rural Residential with one residential unit per five acres of land. Current land use on the Subject Property is consistent with this zoning designation.

3.1.3 ELECTRICAL UTILITY AND NATURAL GAS COMPANIES

Pacific Gas & Electric (PG&E) provides electrical service to the Subject Property. A PG&E utility easement runs north to south through the middle of the property. No natural gas pipelines are located on the Subject Property.

3.2 INTERVIEWS AND QUESTIONNAIRES

Standard land owner and adjacent property questionnaires were distributed by AES and are included in **Appendix H**.

3.2.1 OWNER/USER QUESTIONNAIRE AND OWNER PROVIDED INFORMATION

The Owner/User questionnaire was completed by Tribal Vice Chairman Alan Archuleta on January 17, 2023. In his responses Mr. Archuleta indicated no specific knowledge of hazardous materials or conditions on the Subject Property.

3.2.1.1 Reason for Performing the ESA

The ESA was performed by AES at the request of Mooretown Rancheria to support a fee-to-trust application for the Subject Property.

3.2.1.2 Title Records

No title company or professional was engaged by the client to review recorded land title records and lien records. Likewise, documentation regarding property valuation was not provided nor reviewed.

3.2.1.3 Commonly Known or Reasonably Ascertainable Information, and Actual Knowledge of the User

The Owner/User Questionnaire asks if the owner is aware of “commonly known or reasonably ascertainable information about the property that would help the environmental professional to identify conditions indicative of releases or threatened releases of hazardous materials.” Mr. Archuleta checked the “no” box. However, elsewhere in the questionnaire, Mr. Archuleta clearly indicated commonly known and reasonably ascertainable information and actual knowledge of the Subject Property. Mr. Archuleta indicated that he is unsure regarding the presence of wells, septic systems, or cesspools on the property, and that he is unsure whether there have ever been any spills or chemical releases that have taken place at the Subject Property.

3.2.1.4 Environmental Liens, Activity and Use Limitations, and Valuation Reductions

On the Owner/User Questionnaire, Mr. Archuleta indicated that he was not aware of any environmental liens or activity and use limitations on the Subject Property.

3.2.1.5 Degree of Obviousness

Mr. Archuleta confirmed that based on his knowledge and experience related to the property, there are no obvious indicators that point to the presence or likely presence of hazardous materials products or petroleum product releases at the Subject Property.

3.2.1.6 Specialized Knowledge

Question 3 of the Owner/User Questionnaire states that Mr. Archuleta has specialized knowledge or experience related to the Subject Property. In response to Question 6, Mr. Archuleta states that, as a Tribal official, he has a good understanding of the prior uses of the Subject Property for cattle grazing and agriculture.

3.2.2 ADJACENT PROPERTY OWNER AND AGENCY INTERVIEWS

Butte County Environmental Health Specialist Samuel Viglietti did not find records of any spills reported on the Subject Property. No adjacent property owner could be reached for an interview; the adjacent properties are owned by the Tribe. Based on information provided by local agencies and the property owner and a relative lack of database listings for the Subject Property or adjacent properties, this missing interview is not considered a significant data gap.

4 RECORDS REVIEW

4.1 DATABASE SEARCH

Database searches were conducted for records of known storage tank sites and known sites of hazardous materials generation, storage, and/or contamination within 1.0 mile from the boundary of the Subject Property. The environmental database review was accomplished by using the services of a computerized search firm, EDR. EDR uses a geographic information system to plot locations of past or current hazardous materials involvement. The EDR Report was reviewed to determine if the Subject Property and adjacent sites are listed on regulatory agency databases. Although a site may be listed within a regulatory agency database, the listed site may not currently be contaminated or affect the environmental quality of the Subject Property and therefore may not be considered a REC. The regulatory agency database search is only as accurate as the data and date the data was entered into the regulatory agency-maintained database. If not reported to the appropriate regulatory agency, installation of USTs or hazardous materials releases would not be listed on the regulatory agency databases that were searched for this ESA.

The purpose of the database search is to determine if the Subject Property or adjacent sites contain RECs that would impact surface and/or subsurface conditions on the Subject Property. The EDR Report includes list of known and "unmapped" or orphan sites. The complete list of reviewed databases is provided in the EDR Report, included in **Appendix E**, and is summarized in **Table 3**.

TABLE 3. EDR SUMMARY OF AGENCY DATABASES

REGULATORY AGENCY DATABASE*	MINIMUM SEARCH DISTANCE	SUBJECT PROPERTY LISTED	DATABASE LISTINGS
US Clandestine Drug Labs (CDL)	TP	Yes	1
TOTAL			1
*Sites may be listed in more than one database. Source: EDR, 2021 (**Appendix E**).			

4.2 RECORDED HAZARDOUS MATERIALS

Hazardous materials involvement within the Subject Property and adjacent properties identified as a result of either previously conducted ESAs or listings within the EDR Report are discussed below. Based on the results of an EDR ASTM E2600-15 Tier I VES, a VEC does not exist for the Subject Property.

4.2.1 SUBJECT PROPERTY

There was one site listed on the EDR Radius Report within the Subject Property, from the US Clandestine Drug Lab database. The drug lab (CDL) was seized on May 13, 2008 but no additional information regarding the lab could be found. In previous Phase I ESAs prepared for nearby sites, the CDL location appears to be nearby, but not on the Subject Property. On-site investigations did not display any signs of hazardous materials release where the CDL was plotted on this occasion. This site does not appear to be a REC that would pose a risk to the environmental quality of the Subject Property.

4.2.2 ADJACENT PROPERTIES

There were no adjacent properties identified in databases within a 1-mile radius of the Subject Property.

4.2.3 UNMAPPED OR ORPHAN SITES

There were no unmapped or orphan sites listed in the EDR Report (**Appendix E**).

4.2.4 PREVIOUS ENVIRONMENTAL STUDIES

No previous Phase I ESAs or other environmental reports were encountered during the preparation of this report.

5 FINDINGS AND CONCLUSIONS

This ESA was performed in conformance with the scope and limitations of ASTM Standard Practice E 1527-21 and the BIA Guidelines (602 DM Chapter 2). Any exceptions to, or deletions from, this practice are described in **Section 1.0** of this report. Based on information gathered while conducting this ESA, the following environmental conditions were observed:

- The 360.6-acre Subject Property is located in a rugged region featuring steep hills and deep ravines; the western approximately 60 percent of the Subject Property largely consists of steep slopes, with the contour easing towards the east. The area has been mined extensively, and evidence of mining, including tailings and ditches, remains visible within the Subject Property.
- Hazardous materials such as lead based paint and asbestos may be present in the abandoned residence. The structure should be sampled and tested prior to demolition.
- Four empty 55-gallon drums were observed. There was no evidence of stains on the drums, stained soil or stressed vegetation near the drums, no odor, and no visible oil slicks and therefore the drums are not considered to be a REC.
- Other finds in the Subject Property included tires, debris and dirt piles, wood and dirt piles, two long, narrow metal containers, and a port-a-pot outside the metal workshop. There was an RV, farm equipment, and trailers stored in a barn in the northwestern corner of the Subject Property, a shed located on APN 079-230-003 included multiple 2-gallon cans scattered on the floor, one of which was marked as Roundup herbicide, and another of which had a Union 76 logo. The shed was on a concrete pad, no stains were observed, and therefore the contents of the shed do not appear to constitute a REC. A second small shed covered a well and above-ground water storage tank. None of these appear to pose a threat to the environmental integrity of the Subject Property and are therefore considered de minimis conditions and do not constitute RECs.

Based on the findings and conclusions of this Phase I ESA AES makes the following recommendations:

It is recommended that all 55-gallon drums, the assorted solid waste and debris near the metal workshop, the long metal containers, the abandoned residence, tires, and debris found on the landscape should be removed and properly disposed of.

6 REPORT PREPARERS

The undersigned declare to the best of their professional opinion that they meet the definition of Environmental Professional (EP) as defined in Section 312.10 of 40 CFR 312. Kathleen Sholty performed the site reconnaissance and Charlane Gross prepared this report under the professional supervision of Stephen Defibaugh, who qualifies as an EP as defined in ASTM Standard E 1527-21, and has the specific qualifications based on education, training, and experience to assess a property of the nature, and setting of the Subject Property. Resumes for the report contributors are included in **Appendix I**.

6.1 REPORT PREPARATION

Analytical Environmental Services
1801 7th Street, Suite 100
Sacramento, CA 95811

Site Assessor: K E Sholty ____________ Date: February 21, 2023
Kathleen Sholty

Report Preparer: Charlane Gross ____________ Date: February 21, 2023
Charlane Gross

EP: Stephen Defibaugh ____________ Date: February 23, 2023
Stephen Defibaugh

7 REFERENCES

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APPENDICES

APPENDIX A

HISTORICAL AERIAL PHOTOGRAPHS

Mooretown FTT

3 Alverda Drive

Oroville, CA 95966

Inquiry Number: 6297938.8

December 14, 2020

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

12/14/20

Site Name:

Mooretown FTT
3 Alverda Drive
Oroville, CA 95966
EDR Inquiry # 6297938.8

Client Name:

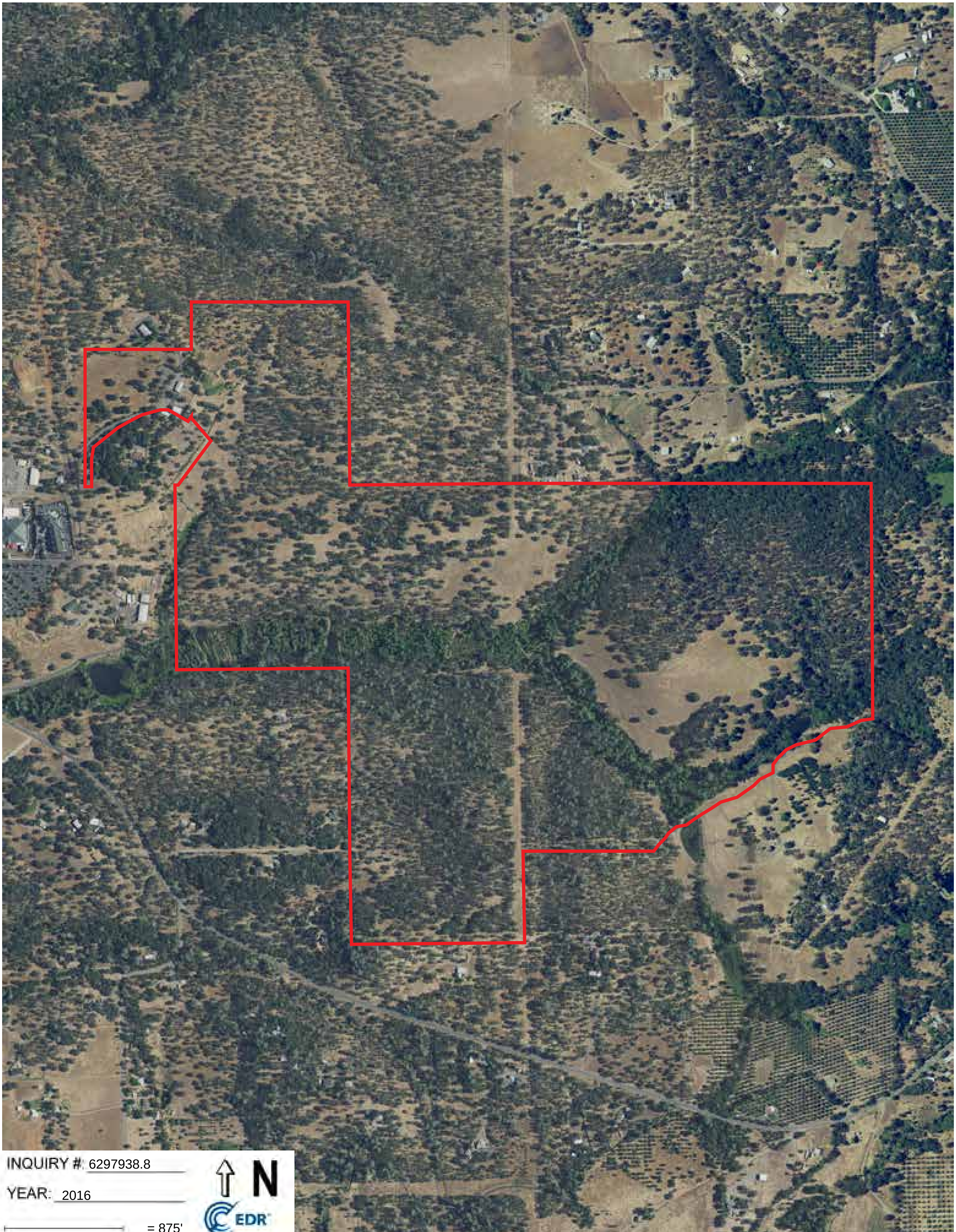
ANALYTICAL ENVIRONMENTAL SERV
1801 7th Street
Sacramento, CA 95811
Contact: Charlane Gross

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	Scale	Details	Source
2016	1"=875'	Flight Year: 2016	USDA/NAIP
2012	1"=875'	Flight Year: 2012	USDA/NAIP
2009	1"=875'	Flight Year: 2009	USDA/NAIP
2006	1"=875'	Flight Year: 2006	USDA/NAIP
1998	1"=875'	Acquisition Date: January 01, 1998	USGS/DOQQ
1984	1"=875'	Flight Date: June 08, 1984	USDA
1977	1"=875'	Flight Date: June 23, 1977	USGS
1973	1"=875'	Flight Date: July 01, 1973	USGS
1969	1"=875'	Flight Date: July 13, 1969	USGS
1952	1"=875'	Flight Date: July 29, 1952	USDA
1937	1"=875'	Flight Date: September 20, 1937	USDA

When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.



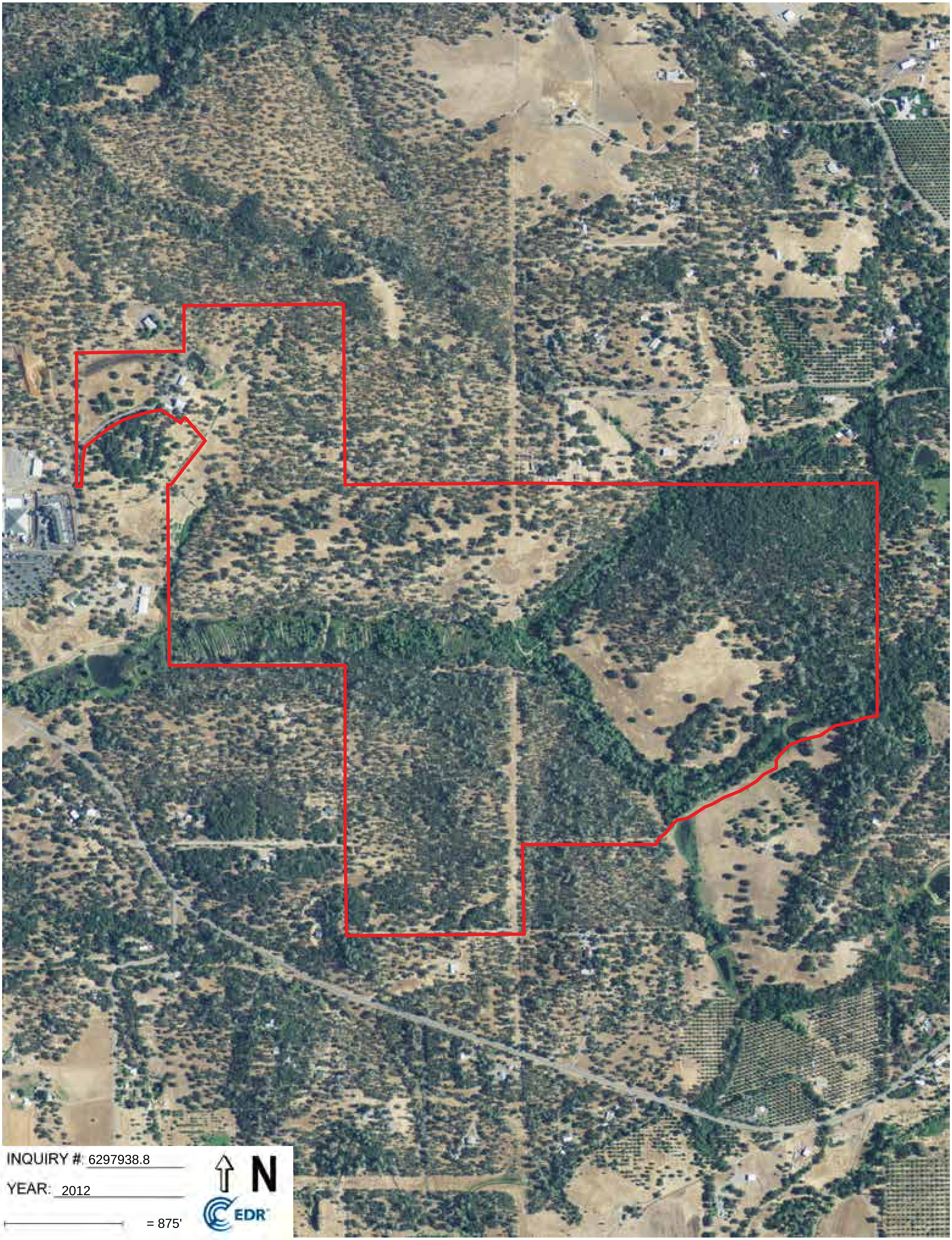
INQUIRY #: 6297938.8

YEAR: 2016

= 875'

N

EDR



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YEAR: 2012
= 875'
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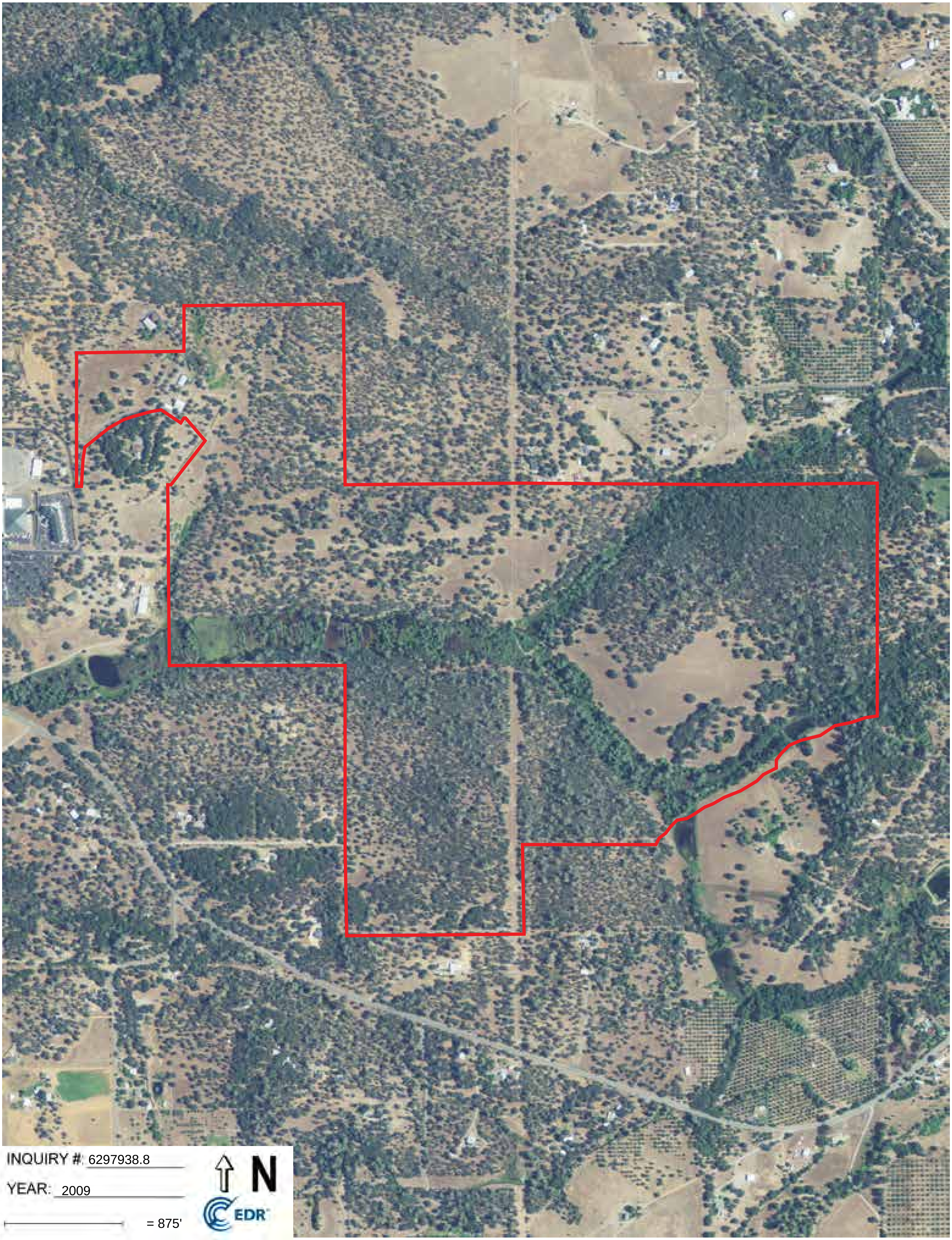
EDR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YEAR: 2009
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N
EDR

INQUIRY #: 6297938.8

YEAR: 2006

= 875'

N

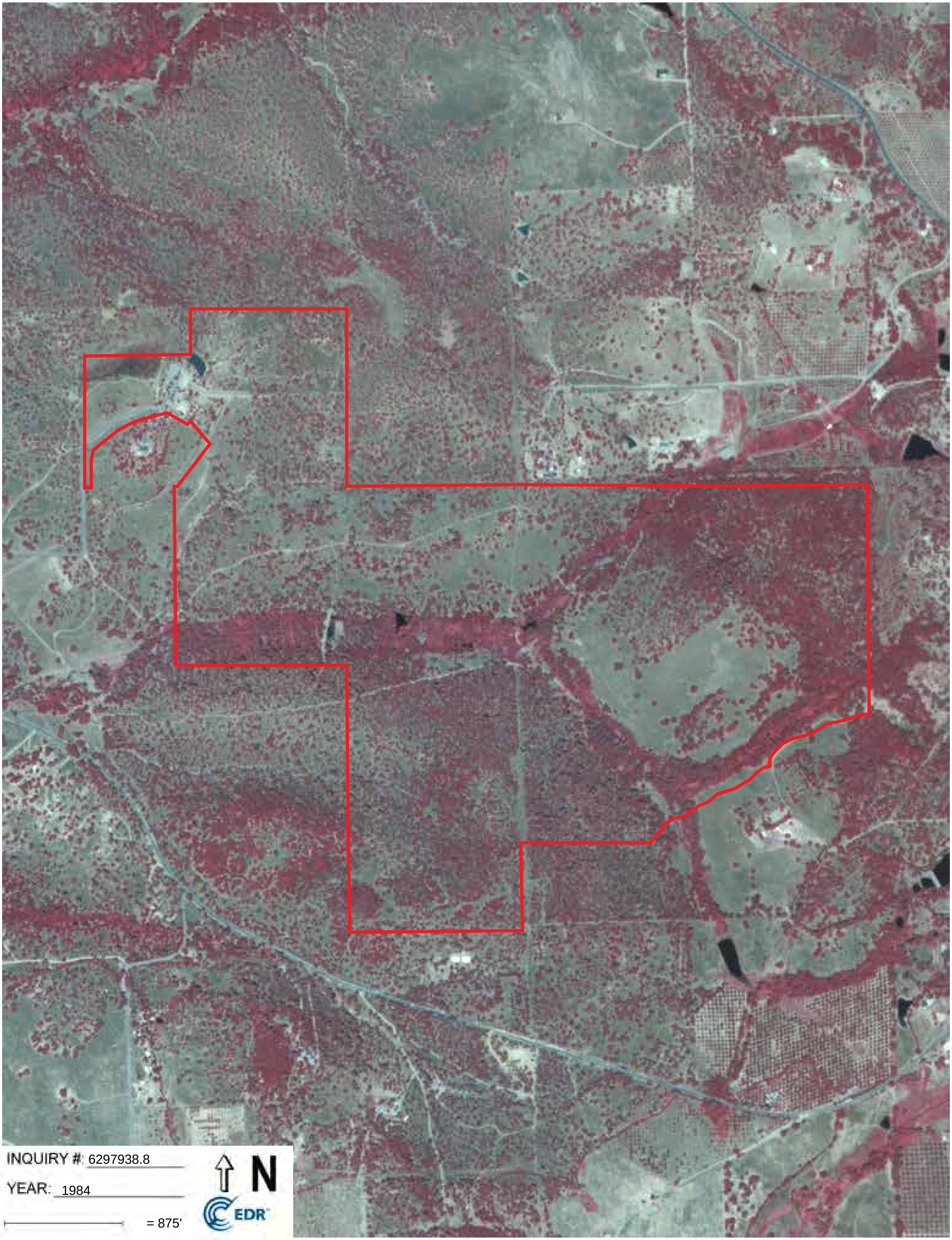
INQUIRY #: 6297938.8

YEAR: 1998

= 875'

N

EDR



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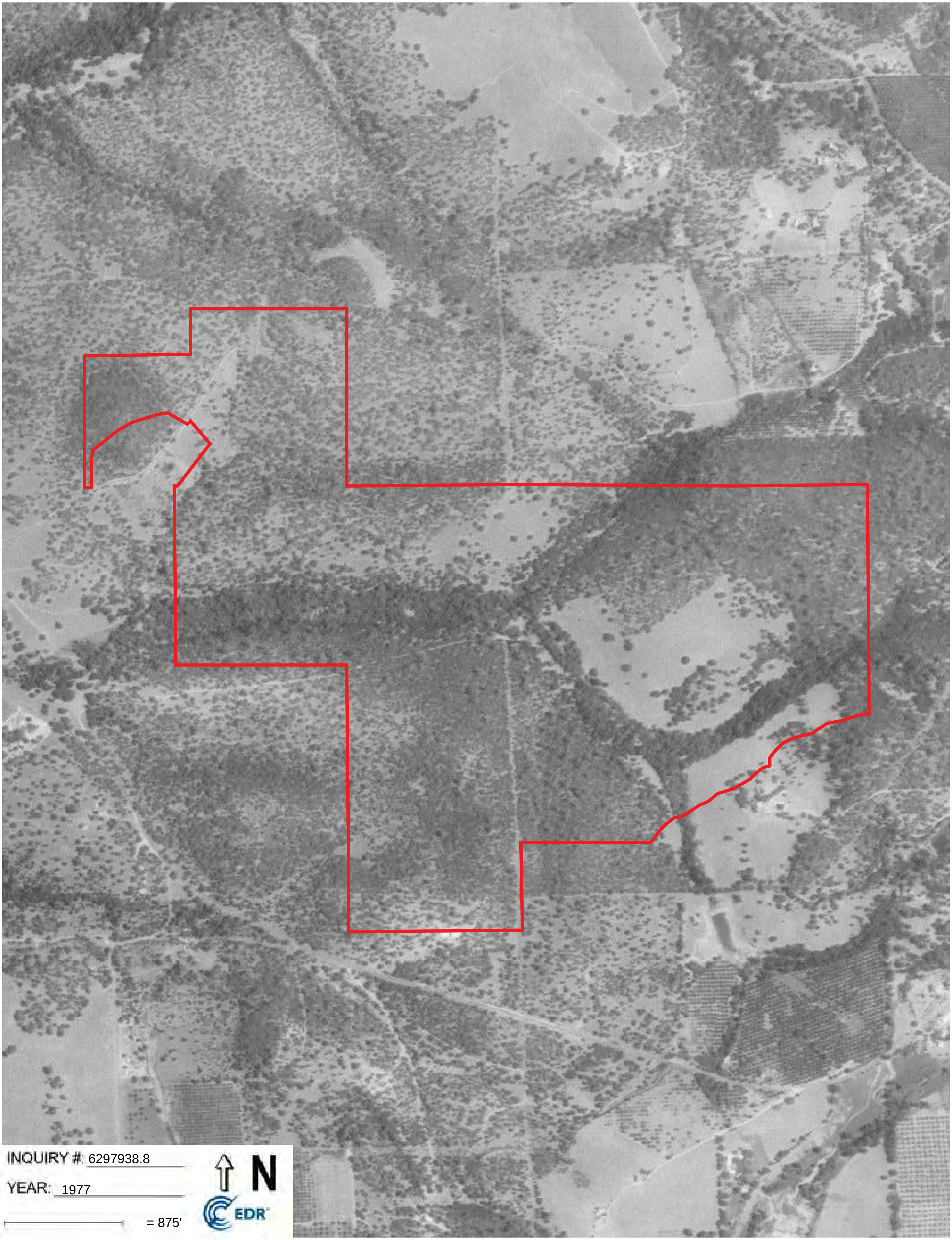
YEAR: 1984

= 875'

N

EDR



INQUIRY #: 6297938.8

YEAR: 1977

= 875'

N

EDR

INQUIRY #: 6297938.8

YEAR: 1973

= 875'

N

EDR

INQUIRY #: 6297938.8
YEAR: 1969
= 875'
N
EDR

INQUIRY #: 6297938.8

YEAR: 1952

= 875'


INQUIRY #: 6297938.8
YEAR: 1937
= 875'
N
EDR

APPENDIX B

HISTORICAL TOPOGRAPHIC MAPS

Mooretown FTT

3 Alverda Drive

Oroville, CA 95966

Inquiry Number: 6297938.4

December 10, 2020

EDR Historical Topo Map Report

with QuadMatch™

EDR®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

12/10/20

Site Name:	Client Name:
Mooretown FTT	ANALYTICAL ENVIRONMENTAL SERVI
3 Alverda Drive	1801 7th Street
Oroville, CA 95966	Sacramento, CA 95811
EDR Inquiry # 6297938.4	Contact: Charlane Gross

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by ANALYTICAL ENVIRONMENTAL SERVICES were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

P.O.# NA

Project: 220546 Mooretown

Coordinates:

Latitude:	39.464089 39° 27' 51'' North
Longitude:	-121.506101 -121° 30' 22'' West
UTM Zone:	Zone 10 North
UTM X Meters:	628512.86
UTM Y Meters:	4369344.10
Elevation:	352.97' above sea level

Maps Provided:

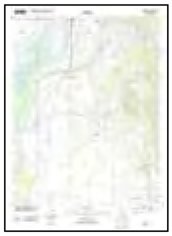
2012	1941
1994	1912
1970	1895
1969	1894
1952	1892
1949, 1952	1891
1947	1888
1944	

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2012 Source Sheets

Bangor
2012
7.5-minute, 24000

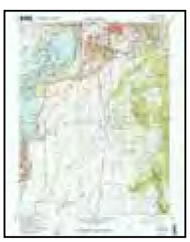


Palermo
2012
7.5-minute, 24000

1994 Source Sheets

Bangor
1994
7.5-minute, 24000
Aerial Photo Revised 1987

1970 Source Sheets



Palermo
1970
7.5-minute, 24000
Aerial Photo Revised 1969

1969 Source Sheets

Bangor
1969
7.5-minute, 24000
Aerial Photo Revised 1969

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

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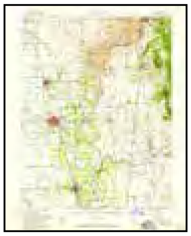


Gridley
1952
15-minute, 62500
Aerial Photo Revised 1949

1949, 1952 Source Sheets

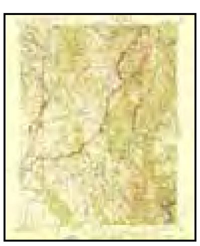
Bangor
1949
7.5-minute, 24000
Aerial Photo Revised 1947

Palermo
1952
7.5-minute, 24000
Aerial Photo Revised 1949

1947 Source Sheets

Bangor
1947
7.5-minute, 24000
Aerial Photo Revised 1947

1944 Source Sheets



Bangor
1944
15-minute, 62500

Topo Sheet Key

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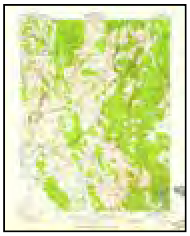
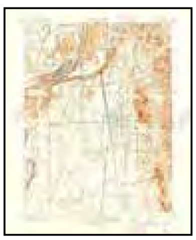
1941 Source Sheets



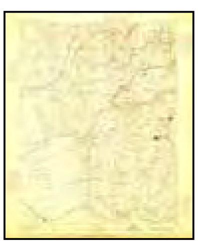
Bangor
1941
15-minute, 62500

1912 Source Sheets

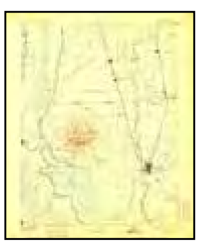


Palermo
1912
7.5-minute, 31680

1895 Source Sheets



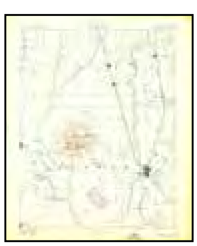
Smartsville
1895
30-minute, 125000



Marysville
1895
30-minute, 125000

1894 Source Sheets

Smartsville
1894
30-minute, 125000



Marysville
1894
30-minute, 125000

Topo Sheet Key

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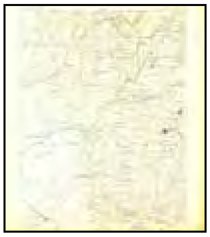
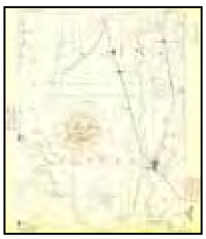
1892 Source Sheets



Smartsville
1892
30-minute, 125000

1891 Source Sheets

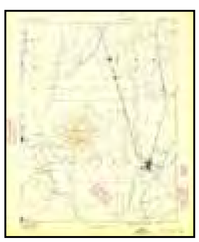


Marysville
1891
30-minute, 125000

Smartsville
1891
30-minute, 125000

1888 Source Sheets

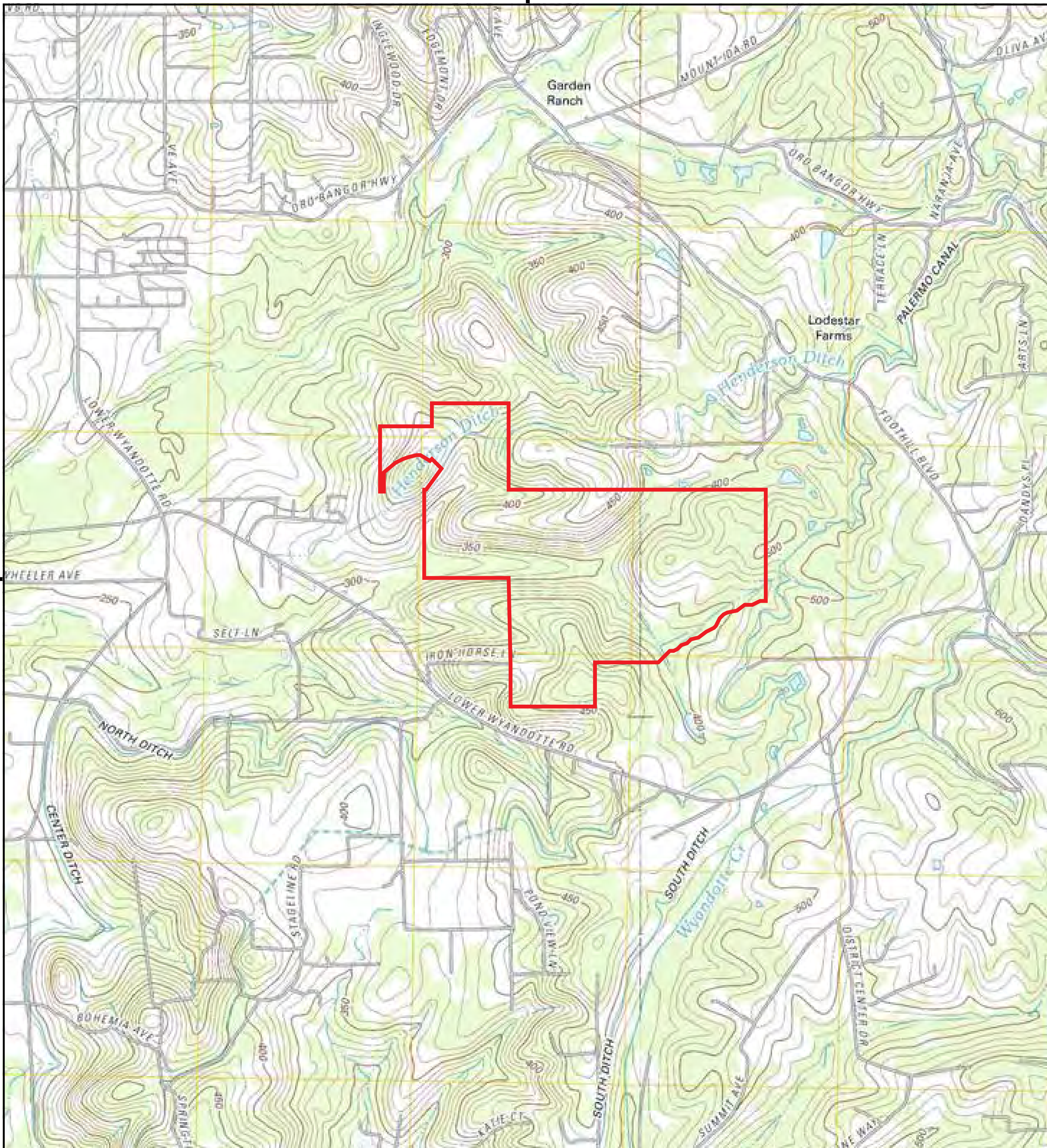
Smartsville
1888
30-minute, 125000



Marysville
1888
30-minute, 125000

Historical Topo Map

2012



0 Miles 0.25 0.5 1 1.5

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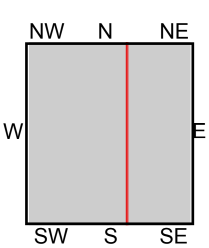


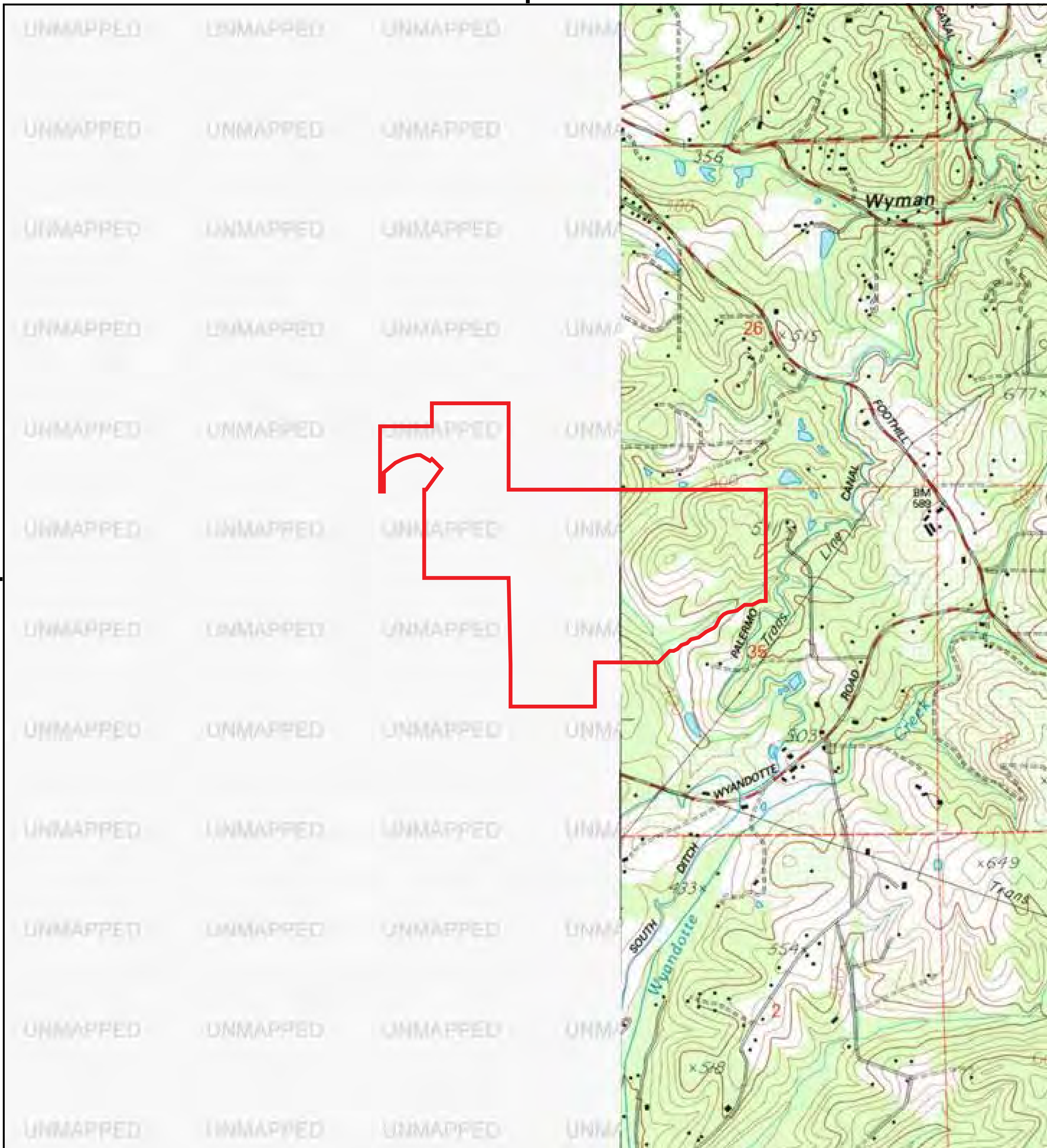
TP, Palermo, 2012, 7.5-minute
SE, Bangor, 2012, 7.5-minute

SITE NAME: Mooretown FTT
ADDRESS: 3 Alverda Drive
Oroville, CA 95966
CLIENT: ANALYTICAL ENVIRONMENTAL SERVI

N

Historical Topo Map

1994



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0 Miles	0.25	0.5	1	1.5

NW N NE

W E

SW S SE

SE, Bangor, 1994, 7.5-minute

SITE NAME: Mooretown FTT

ADDRESS: 3 Alverda Drive
Oroville, CA 95966

CLIENT: ANALYTICAL ENVIRONMENTAL SERVI

N

Historical Topo Map

1970

This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

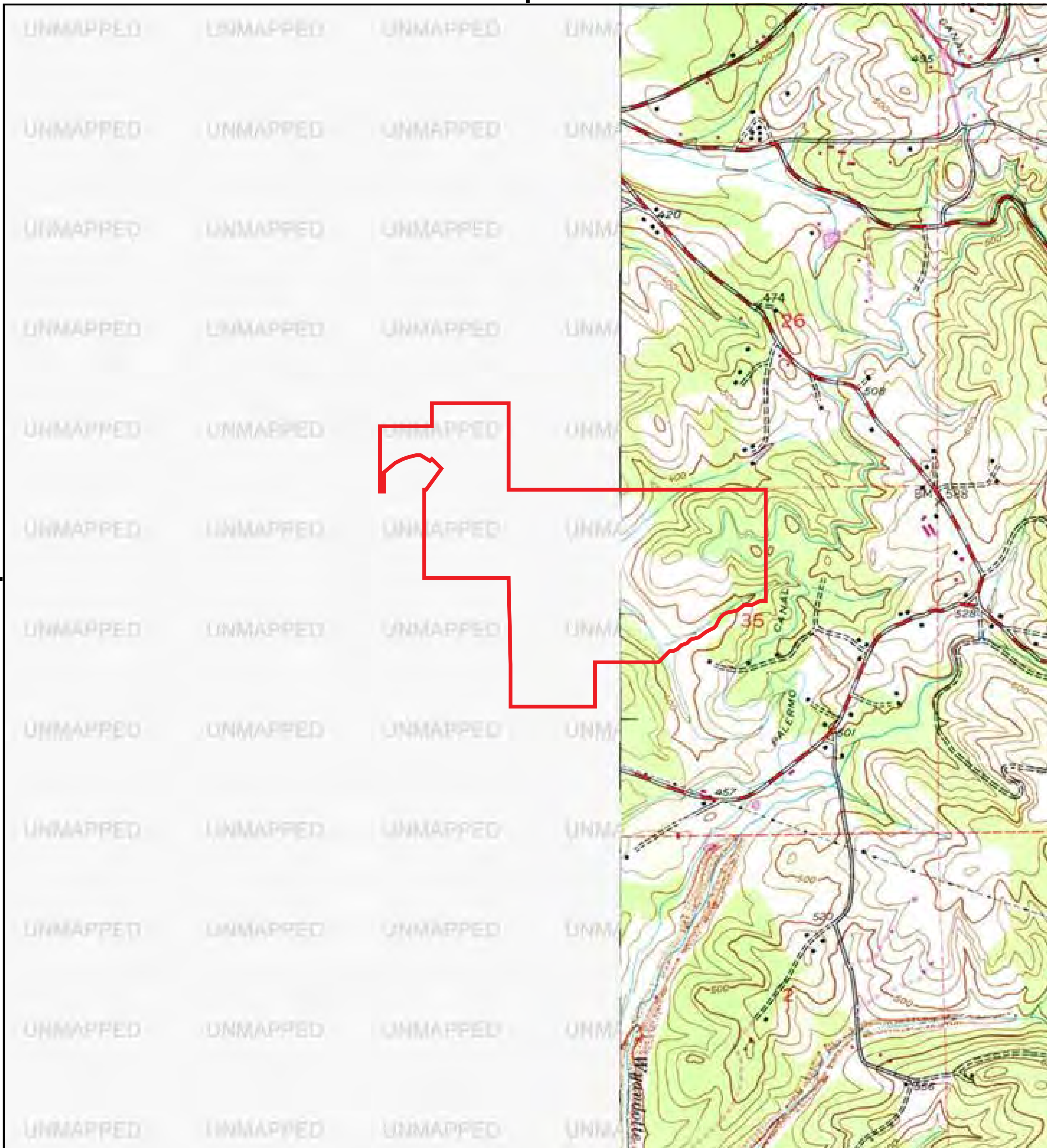
TP, Palermo, 1970, 7.5-minute

SITE NAME: Mooretown FTT
ADDRESS: 3 Alverda Drive
Oroville, CA 95966
CLIENT: ANALYTICAL ENVIRONMENTAL SERVI

N

Historical Topo Map

1969



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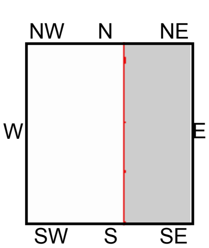
0 Miles 0.25 0.5 1 1.5



SE, Bangor, 1969, 7.5-minute

SITE NAME: Mooretown FTT
ADDRESS: 3 Alverda Drive
Oroville, CA 95966
CLIENT: ANALYTICAL ENVIRONMENTAL SERVI

N

Historical Topo Map

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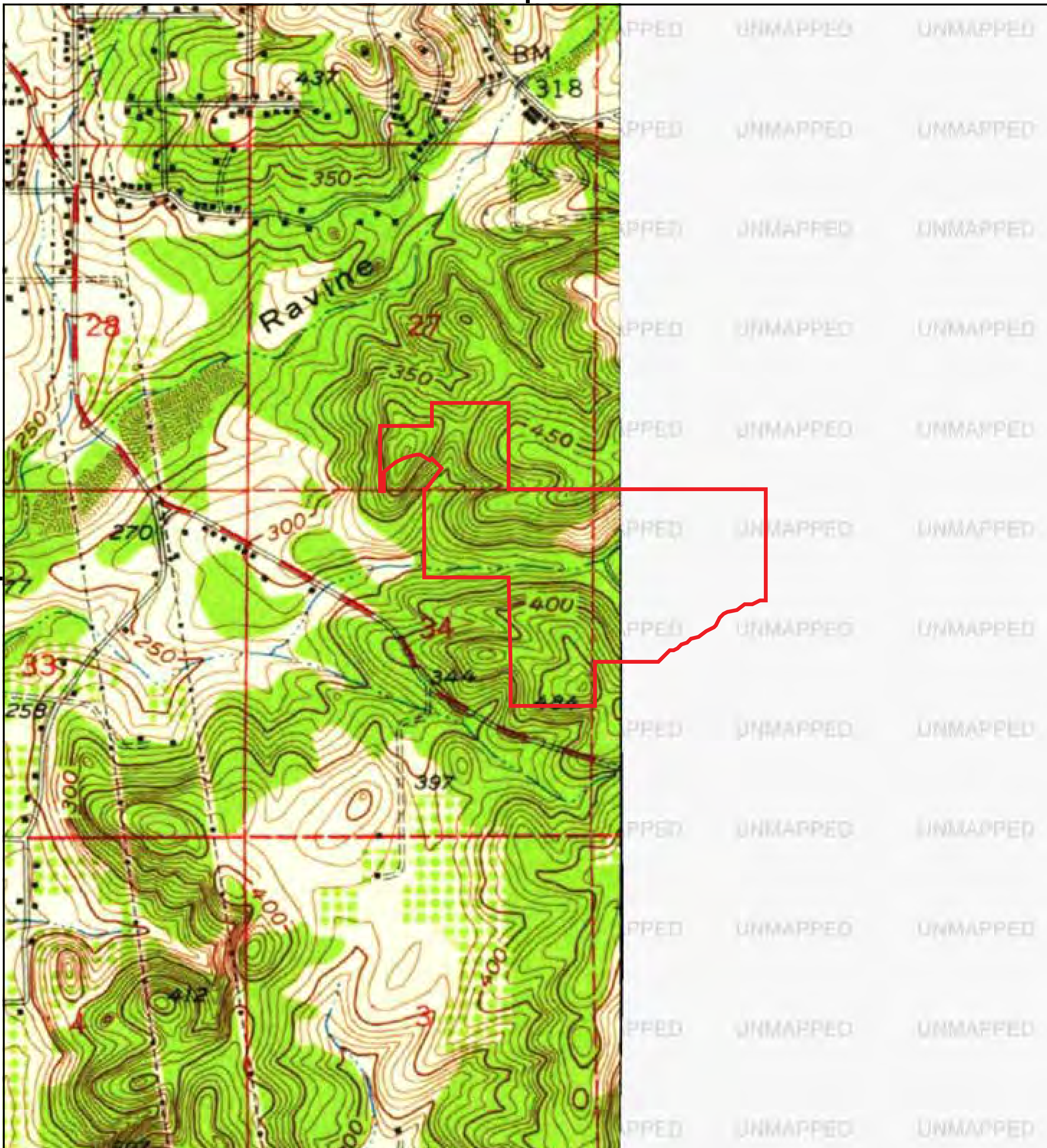

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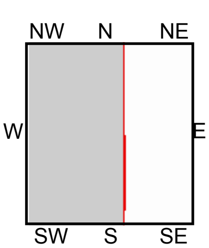
0 Miles 0.25 0.5 1 1.5



TP, Gridley, 1952, 15-minute

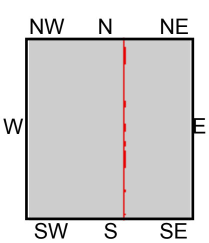
SITE NAME: Mooretown FTT
ADDRESS: 3 Alverda Drive
Oroville, CA 95966
CLIENT: ANALYTICAL ENVIRONMENTAL SERVI

Historical Topo Map

1949, 1952

This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

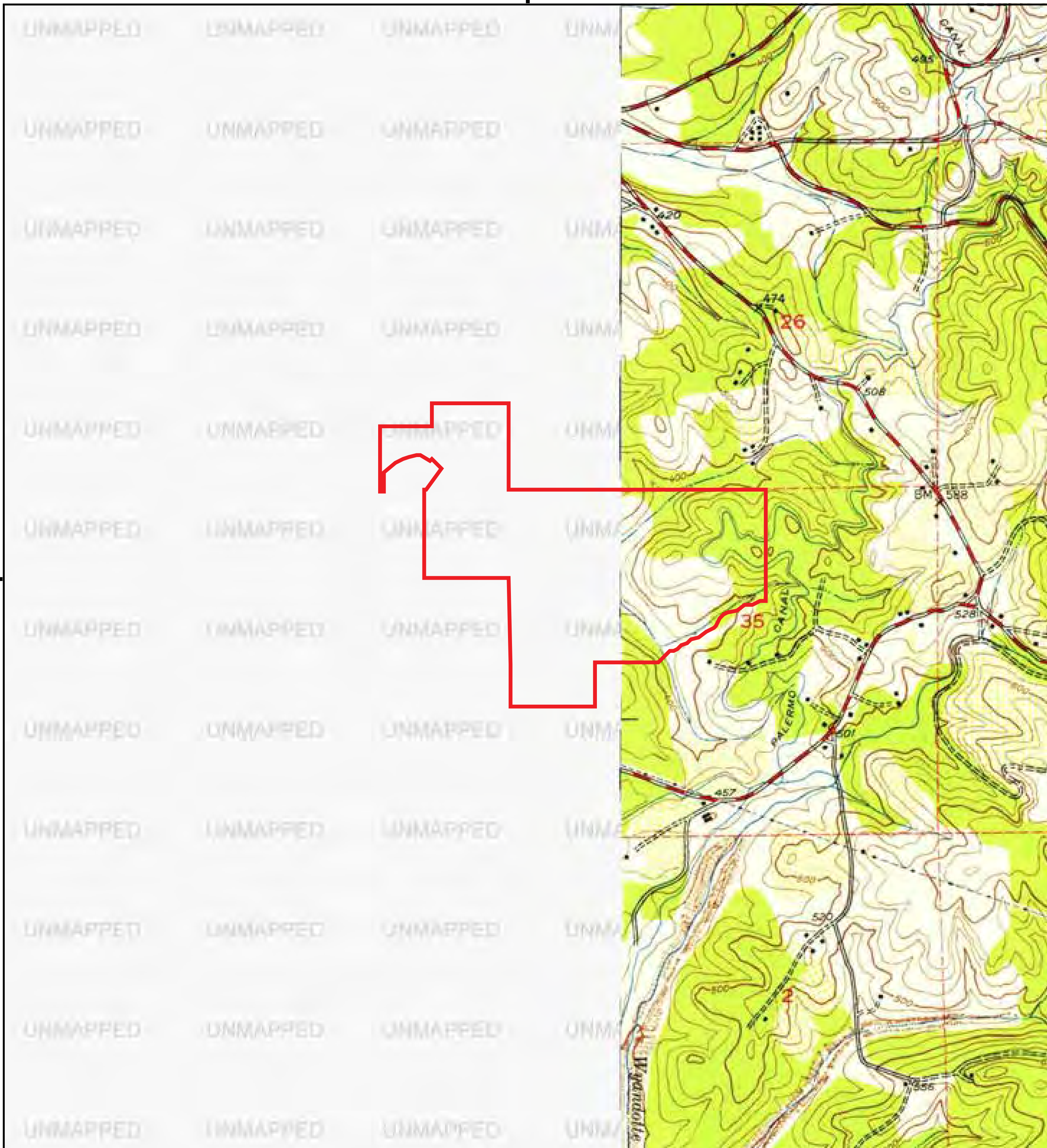


TP, Palermo, 1952, 7.5-minute
SE, Bangor, 1949, 7.5-minute

SITE NAME: Mooretown FTT
ADDRESS: 3 Alverda Drive
Oroville, CA 95966
CLIENT: ANALYTICAL ENVIRONMENTAL SERVI

Historical Topo Map

1947



0 Miles 0.25 0.5 1 1.5

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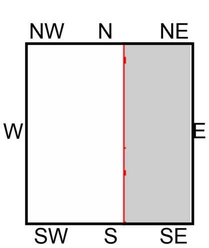
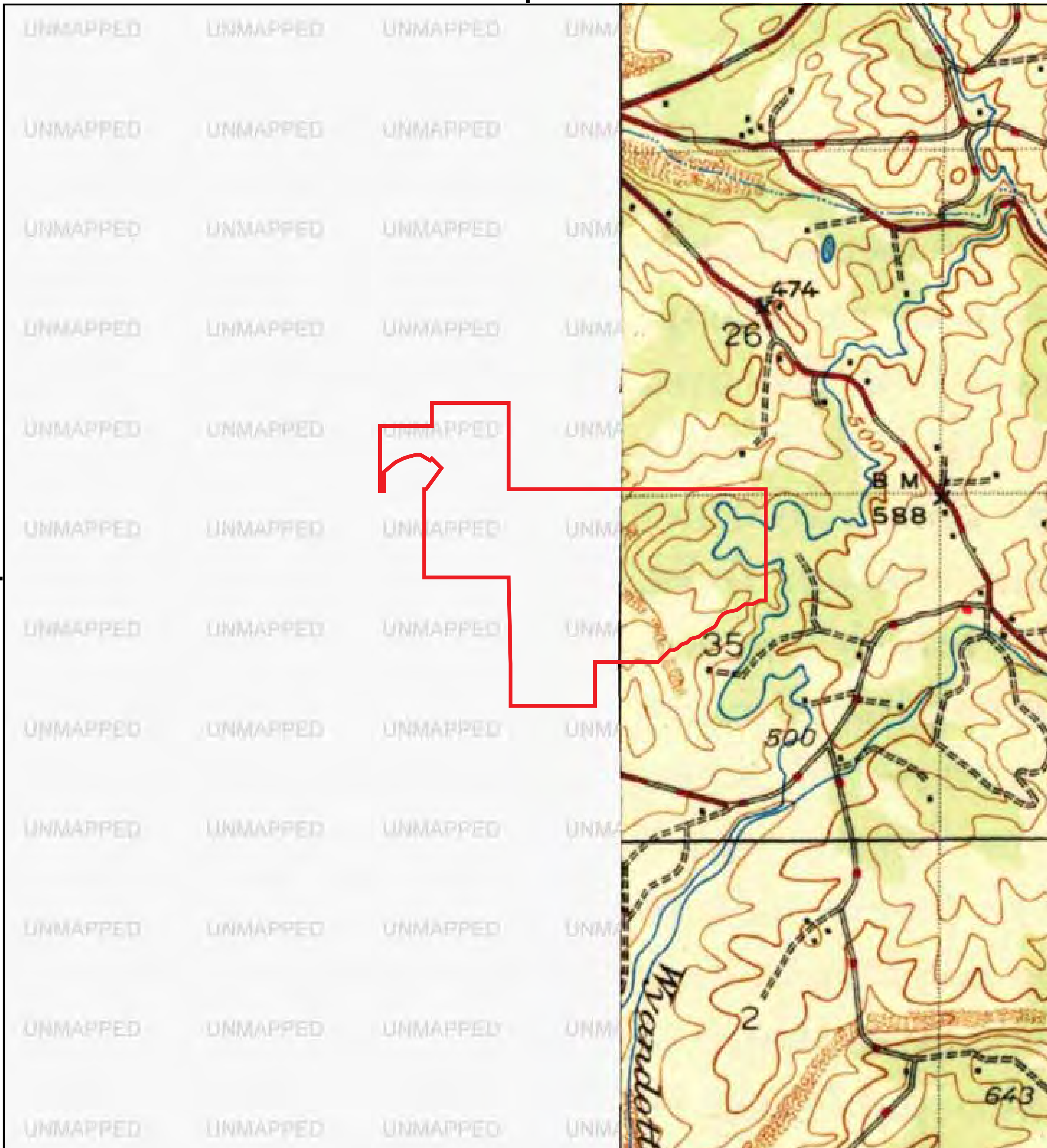


SE, Bangor, 1947, 7.5-minute

SITE NAME: Mooretown FTT
ADDRESS: 3 Alverda Drive
Oroville, CA 95966
CLIENT: ANALYTICAL ENVIRONMENTAL SERVI

Historical Topo Map

1944



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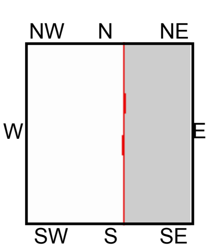
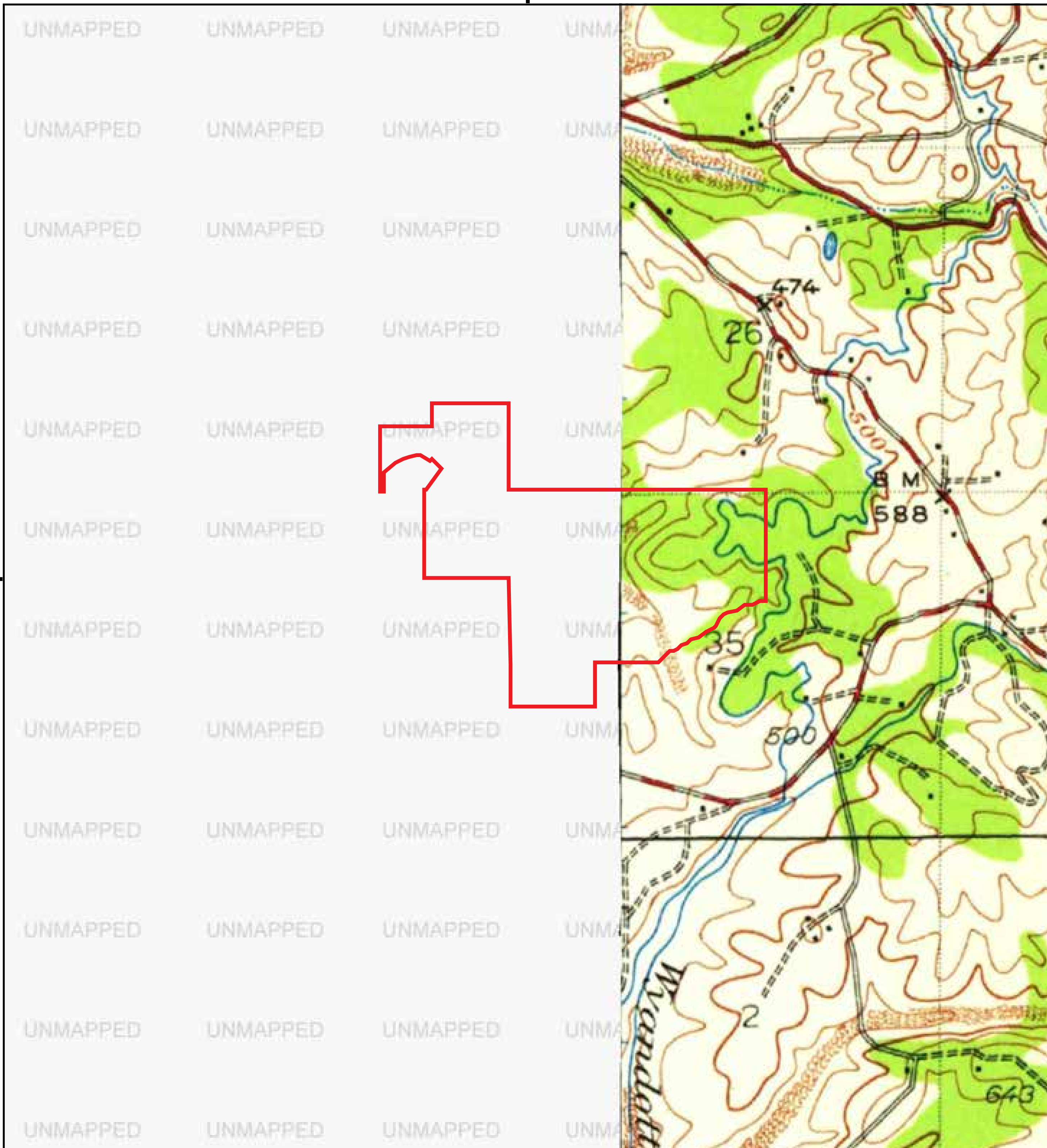


SE, Bangor, 1944, 15-minute

SITE NAME: Mooretown FTT
ADDRESS: 3 Alverda Drive
Oroville, CA 95966
CLIENT: ANALYTICAL ENVIRONMENTAL SERVI

Historical Topo Map

1941



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

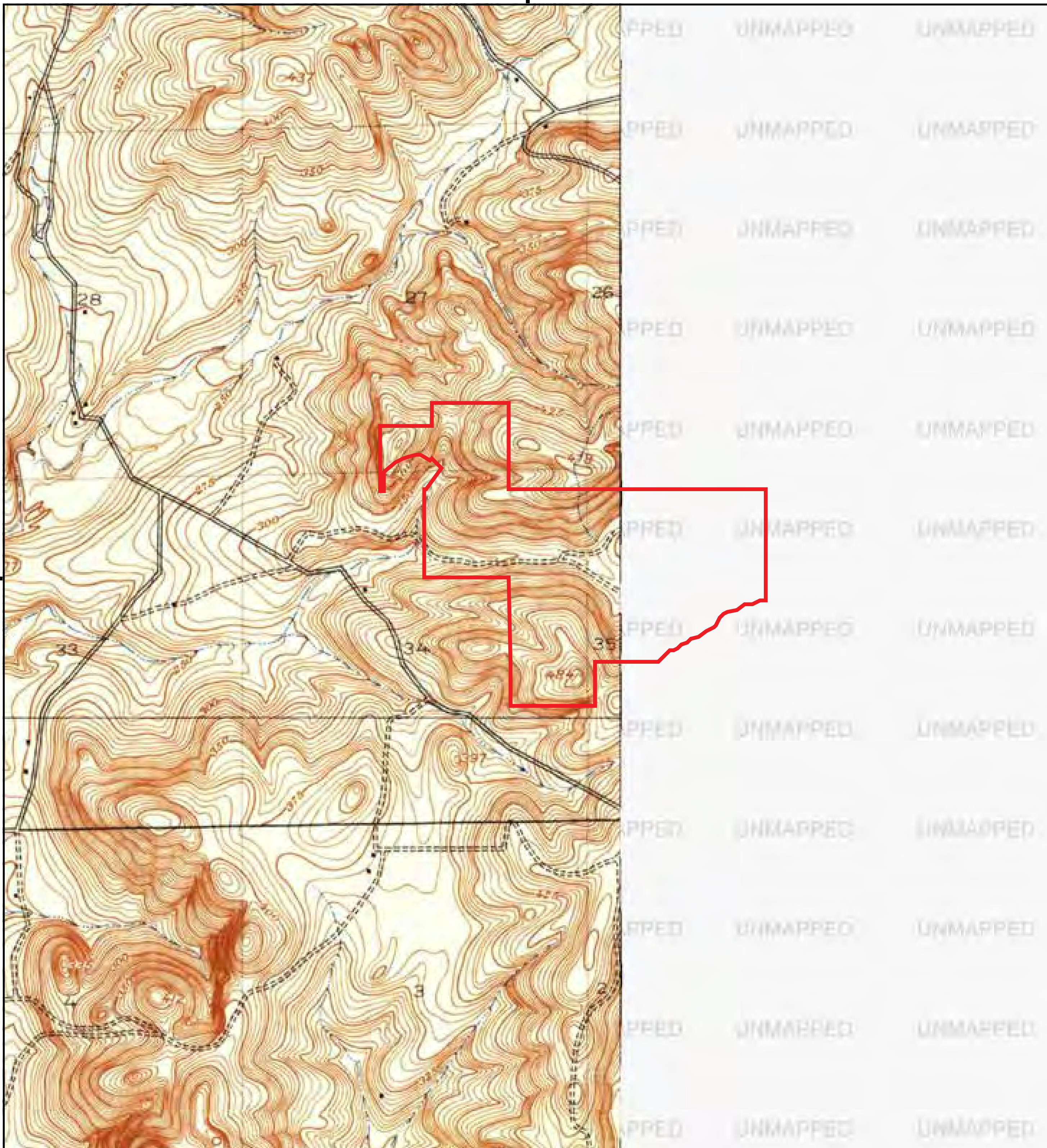
SE, Bangor, 1941, 15-minute

SITE NAME: Mooretown FTT
ADDRESS: 3 Alverda Drive
Oroville, CA 95966
CLIENT: ANALYTICAL ENVIRONMENTAL SERVI

N

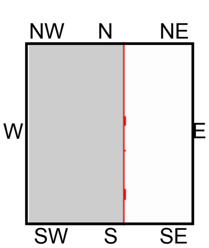
Historical Topo Map

1912



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5



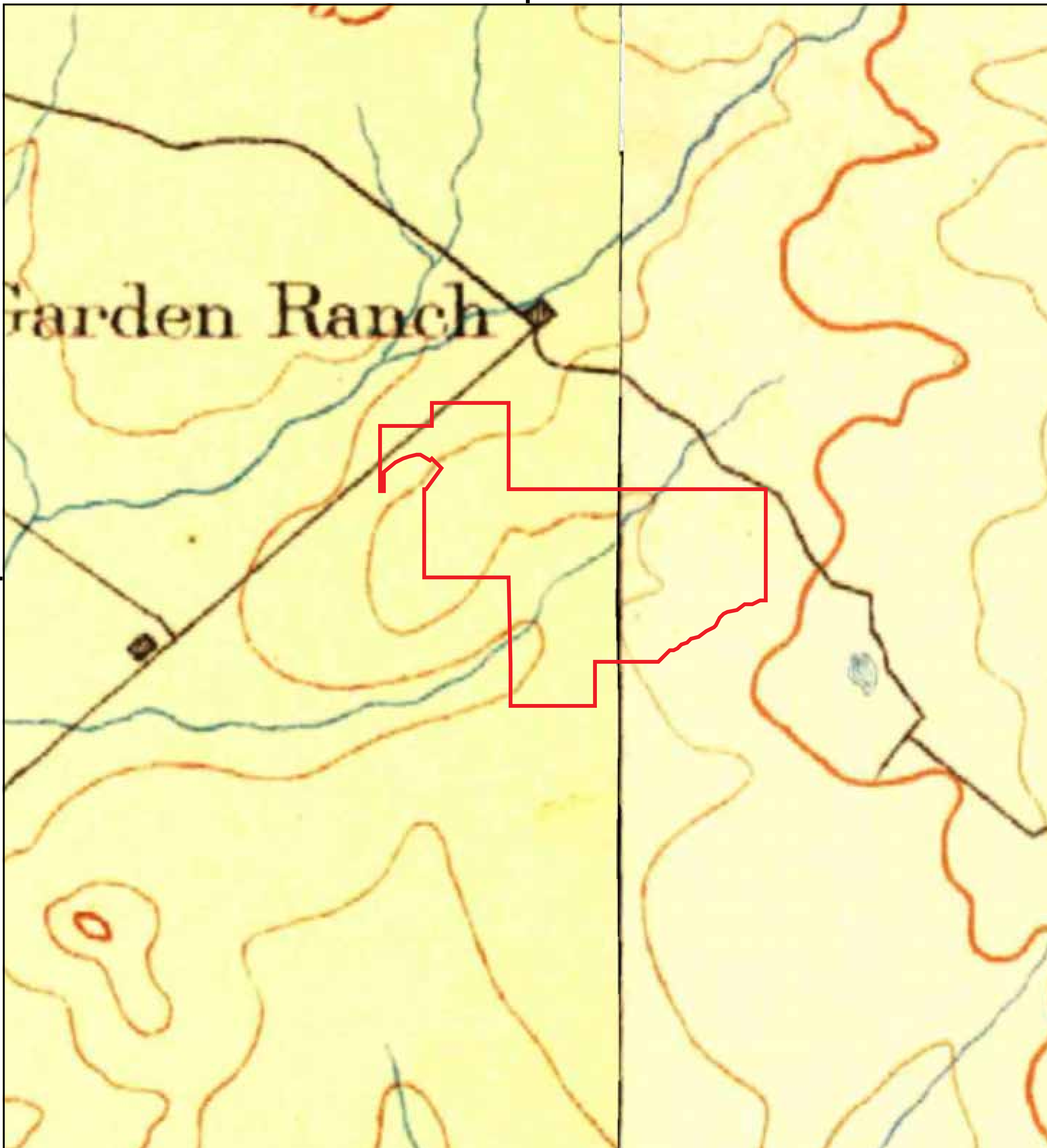
TP, Palermo, 1912, 7.5-minute

SITE NAME: Mooretown FTT
ADDRESS: 3 Alverda Drive
Oroville, CA 95966
CLIENT: ANALYTICAL ENVIRONMENTAL SERVI

N

Historical Topo Map

1895



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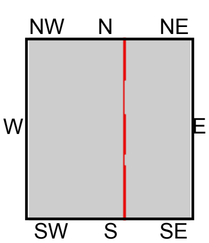
0 Miles 0.25 0.5 1 1.5

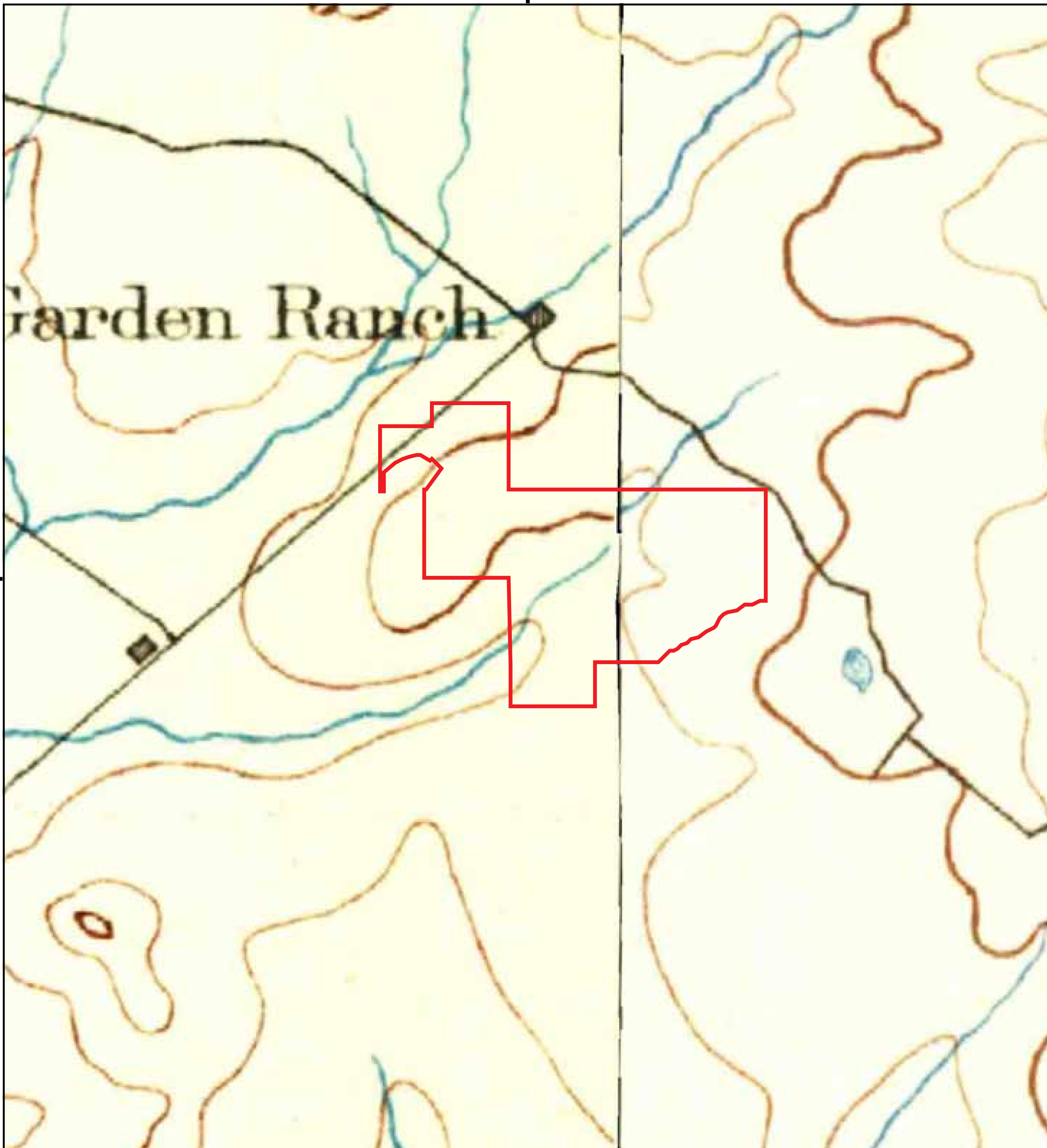


TP, Marysville, 1895, 30-minute
SE, Smartsville, 1895, 30-minute

SITE NAME: Mooretown FTT
ADDRESS: 3 Alverda Drive
Oroville, CA 95966
CLIENT: ANALYTICAL ENVIRONMENTAL SERVI

Historical Topo Map

1894



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

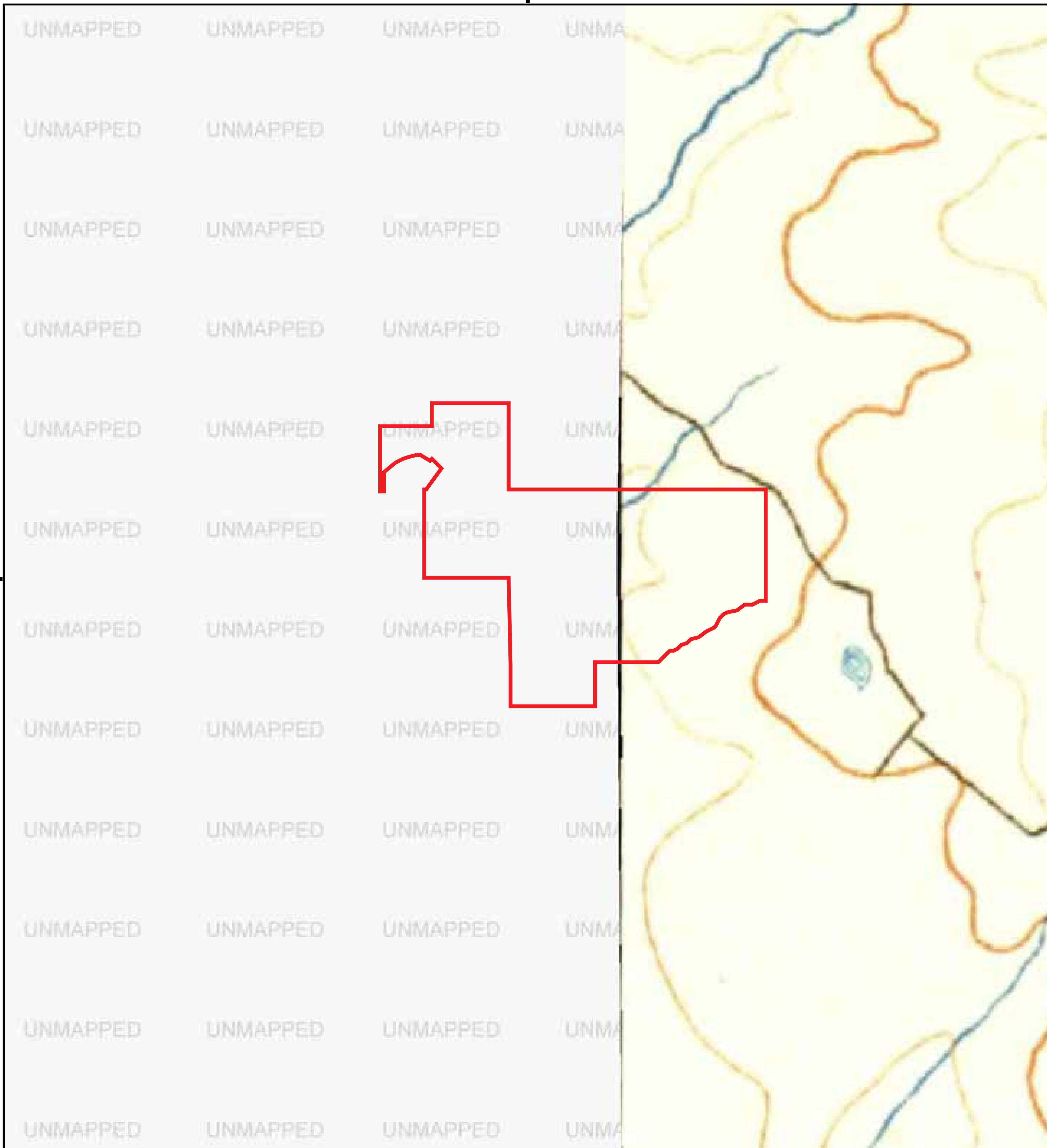
TP, Marysville, 1894, 30-minute
SE, Smartsville, 1894, 30-minute

SITE NAME: Mooretown FTT
ADDRESS: 3 Alverda Drive
Oroville, CA 95966
CLIENT: ANALYTICAL ENVIRONMENTAL SERVI

N

Historical Topo Map

1892



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

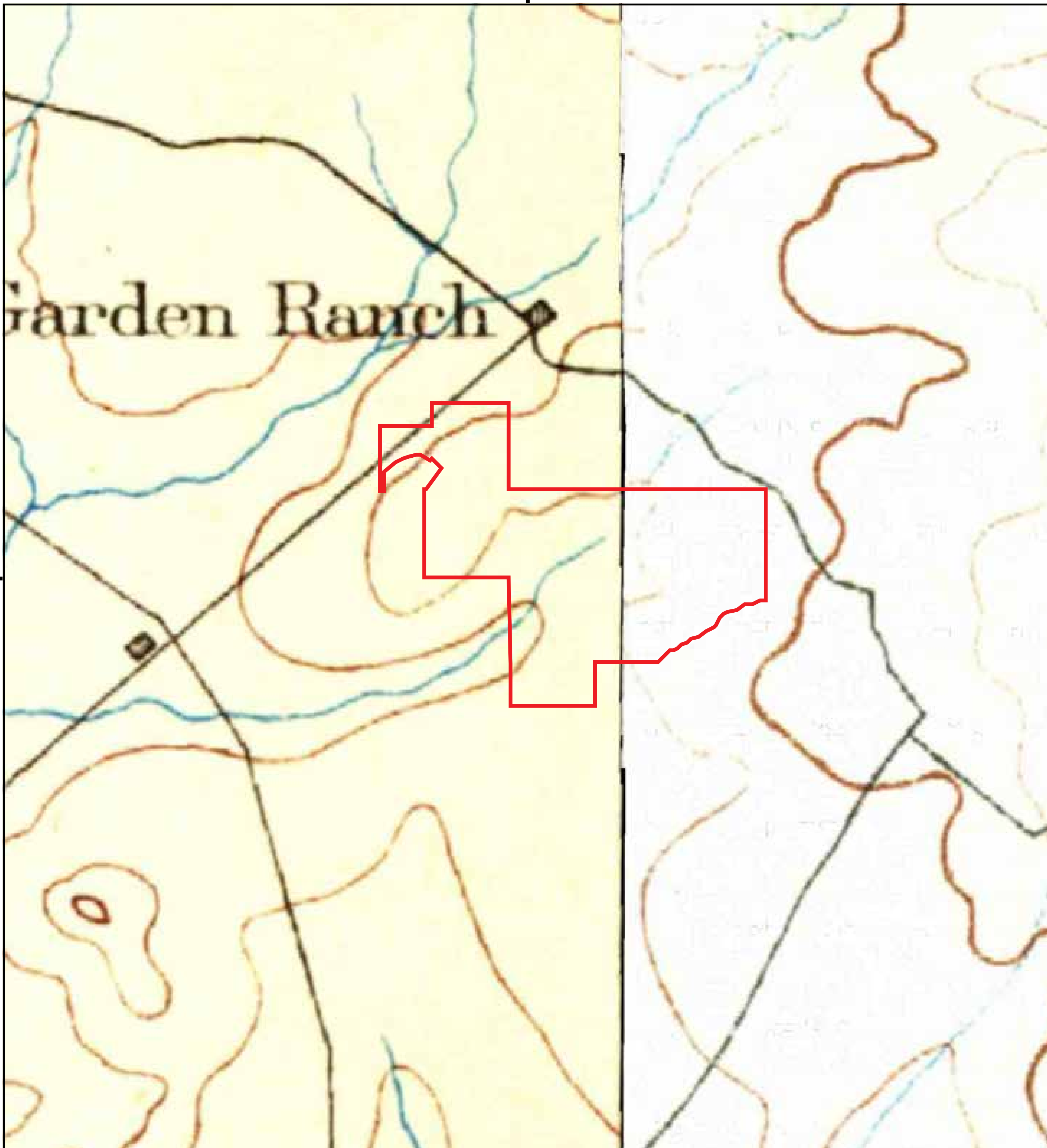
SE, Smartsville, 1892, 30-minute

SITE NAME: Mooretown FTT
ADDRESS: 3 Alverda Drive
Oroville, CA 95966
CLIENT: ANALYTICAL ENVIRONMENTAL SERVI

N

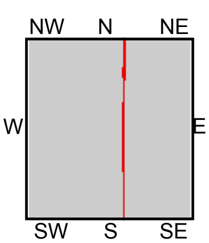
Historical Topo Map

1891



This report includes information from the following map sheet(s).

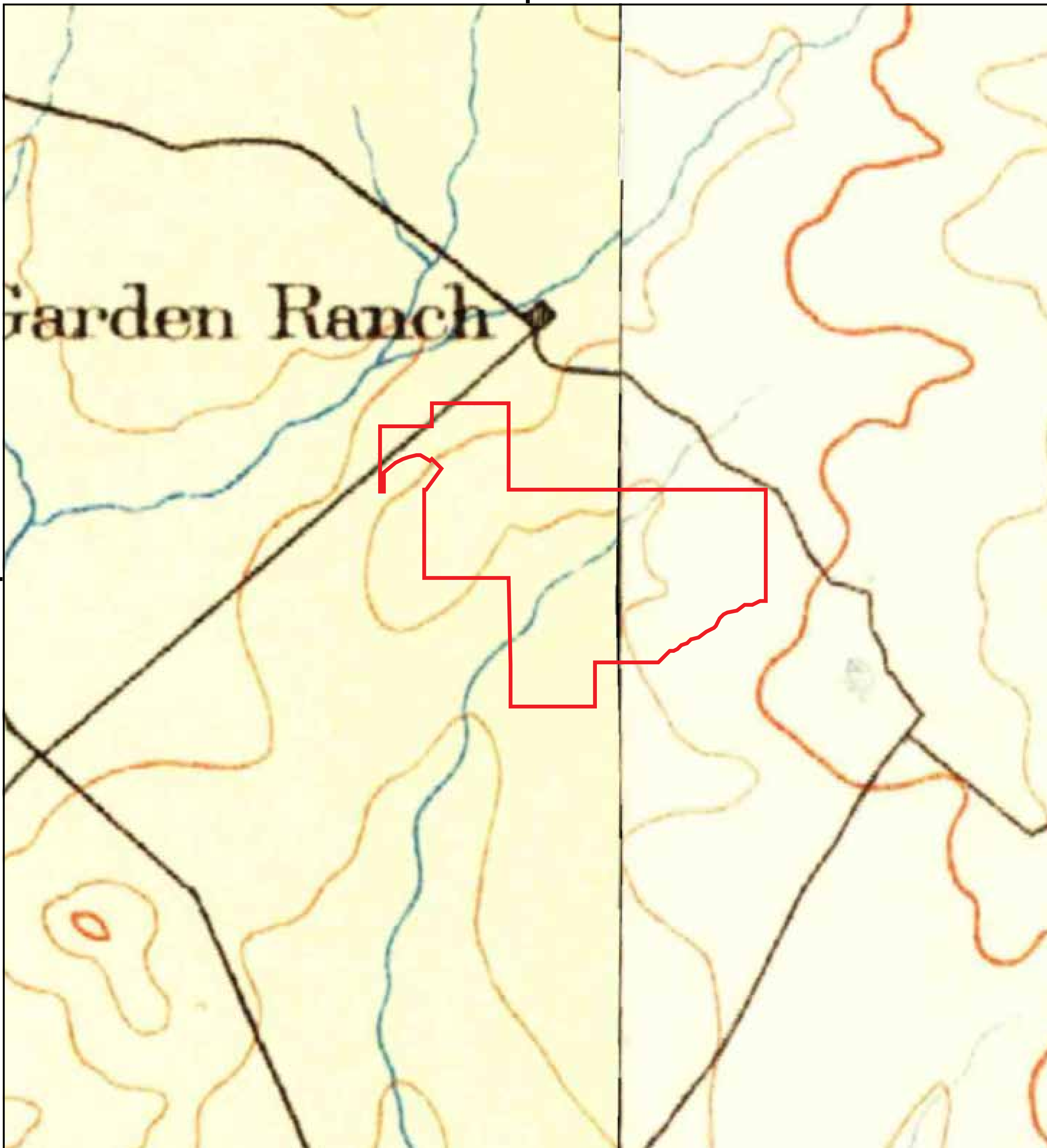
0 Miles 0.25 0.5 1 1.5



TP, Marysville, 1891, 30-minute
SE, Smartsville, 1891, 30-minute

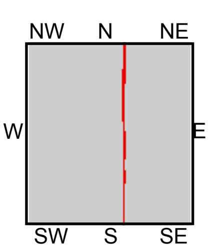
SITE NAME: Mooretown FTT
ADDRESS: 3 Alverda Drive
Oroville, CA 95966
CLIENT: ANALYTICAL ENVIRONMENTAL SERVI

Historical Topo Map



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5



TP, Marysville, 1888, 30-minute
SE, Smartsville, 1888, 30-minute

SITE NAME: Mooretown FTT
ADDRESS: 3 Alverda Drive
Oroville, CA 95966
CLIENT: ANALYTICAL ENVIRONMENTAL SERVI

APPENDIX C

SANBORN NO COVERAGE DOCUMENT

Mooretown FTT

3 Alverda Drive

Oroville, CA 95966

Inquiry Number: 6297938.3

December 10, 2020

Certified Sanborn® Map Report

EDR®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

12/10/20

Site Name:

Mooretown FTT
3 Alverda Drive
Oroville, CA 95966
EDR Inquiry # 6297938.3

Client Name:

ANALYTICAL ENVIRONMENTAL SERVI
1801 7th Street
Sacramento, CA 95811
Contact: Charlane Gross

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by ANALYTICAL ENVIRONMENTAL SERVICES were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 41B9-41C9-980E

PO # NA

Project 220546 Mooretown

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: 41B9-41C9-980E

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ✔ Library of Congress
- ✔ University Publications of America
- ✔ EDR Private Collection

The Sanborn Library LLC Since 1866™

Limited Permission To Make Copies

ANALYTICAL ENVIRONMENTAL SERVICES (the client) is permitted to make up to FIVE photocopies of this Sanborn Map transmittal and each fire insurance map accompanying this report solely for the limited use of its customer. No one other than the client is authorized to make copies. Upon request made directly to an EDR Account Executive, the client may be permitted to make a limited number of additional photocopies. This permission is conditioned upon compliance by the client, its customer and their agents with EDR's copyright policy; a copy of which is available upon request.

APPENDIX D

CITY DIRECTORY IMAGE REPORT

Mooretown FTT
3 Alverda Drive
Oroville, CA 95966

Inquiry Number: 6297938.5
December 15, 2020

The EDR-City Directory Image Report

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available city directory data at 5 year intervals.

RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

EDR is licensed to reproduce certain City Directory works by the copyright holders of those works. The purchaser of this EDR City Directory Report may include it in report(s) delivered to a customer. Reproduction of City Directories without permission of the publisher or licensed vendor may be a violation of copyright.

RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	***Target Street***	***Cross Street***	***Source***
2017	☑	☐	EDR Digital Archive
2014	☑	☐	EDR Digital Archive
2010	☑	☐	EDR Digital Archive
2005	☑	☐	EDR Digital Archive
2000	☑	☐	EDR Digital Archive
1993	☑	☐	Haines Criss-Cross Directory
1986	☐	☐	Haines Criss-Cross Directory
1980	☐	☐	Haines Criss-Cross Directory
1974	☐	☐	Haines Criss-Cross Directory
1970	☐	☐	Haines Criss-Cross Directory

FINDINGS

TARGET PROPERTY STREET

3 Alverda Drive
Oroville, CA 95966

Year	*CD Image*	*Source*	
ALVERDA DR			
2017	pg A1	EDR Digital Archive	
2014	pg A2	EDR Digital Archive	
2010	pg A3	EDR Digital Archive	
2005	pg A4	EDR Digital Archive	
2000	pg A5	EDR Digital Archive	
1993	pg A6	Haines Criss-Cross Directory	
1986	-	Haines Criss-Cross Directory	Street not listed in Source
1980	-	Haines Criss-Cross Directory	Street not listed in Source
1974	-	Haines Criss-Cross Directory	Street not listed in Source
1970	-	Haines Criss-Cross Directory	Street not listed in Source

FINDINGS

CROSS STREETS

No Cross Streets Identified

City Directory Images

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

ALVERDA DR 2017

1	KOA CAMPGROUNDS FEATHER FALLS CASINO
	MOORETOWN RANCHERIA
3	CDN
	FEATHER FALLS CASINO
	KOA KAMPGROUNDS OF AMERICA
10	FEATHER FALLS SMOKE SHOP

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

ALVERDA DR 2014

1	KOA CAMPGROUNDS FEATHER FALLS CASINO
	MOORETOWN RANCHERIA
3	CDN
	FEATHER FALLS CASINO
10	FEATHER FALLS SMOKE SHOP
175	OCCUPANT UNKNOWN,

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

ALVERDA DR 2010

1	MOORETOWN RANCHERIA
3	CDN
	DREAMCATCHER BUFFETFEATHER
	FEATHER FALLS CASINO & LODGE
175	OCCUPANT UNKNOWN,

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

ALVERDA DR 2005

1	FEATHER FALLS MINI MART
	MOORETOWN RANCHERIA
3	MOORETOWN RANCHERIA
175	OCCUPANT UNKNOWN,

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

ALVERDA DR 2000

1	MOORETOWN RANCHERIA
3	C D N
	FEATHER FALLS CASINO
	VILLAGE RESTAURANT AT FEATHER FALLS CASINO
4	FEATHER FALLS GAMING COMMISSION

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

ALVERDA DR 1993

ALVERDA DR (89) 95966
OROVILLE

175	POOLE Manuela	533-7550
	POOLE Thomas A	533-7550

★ 0 BUS 2 RES 0 NEW

APPENDIX E

ENVIRONMENTAL DATA RESOURCES (EDR) REPORT

Mooretown FTT
3 Alverda Drive
Oroville, CA 95966

Inquiry Number: 6297938.2s
December 10, 2020

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

3 ALVERDA DRIVE
OROVILLE, CA 95966

COORDINATES

Latitude (North):	39.4640890 - 39˚ 27' 50.72''
Longitude (West):	121.5061010 - 121˚ 30' 21.96''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	628516.2
UTM Y (Meters):	4369135.0
Elevation:	352 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5603344 PALERMO, CA
Version Date:	2012
Southeast Map:	5603372 BANGOR, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140725
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
3 ALVERDA DRIVE
OROVILLE, CA 95966

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	3 ALVERDA DRIVE	3 ALVERDA DRIVE	US CDL		TP

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following records. For more information on this property see page 9 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
3 ALVERDA DRIVE 3 ALVERDA DRIVE OROVILLE, CA	US CDL	N/A

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL........................... National Priority List
Proposed NPL................ Proposed National Priority List Sites
NPL LIENS.................... Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL.................. National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY.......... Federal Facility Site Information listing
SEMS......................... Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE............... Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS..................... Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF.................... RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG..................... RCRA - Large Quantity Generators

RCRA-SQG - - - - - - - - - - - - - - - - - - RCRA - Small Quantity Generators
RCRA-VSQG - - - - - - - - - - - - - - - - - RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS - Land Use Control Information System
US ENG CONTROLS - - - - - - - - - Engineering Controls Sites List
US INST CONTROLS - - - - - - - - Institutional Controls Sites List

Federal ERNS list

ERNS - Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE - - - - - - - - - - - - - - - - - - State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR - - - - - - - - - - - - - - - EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF - Solid Waste Information System

State and tribal leaking storage tank lists

LUST - Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST - - - - - - - - - - - - - - - - Leaking Underground Storage Tanks on Indian Land
CPS-SLIC - Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST - - - - - - - - - - - - - - - - - - - Underground Storage Tank Listing
UST - Active UST Facilities
AST - Aboveground Petroleum Storage Tank Facilities
INDIAN UST - - - - - - - - - - - - - - - - - - Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP - - - - - - - - - - - - - - - - - - Voluntary Cleanup Priority Listing
VCP - Voluntary Cleanup Program Properties

State and tribal Brownfields sites

BROWNFIELDS - - - - - - - - - - - - - - Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS - - - - - - - - - - A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT - - - - - - - - - - - - - - - Waste Management Unit Database

EXECUTIVE SUMMARY

SWRCY	Recycler Database
HAULERS	Registered Waste Tire Haulers Listing
INDIAN ODI	Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations
ODI	Open Dump Inventory
IHS OPEN DUMPS	Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL	Delisted National Clandestine Laboratory Register
HIST Cal-Sites	Historical Calsites Database
SCH	School Property Evaluation Program
CDL	Clandestine Drug Labs
Toxic Pits	Toxic Pits Cleanup Act Sites
CERS HAZ WASTE	CERS HAZ WASTE
PFAS	PFAS Contamination Site Location Listing

Local Lists of Registered Storage Tanks

SWEEPS UST	SWEEPS UST Listing
HIST UST	Hazardous Substance Storage Container Database
CA FID UST	Facility Inventory Database
CERS TANKS	California Environmental Reporting System (CERS) Tanks

Local Land Records

LIENS	Environmental Liens Listing
LIENS 2	CERCLA Lien Information
DEED	Deed Restriction Listing

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
CHMIRS	California Hazardous Material Incident Report System
LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated
FUDS	Formerly Used Defense Sites
DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System

EXECUTIVE SUMMARY

ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
FINDS	Facility Index System/Facility Registry System
DOCKET HWC	Hazardous Waste Compliance Docket Listing
UXO	Unexploded Ordnance Sites
ECHO	Enforcement & Compliance History Information
FUELS PROGRAM	EPA Fuels Program Registered Listing
CA BOND EXP. PLAN	Bond Expenditure Plan
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
DRYCLEANERS	Cleaner Facilities
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
HAZNET	Facility and Manifest Data
ICE	ICE
HIST CORTESE	Hazardous Waste & Substance Site List
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
NPDES	NPDES Permits Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
Notify 65	Proposition 65 Records
UIC	UIC Listing
UIC GEO	UIC GEO (GEOTRACKER)
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List
MILITARY PRIV SITES	MILITARY PRIV SITES (GEOTRACKER)
PROJECT	PROJECT (GEOTRACKER)
WDR	Waste Discharge Requirements Listing
CIWQS	California Integrated Water Quality System
CERS	CERS
NON-CASE INFO	NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS	OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS	PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT	SAMPLING POINT (GEOTRACKER)

WELL STIM PROJ - - - - - - - - - - - - Well Stimulation Project (GEOTRACKER)
HWTS - Hazardous Waste Tracking System
MINES MRDS - - - - - - - - - - - - - - - - Mineral Resources Data System

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP - EDR Proprietary Manufactured Gas Plants
EDR Hist Auto - - - - - - - - - - - - - - - - EDR Exclusive Historical Auto Stations
EDR Hist Cleaner - - - - - - - - - - - - - EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF - Recovered Government Archive Solid Waste Facilities List
RGA LUST - - - - - - - - - - - - - - - - - - - Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

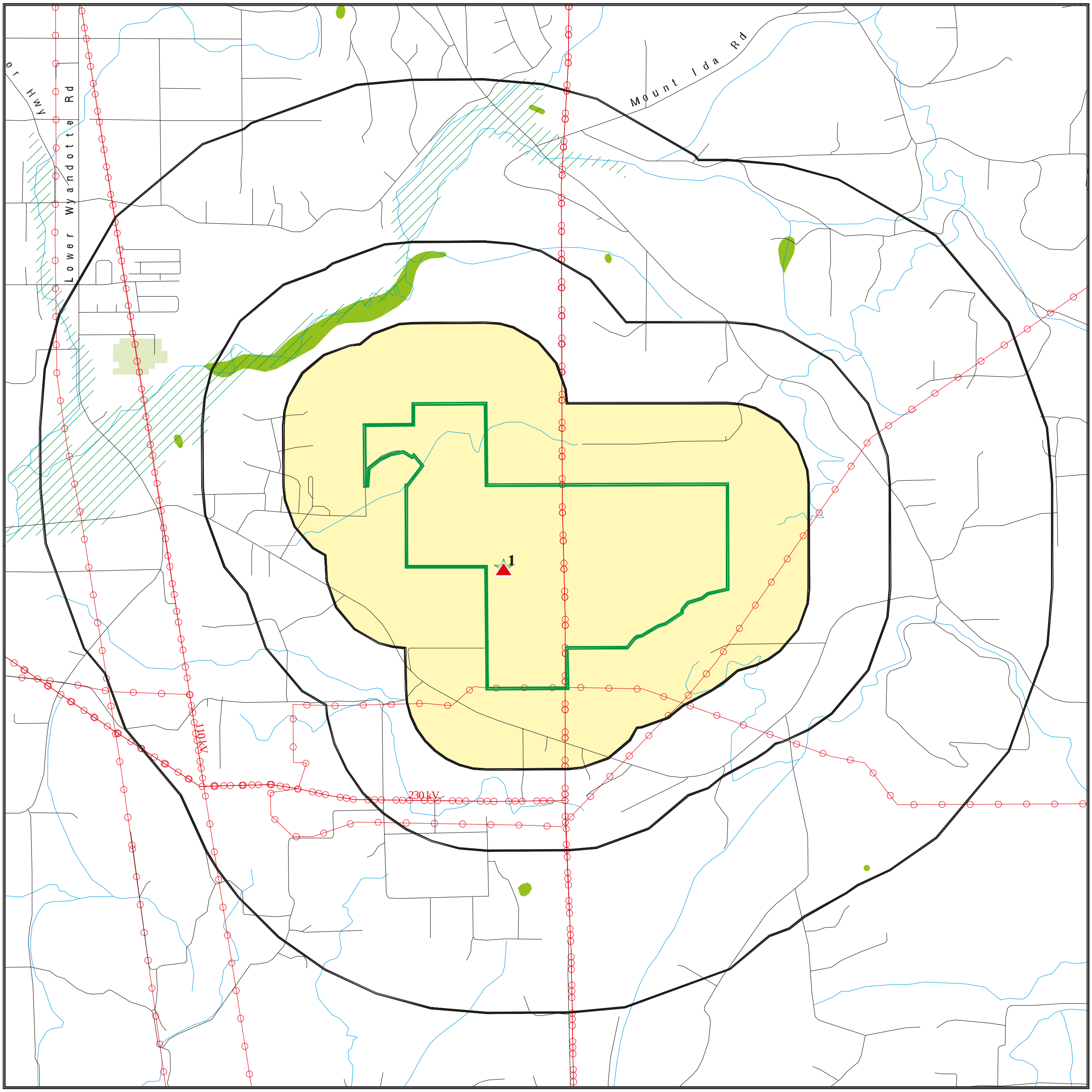
Surrounding sites were not identified.

Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

There were no unmapped sites in this report.

OVERVIEW MAP - 6297938.2S



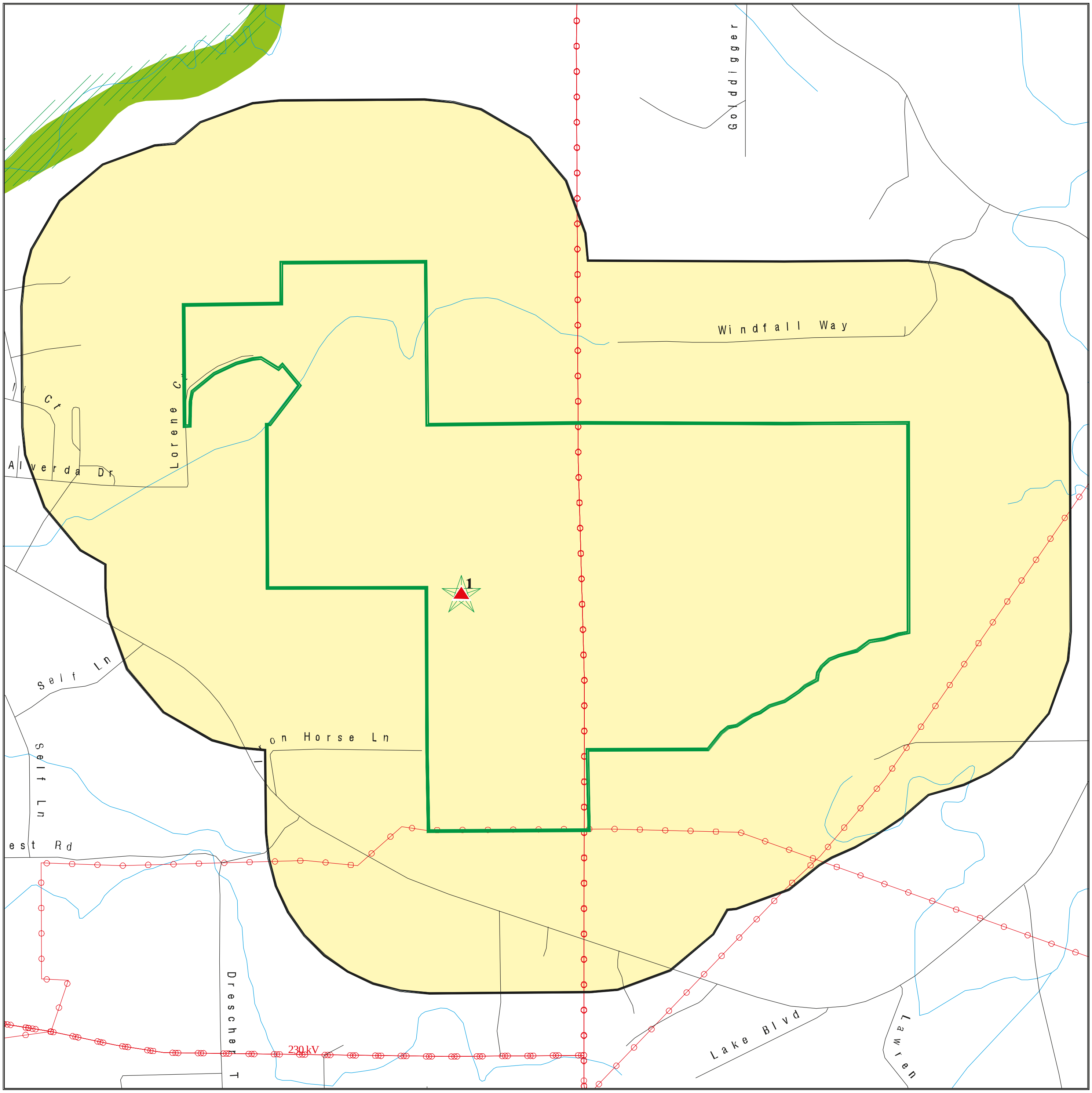
0 1/4 1/2 1 Miles

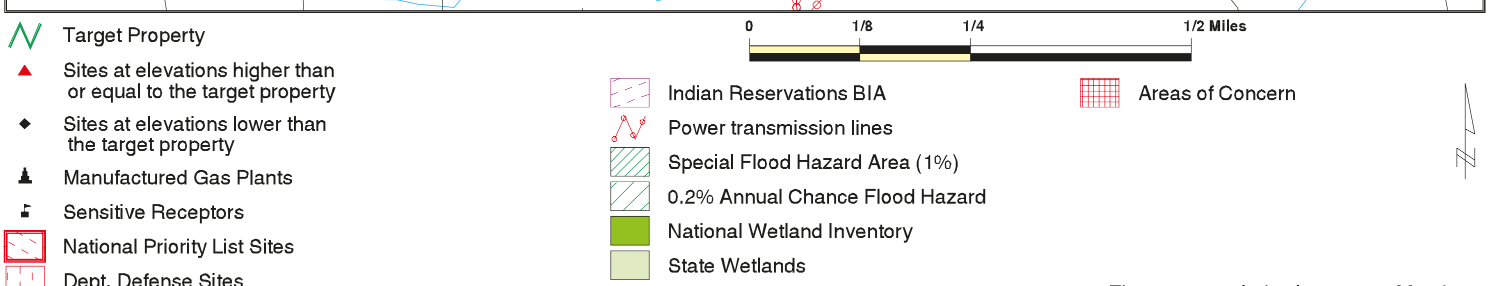
- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Mooretown FTT	CLIENT:	ANALYTICAL ENVIRONMENTAL SERVICES
ADDRESS:	3 Alverda Drive	CONTACT:	Charlane Gross
	Oroville CA 95966	INQUIRY #:	6297938.2s
LAT/LONG:	39.464089 / 121.506101	DATE:	December 10, 2020 8:21 pm

DETAIL MAP - 6297938.2S





This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Mooretown FTT	CLIENT:	ANALYTICAL ENVIRONMENTAL SERVICES
ADDRESS:	3 Alverda Drive	CONTACT:	Charlane Gross
	Oroville CA 95966	INQUIRY #:	6297938.2s
LAT/LONG:	39.464089 / 121.506101	DATE:	December 10, 2020 8:22 pm

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROLS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
US CDL	0.001	1	0	NR	NR	NR	NR	1
PFAS	0.500		0	0	0	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
CERS TANKS	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LIENS 2	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001		0	NR	NR	NR	NR	0
CERS	0.001		0	NR	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
HWTS	TP		NR	NR	NR	NR	NR	0
MINES MRDS	0.001		0	NR	NR	NR	NR	0

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		1	0	0	0	0	0	1

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

MAP FINDINGS

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number
1 Target Property	**3 ALVERDA DRIVE 3 ALVERDA DRIVE OROVILLE, CA**	**US CDL**	**1012055777 N/A**

Actual:
352 ft.

US CDL:

Address:	3 ALVERDA DRIVE
City:	OROVILLE
State:	CA
Seizure Date:	05/13/2008
Address:	3 ALVERDA DRIVE
City:	OROVILLE
State:	CA
Seizure Date:	05/13/2008

Count: 0 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
		NO SITES FOUND			

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 20

Source: EPA
Telephone: N/A
Last EDR Contact: 12/02/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 3
Telephone 215-814-5418

EPA Region 4
Telephone 404-562-8033

EPA Region 5
Telephone 312-886-6686

EPA Region 10
Telephone 206-553-8665

EPA Region 6
Telephone: 214-655-6659

EPA Region 7
Telephone: 913-551-7247

EPA Region 8
Telephone: 303-312-6774

EPA Region 9
Telephone: 415-947-4246

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 20

Source: EPA
Telephone: N/A
Last EDR Contact: 12/02/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 20

Source: EPA
Telephone: N/A
Last EDR Contact: 12/02/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 04/03/2019
Date Data Arrived at EDR: 04/05/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 20

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/02/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 20

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/02/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 87

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/18/2020
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/18/2020
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA’s comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/18/2020
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

RCRAInfo is EPA’s comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/18/2020
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 08/06/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 11/11/2020
Number of Days to Update: 82

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/18/2020
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/18/2020
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 87

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 07/27/2020
Date Data Arrived at EDR: 07/27/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 73

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/26/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 07/27/2020
Date Data Arrived at EDR: 07/27/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 73

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/26/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 05/11/2020
Date Data Arrived at EDR: 05/12/2020
Date Made Active in Reports: 07/27/2020
Number of Days to Update: 76

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 11/10/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List
Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List
Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)
Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land

A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/29/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/26/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 78

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 04/15/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)

Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: No Update Planned

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 07/21/2020
Date Data Arrived at EDR: 09/03/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 83

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

MILITARY UST SITES: Military UST Sites (GEOTRACKER)
Military ust sites

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Semi-Annually

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases
UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 09/03/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 12/03/2020
Number of Days to Update: 86

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 12/08/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 12/09/2020
Next Scheduled EDR Contact: 03/29/2021
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 85

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/29/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 04/03/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/26/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 78

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 09/16/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties
Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 07/27/2020
Date Data Arrived at EDR: 07/27/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 73

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/26/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Quarterly

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 06/22/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/04/2020
Number of Days to Update: 74

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/01/2020
Date Data Arrived at EDR: 06/02/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 09/15/2020
Next Scheduled EDR Contact: 12/28/2020
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 10/20/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 12/08/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 05/28/2020
Date Data Arrived at EDR: 05/29/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 75

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 10/20/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Varies

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land

A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 10/30/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 03/18/2020
Date Data Arrived at EDR: 03/19/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 07/27/2020
Date Data Arrived at EDR: 07/27/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 73

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/26/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 06/30/2019
Date Data Arrived at EDR: 05/28/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Varies

CERS HAZ WASTE: CERS HAZ WASTE

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 07/20/2020
Date Data Arrived at EDR: 07/21/2020
Date Made Active in Reports: 10/07/2020
Number of Days to Update: 78

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 03/18/2020
Date Data Arrived at EDR: 03/19/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Quarterly

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 12/01/2020
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/08/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990’s. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 05/20/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/06/2020
Number of Days to Update: 78

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing
Aboveground storage tank sites

Date of Government Version: 08/03/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/22/2020
Number of Days to Update: 78

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

CERS TANKS: California Environmental Reporting System (CERS) Tanks
List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 07/20/2020
Date Data Arrived at EDR: 07/21/2020
Date Made Active in Reports: 10/07/2020
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Quarterly

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 08/26/2020
Date Data Arrived at EDR: 08/28/2020
Date Made Active in Reports: 11/17/2020
Number of Days to Update: 81

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/23/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 20

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 12/02/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 08/31/2020
Date Data Arrived at EDR: 08/31/2020
Date Made Active in Reports: 11/20/2020
Number of Days to Update: 81

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 12/01/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 06/22/2020
Date Data Arrived at EDR: 06/23/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 86

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 06/30/2020
Date Data Arrived at EDR: 07/21/2020
Date Made Active in Reports: 10/07/2020
Number of Days to Update: 78

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/18/2020
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 08/05/2020
Date Data Arrived at EDR: 08/13/2020
Date Made Active in Reports: 10/21/2020
Number of Days to Update: 69

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 11/17/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 10/08/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 11/09/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 80

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 11/02/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 11/06/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/17/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 85

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 09/18/2020
Next Scheduled EDR Contact: 12/28/2020
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2018	Source: EPA
Date Data Arrived at EDR: 08/14/2020	Telephone: 202-566-0250
Date Made Active in Reports: 11/04/2020	Last EDR Contact: 11/17/2020
Number of Days to Update: 82	Next Scheduled EDR Contact: 03/01/2021
	Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 07/20/2020	Source: EPA
Date Data Arrived at EDR: 07/21/2020	Telephone: 202-564-4203
Date Made Active in Reports: 10/08/2020	Last EDR Contact: 10/19/2020
Number of Days to Update: 79	Next Scheduled EDR Contact: 02/01/2021
	Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 10/28/2020	Source: EPA
Date Data Arrived at EDR: 11/05/2020	Telephone: 703-416-0223
Date Made Active in Reports: 11/25/2020	Last EDR Contact: 12/02/2020
Number of Days to Update: 20	Next Scheduled EDR Contact: 03/15/2021
	Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 07/24/2020	Source: Environmental Protection Agency
Date Data Arrived at EDR: 08/03/2020	Telephone: 202-564-8600
Date Made Active in Reports: 10/21/2020	Last EDR Contact: 10/14/2020
Number of Days to Update: 79	Next Scheduled EDR Contact: 02/01/2021
	Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995	Source: EPA
Date Data Arrived at EDR: 07/03/1995	Telephone: 202-564-4104
Date Made Active in Reports: 08/07/1995	Last EDR Contact: 06/02/2008
Number of Days to Update: 35	Next Scheduled EDR Contact: 09/01/2008
	Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 34

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 12/02/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 10/09/2019
Date Data Arrived at EDR: 10/11/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 70

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/05/2020
Date Data Arrived at EDR: 08/10/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 59

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 10/12/2020
Next Scheduled EDR Contact: 01/31/2021
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

COAL ASH DOE: Steam-Electric Plant Operation Data

A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 42

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 12/01/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List

A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 11/30/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database

The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 11/06/2021
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 09/24/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data
Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 10/27/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees
Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 06/30/2020
Date Data Arrived at EDR: 07/15/2020
Date Made Active in Reports: 07/21/2020
Number of Days to Update: 6

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Varies

BRS: Biennial Reporting System
The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 11/20/2020
Number of Days to Update: 151

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations
This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 10/06/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program
DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 11/06/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites
Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 11/20/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites
A listing of former lead smelter site locations.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 20

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 12/02/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites
A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)
The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

MINES VIOLATIONS: MSHA Violation Assessment Data
Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 09/10/2020
Date Data Arrived at EDR: 09/15/2020
Date Made Active in Reports: 11/20/2020
Number of Days to Update: 66

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 11/24/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Quarterly

US MINES: Mines Master Index File
Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/04/2020
Date Data Arrived at EDR: 08/25/2020
Date Made Active in Reports: 11/18/2020
Number of Days to Update: 85

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 11/23/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 05/06/2020
Date Data Arrived at EDR: 05/27/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 78

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/25/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/25/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 06/22/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 80

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 12/01/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 09/04/2020
Date Data Arrived at EDR: 09/15/2020
Date Made Active in Reports: 11/20/2020
Number of Days to Update: 66

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 12/01/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Quarterly

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 06/27/2020
Date Data Arrived at EDR: 07/02/2020
Date Made Active in Reports: 09/28/2020
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 10/06/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 71

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 11/17/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Varies

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 07/02/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 77

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 10/08/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 08/17/2020
Date Data Arrived at EDR: 08/17/2020
Date Made Active in Reports: 10/21/2020
Number of Days to Update: 65

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 11/13/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 06/22/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/04/2020
Number of Days to Update: 74

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 09/23/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing

list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/14/2019
Date Made Active in Reports: 07/17/2019
Number of Days to Update: 64

Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 11/13/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: Varies

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 08/19/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 09/04/2020
Number of Days to Update: 14

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Varies

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 08/25/2020
Date Data Arrived at EDR: 08/26/2020
Date Made Active in Reports: 11/13/2020
Number of Days to Update: 79

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 11/23/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Varies

DRYCLEANERS: Cleaner Facilities
A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 08/06/2020
Date Data Arrived at EDR: 08/28/2020
Date Made Active in Reports: 11/17/2020
Number of Days to Update: 81

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 11/23/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Annually

EMI: Emissions Inventory Data
Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 06/16/2020
Date Made Active in Reports: 08/28/2020
Number of Days to Update: 73

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 09/18/2020
Next Scheduled EDR Contact: 12/28/2020
Data Release Frequency: Varies

ENF: Enforcement Action Listing
A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 07/20/2020
Date Data Arrived at EDR: 07/21/2020
Date Made Active in Reports: 10/07/2020
Number of Days to Update: 78

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 07/13/2020
Date Data Arrived at EDR: 07/16/2020
Date Made Active in Reports: 09/29/2020
Number of Days to Update: 75

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 08/05/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 79

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 11/04/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 04/15/2020
Date Made Active in Reports: 07/02/2020
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 10/05/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 08/17/2020
Date Data Arrived at EDR: 08/17/2020
Date Made Active in Reports: 11/05/2020
Number of Days to Update: 80

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 11/13/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing

Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/17/2020
Date Data Arrived at EDR: 08/17/2020
Date Made Active in Reports: 11/05/2020
Number of Days to Update: 80

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/13/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database

A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 07/06/2020
Date Data Arrived at EDR: 07/07/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 72

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 10/06/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 12/08/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 08/31/2020
Date Data Arrived at EDR: 08/31/2020
Date Made Active in Reports: 11/20/2020
Number of Days to Update: 81

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 12/01/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 08/10/2020
Date Data Arrived at EDR: 08/10/2020
Date Made Active in Reports: 10/29/2020
Number of Days to Update: 80

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 11/09/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 08/31/2020
Date Data Arrived at EDR: 08/31/2020
Date Made Active in Reports: 11/20/2020
Number of Days to Update: 81

Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 12/01/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 12/01/2020
Number of Days to Update: 84

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 12/08/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 08/21/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 08/27/2020
Number of Days to Update: 6

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 12/07/2020
Next Scheduled EDR Contact: 03/29/2021
Data Release Frequency: No Update Planned

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 12/01/2020
Number of Days to Update: 84

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 12/08/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region’s active disposal pits are operating without permission.

Date of Government Version: 11/19/2019
Date Data Arrived at EDR: 01/07/2020
Date Made Active in Reports: 03/09/2020
Number of Days to Update: 62

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 10/09/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 11/13/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: No Update Planned

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 09/16/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: No Update Planned

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing

In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 12/01/2020
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 12/08/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System

The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 08/31/2020
Date Data Arrived at EDR: 08/31/2020
Date Made Active in Reports: 11/20/2020
Number of Days to Update: 81

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 12/01/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data

The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 07/20/2020
Date Data Arrived at EDR: 07/21/2020
Date Made Active in Reports: 10/07/2020
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)
Produced water ponds sites

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)
Sampling point - public sites

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)
Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

PCS: Permit Compliance System
PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 07/14/2011
Date Data Arrived at EDR: 08/05/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 55

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Semi-Annually

PCS INACTIVE: Listing of Inactive PCS Permits
An inactive permit is a facility that has shut down or is no longer discharging.

Date of Government Version: 11/05/2014
Date Data Arrived at EDR: 01/06/2015
Date Made Active in Reports: 05/06/2015
Number of Days to Update: 120

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Semi-Annually

PCS ENF: Enforcement data
No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Varies

MINES MRDS: Mineral Resources Data System
Mineral Resources Data System

Date of Government Version: 04/06/2018	Source: USGS
Date Data Arrived at EDR: 10/21/2019	Telephone: 703-648-6533
Date Made Active in Reports: 10/24/2019	Last EDR Contact: 11/25/2020
Number of Days to Update: 3	Next Scheduled EDR Contact: 03/08/2021
	Data Release Frequency: Varies

HWTS: Hazardous Waste Tracking System

DTSC maintains the Hazardous Waste Tracking System that stores ID number information since the early 1980s and manifest data since 1993. The system collects both manifest copies from the generator and destination facility.

Date of Government Version: 10/13/2020	Source: Department of Toxic Substances Control
Date Data Arrived at EDR: 10/14/2020	Telephone: 916-324-2444
Date Made Active in Reports: 11/03/2020	Last EDR Contact: 10/01/2020
Number of Days to Update: 20	Next Scheduled EDR Contact: 01/18/2021
	Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A	Source: EDR, Inc.
Date Data Arrived at EDR: N/A	Telephone: N/A
Date Made Active in Reports: N/A	Last EDR Contact: N/A
Number of Days to Update: N/A	Next Scheduled EDR Contact: N/A
	Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A	Source: EDR, Inc.
Date Data Arrived at EDR: N/A	Telephone: N/A
Date Made Active in Reports: N/A	Last EDR Contact: N/A
Number of Days to Update: N/A	Next Scheduled EDR Contact: N/A
	Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 06/30/2020
Date Data Arrived at EDR: 07/01/2020
Date Made Active in Reports: 07/17/2020
Number of Days to Update: 16

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CUPA AMADOR: CUPA Facility List
Cupa Facility List

Date of Government Version: 05/18/2020
Date Data Arrived at EDR: 05/19/2020
Date Made Active in Reports: 06/01/2020
Number of Days to Update: 13

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 06/17/2020
Date Data Arrived at EDR: 06/18/2020
Date Made Active in Reports: 09/02/2020
Number of Days to Update: 76

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/06/2020
Date Data Arrived at EDR: 04/23/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 78

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 07/16/2020
Date Data Arrived at EDR: 07/22/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 78

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 10/20/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 08/13/2020
Date Made Active in Reports: 10/22/2020
Number of Days to Update: 70

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 10/20/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/13/2020
Date Data Arrived at EDR: 08/13/2020
Date Made Active in Reports: 10/22/2020
Number of Days to Update: 70

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 10/20/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 06/30/2020
Date Data Arrived at EDR: 07/01/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 78

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: No Update Planned

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/13/2020
Date Data Arrived at EDR: 08/17/2020
Date Made Active in Reports: 11/05/2020
Number of Days to Update: 80

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 07/14/2020
Date Data Arrived at EDR: 07/16/2020
Date Made Active in Reports: 09/29/2020
Number of Days to Update: 75

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

KERN COUNTY:

CUPA KERN: CUPA Facility List
A listing of sites included in the Kern County Hazardous Material Business Plan.

Date of Government Version: 07/28/2020
Date Data Arrived at EDR: 07/30/2020
Date Made Active in Reports: 10/13/2020
Number of Days to Update: 75

Source: Kern County Public Health
Telephone: 661-321-3000
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 07/28/2020
Date Data Arrived at EDR: 07/30/2020
Date Made Active in Reports: 10/14/2020
Number of Days to Update: 76

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 05/11/2020
Date Data Arrived at EDR: 05/12/2020
Date Made Active in Reports: 07/27/2020
Number of Days to Update: 76

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 12/03/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 08/13/2020
Date Data Arrived at EDR: 08/13/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 71

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 10/07/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 07/31/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 11/09/2020
Number of Days to Update: 80

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

LOS ANGELES COUNTY:

AOCONCERN: Key Areas of Concerns in Los Angeles County
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: N/A
Telephone: N/A
Last EDR Contact: 12/09/2020
Next Scheduled EDR Contact: 03/29/2021
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 07/06/2020
Date Data Arrived at EDR: 07/10/2020
Date Made Active in Reports: 09/28/2020
Number of Days to Update: 80

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 07/13/2020
Date Data Arrived at EDR: 07/13/2020
Date Made Active in Reports: 09/29/2020
Number of Days to Update: 78

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 10/09/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 08/17/2020
Date Made Active in Reports: 11/05/2020
Number of Days to Update: 80

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 10/07/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Varies

LOS ANGELES AST: Active & Inactive AST Inventory

A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019	Source: Los Angeles Fire Department
Date Data Arrived at EDR: 06/25/2019	Telephone: 213-978-3800
Date Made Active in Reports: 08/22/2019	Last EDR Contact: 09/25/2020
Number of Days to Update: 58	Next Scheduled EDR Contact: 01/04/2021
	Data Release Frequency: Varies

LOS ANGELES CO LF METHANE: Methane Producing Landfills

This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 04/30/2012	Source: Los Angeles County Department of Public Works
Date Data Arrived at EDR: 04/17/2019	Telephone: 626-458-6973
Date Made Active in Reports: 05/29/2019	Last EDR Contact: 10/12/2020
Number of Days to Update: 42	Next Scheduled EDR Contact: 01/25/2021
	Data Release Frequency: No Update Planned

LOS ANGELES HM: Active & Inactive Hazardous Materials Inventory

A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019	Source: Los Angeles Fire Department
Date Data Arrived at EDR: 06/25/2019	Telephone: 213-978-3800
Date Made Active in Reports: 08/22/2019	Last EDR Contact: 09/25/2020
Number of Days to Update: 58	Next Scheduled EDR Contact: 01/04/2021
	Data Release Frequency: Varies

LOS ANGELES UST: Active & Inactive UST Inventory

A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 06/01/2019	Source: Los Angeles Fire Department
Date Data Arrived at EDR: 06/25/2019	Telephone: 213-978-3800
Date Made Active in Reports: 08/22/2019	Last EDR Contact: 09/25/2020
Number of Days to Update: 58	Next Scheduled EDR Contact: 01/04/2021
	Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List

Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 03/25/2020	Source: Community Health Services
Date Data Arrived at EDR: 04/14/2020	Telephone: 323-890-7806
Date Made Active in Reports: 07/01/2020	Last EDR Contact: 10/09/2020
Number of Days to Update: 78	Next Scheduled EDR Contact: 01/25/2021
	Data Release Frequency: Annually

UST EL SEGUNDO: City of El Segundo Underground Storage Tank

Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017	Source: City of El Segundo Fire Department
Date Data Arrived at EDR: 04/19/2017	Telephone: 310-524-2236
Date Made Active in Reports: 05/10/2017	Last EDR Contact: 10/07/2020
Number of Days to Update: 21	Next Scheduled EDR Contact: 01/25/2021
	Data Release Frequency: No Update Planned

UST LONG BEACH: City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 04/22/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 65

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 06/27/2019
Date Data Arrived at EDR: 07/30/2019
Date Made Active in Reports: 10/02/2019
Number of Days to Update: 64

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 10/05/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: CUPA Facility List
A listing of sites included in the county’s Certified Unified Program Agency database. California’s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/10/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 72

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 09/23/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 07/28/2020
Date Data Arrived at EDR: 07/30/2020
Date Made Active in Reports: 07/31/2020
Number of Days to Update: 1

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 08/20/2020
Date Data Arrived at EDR: 08/24/2020
Date Made Active in Reports: 11/09/2020
Number of Days to Update: 77

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 11/15/2020
Next Scheduled EDR Contact: 03/08/3021
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 07/13/2020
Date Data Arrived at EDR: 07/15/2020
Date Made Active in Reports: 07/31/2020
Number of Days to Update: 16

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 09/23/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 09/05/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 07/29/2020
Date Data Arrived at EDR: 07/30/2020
Date Made Active in Reports: 10/13/2020
Number of Days to Update: 75

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 10/20/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 06/10/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 10/19/2020
Number of Days to Update: 77

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/02/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 07/02/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 79

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/02/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 07/01/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 10/19/2020
Number of Days to Update: 77

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/03/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 11/24/2020
Date Data Arrived at EDR: 11/24/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 1

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 11/23/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 10/06/2020
Date Data Arrived at EDR: 10/07/2020
Date Made Active in Reports: 11/03/2020
Number of Days to Update: 27

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 12/09/2020
Next Scheduled EDR Contact: 03/29/2021
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 10/06/2020
Date Data Arrived at EDR: 10/07/2020
Date Made Active in Reports: 11/03/2020
Number of Days to Update: 27

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 12/09/2020
Next Scheduled EDR Contact: 03/29/2021
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/18/2020
Date Data Arrived at EDR: 03/31/2020
Date Made Active in Reports: 06/15/2020
Number of Days to Update: 76

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Quarterly

ML SACRAMENTO: Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/24/2020
Date Data Arrived at EDR: 03/31/2020
Date Made Active in Reports: 06/17/2020
Number of Days to Update: 78

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 08/04/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/22/2020
Number of Days to Update: 78

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 08/04/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/26/2020
Number of Days to Update: 82

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 08/31/2020
Date Data Arrived at EDR: 08/31/2020
Date Made Active in Reports: 11/23/2020
Number of Days to Update: 84

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 12/01/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 04/18/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 56

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing

A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 07/14/2020
Date Data Arrived at EDR: 07/16/2020
Date Made Active in Reports: 09/29/2020
Number of Days to Update: 75

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

SAN DIEGO CO SAM: Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 11/23/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

CUPA SAN FRANCISCO CO: CUPA Facility Listing

Cupa facilities

Date of Government Version: 08/03/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/22/2020
Number of Days to Update: 78

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

LUST SAN FRANCISCO: Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: No Update Planned

UST SAN FRANCISCO: Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 08/03/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/26/2020
Number of Days to Update: 82

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 12/09/2020
Next Scheduled EDR Contact: 03/29/2021
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 07/27/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/26/2020
Number of Days to Update: 75

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 02/20/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 04/24/2020
Number of Days to Update: 64

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/11/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019
Date Data Arrived at EDR: 03/29/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 61

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 12/01/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: No Update Planned

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 08/20/2020
Date Data Arrived at EDR: 08/20/2020
Date Made Active in Reports: 11/09/2020
Number of Days to Update: 81

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

HIST LUST SANTA CLARA: HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LUST SANTA CLARA: LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: No Update Planned

SAN JOSE HAZMAT: Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 07/30/2020
Date Data Arrived at EDR: 07/31/2020
Date Made Active in Reports: 10/16/2020
Number of Days to Update: 77

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/13/2019
Number of Days to Update: 68

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 06/03/2019
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 08/25/2020
Date Data Arrived at EDR: 08/26/2020
Date Made Active in Reports: 09/16/2020
Number of Days to Update: 21

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 12/03/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 07/07/2020
Date Data Arrived at EDR: 07/08/2020
Date Made Active in Reports: 09/25/2020
Number of Days to Update: 79

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 09/16/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 07/01/2020
Date Data Arrived at EDR: 07/02/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 77

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 09/16/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 02/04/2020
Date Data Arrived at EDR: 02/05/2020
Date Made Active in Reports: 04/15/2020
Number of Days to Update: 70

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 08/25/2020
Date Data Arrived at EDR: 08/26/2020
Date Made Active in Reports: 11/17/2020
Number of Days to Update: 83

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 11/23/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 08/11/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/26/2020
Number of Days to Update: 75

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 07/14/2020
Date Data Arrived at EDR: 07/16/2020
Date Made Active in Reports: 09/29/2020
Number of Days to Update: 75

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 08/06/2020
Date Data Arrived at EDR: 08/06/2020
Date Made Active in Reports: 10/26/2020
Number of Days to Update: 81

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: Business Plan, Hazardous Waste Producers, and Operating Underground Tanks

The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 07/10/2020
Date Data Arrived at EDR: 07/22/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 78

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Quarterly

LF VENTURA: Inventory of Illegal Abandoned and Inactive Sites

Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 09/23/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: No Update Planned

LUST VENTURA: Listing of Underground Tank Cleanup Sites

Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: No Update Planned

MED WASTE VENTURA: Medical Waste Program List

To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 07/10/2020
Date Data Arrived at EDR: 07/22/2020
Date Made Active in Reports: 10/07/2020
Number of Days to Update: 77

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List

Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 08/26/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 12/01/2020
Number of Days to Update: 84

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 12/08/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report

Underground storage tank sites located in Yolo county.

Date of Government Version: 06/23/2020
Date Data Arrived at EDR: 06/29/2020
Date Made Active in Reports: 09/15/2020
Number of Days to Update: 78

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 10/07/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 08/06/2020	Source: Yuba County Environmental Health Department
Date Data Arrived at EDR: 08/07/2020	Telephone: 530-749-7523
Date Made Active in Reports: 10/26/2020	Last EDR Contact: 11/03/2020
Number of Days to Update: 80	Next Scheduled EDR Contact: 02/08/2021
	Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 08/10/2020	Source: Department of Energy & Environmental Protection
Date Data Arrived at EDR: 10/20/2020	Telephone: 860-424-3375
Date Made Active in Reports: 11/02/2020	Last EDR Contact: 11/09/2020
Number of Days to Update: 13	Next Scheduled EDR Contact: 02/22/2021
	Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2018	Source: Department of Environmental Protection
Date Data Arrived at EDR: 04/10/2019	Telephone: N/A
Date Made Active in Reports: 05/16/2019	Last EDR Contact: 10/09/2020
Number of Days to Update: 36	Next Scheduled EDR Contact: 01/18/2021
	Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019	Source: Department of Environmental Conservation
Date Data Arrived at EDR: 04/29/2020	Telephone: 518-402-8651
Date Made Active in Reports: 07/10/2020	Last EDR Contact: 10/30/2020
Number of Days to Update: 72	Next Scheduled EDR Contact: 02/08/2021
	Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 06/30/2018	Source: Department of Environmental Protection
Date Data Arrived at EDR: 07/19/2019	Telephone: 717-783-8990
Date Made Active in Reports: 09/10/2019	Last EDR Contact: 10/07/2020
Number of Days to Update: 53	Next Scheduled EDR Contact: 01/25/2021
	Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2018	Source: Department of Environmental Management
Date Data Arrived at EDR: 10/02/2019	Telephone: 401-222-2797
Date Made Active in Reports: 12/10/2019	Last EDR Contact: 11/11/2020
Number of Days to Update: 69	Next Scheduled EDR Contact: 03/01/2021
	Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 12/03/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: Endeavor Business Media
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data
Source: Endeavor Business Media
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

MOORETOWN FTT
3 ALVERDA DRIVE
OROVILLE, CA 95966

TARGET PROPERTY COORDINATES

Latitude (North):	39.464089 - 39˚ 27’ 50.72’’
Longitude (West):	121.506101 - 121˚ 30’ 21.96’’
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	628516.2
UTM Y (Meters):	4369135.0
Elevation:	352 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5603344 PALERMO, CA
Version Date:	2012
Southeast Map:	5603372 BANGOR, CA
Version Date:	2012

EDR’s GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

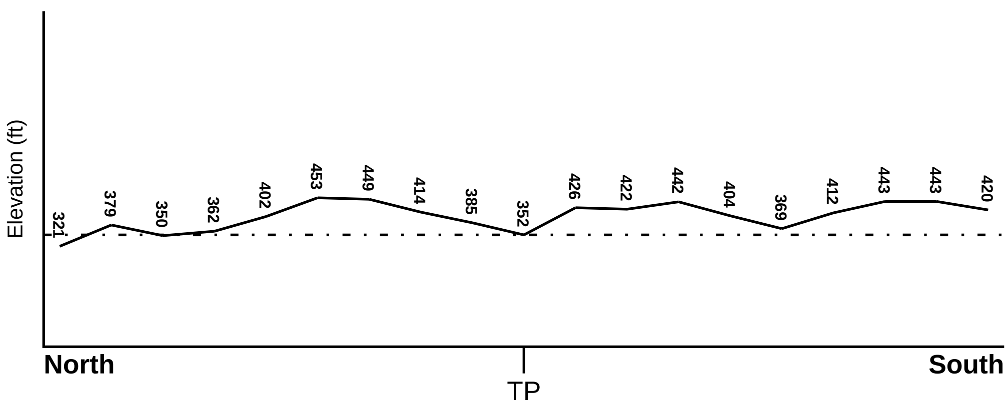
TOPOGRAPHIC INFORMATION

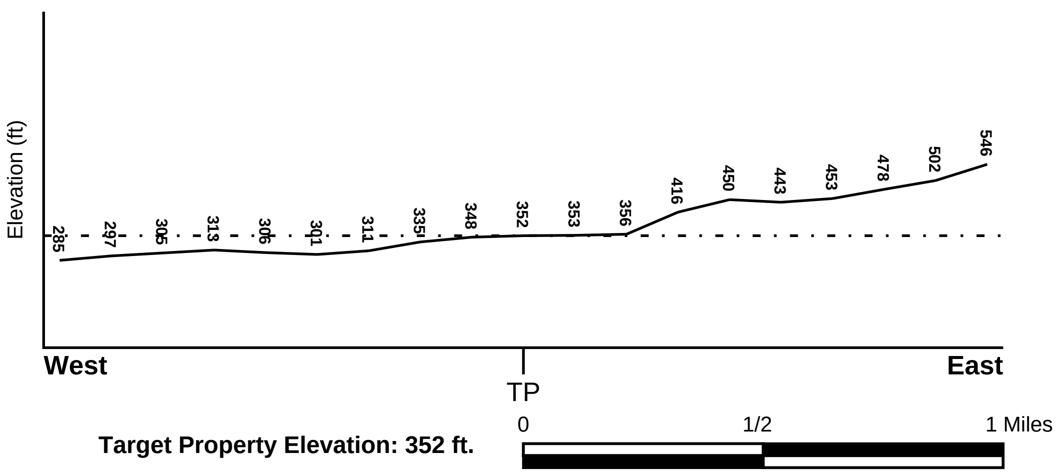
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General NW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 352 ft.

Source: Topography has been determined from the USGS 7.5’ Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06007C0985E	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06007C1025E	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
PALERMO	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius: 1.25 miles
Status: Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

GEOLOGIC AGE IDENTIFICATION

Era:	Mesozoic
System:	Lower Jurassic and Upper Triassic
Series:	Lower Mesozoic
Code:	lMze *(decoded above as Era, System & Series)*

Category: Eugeosynclinal Deposits

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps. The following information is based on Soil Conservation Service STATSGO data.

Soil Component Name: REDDING

Soil Surface Texture: gravelly - loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Moderately well drained. Soils have a layer of low hydraulic conductivity, wet state high in the profile. Depth to water table is 3 to 6 feet.

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel: HIGH

Depth to Bedrock Min: > 60 inches

Depth to Bedrock Max: > 60 inches

Soil Layer Information							
	Boundary			Classification			
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil	Permeability Rate (in/hr)	Soil Reaction (pH)
1	0 inches	15 inches	gravelly - loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 2.00 Min: 0.60	Max: 6.50 Min: 5.10
2	15 inches	19 inches	gravelly - loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 0.60 Min: 0.20	Max: 6.50 Min: 5.10
3	19 inches	22 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 0.06 Min: 0.00	Max: 6.50 Min: 5.10
4	22 inches	24 inches	gravelly - clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 0.06 Min: 0.00	Max: 6.50 Min: 5.10
5	24 inches	28 inches	indurated	Not reported	Not reported	Max: 0.00 Min: 0.00	Max: 0.00 Min: 0.00

OTHER SOIL TYPES IN AREA

Based on Soil Conservation Service STATSGO data, the following additional subordinant soil types may appear within the general area of target property.

Soil Surface Textures: loam
sandy loam
very cobbly - loam
gravelly - sandy loam
fine sandy loam
clay

Surficial Soil Types: loam
sandy loam
very cobbly - loam
gravelly - sandy loam
fine sandy loam
clay

Shallow Soil Types: clay
loam
clay loam
gravelly - clay loam
gravelly - clay
sandy clay loam

very gravelly - loam

Deeper Soil Types: stratified
clay loam
sandy clay loam
weathered bedrock
unweathered bedrock
cemented

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

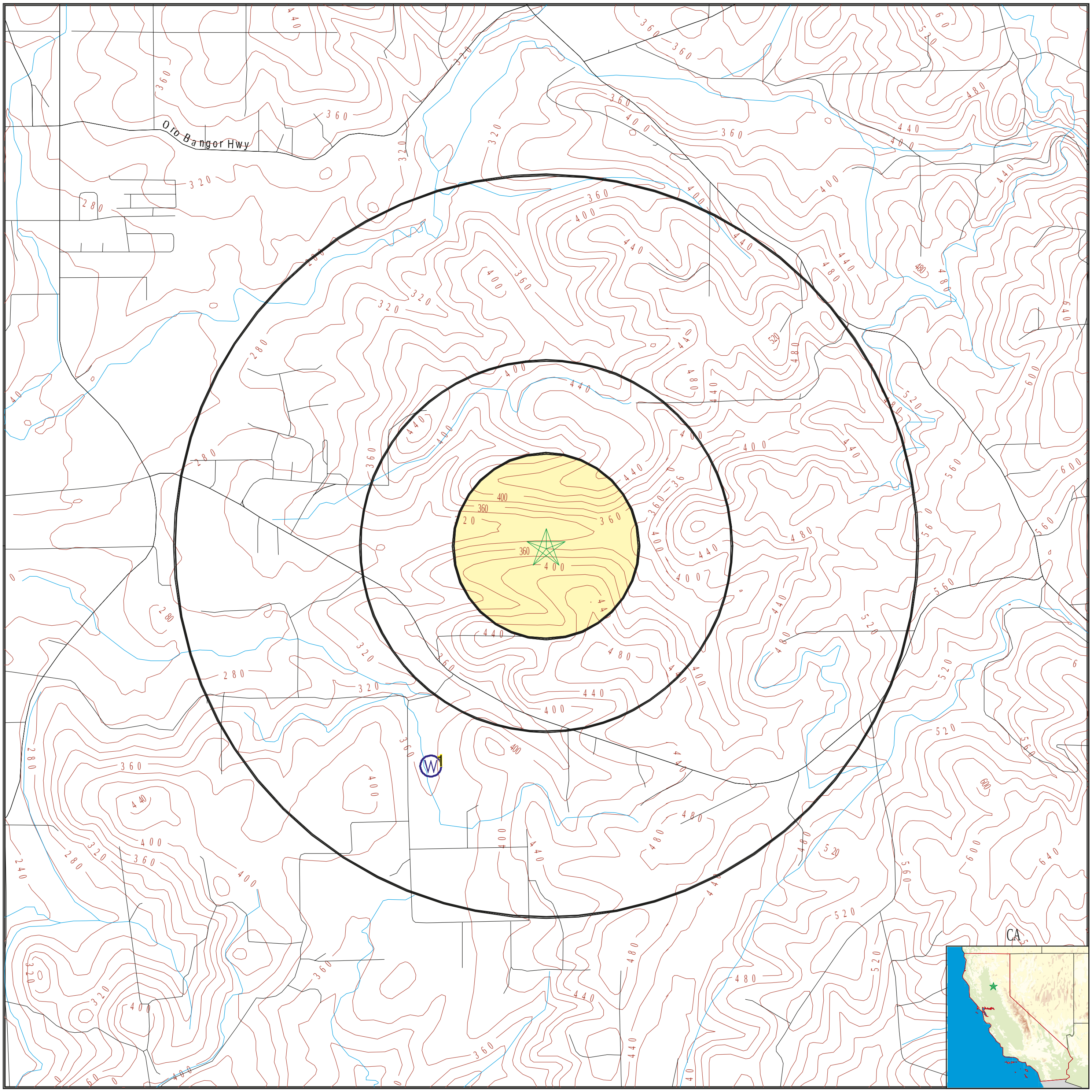
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	CADDW0000015375	1/2 - 1 Mile SSW

PHYSICAL SETTING SOURCE MAP - 6297938.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

0 1/4 1/2 1 Miles

- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME: Mooretown FTT ADDRESS: 3 Alverda Drive Oroville CA 95966 LAT/LONG: 39.464089 / 121.506101	CLIENT: ANALYTICAL ENVIRONMENTAL SERVICES CONTACT: Charlane Gross INQUIRY #: 6297938.2s DATE: December 10, 2020 8:22 pm

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation	Database	EDR ID Number
1 **SSW** **1/2 - 1 Mile** **Higher**	**CA WELLS**	**CADDW0000015375**

Well ID:	0400040-002	Well Type:	MUNICIPAL
Source:	Department of Health Services		
Other Name:	MAIN WELL AKA PIT WELL	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DHS&samp_date=&global_id=&assigned_name=0400040-002&store_num=		
GeoTracker Data:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
95966	9	0

Federal EPA Radon Zone for BUTTE County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 95966

Number of sites tested: 4

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	-0.050 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5’ Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5’ Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW^R Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture’s (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

OTHER STATE DATABASE INFORMATION

Groundwater Ambient Monitoring & Assessment Program
State Water Resources Control Board
Telephone: 916-341-5577
The GAMA Program is Californias comprehensive groundwater quality monitoring program. GAMA collects data by testing the untreated, raw water in different types of wells for naturally-occurring and man-made chemicals. The GAMA data includes Domestic, Monitoring and Municipal well types from the following sources, Department of Water Resources, Department of Heath Services, EDF, Agricultural Lands, Lawrence Livermore National Laboratory, Department of Pesticide Regulation, United States Geological Survey, Groundwater Ambient Monitoring and Assessment Program and Local Groundwater Projects.

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

California Oil and Gas Well Locations
Source: Dept of Conservation, Geologic Energy Management Division
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
The fault lines displayed on EDR’s Topographic map are digitized quaternary fault lines prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California’s Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

PHYSICAL SETTING SOURCE RECORDS SEARCHED

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

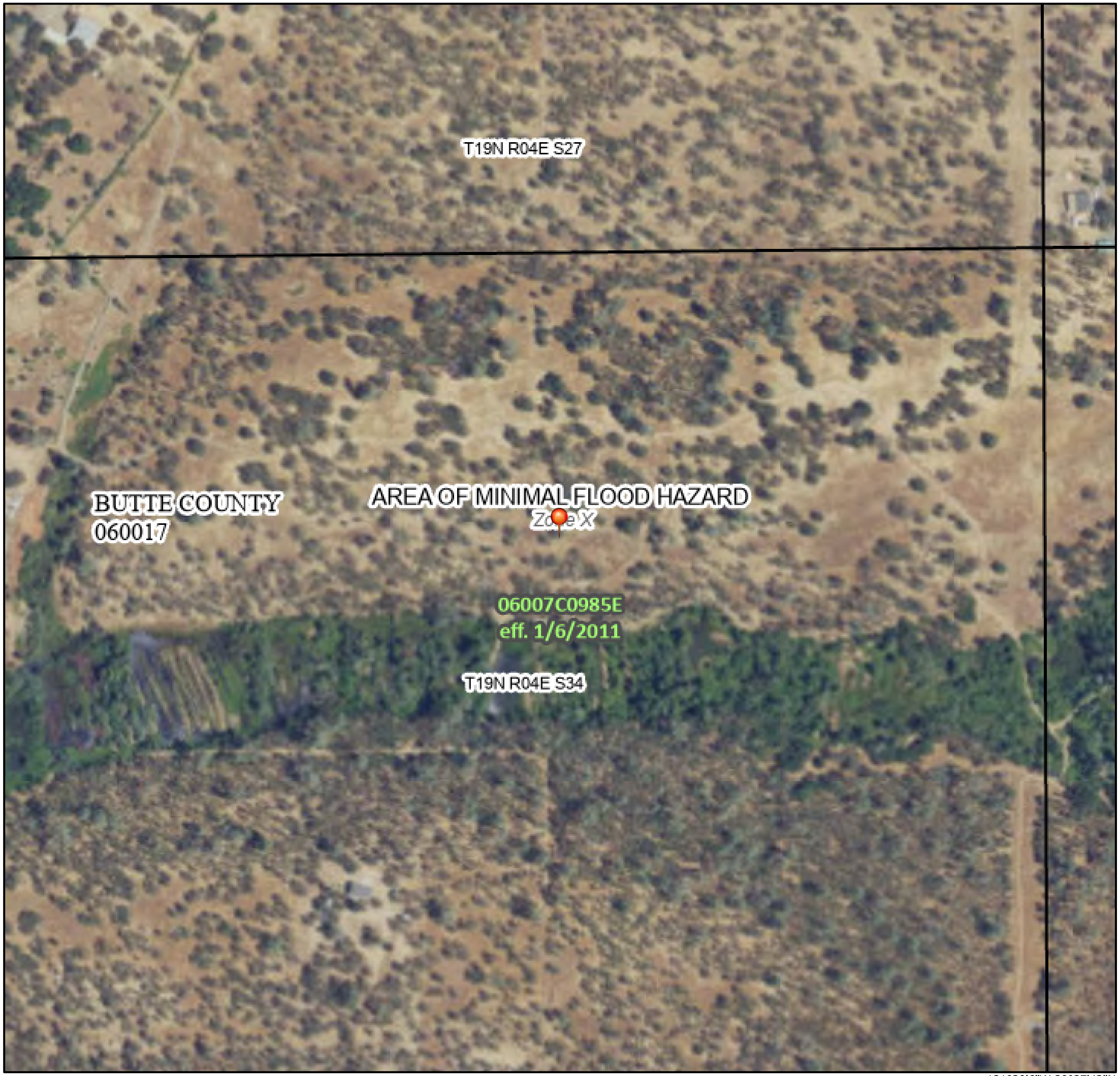
APPENDIX F

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) MAP

National Flood Hazard Layer FIRMette

FEMA

121°30'44"W 39°28'11"N



121°30'6"W 39°27'43"N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- B 20.2 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- 8 Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 8/20/2021 at 4:08 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

APPENDIX G

WETLANDS MAP

U.S. Fish and Wildlife Service
National Wetlands Inventory

Wetlands Map

August 20, 2021

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

APPENDIX H

QUESTIONNAIRES

User/Owner/Occupant/Key Site Manager Questionnaire

The Bureau of Indian Affairs is conducting a Phase I Environmental Site Assessment according to American Society for Testing and Materials (ASTM) Standard Practice E1527-21. We request your assistance in conducting this Assessment by asking that you complete this questionnaire and return it as soon as possible.

These questions should be answered by someone or a group of people that are most likely to have knowledge about the subject of the questions – typically the owner, long time tenant, or a property manager. *Please do not leave any blank.* Answer in good faith to the best of your knowledge and if you're not sure how to answer the question, feel free to contact the environmental professional for clarification.

Property Name: Mooretown Rancheria Phase I ESA

Property Address or ID Number (as applicable): APN 079-230-002, APN 079-230-003, APN 079-230-004, APN 079-230-005, APN 079-230-006, and APN 079-260-001

General Property Description (location, use, level of development, topography, biota, etc.): The Subject Property is undeveloped and located in a rugged region featuring steep hills and deep ravines; the property rises to a high point near the center. The Subject Property region is generally marked by the remains of mining activity, including ditches, prospect pits, and placer-mined areas.

Question	Yes	Not Sure	No	If yes, please describe
1. Did a search of land title records (or judicial records where appropriate – see NOTE below) identify any environmental liens filed or recorded against the property under federal, tribal, state or local law? NOTE — Certain jurisdictions require that environmental liens be filed in judicial records rather than in land title records. In such cases judicial records must be searched for environmental liens.			X	
2. Did a search of recorded land title records (or judicial records where appropriate, see NOTE below) identify any AULs, such as engineering controls, land use restrictions, or institutional controls that are in place at the property and/or have been filed or			X	

Question	Yes	Not Sure	No	If yes, please describe
recorded against the property under federal, tribal, state or local law? NOTE — Certain jurisdictions require that activity and use limitation (AULs) be filed in judicial records rather than in land title records. In such cases judicial records must be searched for AULs.				
3. Do you have any specialized knowledge or experience related to the property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business?	X			I am the vice-chairman of the Tribe and have been aware of the use of the property
4. Does the purchase price paid for the property reasonably reflect the fair market value of the property? If you conclude that there is a difference, do you have any reason to believe that the lower purchase price is because contamination is known or believed to be present at the property?		X		Land purchases have been at a reasonable price and not due to contamination
5. Are you aware of commonly known or reasonably ascertainable information about the property that would help the environmental professional to identify conditions indicative of releases or threatened releases of hazardous materials?			X	

Question	Yes	Not Sure	No	If yes, please describe
6. Do you know the past uses on the property? If so, please generally describe the uses and how long have you have had knowledge of the property?	X			As an elected tribal official, I have a good understanding of the prior uses of the property. Cattle grazing and ag.
7. Do you know of specific chemicals that are present or once were present at the property?		X		
8. Do you know of spills or other chemical releases that have taken place at the property?		X		
9. Do you know of any environmental cleanups that have taken place at the property?			X	

Question	Yes	Not Sure	No	If yes, please describe
10. Based on your knowledge and experience related to the property are there any obvious indicators that point to the presence or likely presence of hazardous materials or petroleum product releases at the property?			X	
11. Are there any pits, ponds, or lagoons on the property that have been used in connection with waste disposal or waste treatment?			X	
12. Are there any areas of stained soil or pavement on the property?			X	
13. Are there any areas of stressed vegetation caused by something other than insufficient water on the property?			X	
14. On the property are there any depressions, mounds, or filled/graded areas that are associated with solid waste disposal?			X	

Question	Yes	Not Sure	No	If yes, please describe
15. Are there any liquid discharges into waterways on the property or injections into groundwater on the property?			X	
16. Are there any wells located on the property?		X		
17. Are there any septic systems or cesspools on the property?		X		
18. Do you have or know of the existence of any of the following records related to the property? a) Environmental site assessment reports? b) Environmental compliance audit reports?	X			all documents are housed at the Tribal Office

Question	Yes	Not Sure	No	If yes, please describe
c) Environmental permits (for example, solid waste disposal permits, hazardous waste disposal permit, wastewater permits, NPDES permits, underground injection permits)? d) Registrations for underground and above-ground storage tanks? e) Registrations for underground injection system? f) Material safety data sheets? g) Community right-to-know plan? h) Safety plans; preparedness and prevention plans; spill prevention, countermeasure, and control plans; facility response plans, etc.? i) Reports regarding hydrogeologic conditions on the property or surrounding area? j) Notices or other correspondence from any government agency relating to past or current violations of environmental laws with respect to the property or relating to environmental liens encumbering the property? k) Hazardous waste generator notices or reports? l) Geotechnical studies? m) Risk assessments? n) Recorded Activity and Use Limitations (AULs)?				
19. Do you know of any pending, threatened, or past litigation or administrative proceedings relevant to hazardous substances on the property?			X	

Question	Yes	Not Sure	No	If yes, please describe
20. Do you know of any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances?			X	
21. Do you have any reason to believe contamination is present at the property that was not covered by the above questions?			X	

Name: Alan Archuleta

Title (if applicable): Vice Chairman

Association with Property (may check more than one if applicable):

____ User (party seeking to use the Phase I Environmental Site Assessment)

____ Owner (owner of Property)

____ Occupant (party occupying *or using* the Property)

____ Key Site Manager (person with good knowledge or uses or physical characteristics of the Property)

Years associated with Property: ____ 1 Year ____ 5 Years _X_ 10+ Years

Sign Here: ______________________ Date: 1-17-23

If more than one person assisted in completing this form:

Name: ______________________

Title (if applicable): ______________________

Association with Property (may check more than one if applicable):

____ User (party seeking to use the Phase I Environmental Site Assessment)

____ Owner (owner of Property)

____ Occupant (party occupying *or using* the Property)

____ Key Site Manager (person with good knowledge or uses or physical characteristics of the Property)

Years associated with Property: ____ 1 Year ____ 5 Years ____ 10+ Years

Sign Here: ______________________ Date: ______________

From:	Viglietti, Samuel
To:	"cgross@montrose-env.com"
Subject:	[EXTERNAL] CUPA Records Request
Date:	Tuesday, January 3, 2023 3:37:34 PM

Hello Charlene –

The records request has been finished and no records have been found for Underground Storage Tanks, Aboveground Storage Tanks, waste, materials, complaints or incidence for the proeprty.

Have a wonderful day.

Samuel Viglietti
Environmental Health Specialist I, Environmental Health
BUTTE COUNTY PUBLIC HEALTH
202 Mira Loma Drive | Oroville, CA 95965
T: 530.552.3982 | F: 530.538.5339

***Environmental Health Fees are being amended to incude an ECI inflator. The fees go into effect 01/01/2023.**

Please refer to our website for online payment and document submittal:
http://www.buttecounty.net/ph/Environmental-Health

Nationally Accredited, 09/13/17

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APPENDIX I

RESUMES

Kathleen Sholty
Biologist

ANALYTICAL ENVIRONMENTAL SERVICES

Ms. Sholty serves as a biologist with extensive experience in conducting surveys and biological assessments for special-status species and other biological resources. She has regularly worked as a biological consultant with local, state, and federal agencies, including the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, the Bureau of Land Management, and the California Department of Fish and Wildlife (CDFW). She is a skilled writer with a background in scientific research and completed her Master's Thesis work on disease ecology in small mammals.

Ms. Sholty has over 12 years of experience conducting both field and lab work, including live-traps, mist-netting, radio-telemetry, and genetic analyses. As a research assistant for the Wildlife Investigations Lab for CDFW, Ms. Sholty conducted research on a wide range of special-status species. Ms. Sholty is highly knowledgeable in wildlife ecology and has conducted a wide range of habitat assessments and data analyses.

Education
B.S. Biology; Kalamazoo College, MI

M.S. Wildlife Biology, Humboldt State University, CA

Qualifications
- 12+ years of experience conducting field and lab work.
- Skilled writer in scientific research including Master's thesis on disease ecology.
- Former research assistant for CDFW with experience in threatened and endangered species, public wildlife education, and lab analyses.
- 3+ years experience working as a biological consultant conducting surveys, writing reports, and coordinating with clients, contractors, and agencies.

Relavant Project Experience

Planning-Level Habitat Surveys

PG&E Gas Line Hydrotesting – Butte, Napa, Sonoma, and Yolo Counties
Ms. Sholty served as the lead biologist for several gas line hydrotesting projects for PG&E in Butte, Napa, Sonoma, and Yolo Counties between May 2017 and September 2019. She conducted planning-level habitat surveys for projects located near wetlands, vernal pools, grasslands, woodlands, and riparian habitats, including survyes for California tiger salamander, palmate-bracted bird's beak, and valley elderberry longhorn beetle. She has prepared biological assessments and recommended permits and avoidance and minimization measures for sensitive habitats and species.

California Tiger Salamander

PG&E Gas Line Hydrotesting – Sonoma and Solano Counties
Ms. Sholty served as the lead biologist for several gas line hydrotest projects for PG&E in Sonoma and Solano Counties between 2017 and 2019. She conducted planning-level surveys for California tiger salamander in aquatic vernal pool and upland grassland habitats. She has prepared biological assessments and recommended permits and avoidance and minimization measures.

Giant Garter Snake

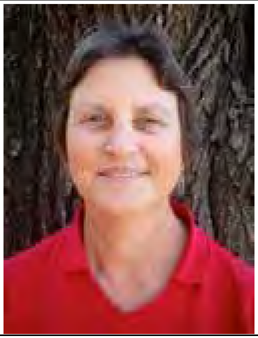
Gray Lodge Water Supply Project – Butte County
Ms. Sholty served as a biologist for a water supply replacement project for Gray Lodge Wildlife Area in Butte County between July and September 2019. She conducted multiple surveys and construction montoring for giant garter snake in rice and aquatic habitats.

USACE Levee Repairs –Colusa County
Ms. Sholty served as a biologist for a levee repair project for the USACE in Colusa County between August and October 2018. She conducted multiple surveys and construction montoring for giant garter snake in aquatic and fresh emergent wetland habitats.

PG&E North American Electric Reliability Council Program –Yolo County
Ms. Sholty served as a biologist and provided training and construction monitoring for the Brighton-Davis 115 kV tower project in Yolo County between 2017 and 2019. She conducted multiple surveys and construction montoring for giant garter snake in aquatic habitat.

CHARLANE GROSS, RPA

a Montrose Environmental Group company



Education:	M.A., Anthropology, San Jose State University B.A., Anthropology, University of California-Berkeley
Certification:	Registered Professional Archaeologist #11854

Key Qualifications

- 30+ years of management, field, and research experience
- Experience in CEQA, NEPA, and Section 106 and Section 110 of the National Historic Preservation Act

Ms. Gross has over 30 years of management, field, and reserach experience in the field of archaeology, as well as completing numerous Phase I Environmental Site Assessments over the course of the last 12 years. Ms. Gross has considerable experience in completing hazardous materials background research, field surveys and documentation for Phase I evaluations for CEQA and NEPA documents.

Key Project Experience

- Chickasaw Nation Kingston Development Project Phase I, Marshall County, OK
- Chickasaw Nation Riverwind Fee-to-Trust Project Phase I, McClain County, OK
- Chickasaw Nation Winstar Fee-to-Trust Project Phase I, Love County, OK
- Menominee Phase I, Kenosha County, MI
- Trinidad Rancheria Phase I, Trinidad, CA
- 2300 Fair Oaks Drive Phase I, Sacramento County, CA
- Casa Grande Cultural Study and Phase I, Sonoma County, CA
- Confederated Tribes of the Colville Reservation Cultural Study and Phase I, Franklin County, WA
- Elk Valley Rancheria Environmental Opinion Project Cultural Study and Phase I, Del Norte County,
- Casagranda Development Project Cultural Study and Phase I, Sonoma County, CA
- 2450 Natomas Park Drive Phase I, Sacramento County, CA
- Picayune Rancheria Bible Story Property Cultural Study and Phase I, Madera County,
- Picayune Rancheria Hawkins Valley Property Cultural Study and Phase I, Madera County, CA
- Lytton Rancheria Fee-to-Trust Project, Kidd Creek Property, Cultural Study and Phase I, Sonoma County, CA
- Lytton Rancheria Fee-to-Trust Project, Alexander Valley Property, Cultural Study and Phase I, Sonoma County, CA
- Lytton Rancheria Fee-to-Trust Project, Windsor Properties, Cultural Study and Phase I, Sonoma County, CA
- Lytton Rancheria Fee-to-Trust Project, Starr Road Properties, Cultural Study and Phase I, Sonoma County, CA
- Lytton Rancheria Fee-to-Trust Project, San Pablo Boulevard Cultural Study and Phase I, Contra Costa County, CA
- 2277 Fair Oaks Boulevard Development Project Phase I, Sacramento County, CA
- Buena Vista Rancheria Fee-to-Trust Project, Cultural Study and Phase I, Amador County, CA

MONTROSE ENVIRONMENTAL

Stephen T. Defibaugh, P.G., C.HG.

Principal Geologist

stdefibaugh@montrose-env.com

Long Beach, CA

Office: (562) 799-9866

Professional Experience

Skilled environmental and geosciences professional with over 30 years of diverse and wide-range experience as a consultant. Has assessed environmental strategies and effectively implemented initiatives to ensure compliance with regulations; managed multiple remediation projects and environmental assessments projects from concept to completion and maintained quality and on-time deliverables. Has also provided due diligence consulting support, prepared corrective action plans, site conceptual models, and risk assessments for a variety of clients in both the public and private sector. Has successfully designed, permitted, and built innovative remediation systems and provided expert witness services.

Education, Licenses & Certifications

B.S, Geology, University of California, Los Angeles

Professional Geologist in California (No. 5626)

Certified Hydrogeologist in California (No. 621)

Additional Training: OSHA 40-Hour Hazardous Waste Health and Safety Training Course; OSHA Site Supervisor Hazardous Waste Health and Safety Training Course; University of California, San Diego, Extension Course: Site Assessment and Mitigation at Hazardous Waste Sites; Environmental Security Technology Certification Program, Short Course: Air Sparging for Site Remediation; ITRC Short Course: Light, Nonaqueous-Phase Liquids; Science, Management, and Technology; CPR and First Aid Certified and Safety Training Courses.

Relevant Project Experience

Environmental and Regulatory Compliance Support, Military Tank Farm, Norwalk, CA

Managed multiple contractors in multi-million dollar remedial effort at a United States Air Force tank farm site with comingled plumes and adjacent park and residential impact. Co-chaired the Restoration Advisory Committee to ensure the involvement of all stake holders, including the city and nearby residents. Employed horizontal air sparging to reduce installation costs and allow for future development. Upgraded key treatment components to reduce maintenance costs.

Environmental and Regulatory Compliance Support, Retail Underground Storage Tank Site, Los Angeles, CA

Completed permitting, approval, shoring, and remedial excavation. Performed a soil gas and utility vault survey for this site in the Los Angeles Methane Zone, to determine risk for mixed retail and residential use with underground parking. Worked with others to prepare risk assessment document for submittal to Regional Water Quality Control Board and Federal Environmental Protection Agency. Negotiated successful site closure with stipulation that an appropriate vapor barrier and venting system would be installed as part of future development to protect against methane buildup.

Environmental and Regulatory Compliance Support, Orange County Transportation Authority, Los Angeles and Orange Counties, CA

Coordinated and supervised Phase I and II environmental site assessments prior to relocating pipelines and utilities to facilitate widening approximately five miles of the I-5 freeway. Tailored the Phase II site assessment to take into account the environmental concerns presented in the Phase I assessment. The Phase II assessment identified potential environmental hazards in the soil and recommended strategies to minimize worker exposure during construction and for soil handling.

Environmental Remediation and Regulatory Compliance Support, ConocoPhillips Company, CA

Managed, supervised, and/or conducted site investigation and remediation activities at more than 150 retail petroleum sales facilities throughout California. These projects required various investigative and remedial approaches to address unique site conditions. Examples of these approaches range from collecting vapor samples with hand held equipment to determine the presence of a release, to excavating test trenches across a site to define the lateral extent of hydrocarbon-affected soil prior to remedial excavation. Performed dual air sparging and vapor extraction pilot testing, supervised injection of ORC® and used results to evaluate technology for client and coauthored a case study with client for publication. Prepared presentation refuting claim by local water district of contamination of municipal well (claim was later dropped). Supervised use of multi-event dual-phase extraction as an interim remedial measure when access delays prevented compliance with corrective action plan. Provided emergency response when release threatened to halt development of nearby property. Prepared Phase I site assessments to determine if offsite sources had contributed to known releases. Commended by client for detail and quality of reports (including extensive use of figures to illustrate complex data sets).

Environmental Remediation and Regulatory Compliance Support, C.W. Driver, Tustin Marine Base, Tustin, CA

Performed a series of quick response assessments and remediation events during redevelopment activities at the former Marine base. Characterized waste streams for short turnaround removal to reduce impact of remediation on the construction schedule. Coordinated closely with the developer to ensure that action plans could be implemented within construction deadlines which resulted in minimal impact to the construction activities and on time completion of a training facility.

Environmental Remediation and Regulatory Compliance Support, United States Navy, Long Beach Naval Shipyard, Long Beach, CA

Performed various environmental compliance tasks for the base compliance group. These included routine sampling of groundwater monitoring wells, sampling of waste water streams, sampling hundreds of transformers for the presence of PCB’s, profiling bilge water for disposal, and monitoring harbor sediments for signs of environmental distress. Obtained security clearance to work in restricted portions of the shipyard.

MONTROSE ENVIRONMENTAL

Presentations & Publications

Defibaugh, S.T., Fischman, D.S., 1999 Biodegradation of MTBE Utilizing a Magnesium Peroxide Compound: A Case Study, In Situ Bioremediation of Petroleum Hydrocarbon and Other Organic Compounds, Battelle Press, OH. 5(3), pp.1-6.

APPENDIX REG

APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS

APPENDIX REG

APPLICABLE FEDERAL, STATE, AND LOCAL LAWS & REGULATIONS

Federal, state, and local laws and regulations relevant to Alternatives A and B included below. As discussed in the Environmental Assessment, state and local laws and regulations apply to the Property prior to acquisition into trust, but are generally not applicable to land in trust.

LAND RESOURCES

FEDERAL

National Earthquake Hazards Reduction Program

The Earthquake Hazards Reduction Act of 1977 (Public Law 95-124, 42 United States Code 7701 et. seq.), as amended in 2004 (Public Laws 101-614, 105-47, 106-503, and 108-360), established the National Earthquake Hazards Reduction Program. This program was designed to develop measures for earthquake hazard reduction and improve the understanding of earthquakes and their effects.

STATE AND LOCAL

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (formerly the Alquist-Priolo Special Studies Zone Act), signed into law December 1972, requires the delineation of zones along active and potentially active faults in California. The California Geological Survey (CGS) defines an “active” fault as one that exhibits evidence of activity during the last 11,000 years. Faults that exhibit evidence of quaternary activity are considered to be “potentially active.” The purpose of the Alquist- Priolo Act is to regulate development on or near fault traces to reduce the hazard of fault rupture and limit the location of structures in these areas.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act was enacted in 1991 to protect the public from the effects of strong ground shaking, liquefaction, landslides, ground failure, or other hazards caused by earthquakes. This act requires a state geologist to delineate various seismic hazard zones and requires cities, counties, and other local permitting agencies to regulate certain development projects within the portions of the zones over which they have jurisdiction. Before a development permit is granted by a city, county, or other local permitting agency for a site within a seismic hazard zone, a geotechnical investigation of the site must be conducted and appropriate mitigation measures must be incorporated into the project’s design.

Butte County General Plan Section 11 Health and Safety Element

The Butte County General Plan is the guiding document for development in unincorporated areas of Butte County. The Health and Safety Element describes the potential natural risks within the County and references the Local Hazard Mitigation Plan (LHMP). The Health and Safety Element acknowledges the risk of natural flooding, dam inundation, potential seismic risks from one active fault and one potentially active fault, subsidence, wildfire, and landslides in steep-sloped areas. An Earthquake Mitigation Action Plan is included as a component of the LHMP.

WATER RESOURCES

FEDERAL

Federal Clean Water Act (CWA)

The CWA, 33 U.S. Code (USC) Section 1251(a)(2), sets forth national goals that waters shall be "fishable, swimmable" waters (CWA Section 101 [a][2]). The CWA addresses both point and non-point sources of pollution (Sections 402 and 319, respectively), both of which are controlled through the National Pollution Discharge Elimination System (NPDES). An NPDES permit must be obtained in order to discharge policy pollutants into "Waters of the U.S." In some states, the U.S. Environmental Protection Agency (USEPA) has delegated permitting authority to the regional water quality agency. On Tribal land, the USEPA retains authority to regulate discharges. Section 303(d) of the CWA requires states to periodically prepare a list of all surface waters in their respective jurisdictions for which beneficial uses of the water—such as for drinking, recreation, aquatic habitat, and industrial use—are impaired by pollutants. These include water bodies that do not meet state surface water quality standards and are not expected to improve within the next two years.

The CWA delegates to the states to establish a priority ranking of these impaired waters for purposes of developing water quality control plans that include Total Maximum Daily Loads (TMDL). A TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards and includes an allocation for each of the pollutant's sources. These water quality control plans describe how an impaired water body will meet water quality standards through the use of TMDLs.

CWA Anti-Degradation Policy

Federal policy (Code of Federal Regulations [CFR], Title 40, Part 131.6) specifies that each state must develop, adopt, and retain an anti-degradation policy to protect the minimum level of surface water quality necessary to support existing uses. Each anti-degradation policy must include implementation methods consistent with provisions outlined in 40 CFR §131.12. On trust land, such issues are addressed by the USEPA.

Safe Drinking Water Act

Under the mandate of the Safe Drinking Water Act (SDWA), the USEPA sets legally enforceable National Primary Drinking Water Regulations (primary standards) that apply to public water systems. These standards are established to protect human health by limiting the levels of contaminants in drinking water. The USEPA does not oversee the construction and permitting of groundwater wells, but requires that public health standards, such as an effectively installed sanitary seal, are in place. The most direct oversight of water systems is conducted by state drinking water programs if the State has been granted "primacy" from the USEPA, the authority to implement SDWA within their jurisdictions. The USEPA will also primarily establish monitoring and operational requirements, which will typically be specific to the project area.

The USEPA also defines National Secondary Drinking Water Regulations (secondary standards) for contaminants that cause cosmetic and aesthetic effects, but not for health effects. The USEPA recommends that these secondary standards be met but does not require systems to comply with them. Both primary and secondary drinking water standards are expressed as either Maximum Contaminant Levels (MCL), which define the highest level of a contaminant allowed in drinking water, or Maximum Contaminant Level Goals, which define the level of a contaminant below which there is no known or expected risk to health.

Disaster Relief Act: Federal Emergency Management Agency

The Disaster Relief Act of 1974, as amended by the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988, created the Federal Emergency Management Agency (FEMA), which is responsible for determining flood elevations and floodplain boundaries based on U.S. Army Corps of Engineers (USACE) studies. FEMA is also responsible for distributing Flood Insurance Rate Maps, which are used in the National Flood Insurance Program. These maps identify the locations of special flood hazard areas, including 100-year floodplains.

NPDES Permitting Program

Facilities discharging pollutants from point-sources into waters of the United States must obtain a discharge permit under the National Pollutant Discharge Elimination System (NPDES) program. To ensure compliance with the CWA anti-degradation policy, the USEPA must consider the status of regional water quality before issuing an individual facility NPDES permit for discharge into impaired waterways. After reviewing an application for an individual facility permit, the permitting authority will issue a permit with specific effluent limits, or Waste Discharge Requirements (WDRs). Construction projects disturbing one or more acres of soil must be covered under the NPDES general permitting process.

For tribal projects on trust land, the Tribe proposing the project must apply for coverage under the USEPA's Stormwater General NPDES Permit for Construction Activities. The USEPA's Stormwater General NPDES Permit for Construction Activities also requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP must list Best Management Practices that address stormwater runoff rates and water quality.

Executive Order 11988

Executive Order (EO) 11988 requires federal agencies to limit adverse impacts associated with the occupancy or modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. Specifically, EO 11988 states that agencies shall first determine whether the proposed action will occur in a floodplain. EO 11988 defines a floodplain as an area that has a one percent or greater chance of flooding in any given year. Second, if an agency proposes to allow an action to be located in a floodplain, "the agency shall consider alternatives to avoid adverse effects and incompatible development in the floodplains." If the only practicable alternative action requires sitting in a floodplain, the agency is required to minimize potential harm to or within the floodplain.

STATE AND LOCAL

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code [Water Code]) provides the basis for surface water and groundwater quality regulation within California. This act established the authority of the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs). The Porter Cologne Act (§13242) requires that a TMDL program of implementation be developed in the Regional Water Quality Control Plans for water bodies listed under Section 303 of the CWA that describes how water quality objectives will be attained.

RWQCB's Anti-degradation Policy

The Porter-Cologne Act requires the State to designate beneficial uses of surface water and groundwater, and to specify water quality objectives designed to protect those uses. These water quality objectives are presented in the Regional Water Quality Control Plans (basin plans). Basin plans are developed and periodically reviewed to fulfill the State's requirements of the anti-degradation policy of the CWA. Each basin plan provides a technical basis for determining WDRs and regulatory enforcement action. The project site is within the North Coast Region.

California Water Code

The California Water Code designates the California Department of Public Health (CDPH) as the lead agency responsible for developing uniform statewide recycling criteria for each type of use of treated wastewater for the protection of public health. The CDPH and the RWQCBs are directed under the Water Code to regulate treated wastewater production and use. The CDPH has jurisdiction over the production of treated wastewater and the enforcement of California Code of Regulations (CCR) Title 22 for treated wastewater criteria. The RWQCB is responsible for issuing treated wastewater use requirements.

Sustainable Groundwater Management Act

The intent of the Sustainable Groundwater Management Act ([SGMA]; Water Code § 10720 et seq.) is to "enhance local management of groundwater consistent with rights to use or store groundwater… [and] to preserve the security of water rights in the state to the greatest extent possible consistent with the sustainable management of groundwater." The SGMA states that "any local agency or combination of local agencies overlying a groundwater basin may elect to be a groundwater sustainability agency for that basin" (Water Code § 10723).

Butte County General Plan

The Water Resources Element of the Butte County General Plan identifies policies and goals surrounding water use and conservation. This element notes that the majority of water use stems from surface water, with the predominant use being for agricultural purposes. Butte County operates under a Small Municipal Separate Storm Sewer Systems stormwater permit facilitated by the Butte County Stormwater Management Plan. This plan requires compliance with the State Construction Storm Water Program for building permits disturbing more than one acre of ground. The general plan promotes utilizing low-impact development designs, identifying and managing groundwater recharge areas, preventing litter from contaminating surface water, and providing waterways and riparian habitat with buffers. The general plan discourages activities that may imperil water quality, groundwater health, or the ability of the County to provide water to municipality connections.

AIR QUALITY AND CLIMATE CHANGE

FEDERAL

Federal Clean Air Act

The Federal Clean Air Act (CAA) was enacted in 1970 and last amended in 1990 (42 USC §7401 et seq.) for the purposes of protecting and enhancing the quality of the nation's air resources to benefit public health, welfare, and productivity. The CAA establishes a framework for national, state, and local air pollution control efforts. Basic components of the CAA and its amendments include national ambient air quality standards (NAAQS) for criteria air pollutants, requirements for state implementation plans (SIPs) to meet the NAAQS, motor vehicle emissions standards, stationary source emissions standards and permits, and enforcement provisions. The EPA is the federal agency responsible for establishing the NAAQS, overseeing state air programs as they relate to the CAA, approving SIPs, and setting emissions standards for mobile sources under federal jurisdiction.

National Ambient Air Quality Standards

The EPA, under authority of the CAA, developed primary and secondary NAAQS in 1971. The primary NAAQS protect the public health with an adequate margin of safety, and the secondary standards protect the public welfare from known or anticipated adverse effects to aesthetics, crops, or architecture (42 USC §7409[b]). The EPA designated six pollutants of primary concern as criteria air pollutants (CAPs): carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone, lead (Pb), and particulate matter (PM). The NAAQS are time-averaged maximum ambient air concentrations. For various CAPs, more than one time-averaged maximum concentration has been established by the EPA in order to address the typical exposures to the population from natural and anthropogenic sources in the environment. Concentrations above these time-averaged maximum concentrations are anticipated to cause adverse health effects to sensitive receptors. The violation criteria established by the EPA are based upon these time-averaged maximum concentrations specific to each CAP. For example, the NAAQS for ozone must be exceeded on more than three days in three consecutive years in order to constitute a violation. On the other hand, if the NAAQS for CO are exceeded on more than one day in any given year, a violation has occurred. **Table 1** presents the violation criteria for the various averaging times of the NAAQS for each CAP.

Federal Attainment Status

To determine conformance with the NAAQS, states are responsible for providing ambient air monitoring data to the EPA. The EPA then determines, using the violation criteria, if the results of the monitoring data indicate compliance with the NAAQS. The EPA classifies areas in compliance with the NAAQS as being in "attainment". Areas that do not meet the NAAQS are classified as being in "nonattainment" by the EPA.

TABLE 1: NAAQS AND ASSOCIATED VIOLATION CRITERIA

Pollutant	Averaging Time	Parts Per Million (PPM)	Micrograms Per Cubic Meter ($\mu G/M^3$)	Violation Criteria
Ozone	8 hours	0.070	N/A	If exceeded on more than three days in three years
Carbon Monoxide	8 hours	9	N/A	If exceeded on more than one day per year
Carbon Monoxide	1 hour	35	N/A	If exceeded on more than one day per year
Particulate Matter $\leq$ 10 microns	24 hours	N/A	150	If exceeded on more than one day per year on average over three years
Particulate Matter $\leq$ 2.5 microns	Annual arithmetic mean	N/A	12	If annual three year mean exceeded
Particulate Matter $\leq$ 2.5 microns	24 hours	N/A	35	If 98th percentile of three year average exceeded
Nitrogen Oxide	1 year	0.053	100	If exceeded
Nitrogen Oxide	1 hour	0.1	N/A	If 98th percentile of 1 hour daily daily maximum concentrations over three years exceeded
Sulfur Oxide	1 hour	0.075	196	If 99th percentile of 1 hour daily maximum conentrations aceraged over three years exceeded

Note: N/A = not applicable
SOURCE: USEPA, 2023a

Federal General Conformity

The federal General Conformity Rule implements Section 176(c) of the CAA, and establishes minimum thresholds for reactive organic compounds (ROGs) and nitrogen oxides (NOx) (ozone precursors), particulate matter (PM), and other regulated constituents for nonattainment and maintenance areas. Under the General Conformity Rule, the lead agency with respect to a federal action is required to demonstrate that the proposed federal action conforms to the applicable SIP before the action is taken. There are two phases to a demonstration of general conformity:

1. The Conformity Review process, which entails an initial review of the federal action to assess whether a full conformity determination is necessary, and
2. The Conformity Determination process, which requires that a proposed federal action be

demonstrated to conform to the applicable SIP.

The Conformity Review requires the lead agency to compare estimated emissions to the applicable general conformity *de minimis* threshold(s). If the emission estimates from step one is below the applicable threshold(s), then a general conformity determination is not necessary, and the full Conformity Determination is not required. If emission estimates are greater than *de minimis* levels, the lead agency must conduct a formal Conformity Determination. Kenosha County is in nonattainment for Ozone and is unclassifiable for the remainder of national ambient air quality standards.

Federal Hazardous Air Pollutant Program

The Federal Hazardous Air Pollutant Program designates the USEPA as the agency with jurisdiction for issuing regulations regarding air quality on Tribal land. In addition to CAPs, the CAA requires the USEPA to regulate hazardous air pollutants (HAPs). The USEPA maintains a list of over 180 airborne chemicals that are recognized as HAPs. Title III of the CAA requires the USEPA to promulgate National Emissions Standards for Hazardous Air Pollutants (NESHAP). The NESHAP may differ between major sources 5 APPENDIX A and area sources of hazardous air pollutants (HAPs). Major sources are defined as stationary sources with potential to emit more than 10 tons per year (tpy) of any HAP or more than 25 tpy of any combination of HAPs; all other sources are considered area sources.

Federal Class I Areas

Title 1, Part C of the CAA was established, in part, to preserve, protect, and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreational, scenic, or historic value. The CAA designates all international parks, national wilderness areas, and memorial parks larger than 5,000 acres and national parks larger than 6,000 acres as "Class I areas." The CAA prevents significant deterioration of air quality in Class I areas under the Prevention of Significant Deterioration (PSD) program. Any major source of emissions within 100 kilometers (km; 62.1 miles) from a federal Class I area is required to conduct a pre-construction review of air quality impacts on the area(s). There are no Class I areas within 100 km (62.1 miles) of the Project Site.

Tribal New Source Review

The Tribal Minor New Source Review (NSR) permitting program was established by the USEPA under the CAA. The minor NSR program applies to both new minor sources and minor modifications to both major and minor projects in attainment and nonattainment areas. NSR programs must comply with the standards and control strategies of the Tribal Implementation Plan (TIP) or SIP. If there is not an applicable SIP or TIP, the USEPA issues permits and implements the program. A General Permit under the minor NSR program would be required on tribal trust land if stationary source allowable emissions of regulated pollutants would exceed the thresholds presented in 40 CFR 49.153, (**Table 2**). This General Permit serves as a preconstruction permit containing limitations and other restrictions specifying the construction, modification, and operation of a minor source. The applicability of Tribal NSR is made on a source's potential to emit (PTE). For emergency generators, the USEPA has determined that 500 hours per year should be assumed as a reasonable and realistic "worst-case" estimate on a PTE basis (USEPA, 1995).

TABLE 2: TRIBAL MINOR NEW SOURCE REVIEW THRESHOLDS

Pollutant	Emissions Thresholds for Nonattainment Areas (tpy)	Emissions Thresholds for Attainment Areas (tpy)
NOx	5	10
ROG	2	5
PM	5	10
PM_{10}	1	5
$PM_{2.5}$	0.6	3
CO	5	10
SO_2	5	10
Pb	0.1	0.1
Source: 40 CFR 49.153.		

National Environmental Policy Act

Climate change is a global phenomenon attributable to the sum of all human activities and natural processes. The Council on Environmental Quality (CEQ) recently released a final guidance memorandum on how climate change should be addressed in National Environmental Policy Act (NEPA) documents (CEQ, 2016). As of March 31, 2017, EO 13783 was released, which required the withdrawal of the 2016 CEQ guidance; therefore, there is no approved federal threshold for greenhouse gas (GHG) emissions. The CEQ guidance advises federal lead agencies to address impacts to and from climate change when assessing cumulative project-level impacts under the NEPA. To assess impacts, the guidance states that federal agencies should quantify direct and indirect emissions of the project alternatives (including the No Action Alternative), with the level of effort being proportionate to the scale of the emissions relevant to the NEPA review, as a proxy for assessing potential effects on climate change in a NEPA analysis. Although this guidance has been rescinded, it is used within this document as no other federal thresholds for GHG emissions have been set.

According to CEQ, climate change impacts relating to indirect and direct actions concerning the federal action and associated short-term and long-term effects should also be included in the NEPA analysis. The guidance does not establish any particular quantity of GHG emissions as "significantly" affecting the quality of the human environment or give greater consideration to the effects of GHG emissions and climate change over other effects on the human environment. However, the guidance does state that agencies should consider reasonable alternatives and mitigation measures to reduce action-related GHG emissions or increase carbon sequestration in the same fashion as they consider alternatives and mitigation measures for any other environmental effects.

The guidance further states that climate change effects on the environment and on the proposed project should be considered in the NEPA analysis if the project is considered vulnerable to the effects of climate change such as increasing sea level, drought, high intensity precipitation events, increased fire risk, or ecological change. Assessment of such impacts, if applicable, should be conducted with existing information as CEQ states that agencies need not undertake new research or analysis of potential climate change impacts in the proposed action area.

EO 13990

Executive Order (EO) 13990 directs agencies to consider all available tools and resources in assessing GHG emissions and climate change effects of their proposed actions. In 2016, the CEQ issued a guidance document entitled "Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews." In January 2023, the CEQ issued updated interim guidance and solicited for public comment through March 10, 2023. To assess impacts, the 2023 interim GHG Guidance states that federal agencies should quantify direct and indirect emissions of the project alternatives with the level of effort being proportionate to the scale of the emissions relevant to NEPA review. The CEQ guidance advises federal lead agencies to consider the following:

- The potential effects of a proposed action on climate change, including assessing both GHG emissions and reductions from the proposed action
- The effects of climate change on a proposed action and its environmental impacts.

Federal guidance on climate change provides that agencies should quantify GHG emissions of project alternatives and consider reasonable alternatives and mitigation measures to reduce action-related GHG emissions or increase carbon sequestration in the same fashion as they consider alternatives and mitigation measures for any other environmental effects. This approach allows an agency to present the environmental and public health effects of a proposed action in clear terms and with sufficient information to make a reasoned choice between no action and other alternatives and appropriate mitigation measures. While the guidance doesn't quantify specific significance thresholds, it recommends that the following steps be taken to assess impacts:

- Quantifying reasonably foreseeable GHG emissions of all alternatives
- Disclosing the context of GHG emissions, as appropriate, in monetized climate damages, in compliance with climate action goals and commitments, and in common equivalents
- Analyzing reasonable alternatives and available mitigation to avoid, minimize, or compensate for impacts

SO 3399

On February 19, 2021, Secretary of the Interior Deb Haaland issued Secretarial Order (SO) 3399 to prioritize action on climate change throughout the Department and to restore transparency and integrity in the Department's decision-making processes. SO 3399 specifies that when considering the impact of GHG emissions from a proposed action, Bureaus/Offices should use appropriate tools, methodologies, and resources available to quantify GHG emissions and compare GHG quantities across alternatives. SO 3399 acknowledges that identifying the interactions between climate change and the environmental impacts of a proposed action in NEPA documents can help decision makers identify opportunities to reduce GHG emissions, improve environmental outcomes, and contribute to protecting communities from the climate crisis.

STATE AND LOCAL

California Clean Air Act (CCAA)

The California Clean Air Act of 1988 (CCAA) requires nonattainment areas to achieve and maintain the CAAQS by the earliest practicable date, as well as requires local air districts to develop plans for attaining the State standards.

California SIP

California's SIP is comprised of overall air quality attainment plans to meet the NAAQS as well as the individual air quality attainment plans of each air quality management district (AQMD) and air pollution control district (APCD). AQMDs and APCDs, as well other agencies such as the Bureau of Automotive Repair, prepare draft California SIP elements and submit them to CARB for review and approval. The CCAA identifies CARB as the lead agency for compiling items for incorporation into the California SIP and submitting them to the USEPA.

State Legislation – Climate Change

California has passed several initiatives and legislation for reducing climate change or GHG emissions over the last two decades. Central to these initiatives include the various Assembly Bills, Executive Orders, and Senate Bills, discussed below.

Assembly Bill 1493 (AB 1493)

AB 1493 of 2002 requires CARB to develop and adopt the nation's first GHG emission standards for automobiles. These standards are also known as Pavley I. Subsequent improvements to these standards covered model years 2012 to 2016 and resulted in 30 percent GHG reductions by 2016. The most recent standards establish a range of annual GHG reductions for 2017 to 2025 model year light-duty vehicles of 3 to 6 percent per year.

Executive Orders

The following summarizes the relevant Executive Orders (EO) related to climate change and the Proposed Project.

- EO S-3-05 – This EO established GHG reduction targets of; the year 2000 GHG levels by 2010; year 1990 GHG levels by 2020; and 80 percent below 1990 levels by 2050. EO S-3-05 created a "Climate Action Team" (CAT) headed by the California Environmental Protection Agency and including several other state agencies. The CAT is mandated by EO S-3-05 to outline the effects of climate change on California and recommend an adaptation plan. The CAT is also mandated with creating a strategy to meet the emission reduction target required by the EO. In April 2006 the CAT published an initial report that accomplished these two tasks. The 2010 CAT Report to the Governor and Legislature was issued December 2010, discussing progress and supplemental recommendations, and further legislation (described below) codified EO-S-05's goals.
- EO S-01-07 – This EO mandates a statewide goal to reduce the carbon intensity of transportation fuels by at least 10% by 2020. This target reduction was identified by CARB as one of the AB 32

early action measures.

- EO B-30-15 – This EO was signed by the Governor on April 29, 2015, and established a state GHG reduction target of 40 percent below 1990 levels by 2030. This intermediate GHG emissions reduction target would make it possible to meet the ultimate GHG emissions reduction target of 80 percent below 1990 levels by 2050 as established in EO S-3-05.
- EO B-55-18 – Signed on September 10, 2018, B-55-18 directs the state as a whole to achieve carbon neutrality by 2045 and net negative emissions thereafter. The order does not specify the means by which carbon neutrality must be met. The order also calls on the California Air Resources Board to work with state agencies to ensure future Scoping Plans meet the new carbon neutrality goal.

California Global Warming Solutions Act of 2006 (Assembly Bill 32 [AB 32])

AB 32 codifies a key requirement of EO S-3-05, specifically the requirement to reduce statewide GHG emissions to 1990 levels by 2020. AB 32 mandates CARB with monitoring state sources of GHGs and designing emission reduction measures to comply with the law's emission reduction requirements. AB 32 also states that the CAT should coordinate overall state climate policy. AB 32 required that CARB prepare a comprehensive "scoping plan" every five years that identifies all strategies necessary to achieve the required 2020 emissions reductions. In early December 2008, CARB released its scoping plan to the public, which was approved by CARB on December 12, 2008. The scoping plan relies on existing technologies and improving energy efficiency to achieve a 30 percent reduction in GHG emission levels by 2020. The most recent update to the Scoping Plan was released in November 2017 and outlines statewide strategies to meet the 2030 SB 32 goal of reducing emissions 40 percent from 2020 levels. The State Scoping Plan was initially approved in December 2008 and updated in 2014 and 2017. In each update, the Scoping Plan outlined progress California had made to date regarding near-term 2020 GHG limits. The 2017 State Scoping Plan also incorporated guidance for achieving the State's 2030 GHG reduction goals (CARB, 2017). The draft Scoping Plan also identifies several climate change mitigation policies.

The California Climate Crisis Act (AB 1279)

The California Climate Crisis Act (AB 1279) declares the State's policy to achieve net zero greenhouse gas emissions no later than 2045 and achieve and maintain net negative greenhouse gas emissions thereafter. The bill also ensures that by 2045, statewide anthropogenic greenhouse gas emissions will be reduced to at least 85% below the 1990 levels. The bill requires the State Board to work with relevant State agencies to ensure that updates to the CARB Scoping Plan identify and recommend measures to achieve these policy goals and to identify and implement a variety of policies and strategies that enable carbon dioxide removal solutions and carbon capture, utilization, and storage technologies in California, as specified.

Building on the success of the previous Plan's iterations, the 2022 CARB Scoping Plan lays out the sector-by-sector roadmap for California to achieve carbon neutrality by 2045 or earlier, outlining a technologically feasible, cost-effective, and equity-focused path to achieve the State's climate target.

Previous plans have focused on GHG reduction targets for our industrial, energy, and transportation sectors—first to meet 1990 levels by 2020, then to meet the more aggressive target of 40% below 1990 levels by 2030. The 2022 Scoping Plan extends and expands upon the earlier Plans with a target of reducing anthropogenic emissions to 85% below 1990 levels by 2045. The Plan outlines how carbon neutrality can be achieved by taking bold steps to reduce GHGs to meet the anthropogenic emissions target and by expanding actions to capture and store carbon through the State's natural and working lands and using a variety of mechanical approaches (CARB, 2022).

The major element of the 2022 Scoping Plan focuses on the aggressive reduction of fossil fuels wherever they are currently used in California. The main tenets of the Scoping Plan include 1) the electrification of vehicles, homes, and buildings; 2) stricter regulation of chemicals and refrigerants that potentiate climate change; 3) encouraging sustainable forms of public transportation, increased production of renewable energies and fuels; and 4) and promotion and expansion of healthy natural working lands (forests, shrublands/chaparral, croplands, wetlands, and other lands) (CARB, 2022).

Executive Order B-30-15 (EO B-30-15)

Executive Order B-30-15 was signed by the Governor on April 29, 2015. It sets interim GHG targets of 40 percent below 1990 by 2030, to ensure California will meet its 2050 targets set by AB 32. It also directs the CARB to update the Climate Change Scoping Plan.

Senate Bills

The following summarizes the various Senate Bills (SB) related to climate change that are applicable to the Proposed Project:

- SB 97 - In August 2007, SB 97 was adopted to recognize the need to address climate change under the California Environmental Quality Act (CEQA). Particularly, it recognized the need to address cumulative contribution of emissions for a development project. It also required that lead agencies make a good-faith effort to calculate and describe GHG emissions potentially resulting from a project. Following SB 97, the California Air Pollution Control Officers Association (CAPCOA) provided guidance on integrating analysis of climate change in its 2008 white paper CEQA & Climate Change (CAPCOA, 2008).
- SB 375 - SB 375 directed CARB to develop regional GHG emission reduction targets to be achieved by metropolitan planning organizations (MPOs). MPOs are required to align their regional transportation, housing and land use plans and prepare Sustainable Communities Strategies (SCS) to reduce vehicular travel and GHG emissions. CARB determines whether the SCS will achieve the region's GHG emissions reduction goals.
- SB 605 – This SB requires CARB to complete a comprehensive strategy to reduce emissions of short-lived climate pollutants in the State no later than January 1, 2016. The final strategy released by CARB in March 2017 focuses on CH_4, black carbon, and fluorinated gases, particularly HFCs, as important short-lived climate pollutants. The final strategy recognizes emission reduction efforts implemented under AB 32 (e.g., refrigerant management programs) and other regulatory programs (e.g., in-use diesel engines, solid waste diversion). The measures identified in the final strategy and their expected emission reductions will feed into the update to the CARB Scoping Plan.
- SB 350 - Senate Bill 350 codifies the GHG targets for 2030 set by EO B-30-15. To meet these goals, SB 350 also raises the California Renewables Portfolio Standard (RPS) from 33 percent renewable generation by 2020 to 50 percent renewable generation by December 31, 2030.

- SB 32 - Signed in 2016, SB 32 further strengthens AB 32 with goals of reducing GHG emissions to 40 percent below 1990 levels by 2030. Based on GHG emissions inventory data compiled by CARB through 2017 and the emission limit of 431 million MT of CO_2e established in the IPCC Fourth Assessment Report, California emission reduction goals for near-term 2020 will be met by abiding by the California Climate Change Scoping Plan.
- SB 743 - SB 743 changes how public agencies must evaluate the transportation impacts of projects under CEQA. As required under SB 743, the Governor's Office of Planning and Research (OPR) developed potential metrics to measure transportation impacts that may include, but are not limited to, vehicle miles traveled (VMT), VMT per capita, automobile trip generation rates, or automobile trips generated.

Title 20 Appliance Efficiency Regulations

California's Appliance Efficiency Regulations, California Code of Regulations Title 20, contain standards for both federally regulated appliances and non-federally regulated appliances. The regulations are updated regularly to allow consideration of new energy efficiency technologies and methods. The current standards were adopted by the California Energy Commission in 2018. The standards outlined in the regulations apply to appliances that are sold or offered for sale in California. More than 23 different categories of appliances are regulated, including refrigerators, freezers, water heaters, washing machines, dryers, air conditioners, pool equipment, and plumbing fittings.

California Green Building Standards Code (CALGreen)

Title 24 Building Standards Code, Part 11 of the California Code of Regulations is referred to as the California Green Building Standards Code (CALGreen Code). The purpose of the CALGreen Code is to improve public health, safety, and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices in the following categories: (1) planning and design; (2) energy efficiency; (3) water efficiency and conservation; (4) material conservation and resource efficiency; and (5) environmental air quality. Refer to Section 3.7 for additional information on Title 24 requirements.

Butte County Air Quality Management District

The Butte County Air Quality Management District (Butte County AQMD) has jurisdiction over Butte County, which is located within the Northern Sacramento Valley Air Basin (NSVAB). The Butte County AQMD attains and maintains air quality conditions in Butte County through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean air strategy of the Butte County AQMD includes the preparation of plans for the attainment of ambient air quality standards, when needed, adoption and enforcement of rules and regulations concerning sources of air pollution, and issuance of permits for stationary sources of air pollution. It should be noted that once the land is taken into trust, the Butte County AQMD would not have jurisdiction over the site; the USEPA and the Tribe would have jurisdiction over the site. However, off-site improvements would be subject to applicable Butte County AQMD rules and regulations in effect at the time of construction.

Butte County General Plan

The Conservation and Open Space Element in the Butte County General Plan addresses regional air quality. The Element presents policies in accordance with requirements of the Federal and State Clean Air Acts that encourage preservation of air quality. In addition to traffic reducing measures outlined in the Circulation Element, the Conservation and Open Space Element includes policies designed to meet General Plan goals, such as emissions reduction to 1990 levels by 2020. The General Plan additionally includes policies such as emissions mitigation on-site or as close to an impact site as possible, use of recycled materials in new construction, and attainment of green building standards such as Leadership in Energy and Environmental Design standards for Neighborhood Design.

Butte County Climate Action Plan

The Butte County Climate Action Plan was created by the Butte County Department of Development Services. The Climate Action Plan covers the unincorporated areas of Butte County and incudes the Property. The purpose of the Butte County Climate Action Plan is to provide goals, policies, and plans in order to improve environmental resiliency, reduce local GHG emissions, increase energy efficiency, and reach attainment foals of the County's General Plan and State and Federal air quality requirements.

LIVING RESOURCES

FEDERAL

Federal Endangered Species Act (ESA)

The U.S. Fish & Wildlife Service (USFWS) enforces the provisions of the federal Endangered Species Act for all terrestrial species. Section 9 (§ 1538) prohibits the "take" of a listed species by anyone, including private individuals and state and local agencies. Threatened and endangered species on the federal list (50 CFR Sections 17.11 and 17.12) are protected from take, which is defined as direct or indirect harm. If "take" of a listed species is incidental to an otherwise lawful activity, this triggers the need for consultation under Section 7 of the ESA for federal agencies, including tribes.

Pursuant to the requirements of the ESA, a federal agency reviewing a project within its jurisdiction must determine whether any federally listed species may be present on a project site and whether the project will have a potentially significant impact upon such species. A discussion of regionally listed species is provided in consideration of potential impacts associated with project implementation. Under the ESA, habitat loss is considered to be an impact to the species. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species that is proposed for listing under the ESA or to result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC Section 1536[3], [4]). Therefore, project-related impacts to these species, or their habitats, would be considered significant.

Migratory Bird Treaty Act (MBTA)

Migratory birds are protected under the federal Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed under 50 CFR 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). The direct injury or death of a migratory bird due to construction activities or other construction-related disturbance that causes nest abandonment, nestling abandonment, or forced fledging would be considered take under the MBTA. As such, project-related disturbances must be reduced or eliminated during the nesting season. The general nesting season extends from February 15 to September 15.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act was originally enacted in 1940 to protect bald eagles and was later amended to include golden eagles (16 USC Subsection 668-668). This act prohibits take, possession, and commerce of bald and golden eagles and associated parts, feathers, nests, or eggs with limited exceptions. The definition of take is the same as the definition under the FESA. The USFWS established five recovery programs in the mid-1970s based on geographical distribution of the species. Critical Habitat was not designated by regulation under FESA. In 1995, the USFWS reclassified the bald eagle from endangered to threatened under FESA in the contiguous 48 states, excluding Michigan, Minnesota, Wisconsin, Oregon, and Washington where it had already been listed as threatened. In 2007, the bald eagle was federally delisted under FESA. However, the provisions of the act remain in place for protection of bald and golden eagles.

Clean Water Act (CWA) Section 404 and 401

A project that involves discharge of dredged or fill material in navigable Waters of the U.S. must first obtain authorization from the USACE, under Section 404 of the CWA. USACE maintains the final authority for determining whether an aquatic habitat qualifies as a Water of the U.S. Projects requiring a 404 permit under the CWA also require a Section 401 certification from either USEPA for trust land, or the RWQCB for non-trust land. These two agencies also administer the NPDES general permits for construction activities disturbing one acre or more.

STATE AND LOCAL

California Endangered Species Act

The California Endangered Species Act (CESA) is similar to FESA, but is limited to species under state jurisdiction listed by the state as threatened or endangered. Under Section 2080 of the California Fish and Game Code, off-reservation take is prohibited. Take is defined as activities that “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Under Section 2081, the California Department of Fish and Wildlife (CDFW) can authorize take if an incidental take permit is issued by the Secretary of the Interior or Commerce in compliance with FESA for jointly listed species, or if the director of CDFW issues a permit and impacts are minimized and mitigated for State listed species. In general, CESA does not cover habitat impacts.

California Department of Fish and Game Code

California Fish and Game Codes § 3503, 3503.5, and 3800 prohibit the off-reservation possession, incidental take, or needless destruction of birds, their nests, and eggs. California Fish and Game Code §3511 lists birds or other species that are “fully protected” off-reservation and may not be taken or possessed except under specific permit. Consultation with CDFW may be required if construction would potentially impact off-reservation state-listed species or nesting raptors.

California Fish and Game Code Section 1602 requires notification before beginning off-reservation activities that obstruct or divert the natural flow of an off-reservation river, stream, or lake; change or use of any material from the bed, channel, or bank of an off-reservation river, stream, or lake; or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into an off-reservation river, stream, or lake. California Fish and Game Code Section 1602 applies to off-reservation perennial, intermittent, and ephemeral bodies of water in California.

Butte County General Plan

The Conservation and Open Space Element of the Butte County General Plan identifies six area of importance: preservation of natural resources, management of production resources, recreational and scenic viewing opportunities, open space in areas of natural disaster risk to promote health and safety, supporting military installation, and preservation of cultural resources. This element supports green building and protection of sensitive biological resources such as migratory deer pathways, special-status and fisheries species, and oak woodlands. Additionally, this element requires fencing around sensitive resources in the vicinity of construction, and construction worker environmental awareness training completed by a qualified biologist.

Butte Regional Conservation Plan

The Butte Regional Conservation Plan (BRCP) is both a federal Habitat Conservation Plan and a state Natural Community Conservation Plan. The BRCP is currently in draft form, but is intended to provide a streamlined approach to environmental review and permitting for development projects identified in the County General Plan, such as housing development, that may result in take of special-status species, or loss of sensitive habitat. The BRCP is supported by the payment of fees, which it then uses to manage open space conservation areas and other mitigating actions.

CULTURAL RESOURCES

FEDERAL

Section 106 of the National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA), as amended, and its implementing regulations found in 36 CFR Part 800 require federal agencies to identify cultural resources that may be affected by actions involving federal lands, funds, or permitting. The Bureau of Indian Affairs must comply with Section 106 for the proposed trust acquisition. The significance of the resources must be evaluated using established criteria outlined in 36 CFR 60.4, as described below.

If a resource is determined to be a historic property, Section 106 of the NHPA requires that effects of the federal undertaking on the resource be determined. A historic property is defined as:

…any prehistoric or historic district, site, building, structure or object included in, or eligible for inclusion in the National Register of Historic Places, including artifacts, records, and material remains related to such a property…(NHPA Sec. 301[5])

Section 106 of the NHPA prescribes specific criteria for determining whether a project would adversely affect a historic property, as defined in 36 CFR 800.5. An impact is considered adverse when prehistoric or historic archaeological sites, structures, or objects that are listed on or eligible for listing in the National Register of Historic Places (NRHP) are subjected to the following.

- physical destruction of or damage to all or part of the property
- alteration of a property
- removal of the property from its historic location
- change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance
- introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features
- neglect of a property that causes its deterioration
- transfer, lease, or sale of the property out of federal control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance

If the historic property will be adversely affected by the undertaking, then prudent and feasible measures to resolve adverse impacts must be taken. The State Historic Preservation Office must be provided an opportunity to review and comment on these measures prior to project implementation.

Archaeological Resources Protection Act

The Archaeological Resources Protection Act of 1979 (ARPA; Public Law 96-95; 16 USC 470aa-mm) provides for the protection of archaeological resources and sites that are on public and Indian lands, and fosters increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals having collections of archaeological resources and data that were obtained before October 31, 1979. ARPA also provides for penalties for noncompliance and illegal trafficking.

National Register of Historic Places

The eligibility of a resource for listing in the NRHP is determined by evaluating the resource using criteria defined in 36 CFR § 60.4 as follows. The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, association, and

A. that are associated with events that have made a significant contribution to the broad patterns of our history;
B. that are associated with the lives of persons significant in our past;
C. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant

and distinguishable entity whose components may lack individual distinction; or

D. that have yielded, or may be likely to yield, information important to prehistory or history.

Sites younger than 50 years, unless of exceptional importance, are not eligible for listing in the NRHP. In addition to meeting at least one of the criteria listed above, the property must also retain enough integrity to enable it to convey its historic significance. The NRHP recognizes seven aspects or qualities that, in various combinations, define integrity. These seven elements of integrity are location, design, setting, materials, workmanship, feeling, and association. To retain integrity a property will always possess several, and usually most, of these aspects.

Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act (NAGPRA), 25 USC 3001 et seq*.,* provides a process for museums and federal agencies to return Native American cultural items – human remains, funerary objects, sacred objects, or objects of cultural patrimony – to lineal descendants, and culturally affiliated Indian tribes and Native Hawaiian organizations. NAGPRA includes provisions for unclaimed and culturally unidentifiable Native American cultural items, intentional and inadvertent discovery of Native American cultural items on federal and Tribal lands, and penalties for noncompliance and illegal trafficking.

Paleontological Resources Preservation Act

Paleontological resources are defined as the traces or remains of prehistoric plants and animals. Such remains often appear as fossilized or petrified skeletal matter, imprints, or endocasts, and reside in sedimentary rock layers. Paleontological resources are considered important for their scientific and educational value. Fossil remains of vertebrates are considered significant. Invertebrate fossils are considered significant if they function as index fossils. Index fossils are those that appear in the fossil record for a relatively short and known period of time. This allows geologists to interpret the age range of the geological formations in which they are found. The Paleontological Resources Preservation subtitle of the Omnibus Public Land Management Act, 16 USC 470aaa to aaa-11 requires the U.S. Department of Agriculture (USDA) and the U.S. Department of the Interior to issue implementation regulations to provide for the preservation, management, and protection of paleontological resources on federal lands and ensure that these resources are available for current and future generations to enjoy as part of America's national heritage.

STATE AND LOCAL

PRC Section 21083.2

CEQA requires that, for projects financed by or requiring the discretionary approval of public agencies in California, the effects that a project has on historical and unique archaeological resources be considered (Public Resources Code [PRC] Section 21083.2). Historical resources are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, or scientific importance (PRC Section 50201).

CEQA Guidelines Section 15064.5

The CEQA Guidelines (Section 15064.5) define three cases in which a property may qualify as a historical resource for the purpose of CEQA review:

- The resource is listed in or determined eligible for listing in the California Register of Historical Resources (CRHR).
- The resource is included in a local register of historic resources, as defined in PRC Section 5020.1(k), or is identified as significant in a historical resources survey that meets the requirements of PRC Section 5024.1(g) (unless the preponderance of evidence demonstrates that the resource is not historically or culturally significant).
- The Lead Agency determines that the resource may be a historical resource as defined in PRC Section 5020.1(j), 5024.1, or significant as supported by substantial evidence in light of the whole record. Section 5024.1 defines eligibility requirements and states that a resource may be eligible for inclusion in the CRHR if it:

    1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
    2. Is associated with the lives of persons important in our past;
    3. Embodies the distinctive characteristics of a type, period, region, or method of construction, represents the work of an important creative individual, or possesses high artistic values; or
    4. Has yielded, or may be likely to yield, information important in prehistory or history.

Resources must retain integrity to be eligible for listing on the CRHR. Resources that are listed in or eligible for listing in the National Register of Historic Places (NRHP) are considered eligible for listing in the CRHR, and thus are significant historical resources for the purposes of CEQA (PRC Section 5024.1(d)(1)).

California Health and Safety Code Section 7050.5

In the event of discovery of human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined whether the remains are Native American. The coroner shall make his or her determination within two working days from the time the person responsible for the excavation, or his or her authorized representative, notifies the coroner of the discovery or recognition of the human remains. If the coroner determines that the remains are not subject to his or her authority and if the coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission (NAHC).

Assembly Bill 52

AB 52, signed into law in 2014, established a new category of resources in CEQA called "tribal cultural resources" that considers the tribal cultural values in addition to the scientific and archaeological values when determining impacts and mitigation. Pursuant to PRC, Division 13, Section 21074, TCRs can be either:

1. Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either:
    a. Included or determined to be eligible for inclusion in the CRHR; or
    b. Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.
2. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to the eligibility criteria for the CRHR (PRC § 5024.1(c)). In applying these criteria, the lead agency must consider the significance of the resource to a California Native American Tribe.

Native American tribes traditionally and culturally affiliated with a geographic area may have expertise concerning their tribal cultural resources. In light of this, AB 52 requires that, within 14 days of a decision to undertake a project or determination that a project application is complete, a lead agency shall provide written notification to California Native American tribes that have previously requested placement on the agency's notice list. Notice to tribes shall include a brief project description, location, lead agency contact information, and the statement that the tribe has 30 days to request consultation. The lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a tribe.

Butte County General Plan

The Conservation and Open Space Element of the Butte County General Plan includes the following objectives and policies for cultural resources:

Goal COS-14: Preserve important cultural resources.

Policies:

- COS-P14.2 As part of CEQA and NEPA projects, evaluations of surface and subsurface cultural resources in the county shall be conducted. Such evaluations should involve consultation with the Northeast Information Center.

Actions:

- COS-A14.6 Develop and adopt incentives to support the preservation of historic and cultural resources, including Mills Act incentives, incentives to encourage adherence to the Secretary of the Interior's Standards for Rehabilitation, and incentives to expand the types of properties that can be listed on the register.

Goal COS-15: Ensure that new development does not adversely impact cultural resources.

Policies:

- COS-P15.1 Areas found during construction to contain significant historic or prehistoric archaeological artifacts shall be examined by a qualified consulting archaeologist or historian for appropriate protection and preservation. Historic or prehistoric artifacts found during construction shall be examined by a qualified consulting archaeologist or historian to determine their significance and develop appropriate protection and preservation measures.
- COS-P15.2 Any archaeological or paleontological resources on a development project site shall be

either preserved in their sites or adequately documented as a condition of removal. When a development project has sufficient flexibility, avoidance and preservation of the resource shall be the primary mitigation measure.

Goal COS-16: Respect Native American culture and planning concerns.

Policies:

- COS-P16.1 County staff shall participate in a dialog with local Native American tribes to collaborate on tribal land use plans.
- COS-P16.2 Impacts to the traditional Native American landscape shall be considered during California Environmental Quality Act or National Environmental Protection Act review of development proposals.
- COS-P16.3 Human remains discovered during implementation of public and private development projects shall be treated with dignity and respect. Such treatment shall fully comply with the federal Native American Graves Protection and Repatriation Act and other appropriate laws.
- COS-P16.4 If human remains are located during any ground disturbing activity, work shall stop until the County Coroner has been contacted, and, if the human remains are determined to be of Native American origin, the NAHC and most likely descendant have been consulted.
- COS-P16.5 Consistent with State local and tribal intergovernmental consultation requirements such as SB18, the County shall consult with Native American tribes that may be interested in proposed new development projects and land use policy changes.

Actions:

- COS-A16.1 Establish Memoranda of Agreement regarding development consultation procedures with local Native American tribes. These Memoranda may include the following:
    - **a.** Addition of a General Plan policy that establishes a process for consultation regarding proposed development projects with local Indian tribes at the earliest possible time.
    - **b.** Development of a formal consultation protocol that provides adequate review time for tribes to review and respond to consultation requests, and that includes a definition of terms, notification procedures, review periods and procedures regarding sharing of confidential information.
    - **c.** Development and adoption of a cultural resources management plan for the County, including policies and procedures for the curation and disposition of objects, and protection, preservation and long-term monitoring of traditional cultural properties.
    - **d.** Guidelines for engagement with local tribes to create a confidential cultural resources inventory to be conducted as part of a countywide assessment of cultural resources. Use ethnographies as one source of information for nonarchaeological Native American sites.
    - **e.** Development of a reliable and trustworthy system and relationship between local tribes and the County to protect confidential tribal information.
    - **f.** Coordination with local tribes to adopt standards for County and private retention of professional archaeologists and cultural resource specialists to monitor construction on sensitive sites. Standards for professional archaeologists should meet or exceed US Department of Interior standards.
    - **g.** Guidelines for engagement with local Indian tribes to create a confidential cultural resources inventory of the county and development of a reliable and trustworthy system

and relationship between local tribes and the County to protect confidential tribal information.

h. Re-evaluation of sites of past archaeological investigations that may be impacted by proposed development projects to assess cultural sensitivity, using state-of-the-art methods.

i. Recognition of the importance to Native Americans of natural resources, including oak woodlands, deer herds, water bodies and riparian corridors, as well as aquatic, riparian and upland plant and animal species. Recognition of the importance to local Native American tribes of gathering and use sites, as well as other traditional tribal cultural places. Consideration of the use of these resources and sites by contemporary Native Americans in planning for land use, development and management. Consultation and other coordination with local Native American tribes to preserve these habitats, resources, sites and species.

j. Establishment of protection measures to acknowledge and protect traditional tribal cultural knowledge and intellectual property rights.

SOCIOECONOMIC CONDITIONS/ENVIRONMENTAL JUSTICE

FEDERAL

Executive Order 12898

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, as amended, directs federal agencies to develop an Environmental Justice Strategy that identifies and addresses disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations. The CEQ has oversight responsibility of the federal government's compliance with EO 12898 and NEPA. The CEQ, in consultation with the USEPA and other agencies, has developed guidance to assist federal agencies with their NEPA procedures so that environmental justice concerns are effectively identified and addressed. The document *Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses* provides the direction on how to analyze the impacts of actions on low-income and minority populations. Communities may be considered "minority" under the executive order if one of the following characteristics apply:

- The cumulative percentage of minorities within a census tract is greater than 50 percent (primary method of analysis).
- The cumulative percentage of minorities within a census tract is less than 50 percent, but the percentage of minorities is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (secondary method of analysis).

According to USEPA, either the county or the state can be used when considering the scope of the "general population." A definition of "meaningfully greater" is not given by the CEQ or USEPA, although the latter has noted that any affected area that has a percentage of minorities above the state's percentage is a potential minority community and any affected area with a minority percentage double that of the state's is a definite minority community under EO 12898. Communities may be considered "low-income" under the EO if one of the following characteristics applies.

- The median household income for a census tract is below the poverty line (primary method of analysis).
- Other indications are present that indicate a low-income community is present within the census tract (secondary method of analysis).

In most cases, the primary method of analysis will suffice to determine whether a low-income community exists in the affected environment. However, when a census tract income may be just over the poverty line or where a low-income pocket within the tract appears likely, the secondary method of analysis may be warranted. Other indications of a low-income community under the secondary method of analysis include limited access to health care, overburdened or aged infrastructure, and dependence on subsistence living.

STATE AND LOCAL

Regional Housing Allocation Plan

California State law specifies a process for determining each local jurisdiction's fair share of regional housing needs, called the Regional Housing Needs Allocation Plan (RHNA). The California Department of Housing and Community Development assigns each regional council of governments a necessary number of new housing units for that region, including affordable housing. Each local government in California is required to adopt a Housing Element as part of its General Plan that shows how the community plans to meet the existing and projected housing needs of people at all income levels.

Butte County General Plan

The goals of the Butte County General Plan Housing Element are to satisfy the regional housing needs of all income level households via new housing developments, encourage the rehabilitation of the existing housing stock, and to provide equal housing opportunities that includes low-income and special housing needs. Projected housing needs are included in this element as the Housing Needs Assessment. This element additionally identifies incorporation of green building standards as a recognized goal.

TRANSPORTATION AND CIRCULATION

FEDERAL

Federal Transportation Improvement Program

The Federal Transportation Improvement Program (FTIP) is a plan for the implementation of the long-range Regional Transportation Plan. The FTIP presents manageable components to federal funding agencies for the funding of long-term plans and establishes a systematic approach to programming capital improvement projects over a five-year term, and is subject to continual modifications.

STATE AND LOCAL

California Department of Transportation

The California Department of Transportation establishes Caltrans as the managing agency over permitting and regulation of state roadways. They are responsible for numerous programs involved with transportation standards, engineering services, environmental review, as well as the management of rail and mass transportation.

Butte County Association of Governments

The Butte County Association of Governments (BCAG) is a Joint Powers Agency of the County of Butte, the cities of Biggs, Chico, Gridley, Oroville, and the Town of Paradise. The primary responsibility of BCAG is to prepare all state and federally required transportation plans and programs that are necessary for securing transportation funding for highways, streets and roads, transit, bike and pedestrian facilities, and other transportation modes.

Butte County General Plan

The Circulation Element of the Butte County General Plan deals with the safety and efficiency of people and goods travelling within and through the County. Of the various modes of transportation within the County, vehicular traffic is considered the most prevalent. A Level of Service (LOS) of A through C are considered acceptable, while LOS D is considered marginally acceptable. LOS below D is not considered acceptable. The General Plan seeks to reduce harmful emissions from transportation, devote additional land to transportation infrastructure, include alternative transportation design in development or re-development areas, and integrate the public transportation system with alternate forms of transportation.

LAND USE

FEDERAL

Farmland Protection Policy Act

The Farmland Protection Policy Act (FPPA) is intended to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It assures that federal programs are administered in a matter that is compatible with state and local units of government, and private programs and policies to protect farmland (7 USC § 4201).

The Natural Resource Conservation Service (NRCS) is responsible for the implementation of the FPPA and categorizes farmland in a number of ways. These categories include: prime farmland, farmland of statewide importance, and unique farmland. Prime farmland is considered to have the best possible features to sustain long-term productivity. Farmland of statewide importance includes farmland similar to prime farmland, but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Unique farmland is characterized by inferior soils and, depending on climate, generally needs irrigation.

The NRCS fulfills the directives of the Soil and Water Conservation Act (16 USC § 2001-2009) by identifying significant areas of concern for the protection of national resources. NRCS uses a land evaluation and site assessment (LESA) system to establish a Farmland Conversion Impact Rating (FCIR) score. The FCIR is completed on form AD-1006. The FCIR form has two components: land evaluation, which rates soil quality up to 100 points, and the site assessment, which measures other factors that affect the property's viability up to 160 points.

The total FCIR score is used as an indicator for the project's sponsor to consider alternative sites if the potential adverse impacts on the farmland exceed the allowable level; however, the FPPA does not require federal agencies to alter projects to avoid or minimize farmland conversion. Sites receiving a combined score of less than 160 (out of 260 possible points) do not require further evaluation. For sites with a combined score greater than 160 points, at least two other alternatives are required to be considered and the alternative with the lowest number of points selected unless there are other overriding considerations.

Williamson Act

The Williamson Act, also known as the California Land Conservation Act of 1965, allows local governments to enter into contracts with private landowners to restrict specific parcels for agricultural use or open space. The private land owner then receives property tax assessments that are much lower than the market value. The Williamson Act also outlines enrollment guidelines, acreage minimums, enforcement procedures, allowable uses, and compatible uses.

STATE AND LOCAL

Butte County General Plan

The Butte County General Plan outlines the purpose of the Land Use element to shape the physical development of the County to conserve livability and current quality of life for residents. The Land Use Element specifically states that the purpose of the element is not designed to discourage or promote development, but rather to describe the manner in which it should be managed if it were to occur. The element outlines overlays, goals, policies, and actions as well as zoning designations for the County. A General Plan Land Use Designation Map is also included within the element.

Butte County Zoning Ordinance

According to the Butte County Zoning Ordinance, the ordinance is designed "to implement the Butte County General Plan and to protect and promote the health, safety, and welfare of Butte County residents." The zoning ordinance provides the applicable zone by parcel for parcels within unincorporated Butte County. Each zone is described within the Butte County Zoning Ordinance with allowable uses, and uses allowed by permit. While the zoning ordinance is the tool utilized to implement the General Plan, the zoning ordinance additionally states that, when land use conflict between the zoning ordinance and the general plan occurs, the land use designation of the general plan takes precedence.

PUBLIC SERVICES

FEDERAL

Safe Drinking Water Act

Minimum national drinking water standards and guidelines for groundwater protection are established through the 1974 Safe Drinking Water Act (amended in 1986 and 1996). Contaminants of concern relevant to domestic water supply are defined as those that pose a public health threat or that alter the aesthetic acceptability of the water. The USEPA regulates contaminants through the development of national primary and secondary Maximum Contaminant Levels for drinking water.

STATE AND LOCAL

California Integrated Waste Management Act

State Assembly Bill 939 (AB 939), or California Integrated Waste Management Act, requires all jurisdictions to enact plans and programs to divert 50 percent of all solid waste away from landfills. These plans and programs include, but are not limited to Source Reduction, Recycling, Composting, Special Waste Component, and Public Education. A local assistanc staff will help localities meet their planning and diversion mandateds and impose fines if the diversion plan is not met.

Butte County General Plan

The Health and Safety Element of the Butte County General Plan provides information concerning the protection of the community from fires and floods, and provides information on emergency response and disaster preparedness. According to the general plan, "The responsibility for the prevention and suppression of wildfires in Butte County belongs to the Butte County Fire Department (BCFD) and the California Department of Forestry and Fire Protection (CAL FIRE) and to individual municipalities and a fire protection district." The Public Facilities and Services Element provides background information and goals and policies related to future development for government services, fire protection, emergency medical service, sheriff services, public education, libraries, parks and recreation, solid waste removal, and wastewater removal services. In general, goals and policies are designed to allow for sufficient public services to be reasonably available to citizens throughout the County.

NOISE

FEDERAL

The U.S. Department of Housing and Urban Development

The U.S. Department of Housing and Urban Development (HUD) provides noise standards to encourage the control of noise at its source in cooperation with other Federal departments and agencies, and encourage land use patterns for housing and other noise sensitive urban needs that will provide a suitable separation between them and major noise sources. HUD considers an acceptable noise level for residential units to be 65 dB (24 CFR Part 51).

The Federal Interagency Committee on Noise

The Federal Interagency Committee on Noise (FICON) provides guidance in how to assess noise impacts resulting from aircraft operations, shown in **Table 3**. However, although FICON recommendations were specifically developed to assess aircraft noise impacts, these criteria have been applied to other sources of noise similarly described in terms of cumulative noise exposure metrics.

TABLE 3 - SIGNIFICANCE OF CHANGES IN NOISE EXPOSURE LEVELS

Ambient Noise Level without Project, LDN	Increase Required for Significant Impact
< 60 dB	+ 5.0 dB or more
60 to 65 dB	+ 3.0 dB or more
> 65 dB	+ 1.5 dB or more
Source: FICON, 1992	

Noise Abatement Criteria

The FHWA establishes Noise Abatement Criteria (NAC) for various land uses that have been categorized based on activity. Land uses are categorized on the basis of their sensitivity to noise as indicated in **Table 4**. The FHWA NAC is based on peak traffic hour noise levels.

TABLE 4. FEDERAL NOISE ABATEMENT CRITERIA HOURLY A-WEIGHTED SOUND LEVEL DECIBELS

Activity Category	Activity Criteria Leq (h), dBA	Evaluation Location	Activity Category Description
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67	Exterior	Residential.
C	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycare centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails and trail crossings.
D	52	Interior	Auditoriums, daycare centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or non-profit institutional structures, radio studios, recording studios, schools, and television studios.
E[1]	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.

Activity Category	Activity Criteria Leq (h), dBA	Evaluation Location	Activity Category Description
F	--	--	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, shipyards, utilities (water resources, water treatment, electricity), and warehousing.
G	--	--	Undeveloped lands that are not permitted.

Notes: [1] Includes undeveloped lands permitted for this activity category.
Source: 23 CFR 772

FHWA Construction Noise Thresholds

The Federal Highway Administration (FHWA) provides construction noise level thresholds in its Construction Noise Handbook, 2006 in order to evaluate the potential noise impacts for projects. These are provided in **Table 5**.

TABLE 5: FEDERAL CONSTRUCTION NOISE THRESHOLDS

Noise Receptor Locations and Land Uses	Daytime (7 am - 6 pm)	Evening (6 pm - 10 pm)	Nighttime (10 pm - 7 am)
	dBA, Leq[1]		
Noise-Sensitive Locations (residences, institutions, hotels, etc.)	72 or Baseline + 5 (whichever is louder)	Baseline + 5	Baseline + 5 (if Baseline < 70) or Baseline + 3 (if Baseline > 70)
Commercial Areas (businesses, offices, stores, etc.)	77 or Baseline + 5	None	None
Industrial Areas (factories, plants, etc.)	82 or Baseline + 5	None	None

Notes: [1] Leq is the equivalent countinuous sound level; Leq thresholds were empirically determined using L_{10} (FHWA, 2006). dBA are
Source: FHWA, 2006.

Vibration Standards

The effects of ground-borne vibrations typically cause only a nuisance to people, but at extreme vibration levels, damage to buildings may occur. Although ground-borne vibration can be felt outdoors, it is typically an annoyance only indoors, where the associated effects of the building shaking can be notable. Ground-borne noise is an effect of ground-borne vibration and only exists indoors since it is produced from noise radiated from the motion of the walls and floors of a room and may consist of the rattling of windows or dishes on shelves.

The Federal Transit Administration (FTA) utilizes criteria for acceptable ground-borne vibration which is expressed in terms of root mean squared (RMS) velocity levels in decibels. Vibration categories are classified by land use for a general assessment of impact levels as seen in **Table 6.**

TABLE 6: GROUND-BORNE VIBRATION (GBV) IMPACT CRITERIA FOR GENERAL ASSESSMENT

Land Use Category	GBV Impact Levels (VdB re 1 micro-inch / sec)		
	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]
Category 1: Buildings where vibration would interfere with interior operations.	65 VdB	65 VdB	65 VdB
Category 2: Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB
Category 3: Institutional uses with primarily daytime use.	75 VdB	78 VdB	83 VdB

1. "Frequent Events" is defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category.
2. "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day. Most commuter trunk lines have this many operations.
3. "Infrequent Events" is defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines.
4. This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.
5. Vibration-sensitive equipment is generally not sensitive to ground-borne noise.

Source: FTA, 2006

Peak particle velocity (PPV) is often used to measure vibration. PPV is the maximum instantaneous peak (inches per second) of the vibration signal. The PPV levels are used to estimate L_v or VdB levels (vibration decibels with a reference velocity of one micro-inch per second). Human responses to vibration vary by the source of vibration, which is either continuous or transient. Continuous sources of vibration include construction while transient sources include truck movements. Generally, the thresholds of perception and annoyance are higher for transient sources than for continuous sources. **Table 7** summarizes the FTA's guideline vibration damage criteria for various structural categories. As shown therein, buildings extremely susceptible to vibration damage could be damaged if vibration levels exceed 90 VdB. Additionally, although humans have a perceptibility threshold of 65 VdB, human response to vibration is not usually significant unless the vibration exceeds 70 VdB (FTA, 2006). Background vibration velocity in residential areas is usually 50 VdB or lower.

TABLE 7: CONSTRUCTION VIBRATION DAMAGE CRITERIA

Building Category	Approximate PPV (in/sec)	Approximate Lv (VdB)
Reinforced-concrete, steel, or timber (no plaster)	0.5	102
Engineered concrete and masonry (no plaster)	0.3	98
Non-engineered timber and masonry buildings	0.2	94
Buildings extremely susceptible to vibration damage	0.12	90

Source: FTA, 2006

STATE AND LOCAL

California Noise Insulation Standards

The State of California establishes noise limits for vehicles licensed to operate on public roads. The State has also established noise insulation standards for new multi-family residential units, hotels, and motels that would be subject to high levels of transportation-related noise. The requirements are collectively known as the California Noise Insulation Standards (CNIS; Title 24, CCR). The CNIS set forth an interior day-night average noise level (Ldn) standard of 45 dB in a habitable room. An acoustical analysis demonstrating how dwelling units have been designed to meet this interior standard is required where such units are proposed in areas subject to noise levels greater than 60 dB Ldn.

Butte County General Plan

A discussion on noise levels is included within the Health and Safety Element of the Butte County General Plan. Mobile noise sources related to transportation are identified as the most prevalent noise producers in the County. This includes automobiles, trains, and airplanes. Stationary noise producers are dominated by industrial activities, but also include facilities such as parks and sporting fields. The noise component of the Health and Safety Element seeks to ensure acceptable noise levels and compatible adjacent land uses to noise sources throughout the County. The Health and Safety Element generally proposes to achieve this through use of low-noise equipment, noise-reduction mitigation, and strategic land use planning such that sensitive receptors are not subject to unacceptable levels of noise or groundborne vibrations.

HAZARDOUS MATERIALS

FEDERAL

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) regulates the land disposal of hazardous materials from cradle-to-grave. This means establishing a regulatory framework for the generation, transport, treatment, storage and disposal of hazardous waste. Specifically, Subtitle D of RCRA pertains to non-hazardous solid waste and Subtitle C focuses on hazardous solid waste. A solid waste can consist of solids, liquids and gases, but these must be discarded in order to be considered waste. Additionally, the USEPA has developed regulations to set minimum national technical standards for how disposal facilities should be designed and operated. States issue permits to ensure compliance with USEPA and state regulations. The regulated community is comprised of a diverse group that must comprehend and adhere to RCRA regulations. These groups can consist of hazardous waste generators, government agencies, small businesses, and gas stations with underground petroleum tanks.

Toxic Substances Control Act

The federal Toxic Substances Control Act (TSCA), as amended by the Frank R. Lautenberg Chemical Safety for the 21st Century Act, permits the USEPA to evaluate the potential risk from novel and existing chemicals and address unacceptable risks chemicals may have on human health and the environment. The USEPA oversees the production, importation, use, and disposal of certain chemicals. This includes the USEPA having the authority to require record keeping, reporting, and test requirements and restrictions associated with certain chemical substances and/or mixtures. However, certain groups of chemicals are excluded from TSCA consideration, including—but not limited to—food, drugs, cosmetics and pesticides. Examples of chemicals included in TSCA consideration are lead paint, asbestos, mercury, formaldehyde, and polychlorinated biphenyls.

Comprehensive Environmental Response, Compensation and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980, also known as Superfund, provides funds to clean up uncontrolled, closed, or abandoned hazardous waste sites, as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. The USEPA cleans up orphan sites when potentially responsible parties cannot be identified or located, or when they fail to act.

STATE AND LOCAL

California Environmental Protection Agency

The California Environmental Protection Agency (CalEPA) develops, implements, and enforces environmental laws that regulate air, water and soil quality, pesticide use, and waste recycling and reduction. CalEPA oversees and coordinates the activities of the Office of Environmental Health Hazard Assessment, the SWRCB, the Air Resources Board (ARB), the Department of Pesticide Regulation, Department of Toxic Substances Control (DTSC), and the Department of Resources Recycling and Recovery. The DTSC takes enforcement actions against violators, oversees hazardous wastes on contaminated properties, makes decisions on permit applications from companies that want to store, treat, or dispose of hazardous waste, and protects consumers against toxic ingredients in everyday products.

California Code of Regulations, Title 22, Division 4.5

CCR Title 22, Divisions 4 and Division 4.5 address off-Reservation environmental and public health standards for the management of hazardous waste. Hazardous materials are defined as those that pose a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment (22 CCR §66260.10). Hazardous waste as defined in 22 CCR § 66261.3 includes acutely hazardous waste, extremely hazardous waste, non-RCRA hazardous waste, RCRA hazardous waste, special waste, and universal waste.

California Health and Safety Code, Division 20, Chapter 6.95

California Health and Safety Code, Division 20, Chapter 6.95 requires off-Reservation businesses to plan and prepare for a chemical emergency through the preparation of a Hazardous Materials Inventory and a Hazardous Materials Business Plan (HMBP). The local Certified Unified Program Agency conducts routine inspections at off-Reservation businesses to submit HMBPs via California's Environmental Reporting System website.

Butte County General Plan

Butte County has identified hazardous materials sites as most commonly former industrial sites, groundwater plumes and burn sites. The Health and Safety Element of the Butte County General Plan includes the following goals and policies:

Goal HS-14: Reduce risks from the harmful effects of hazardous materials.
Policies:

- HS-P14.1 Hazardous materials carrier routes shall be designated to direct hazardous materials transport away from populated areas.
- HS-P14.2 Hazardous and toxic materials shall be transported only along the designated highway and rail routes.
- HS-P14.3 Proponents of new hazardous waste management facilities shall demonstrate that potential environmental impacts can be mitigated as a condition of approval.
- HS-P14.4 Environmental assessment and/or investigation shall be required prior to General Plan Amendment or Rezone approval that would allow uses with sensitive receptors, such as residential developments, schools, or care facilities, on sites previously used for commercial, industrial, agricultural or mining uses to determine whether soils, groundwater and existing structures are contaminated and require remediation. Policies and oversight authority shall follow Health and Safety Code Division 20, Chapters 6.5 and 6.8 when determining jurisdiction.

VISUAL RESOURCES

FEDERAL

National Scenic Byway Program

The National Scenic Byway Program was established by Congress in 1991 as the Intermodal Surface Transportation Efficiency Act. The Program is administered by the Federal Highway Administration and was established to preserve scenic but less-traveled roadways. A national scenic byway is a road recognized by the U.S. Department of Transportation for one or more of six intrinsic qualities. Intrinsic qualities include archeological, cultural, historic, natural, recreational, and scenic. National scenic byways must already be designated as state scenic byways or must possess all six intrinsic qualities to be nominated.

STATE AND LOCAL

California State Scenic Highways

In 1963, the State Legislature established the California Scenic Highway Program through Senate Bill 1467 and 1468, provisions of which were added to the Streets and Highways Code. Scenic highway designation does not preclude nearby development; however, the program encourages development that does not degrade the scenic value of the highway corridor.

Butte County General Plan

The Conservation and Open Space Element includes Scenic Resources as one of the main components. It identifies many scenic features that exist within Butte County. In addition to scenic highway zones,

Figure COS-6 of the general plan identifies notable land and water based scenic features and areas of note within the County.

Goal COS-18: Maintain and enhance the quality of Butte County's scenic and visual resources.
Policies:

- COS-P18.1 Views of Butte County's scenic resources, including water features, unique geologic features, and wildlife habitat areas, shall be maintained
- COS-P18.2 Ridgeline development near scenic resources shall be limited via the adoption of specific development guidelines to minimize visual impacts.*

Actions:

- COS-A18.1 Adopt development guidelines that mitigate the impacts of ridgeline development near scenic resources

Goal COS-19: Protect and enhance scenic areas adjacent to and visible from highways for enjoyment by residents and visitors.
Policies:

- COS-P19.1 The County shall designate scenic corridors based on careful consideration of the following factors:
  - a. Relationship to the scenic highway system, including proximity to urban population centers, gateways, integration with other highways and scenic highways and access to major recreation areas.
  - b. Safety characteristics, including road surface and alignment, shoulder width, traffic levels, number of intersections, access points, turnouts, and rest areas.
  - c. Scenic characteristics, including vista points, geologic resources, native plant and animal species, waterways, historic resources and agricultural, timber and recreation uses.
  - d. Government policies, including public lands, eligibility for State scenic highway designation, and consistency with other Butte County General Plan 2030 elements.
  - e. Economic impacts on properties affected by a scenic highway designation.
- COS-P19.2 To enhance safety on scenic highways, the County shall limit access, using existing access where feasible, and limit encroachment permits.
- COS-P19.3 The County shall require utility companies to choose the least conspicuous locations for distribution lines, to avoid impacts to scenic corridors where there is reasonable choice.

Actions:

- COS-A19.1 Review the scenic highways program, considering the potential designation of new scenic highways, removal of existing scenic highway designations, and modifications to the scenic highway standards.

APPENDIX SOILS

NRCS CUSTOM SOILS REPORT

United States Department of Agriculture

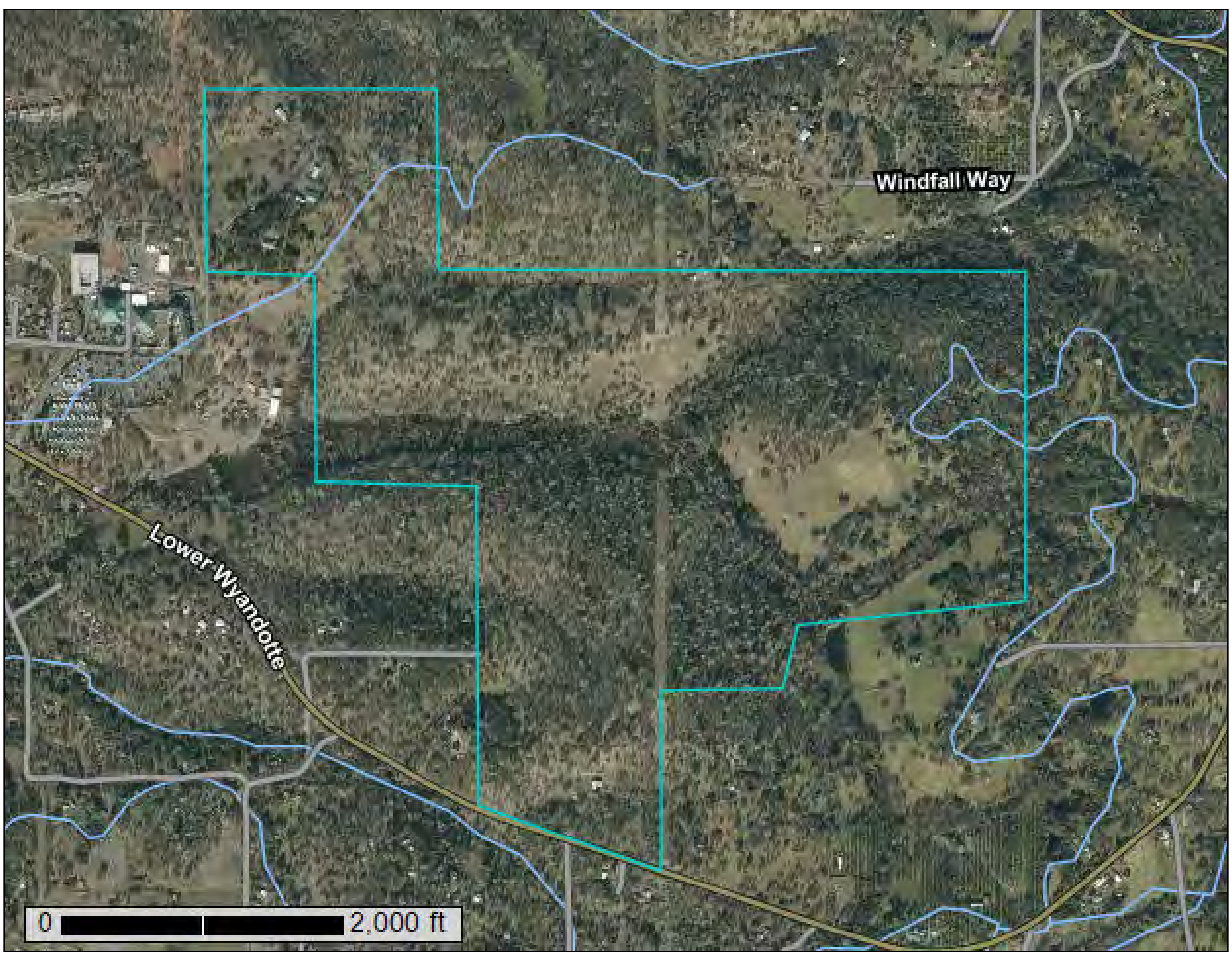
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for
Butte Area, California, Parts of Butte and Plumas Counties

Mooretown Rancheria FTT Project



August 2, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

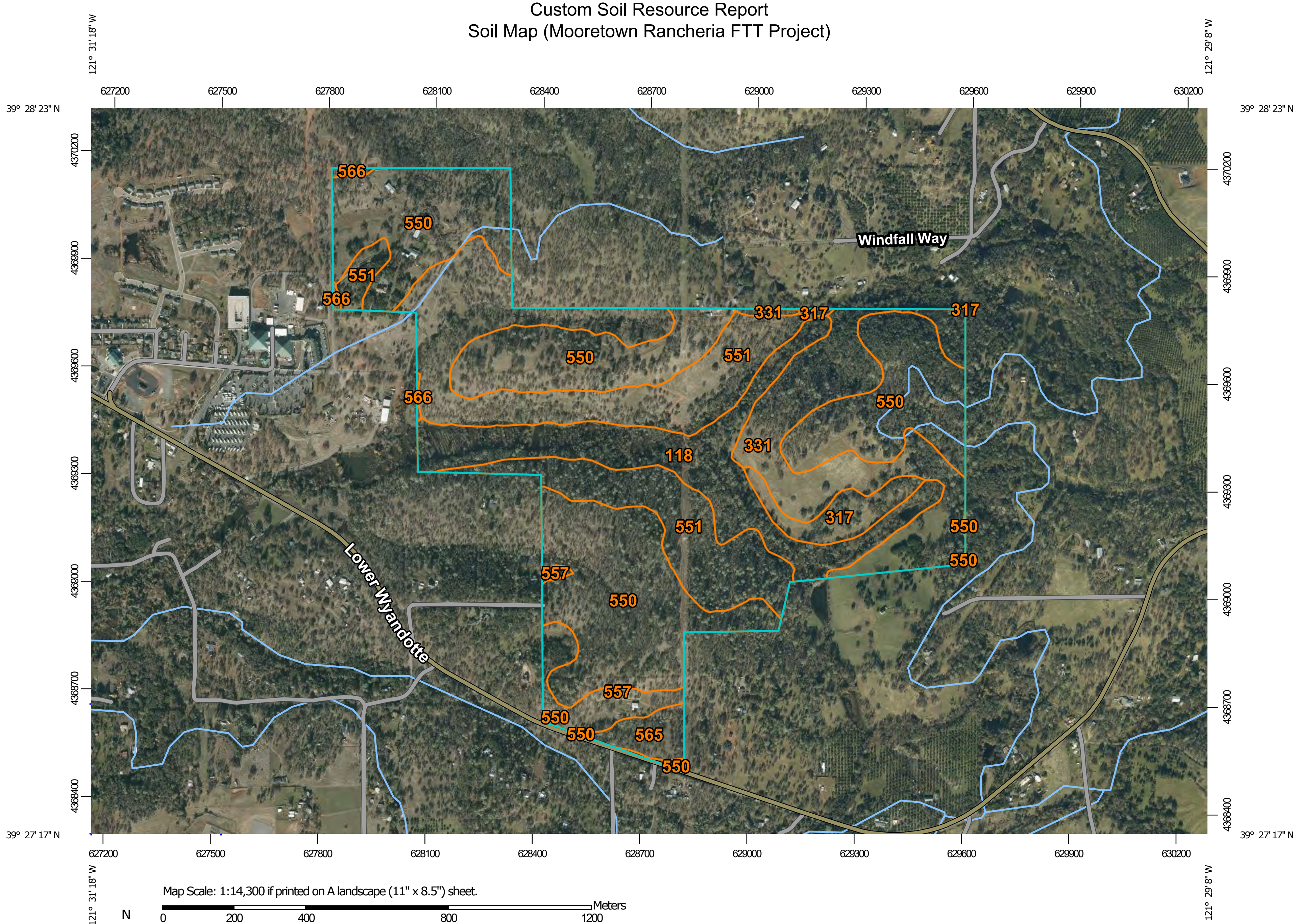
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

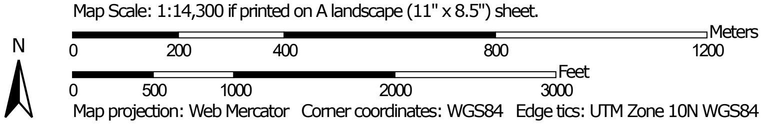
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map (Mooretown Rancheria FTT Project)



Map Scale: 1:14,300 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Butte Area, California, Parts of Butte and Plumas Counties
Survey Area Data: Version 17, Jun 1, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 6, 2018—Dec 12, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Mooretown Rancheria FTT Project)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
118	Xerorthents, Tailings and 0 to 50 percent slopes	46.8	12.8%
317	Thompsonflat loam, 2 to 15 percent slopes	10.4	2.8%
331	Thompsonflat loam, 15 to 30 percent slopes	47.9	13.1%
550	Dunstone-loafercreek complex, dry, 1 to 15 percent slopes	147.1	40.4%
551	Dunstone-Lomarica-Argonaut taxadjunct , 15 to 30 percent slopes	93.5	25.7%
557	Mounthope-Hartsmill , 15 to 30 percent slopes	11.4	3.1%
565	Dunstone-Argonaut taxadjunct-Sunnyslope , 2 to 15 percent slopes	6.4	1.7%
566	Dunstone-Loafercreek-Katskillhill , 2 to 15 percent slopes	1.1	0.3%
Totals for Area of Interest		**364.6**	**100.0%**

Map Unit Descriptions (Mooretown Rancheria FTT Project)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Butte Area, California, Parts of Butte and Plumas Counties

118—Xerorthents, Tailings and 0 to 50 percent slopes

Map Unit Setting

National map unit symbol: hgxl
Elevation: 90 to 1,340 feet
Mean annual precipitation: 21 to 50 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 240 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Xerorthents and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Xerorthents

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Dredged spoil piles from gravelly alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

A - 0 to 3 inches: very gravelly sandy loam
AC - 3 to 8 inches: extremely gravelly sandy loam
C1 - 8 to 21 inches: loamy sand
C2 - 21 to 26 inches: loamy sand
C3 - 26 to 35 inches: loamy sand
C4 - 35 to 48 inches: loamy coarse sand
C5 - 48 to 59 inches: loamy sand
C6 - 59 to 81 inches: loamy sand

Properties and qualities

Slope: 0 to 50 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 4.25 in/hr)
Depth to water table: About 60 to 80 inches
Frequency of flooding: RareNoneOccasional
Frequency of ponding: None
Available water capacity: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A

Hydric soil rating: Yes

Minor Components

Unnamed, riparian areas
Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

Pits, water-filled
Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

Xeropsamments, tailings
Percent of map unit: 3 percent
Landform: Flood plains
Hydric soil rating: Yes

Xerofluvents, tailings
Percent of map unit: 3 percent
Landform: Flood plains
Hydric soil rating: Yes

Haploxeralfs, terrace
Percent of map unit: 2 percent
Landform: Stream terraces
Hydric soil rating: No

Unnamed, duripan
Percent of map unit: 2 percent
Landform: Terraces
Hydric soil rating: Yes

317—Thompsonflat loam, 2 to 15 percent slopes

Map Unit Setting

National map unit symbol: sdr4
Elevation: 160 to 500 feet
Mean annual precipitation: 22 to 30 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 260 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Thompsonflat, loam, and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Thompsonflat, Loam

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium over clayey alluvium over noncemented to very weakly cemented sandy and gravelly alluvium derived from igneous and metamorphic rock

Typical profile

A - 0 to 2 inches: loam
Bt1 - 2 to 5 inches: gravelly loam
Bt2 - 5 to 12 inches: gravelly loam
Bt3 - 12 to 19 inches: gravelly loam
Bt4 - 19 to 29 inches: gravelly clay loam
2Bt5 - 29 to 35 inches: very gravelly clay
3Bq1 - 35 to 43 inches: extremely gravelly sandy clay loam
3Bq2 - 43 to 80 inches: extremely gravelly sandy clay loam

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.09 to 0.23 in/hr)
Depth to water table: About 40 to 81 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 0.5 mmhos/cm)
Available water capacity: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Oroville

Percent of map unit: 10 percent
Landform: Terraces
Hydric soil rating: No

Unnamed, fine-loamy, duripan 20 to 40 inches

Percent of map unit: 5 percent
Landform: Terraces
Hydric soil rating: No

Unnamed, loamy, duripan 10 to 20 inches

Percent of map unit: 5 percent
Landform: Terraces
Microfeatures of landform position: Swales

Hydric soil rating: No

Unnamed, fine, bedrock (densic) 40 to 60 inches

Percent of map unit: 2 percent
Landform: Terraces
Hydric soil rating: No

Rock outcrop, mudflow or tuff

Percent of map unit: 2 percent
Landform: Hills
Hydric soil rating: No

Vertisols, duripan 20 to 40 inches

Percent of map unit: 1 percent
Landform: Terraces
Hydric soil rating: Yes

331—Thompsonflat loam, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: sdr7
Elevation: 260 to 500 feet
Mean annual precipitation: 22 to 30 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Thompsonflat, loam, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Thompsonflat, Loam

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Riser
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy alluvium over clayey alluvium over noncemented to very weakly cemented sandy and gravelly alluvium derived from igneous and metamorphic rock

Typical profile

A - 0 to 2 inches: loam
Bt1 - 2 to 5 inches: gravelly loam
Bt2 - 5 to 12 inches: gravelly loam
Bt3 - 12 to 19 inches: gravelly loam
Bt4 - 19 to 29 inches: gravelly clay loam
2Bt5 - 29 to 35 inches: very gravelly clay

3Bq1 - 35 to 43 inches: extremely gravelly sandy clay loam
3Bq2 - 43 to 80 inches: extremely gravelly sandy clay loam

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.09 to 0.23 in/hr)
Depth to water table: About 40 to 81 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 0.5 mmhos/cm)
Available water capacity: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Oroville

Percent of map unit: 9 percent
Landform: Terraces
Hydric soil rating: No

Escarpments

Percent of map unit: 3 percent
Landform: Terraces
Hydric soil rating: No

Unnamed, fine-loamy, duripan 20 to 40 inches

Percent of map unit: 3 percent
Landform: Terraces
Hydric soil rating: No

550—Dunstone-loafercreek complex, dry, 1 to 15 percent slopes

Map Unit Setting

National map unit symbol: hh4p
Elevation: 250 to 1,200 feet
Mean annual precipitation: 28 to 40 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 230 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Dunstone, loam, dry, and similar soils: 60 percent

Loafercreek, silt loam, dry, and similar soils: 20 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dunstone, Loam, Dry

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy residuum weathered from metavolcanics

Typical profile

A - 0 to 2 inches: loam
BAt - 2 to 7 inches: loam
Bt1 - 7 to 10 inches: loam
Bt2 - 10 to 16 inches: loam
Cr - 16 to 26 inches: bedrock

Properties and qualities

Slope: 1 to 15 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.43 to 1.56 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F018XI201CA - Moderately Deep Thermic Foothills 22-31 PZ
Hydric soil rating: No

Description of Loafercreek, Silt Loam, Dry

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy residuum and/or colluvium derived from metavolcanics

Typical profile

A1 - 0 to 2 inches: silt loam
A2 - 2 to 4 inches: silt loam
BAt - 4 to 11 inches: loam
Bt1 - 11 to 20 inches: loam
Bt2 - 20 to 29 inches: loam

Crt - 29 to 39 inches: bedrock

Properties and qualities

Slope: 1 to 15 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.43 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F018XI201CA - Moderately Deep Thermic Foothills 22-31 PZ
Hydric soil rating: No

Minor Components

Auburn, loam

Percent of map unit: 9 percent
Landform: Hills
Hydric soil rating: No

Unnamed, loamy-skeletal, bedrock 10 to 20 inches

Percent of map unit: 5 percent
Landform: Hills
Hydric soil rating: No

Unnamed, clayey, bedrock (paralithic) 10 to 20 in

Percent of map unit: 2 percent
Landform: Hills
Hydric soil rating: No

Lomarica

Percent of map unit: 2 percent
Landform: Hills
Hydric soil rating: No

Rock outcrop, greenschist

Percent of map unit: 2 percent
Landform: Hills
Hydric soil rating: No

551—Dunstone-Lomarica-Argonaut taxadjunct , 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: hh4n
Elevation: 200 to 1,600 feet
Mean annual precipitation: 28 to 40 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 230 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Dunstone, loam, dry, and similar soils: 35 percent
Lomarica, loam, and similar soils: 15 percent
Argonaut taxadjunct, loam, and similar soils: 15 percent
Minor components: 35 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dunstone, Loam, Dry

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy residuum weathered from metavolcanics

Typical profile

A - 0 to 2 inches: loam
BAt - 2 to 7 inches: loam
Bt1 - 7 to 10 inches: loam
Bt2 - 10 to 16 inches: loam
Cr - 16 to 59 inches: bedrock

Properties and qualities

Slope: 15 to 30 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.43 to 1.56 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): 6e

Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Lomarica, Loam

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Clayey colluvium and/or residuum weathered from metavolcanics

Typical profile

A - 0 to 1 inches: loam
BAt - 1 to 5 inches: loam
Bt1 - 5 to 9 inches: clay loam
Bt2 - 9 to 12 inches: clay loam
2Bt3 - 12 to 25 inches: extremely gravelly clay loam
2Btss - 25 to 32 inches: extremely gravelly clay
2Cr - 32 to 59 inches: bedrock

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.09 to 0.12 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Argonaut Taxadjunct, Loam

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey colluvium and/or residuum weathered from metavolcanics

Typical profile

A - 0 to 2 inches: loam
Bt1 - 2 to 8 inches: clay loam
Bt2 - 8 to 14 inches: clay
Bt3 - 14 to 20 inches: clay
BCt1 - 20 to 26 inches: clay

BCt2 - 26 to 30 inches: clay loam
Cr - 30 to 59 inches: bedrock

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.11 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F018XI201CA - Moderately Deep Thermic Foothills 22-31 PZ
Hydric soil rating: No

Minor Components

Loafercreek

Percent of map unit: 8 percent
Landform: Hills
Hydric soil rating: No

Katskillhill

Percent of map unit: 8 percent
Landform: Hills
Hydric soil rating: No

Unnamed, clayey-skeletal bedrock paralithic >40in

Percent of map unit: 5 percent
Landform: Hills
Hydric soil rating: No

Unnamed, clayey-skeletal bedrock paralithic <20in

Percent of map unit: 5 percent
Landform: Hills
Hydric soil rating: No

Auburn, loam

Percent of map unit: 5 percent
Landform: Hills
Hydric soil rating: No

Rock outcrop, greenschist

Percent of map unit: 4 percent
Landform: Hills
Hydric soil rating: No

557—Mounthope-Hartsmill , 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: hh57
Elevation: 1,200 to 2,000 feet
Mean annual precipitation: 40 to 45 inches
Mean annual air temperature: 57 to 59 degrees F
Frost-free period: 240 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Mounthope, loam, and similar soils: 50 percent
Hartsmill, gravelly loam, and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mounthope, Loam

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum and/or colluvium derived from metavolcanics

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 3 inches: loam
Bt1 - 3 to 7 inches: loam
Bt2 - 7 to 15 inches: loam
Bt3 - 15 to 22 inches: gravelly clay loam
Bt4 - 22 to 26 inches: gravelly clay loam
Bt5 - 26 to 31 inches: very gravelly clay loam
Bt6 - 31 to 42 inches: very gravelly clay loam
Bt7 - 42 to 52 inches: gravelly clay loam
Cr - 52 to 62 inches: bedrock

Properties and qualities

Slope: 15 to 30 percent
Surface area covered with cobbles, stones or boulders: 20.0 percent
Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.28 to 0.57 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Hartsmill, Gravelly Loam

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy residuum and/or colluvium derived from metavolcanics

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 3 inches: gravelly loam
Bt1 - 3 to 6 inches: very gravelly loam
Bt2 - 6 to 13 inches: very gravelly loam
Bt3 - 13 to 24 inches: very gravelly loam
BCt1 - 24 to 35 inches: very cobbly clay loam
BCt2 - 35 to 62 inches: extremely cobbly clay loam
Crt - 62 to 72 inches: bedrock

Properties and qualities

Slope: 15 to 30 percent
Surface area covered with cobbles, stones or boulders: 4.0 percent
Depth to restrictive feature: 60 to 80 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R018XI105CA - Mesic Steep Convex Slopes 31-40 PZ bordering thermic
Hydric soil rating: No

Minor Components

Dunstone, gravelly loam

Percent of map unit: 2 percent
Landform: Hills
Hydric soil rating: No

Rock outcrop, greenschist

Percent of map unit: 2 percent
Landform: Hills
Hydric soil rating: No

Unnamed, loamy-skeletal bedrock 20 to 40 inches

Percent of map unit: 2 percent
Landform: Hills
Hydric soil rating: No

Unnamed, fine-loamy, bedrock (paralithic) >60 in.

Percent of map unit: 2 percent
Landform: Hills
Hydric soil rating: No

Unnamed, fine-loamy bedrock paralithic 20 to 40in

Percent of map unit: 2 percent
Landform: Hills
Hydric soil rating: No

565—Dunstone-Argonaut taxadjunct-Sunnyslope , 2 to 15 percent slopes

Map Unit Setting

National map unit symbol: hh4z
Elevation: 200 to 1,600 feet
Mean annual precipitation: 28 to 35 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 230 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Dunstone, loam, dry, and similar soils: 35 percent
Argonaut taxadjunct, loam, and similar soils: 30 percent
Sunnyslope, loam, and similar soils: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dunstone, Loam, Dry

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy residuum weathered from metavolcanics

Typical profile

A - 0 to 2 inches: loam
BAt - 2 to 7 inches: loam
Bt1 - 7 to 10 inches: loam
Bt2 - 10 to 16 inches: loam
Cr - 16 to 26 inches: bedrock

Properties and qualities

Slope: 2 to 15 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.43 to 1.56 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Argonaut Taxadjunct, Loam

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey residuum weathered from metavolcanics

Typical profile

A - 0 to 2 inches: loam
Bt1 - 2 to 8 inches: clay loam
Bt2 - 8 to 14 inches: clay
Bt3 - 14 to 20 inches: clay
BCt1 - 20 to 26 inches: clay
BCt2 - 26 to 30 inches: clay loam
Cr - 30 to 40 inches: bedrock

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.11 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Sunnyslope, Loam

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy residuum weathered from metavolcanics

Typical profile

A - 0 to 2 inches: loam
Bt1 - 2 to 6 inches: gravelly loam
Bt2 - 6 to 10 inches: very cobbly loam
Bt3 - 10 to 14 inches: extremely gravelly clay loam
Crt - 14 to 24 inches: bedrock

Properties and qualities

Slope: 2 to 15 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.43 to 2.41 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Unnamed, fine, bedrock (paralithic) 20 to 40 in.

Percent of map unit: 5 percent
Landform: Hills
Hydric soil rating: No

Loafercreek

Percent of map unit: 4 percent
Landform: Hills
Hydric soil rating: No

Auburn, loam

Percent of map unit: 2 percent
Landform: Hills

Hydric soil rating: No

Rock outcrop, greenschist

Percent of map unit: 2 percent
Landform: Hills
Hydric soil rating: No

Unnamed, abrupt clay layer, bedrock 20 to 40 in.

Percent of map unit: 2 percent
Landform: Hills
Hydric soil rating: No

566—Dunstone-Loafercreek-Katskillhill , 2 to 15 percent slopes

Map Unit Setting

National map unit symbol: hh7l
Elevation: 300 to 900 feet
Mean annual precipitation: 28 to 40 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 230 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Dunstone, loam, dry, and similar soils: 45 percent
Loafercreek, silt loam, dry, and similar soils: 20 percent
Katskillhill, loam, and similar soils: 15 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dunstone, Loam, Dry

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy residuum weathered from metavolcanics

Typical profile

A - 0 to 2 inches: loam
BAt - 2 to 7 inches: loam
Bt1 - 7 to 10 inches: loam
Bt2 - 10 to 16 inches: loam
Cr - 16 to 59 inches: bedrock

Properties and qualities

Slope: 2 to 15 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent

Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.43 to 1.56 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F018XI200CA - Low Elevation Foothills 18-25 PZ
Hydric soil rating: No

Description of Loafercreek, Silt Loam, Dry

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy residuum weathered from metavolcanics

Typical profile

A1 - 0 to 2 inches: silt loam
A2 - 2 to 4 inches: silt loam
BAt - 4 to 11 inches: loam
Bt1 - 11 to 20 inches: loam
Bt2 - 20 to 29 inches: loam
Crt - 29 to 59 inches: bedrock

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.43 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F018XI201CA - Moderately Deep Thermic Foothills 22-31 PZ
Hydric soil rating: No

Description of Katskillhill, Loam

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy residuum over clayey residuum weathered from metavolcanics

Typical profile

A - 0 to 2 inches: loam
BAt - 2 to 8 inches: loam
Bt1 - 8 to 12 inches: very gravelly loam
2Bt2 - 12 to 19 inches: clay
2Btss1 - 19 to 29 inches: clay
2Btss2 - 29 to 42 inches: clay
2R - 42 to 52 inches: bedrock

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: 40 to 60 inches to lithic bedrock
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.11 to 0.13 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F018XI201CA - Moderately Deep Thermic Foothills 22-31 PZ
Hydric soil rating: No

Minor Components

Auburn, loam

Percent of map unit: 5 percent
Landform: Hills
Hydric soil rating: No

Unnamed, clayey, bedrock (paralithic) 10 to 20 in

Percent of map unit: 5 percent
Landform: Hills
Hydric soil rating: No

Lomarica

Percent of map unit: 4 percent
Landform: Hills
Hydric soil rating: No

Unnamed, clayey-skeletal bedrock paralithic >40in

Percent of map unit: 3 percent
Landform: Hills
Hydric soil rating: No

Argonaut taxadjunct, loam

Percent of map unit: 3 percent
Landform: Hills
Hydric soil rating: No

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Building Site Development

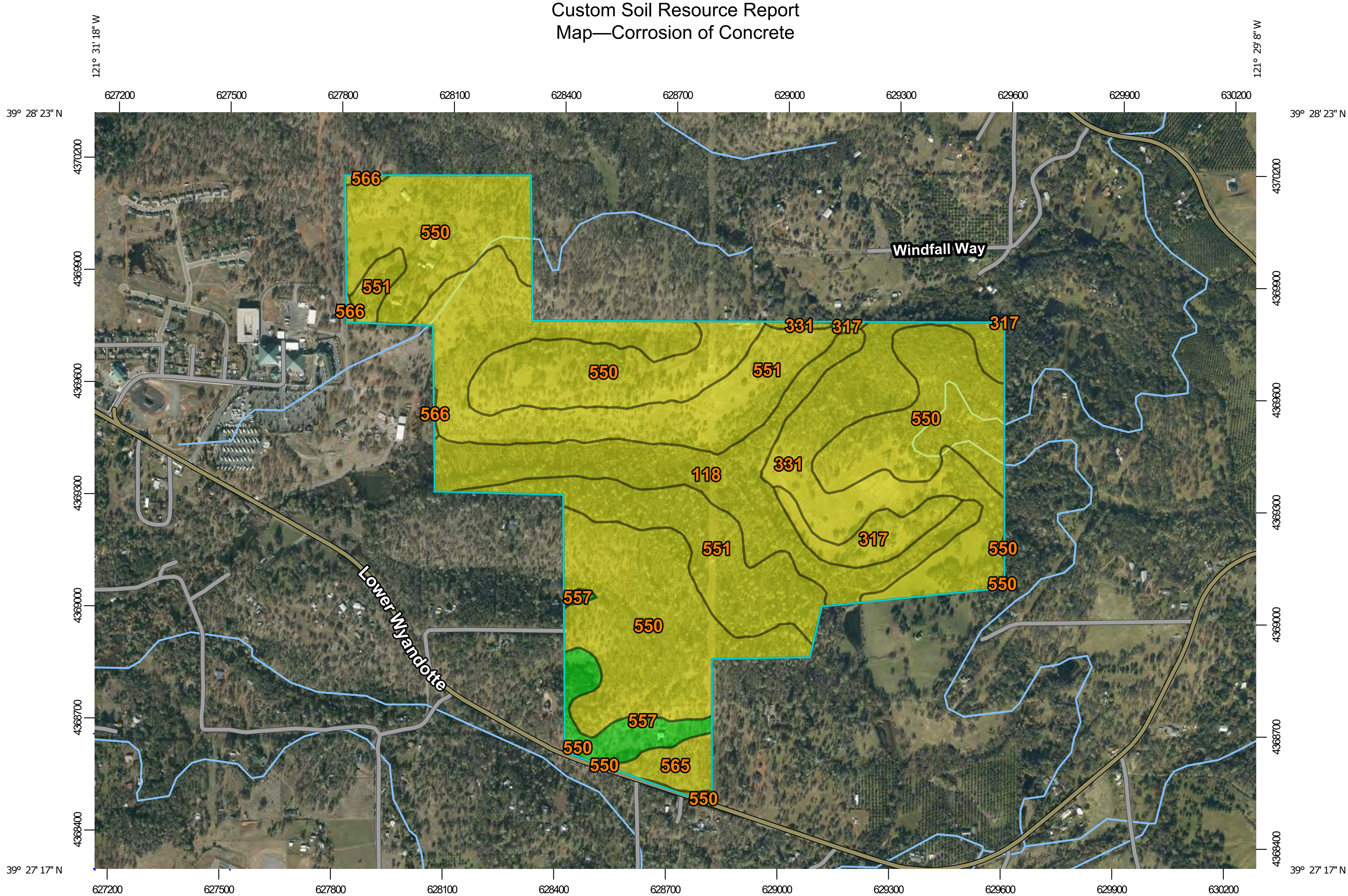
Building site development interpretations are designed to be used as tools for evaluating soil suitability and identifying soil limitations for various construction purposes. As part of the interpretation process, the rating applies to each soil in its described condition and does not consider present land use. Example interpretations can include corrosion of concrete and steel, shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping.

Corrosion of Concrete

"Risk of corrosion" pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens concrete. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the concrete in installations that are entirely within one kind of soil or within one soil layer.

The risk of corrosion is expressed as "low," "moderate," or "high."

Map—Corrosion of Concrete



Map Scale: 1:14,300 if printed on A landscape (11" x 8.5") sheet.

Meters: 0, 200, 400, 800, 1200

Feet: 0, 500, 1000, 2000, 3000

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

High

Moderate

Low

Not rated or not available

Soil Rating Lines

High

Moderate

Low

Not rated or not available

Soil Rating Points

High

Moderate

Low

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Butte Area, California, Parts of Butte and Plumas Counties
Survey Area Data: Version 17, Jun 1, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 6, 2018—Dec 12, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Corrosion of Concrete

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
118	Xerorthents, Tailings and 0 to 50 percent slopes	Moderate	46.8	12.8%
317	Thompsonflat loam, 2 to 15 percent slopes	Moderate	10.4	2.8%
331	Thompsonflat loam, 15 to 30 percent slopes	Moderate	47.9	13.1%
550	Dunstone-loafercreek complex, dry, 1 to 15 percent slopes	Moderate	147.1	40.4%
551	Dunstone-Lomarica-Argonaut taxadjunct , 15 to 30 percent slopes	Moderate	93.5	25.7%
557	Mounthope-Hartsmill , 15 to 30 percent slopes	Low	11.4	3.1%
565	Dunstone-Argonaut taxadjunct-Sunnyslope , 2 to 15 percent slopes	Moderate	6.4	1.7%
566	Dunstone-Loafercreek-Katskillhill , 2 to 15 percent slopes	Moderate	1.1	0.3%
Totals for Area of Interest			**364.6**	**100.0%**

Rating Options—Corrosion of Concrete

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

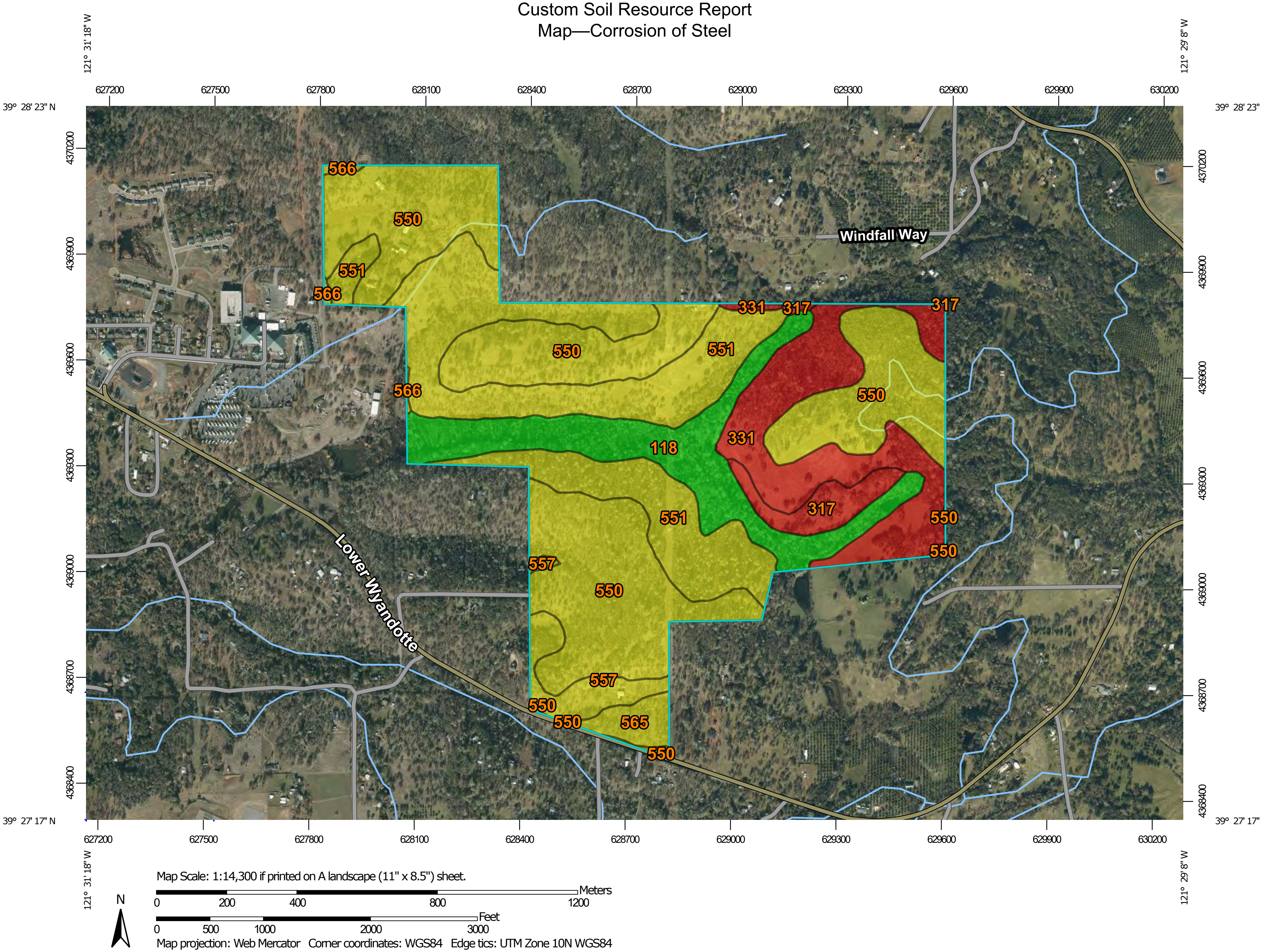
Tie-break Rule: Higher

Corrosion of Steel

"Risk of corrosion" pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel in installations that are entirely within one kind of soil or within one soil layer.

The risk of corrosion is expressed as "low," "moderate," or "high."

Map—Corrosion of Steel



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

High

Moderate

Low

Not rated or not available

Soil Rating Lines

High

Moderate

Low

Not rated or not available

Soil Rating Points

High

Moderate

Low

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Butte Area, California, Parts of Butte and Plumas Counties
Survey Area Data: Version 17, Jun 1, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 6, 2018—Dec 12, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Corrosion of Steel

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
118	Xerorthents, Tailings and 0 to 50 percent slopes	Low	46.8	12.8%
317	Thompsonflat loam, 2 to 15 percent slopes	High	10.4	2.8%
331	Thompsonflat loam, 15 to 30 percent slopes	High	47.9	13.1%
550	Dunstone-loafercreek complex, dry, 1 to 15 percent slopes	Moderate	147.1	40.4%
551	Dunstone-Lomarica-Argonaut taxadjunct , 15 to 30 percent slopes	Moderate	93.5	25.7%
557	Mounthope-Hartsmill , 15 to 30 percent slopes	Moderate	11.4	3.1%
565	Dunstone-Argonaut taxadjunct-Sunnyslope , 2 to 15 percent slopes	Moderate	6.4	1.7%
566	Dunstone-Loafercreek-Katskillhill , 2 to 15 percent slopes	Moderate	1.1	0.3%
Totals for Area of Interest			**364.6**	**100.0%**

Rating Options—Corrosion of Steel

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

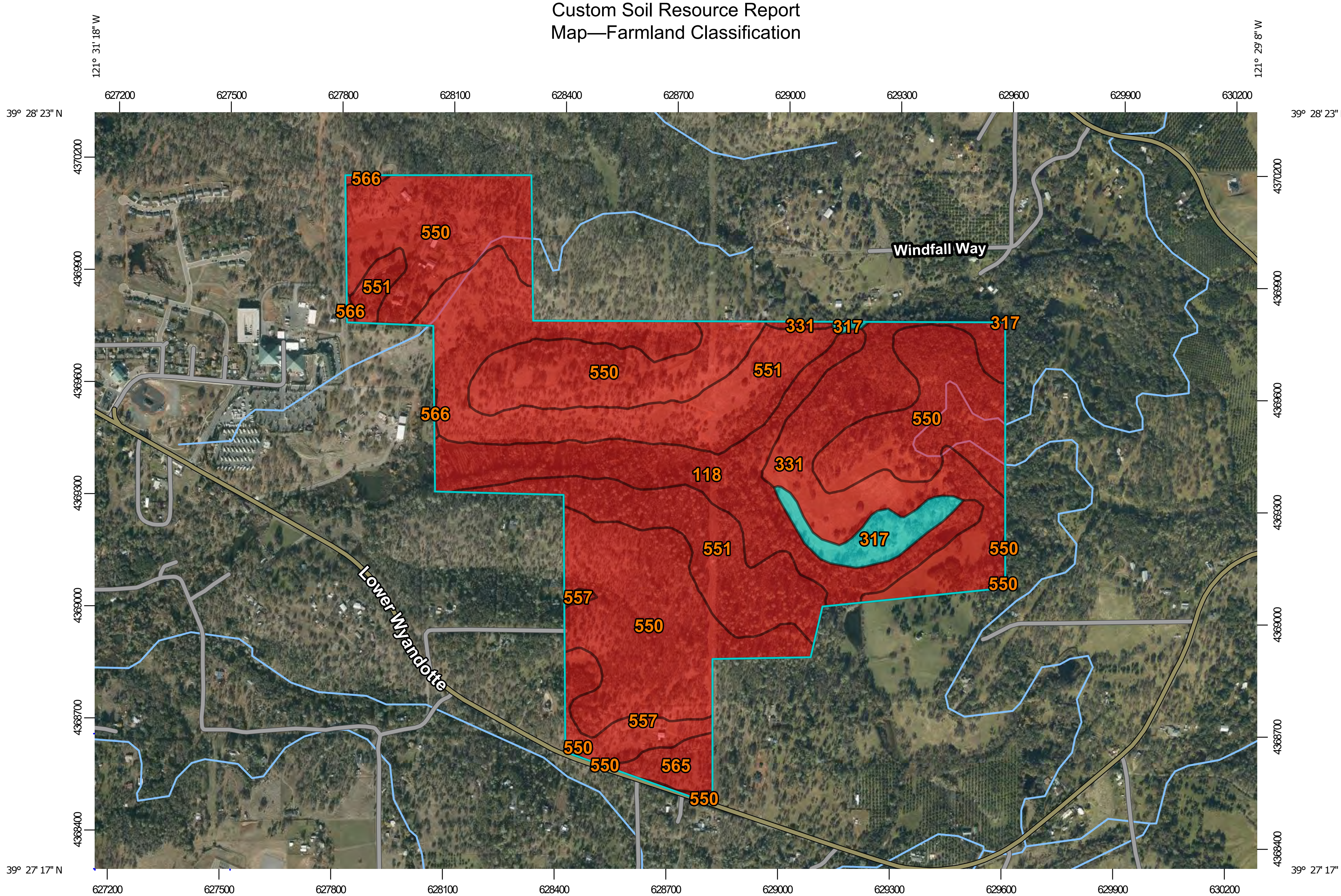
Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Farmland Classification

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Map—Farmland Classification



Map Scale: 1:14,300 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0, 200, 400, 800, 1200

Feet: 0, 500, 1000, 2000, 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of statewide importance, if drained
- Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated
- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Soil Rating Lines

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season

- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of statewide importance, if drained
- Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated
- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Soil Rating Points

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of statewide importance, if drained
- Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated

- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Butte Area, California, Parts of Butte and Plumas Counties
Survey Area Data: Version 17, Jun 1, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 6, 2018—Dec 12, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Farmland Classification

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
118	Xerorthents, Tailings and 0 to 50 percent slopes	Not prime farmland	46.8	12.8%
317	Thompsonflat loam, 2 to 15 percent slopes	Farmland of statewide importance	10.4	2.8%
331	Thompsonflat loam, 15 to 30 percent slopes	Not prime farmland	47.9	13.1%
550	Dunstone-loafercreek complex, dry, 1 to 15 percent slopes	Not prime farmland	147.1	40.4%
551	Dunstone-Lomarica-Argonaut taxadjunct , 15 to 30 percent slopes	Not prime farmland	93.5	25.7%
557	Mounthope-Hartsmill , 15 to 30 percent slopes	Not prime farmland	11.4	3.1%
565	Dunstone-Argonaut taxadjunct-Sunnyslope , 2 to 15 percent slopes	Not prime farmland	6.4	1.7%
566	Dunstone-Loafercreek-Katskillhill , 2 to 15 percent slopes	Not prime farmland	1.1	0.3%
Totals for Area of Interest			**364.6**	**100.0%**

Rating Options—Farmland Classification

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

Sanitary Facilities

Sanitary Facilities interpretations are tools designed to guide the user in site selection for the safe disposal of sewage and solid waste. Example interpretations include septic tank absorption fields, sewage lagoons, and sanitary landfills.

Septic Tank Absorption Fields

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

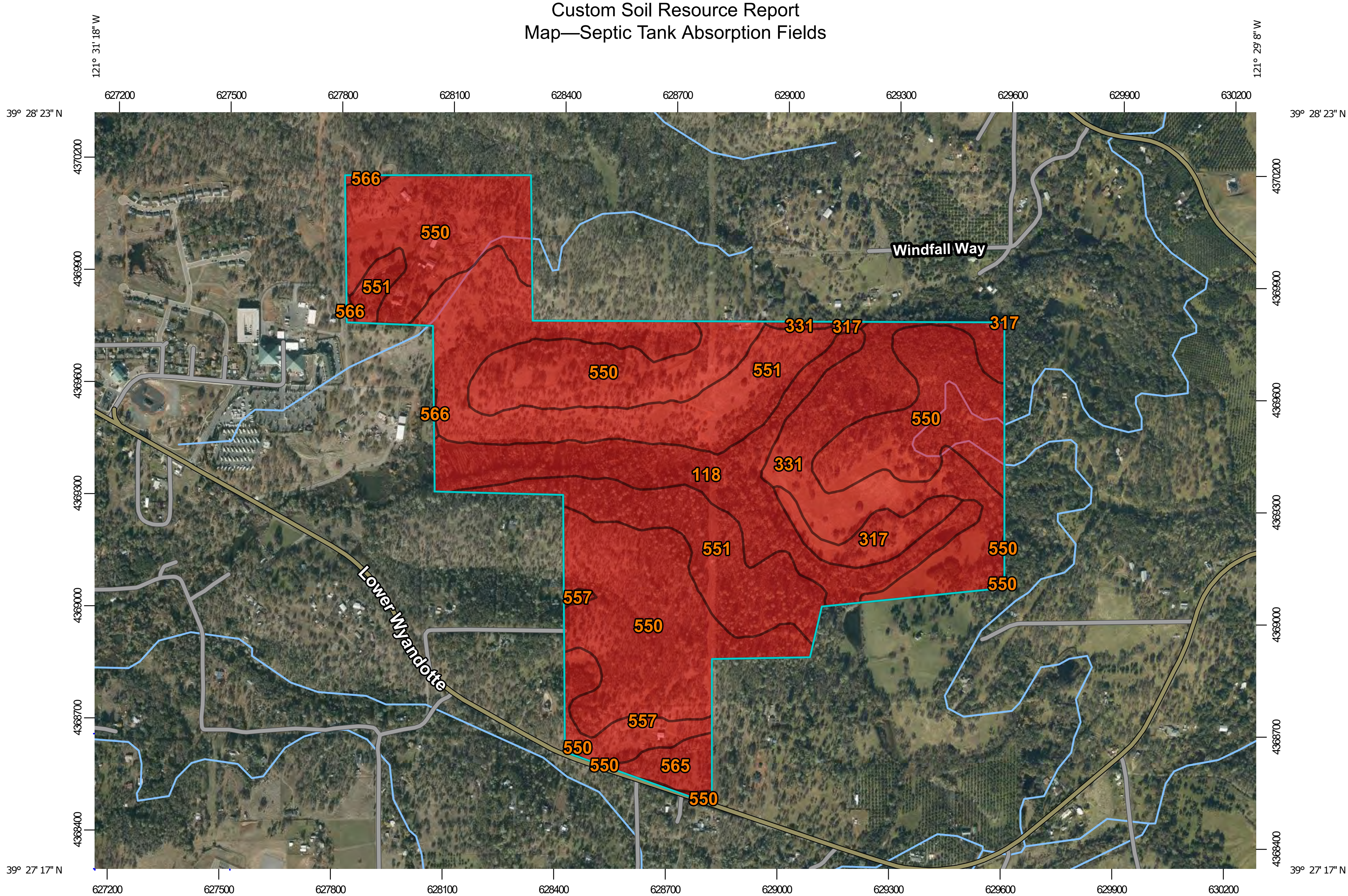
The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

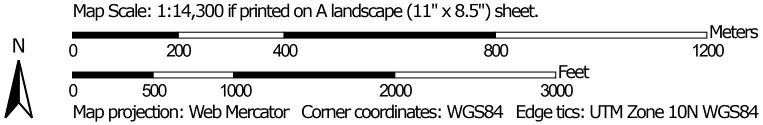
The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Map—Septic Tank Absorption Fields



Map Scale: 1:14,300 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

Very limited

Somewhat limited

Not limited

Not rated or not available

Soil Rating Lines

Very limited

Somewhat limited

Not limited

Not rated or not available

Soil Rating Points

Very limited

Somewhat limited

Not limited

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

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Survey Area Data: Version 17, Jun 1, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 6, 2018—Dec 12, 2018

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Tables—Septic Tank Absorption Fields

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
118	Xerorthents, Tailings and 0 to 50 percent slopes	Very limited	Xerorthents (80%)	Flooding (1.00)	46.8	12.8%
				Seepage, bottom layer (1.00)		
				Filtering capacity (1.00)		
317	Thompsonflat loam, 2 to 15 percent slopes	Very limited	Thompsonflat, loam (75%)	Slow water movement (1.00)	10.4	2.8%
				Depth to saturated zone (0.43)		
331	Thompsonflat loam, 15 to 30 percent slopes	Very limited	Thompsonflat, loam (85%)	Slow water movement (1.00)	47.9	13.1%
				Slope (1.00)		
				Depth to saturated zone (0.43)		
550	Dunstone-loafercreek complex, dry, 1 to 15 percent slopes	Very limited	Dunstone, loam, dry (60%)	Depth to bedrock (1.00)	147.1	40.4%
			Loafercreek, silt loam, dry (20%)	Depth to bedrock (1.00)		
				Slow water movement (0.08)		
551	Dunstone-Lomarica-Argonaut taxadjunct , 15 to 30 percent slopes	Very limited	Dunstone, loam, dry (35%)	Depth to bedrock (1.00)	93.5	25.7%
				Slope (1.00)		
			Argonaut taxadjunct, loam (15%)	Slow water movement (1.00)		
				Slope (1.00)		
				Depth to bedrock (1.00)		
			Lomarica, loam (15%)	Slow water movement (1.00)		
				Slope (1.00)		
				Depth to bedrock (1.00)		
557	Mounthope-Hartsmill , 15 to 30 percent slopes	Very limited	Mounthope, loam (50%)	Slow water movement (1.00)	11.4	3.1%
				Slope (1.00)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Depth to bedrock (0.68)		
			Hartsmill, gravelly loam (40%)	Slow water movement (1.00)		
				Slope (1.00)		
				Filtering capacity (1.00)		
				Depth to bedrock (0.17)		
				Large stones (0.02)		
565	Dunstone-Argonaut taxadjunct-Sunnyslope , 2 to 15 percent slopes	Very limited	Dunstone, loam, dry (35%)	Depth to bedrock (1.00)	6.4	1.7%
			Argonaut taxadjunct, loam (30%)	Slow water movement (1.00)		
				Depth to bedrock (1.00)		
			Sunnyslope, loam (20%)	Depth to bedrock (1.00)		
566	Dunstone-Loafercreek-Katskillhill , 2 to 15 percent slopes	Very limited	Dunstone, loam, dry (45%)	Depth to bedrock (1.00)	1.1	0.3%
			Loafercreek, silt loam, dry (20%)	Depth to bedrock (1.00)		
				Slow water movement (0.08)		
			Katskillhill, loam (15%)	Slow water movement (1.00)		
				Depth to bedrock (0.99)		
Totals for Area of Interest					**364.6**	**100.0%**

Rating	Acres in AOI	Percent of AOI
Very limited	364.6	100.0%
Totals for Area of Interest	**364.6**	**100.0%**

Rating Options—Septic Tank Absorption Fields

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Physical Properties

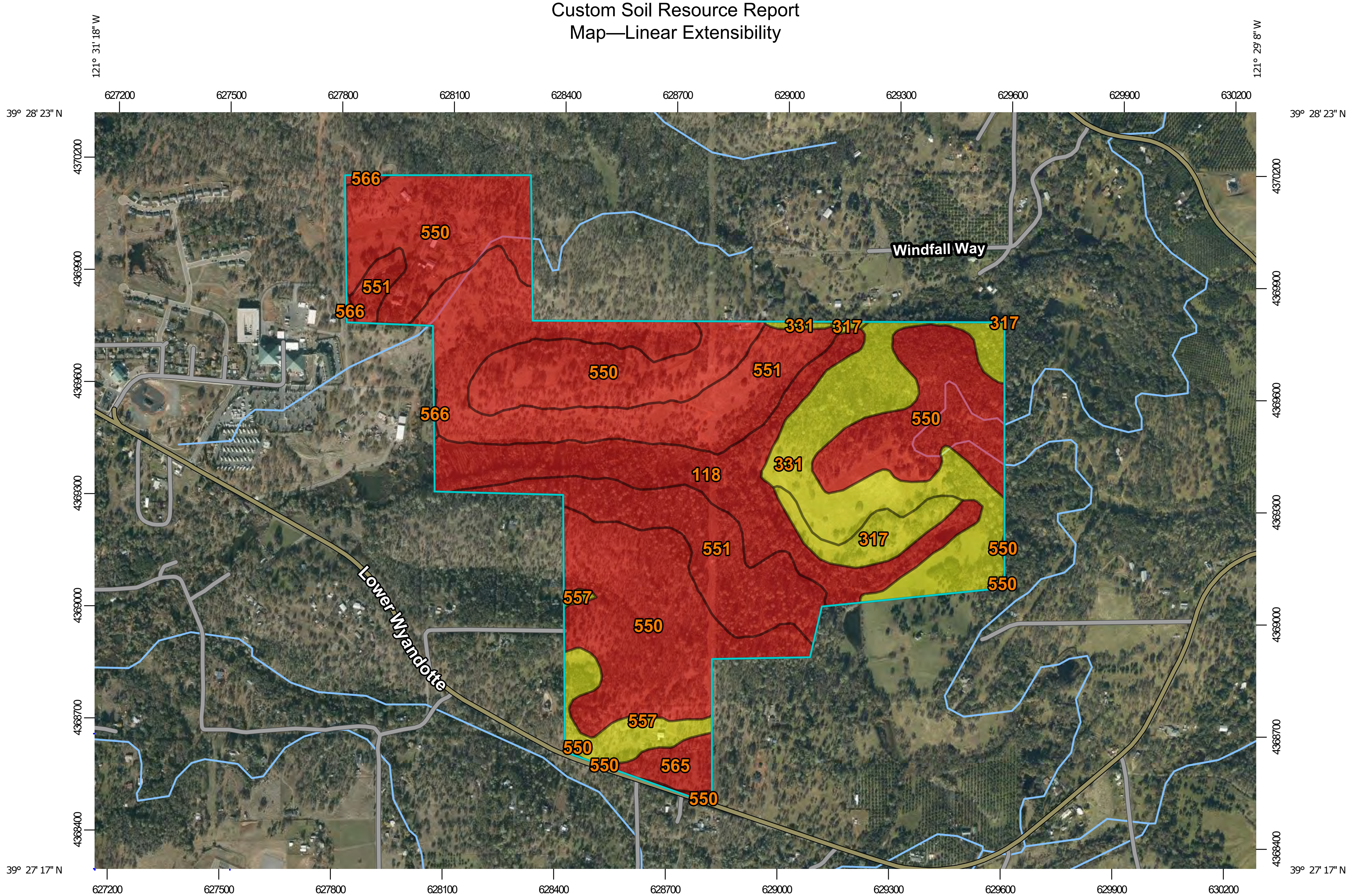
Soil Physical Properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Linear Extensibility

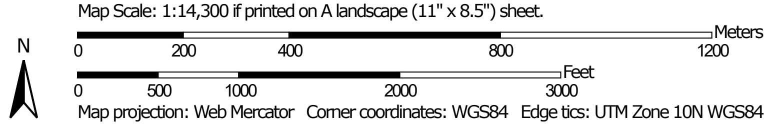
Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Custom Soil Resource Report
Map—Linear Extensibility



Map Scale: 1:14,300 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Low (0 - 3)
- Moderate (3 - 6)
- High (6 - 9)
- Very High (9 - 30)
- Not rated or not available

Soil Rating Lines

- Low (0 - 3)
- Moderate (3 - 6)
- High (6 - 9)
- Very High (9 - 30)
- Not rated or not available

Soil Rating Points

- Low (0 - 3)
- Moderate (3 - 6)
- High (6 - 9)
- Very High (9 - 30)
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Butte Area, California, Parts of Butte and Plumas Counties
Survey Area Data: Version 17, Jun 1, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 6, 2018—Dec 12, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Linear Extensibility

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
118	Xerorthents, Tailings and 0 to 50 percent slopes	1.0	46.8	12.8%
317	Thompsonflat loam, 2 to 15 percent slopes	3.7	10.4	2.8%
331	Thompsonflat loam, 15 to 30 percent slopes	3.7	47.9	13.1%
550	Dunstone-loafercreek complex, dry, 1 to 15 percent slopes	1.5	147.1	40.4%
551	Dunstone-Lomarica-Argonaut taxadjunct , 15 to 30 percent slopes	1.5	93.5	25.7%
557	Mounthope-Hartsmill , 15 to 30 percent slopes	3.6	11.4	3.1%
565	Dunstone-Argonaut taxadjunct-Sunnyslope , 2 to 15 percent slopes	1.5	6.4	1.7%
566	Dunstone-Loafercreek-Katskillhill , 2 to 15 percent slopes	1.5	1.1	0.3%
Totals for Area of Interest			**364.6**	**100.0%**

Rating Options—Linear Extensibility

Units of Measure: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

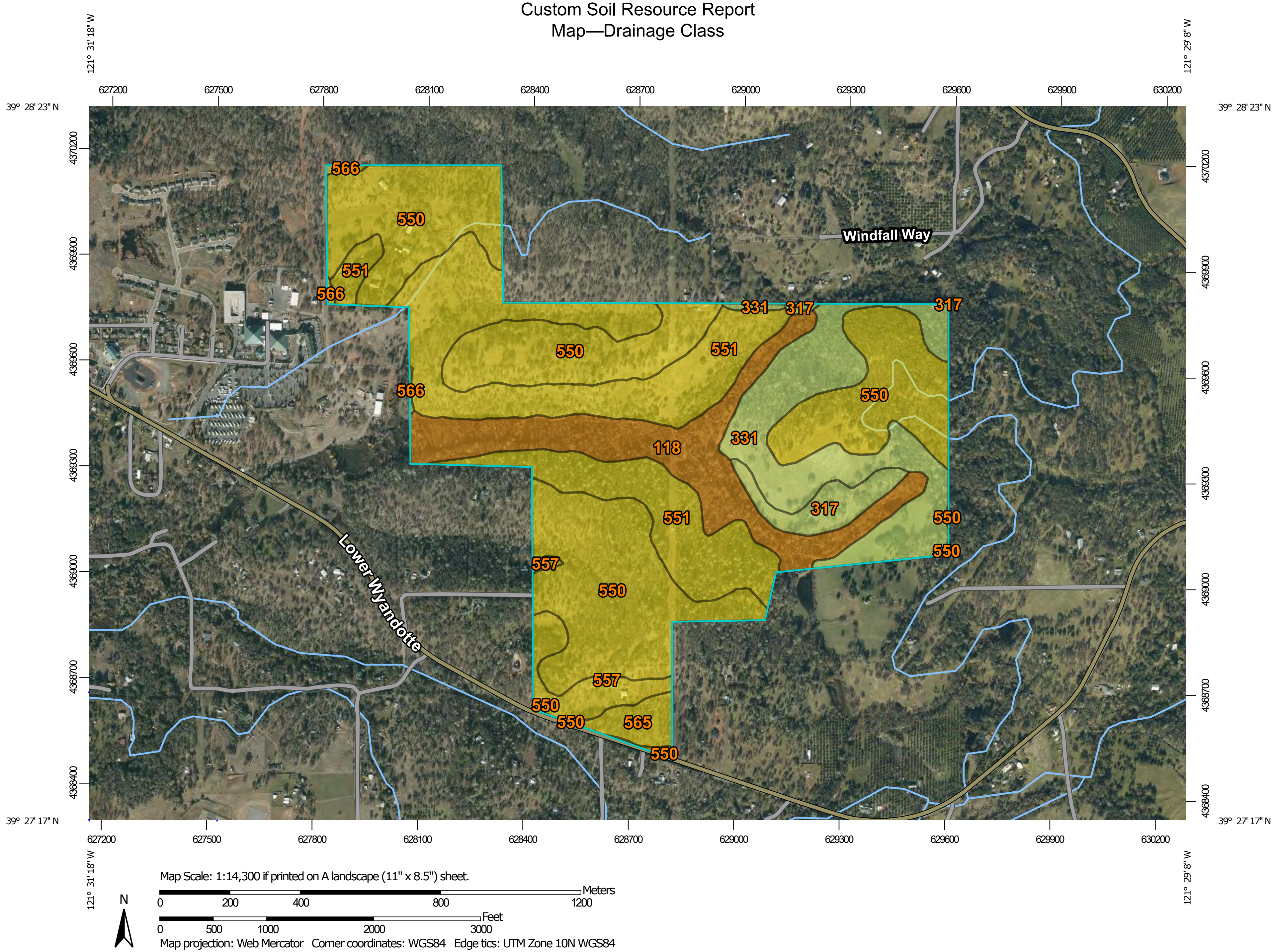
Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Drainage Class

"Drainage class (natural)" refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized-excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual."

Custom Soil Resource Report
Map—Drainage Class



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Soil Rating Lines

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Soil Rating Points

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Table—Drainage Class

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
118	Xerorthents, Tailings and 0 to 50 percent slopes	Somewhat excessively drained	46.8	12.8%
317	Thompsonflat loam, 2 to 15 percent slopes	Moderately well drained	10.4	2.8%
331	Thompsonflat loam, 15 to 30 percent slopes	Moderately well drained	47.9	13.1%
550	Dunstone-loafercreek complex, dry, 1 to 15 percent slopes	Well drained	147.1	40.4%
551	Dunstone-Lomarica-Argonaut taxadjunct , 15 to 30 percent slopes	Well drained	93.5	25.7%
557	Mounthope-Hartsmill , 15 to 30 percent slopes	Well drained	11.4	3.1%
565	Dunstone-Argonaut taxadjunct-Sunnyslope , 2 to 15 percent slopes	Well drained	6.4	1.7%
566	Dunstone-Loafercreek-Katskillhill , 2 to 15 percent slopes	Well drained	1.1	0.3%
Totals for Area of Interest			**364.6**	**100.0%**

Rating Options—Drainage Class

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Water Features

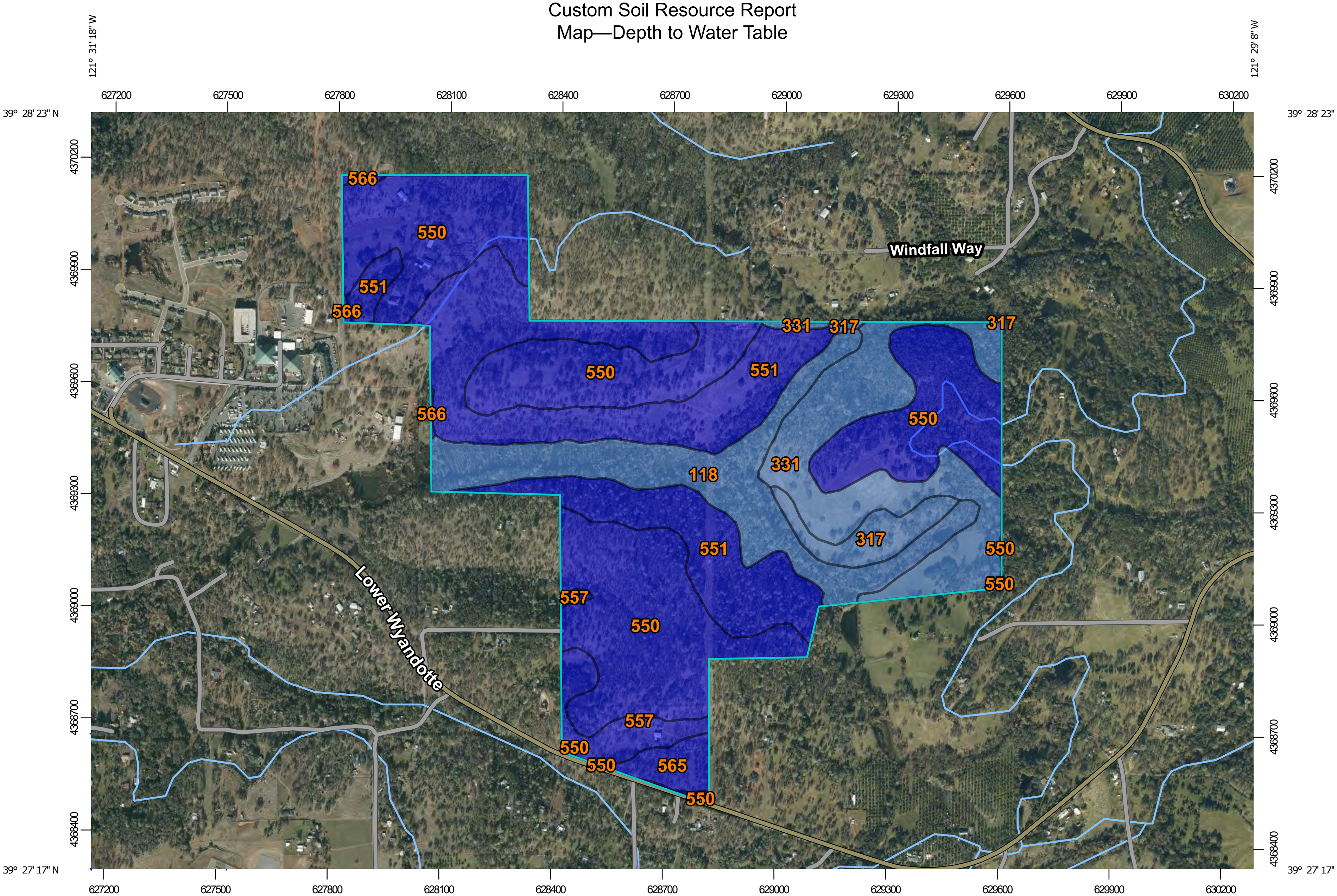
Water Features include ponding frequency, flooding frequency, and depth to water table.

Depth to Water Table

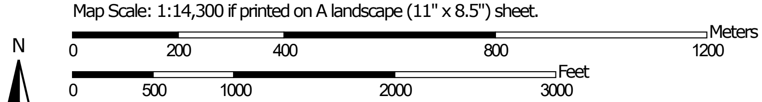
"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Map—Depth to Water Table



Map Scale: 1:14,300 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Lines

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Points

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Water Features

Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

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Table—Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
118	Xerorthents, Tailings and 0 to 50 percent slopes	190	46.8	12.8%
317	Thompsonflat loam, 2 to 15 percent slopes	152	10.4	2.8%
331	Thompsonflat loam, 15 to 30 percent slopes	152	47.9	13.1%
550	Dunstone-loafercreek complex, dry, 1 to 15 percent slopes	>200	147.1	40.4%
551	Dunstone-Lomarica-Argonaut taxadjunct , 15 to 30 percent slopes	>200	93.5	25.7%
557	Mounthope-Hartsmill , 15 to 30 percent slopes	>200	11.4	3.1%
565	Dunstone-Argonaut taxadjunct-Sunnyslope , 2 to 15 percent slopes	>200	6.4	1.7%
566	Dunstone-Loafercreek-Katskillhill , 2 to 15 percent slopes	>200	1.1	0.3%
Totals for Area of Interest			**364.6**	**100.0%**

Rating Options—Depth to Water Table

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: December

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Glossary

Many of the terms relating to landforms, geology, and geomorphology are defined in more detail in the following National Soil Survey Handbook link: "National Soil Survey Handbook."

ABC soil

A soil having an A, a B, and a C horizon.

Ablation till

Loose, relatively permeable earthy material deposited during the downwasting of nearly static glacial ice, either contained within or accumulated on the surface of the glacier.

AC soil

A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil

The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil

Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil

A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial cone

A semiconical type of alluvial fan having very steep slopes. It is higher, narrower, and steeper than a fan and is composed of coarser and thicker layers of material deposited by a combination of alluvial episodes and (to a much lesser degree) landslides (debris flow). The coarsest materials tend to be concentrated at the apex of the cone.

Alluvial fan

A low, outspread mass of loose materials and/or rock material, commonly with gentle slopes. It is shaped like an open fan or a segment of a cone. The material was deposited by a stream at the place where it issues from a narrow mountain valley or upland valley or where a tributary stream is near or at its junction with the main stream. The fan is steepest near its apex, which points upstream, and slopes gently and convexly outward (downstream) with a gradual decrease in gradient.

Alluvium

Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

Alpha,alpha-dipyridyl

A compound that when dissolved in ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction implies reducing conditions and the likely presence of redoximorphic features.

Animal unit month (AUM)

The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions

Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon

A subsoil horizon characterized by an accumulation of illuvial clay.

Arroyo

The flat-floored channel of an ephemeral stream, commonly with very steep to vertical banks cut in unconsolidated material. It is usually dry but can be transformed into a temporary watercourse or short-lived torrent after heavy rain within the watershed.

Aspect

The direction toward which a slope faces. Also called slope aspect.

Association, soil

A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity)

The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low: 0 to 3
Low: 3 to 6
Moderate: 6 to 9
High: 9 to 12
Very high: More than 12

Backslope

The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Backswamp

A flood-plain landform. Extensive, marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces.

Badland

A landscape that is intricately dissected and characterized by a very fine drainage network with high drainage densities and short, steep slopes and narrow interfluves. Badlands develop on surfaces that have little or no vegetative cover overlying unconsolidated or poorly cemented materials (clays, silts, or sandstones) with, in some cases, soluble minerals, such as gypsum or halite.

Bajada

A broad, gently inclined alluvial piedmont slope extending from the base of a mountain range out into a basin and formed by the lateral coalescence of a series of alluvial fans. Typically, it has a broadly undulating transverse profile, parallel to the mountain front, resulting from the convexities of component fans. The term is generally restricted to constructional slopes of intermontane basins.

Basal area

The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Base saturation

The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope (geomorphology)

A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Bedding plane

A planar or nearly planar bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology) from the preceding or following layer; a plane of deposition. It commonly marks a change in the circumstances of deposition and may show a parting, a color difference, a change in particle size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.

Bedding system

A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock

The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography

A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bench terrace

A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bisequum

Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Blowout (map symbol)

A saucer-, cup-, or trough-shaped depression formed by wind erosion on a preexisting dune or other sand deposit, especially in an area of shifting sand or loose soil or where protective vegetation is disturbed or destroyed. The adjoining accumulation of sand derived from the depression, where recognizable, is commonly included. Blowouts are commonly small.

Borrow pit (map symbol)

An open excavation from which soil and underlying material have been removed, usually for construction purposes.

Bottom land

An informal term loosely applied to various portions of a flood plain.

Boulders

Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks

A landscape or tract of steep, rough or broken land dissected by ravines and gullies and marking a sudden change in topography.

Breast height

An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management

Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Butte

An isolated, generally flat-topped hill or mountain with relatively steep slopes and talus or precipitous cliffs and characterized by summit width that is less than the height of bounding escarpments; commonly topped by a caprock of resistant material and representing an erosion remnant carved from flat-lying rocks.

Cable yarding

A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Calcareous soil

A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Caliche

A general term for a prominent zone of secondary carbonate accumulation in surficial materials in warm, subhumid to arid areas. Caliche is formed by both geologic and pedologic processes. Finely crystalline calcium carbonate forms a nearly continuous surface-coating and void-filling medium in geologic (parent) materials. Cementation ranges from weak in nonindurated forms to very strong in indurated forms. Other minerals (e.g., carbonates, silicate, and sulfate) may occur as accessory cements. Most petrocalcic horizons and some calcic horizons are caliche.

California bearing ratio (CBR)

The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy

The leafy crown of trees or shrubs. (See Crown.)

Canyon

A long, deep, narrow valley with high, precipitous walls in an area of high local relief.

Capillary water

Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena

A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material and under similar climatic conditions but that have different characteristics as a result of differences in relief and drainage.

Cation

An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity

The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Catsteps

See Terracettes.

Cement rock

Shaly limestone used in the manufacture of cement.

Channery soil material

Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment

Control of unwanted vegetation through the use of chemicals.

Chiseling

Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Cirque

A steep-walled, semicircular or crescent-shaped, half-bowl-like recess or hollow, commonly situated at the head of a glaciated mountain valley or high on the side of a mountain. It was produced by the erosive activity of a mountain glacier. It commonly contains a small round lake (tarn).

Clay

As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions

See Redoximorphic features.

Clay film

A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Clay spot (map symbol)

A spot where the surface texture is silty clay or clay in areas where the surface layer of the soils in the surrounding map unit is sandy loam, loam, silt loam, or coarser.

Claypan

A dense, compact subsoil layer that contains much more clay than the overlying materials, from which it is separated by a sharply defined boundary. The layer restricts the downward movement of water through the soil. A claypan is commonly hard when dry and plastic and sticky when wet.

Climax plant community

The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil

Sand or loamy sand.

Cobble (or cobblestone)

A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material

Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility)

See Linear extensibility.

Colluvium

Unconsolidated, unsorted earth material being transported or deposited on side slopes and/or at the base of slopes by mass movement (e.g., direct gravitational action) and by local, unconcentrated runoff.

Complex slope

Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil

A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions

See Redoximorphic features.

Conglomerate

A coarse grained, clastic sedimentary rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system

Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage

A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil

Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping

Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section

The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat)

A type of limnic layer composed predominantly of fecal material derived from aquatic animals.

Corrosion (geomorphology)

A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.

Corrosion (soil survey interpretations)

Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop

A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management

Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cropping system

Growing crops according to a planned system of rotation and management practices.

Cross-slope farming

Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown

The upper part of a tree or shrub, including the living branches and their foliage.

Cryoturbate

A mass of soil or other unconsolidated earthy material moved or disturbed by frost action. It is typically coarser than the underlying material.

Cuesta

An asymmetric ridge capped by resistant rock layers of slight or moderate dip (commonly less than 15 percent slopes); a type of homocline produced by differential erosion of interbedded resistant and weak rocks. A cuesta has a long, gentle slope on one side (dip slope) that roughly parallels the inclined beds; on the other side, it has a relatively short and steep or clifflike slope (scarp) that cuts through the tilted rocks.

Culmination of the mean annual increment (CMAI)

The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave

The walls of excavations tend to cave in or slough.

Decreasers

The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing

Postponing grazing or resting grazing land for a prescribed period.

Delta

A body of alluvium having a surface that is fan shaped and nearly flat; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.

Dense layer

A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depression, closed (map symbol)

A shallow, saucer-shaped area that is slightly lower on the landscape than the surrounding area and that does not have a natural outlet for surface drainage.

Depth, soil

Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Desert pavement

A natural, residual concentration or layer of wind-polished, closely packed gravel, boulders, and other rock fragments mantling a desert surface. It forms where wind action and sheetwash have removed all smaller particles or where rock fragments have migrated upward through sediments to the surface. It typically protects the finer grained underlying material from further erosion.

Diatomaceous earth

A geologic deposit of fine, grayish siliceous material composed chiefly or entirely of the remains of diatoms.

Dip slope

A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

Diversion (or diversion terrace)

A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming

A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Drainage class (natural)

Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the "Soil Survey Manual."

Drainage, surface

Runoff, or surface flow of water, from an area.

Drainageway

A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Draw

A small stream valley that generally is shallower and more open than a ravine or gulch and that has a broader bottom. The present stream channel may appear inadequate to have cut the drainageway that it occupies.

Drift

A general term applied to all mineral material (clay, silt, sand, gravel, and boulders) transported by a glacier and deposited directly by or from the ice or transported by running water emanating from a glacier. Drift includes unstratified material (till) that forms moraines and stratified deposits that form outwash plains, eskers, kames, varves, and glaciofluvial sediments. The term is generally applied to Pleistocene glacial deposits in areas that no longer contain glaciers.

Drumlin

A low, smooth, elongated oval hill, mound, or ridge of compact till that has a core of bedrock or drift. It commonly has a blunt nose facing the direction from which the ice approached and a gentler slope tapering in the other direction. The longer axis is parallel to the general direction of glacier flow. Drumlins are products of streamline (laminar) flow of glaciers, which molded the subglacial floor through a combination of erosion and deposition.

Duff

A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Dune

A low mound, ridge, bank, or hill of loose, windblown granular material (generally sand), either barren and capable of movement from place to place or covered and stabilized with vegetation but retaining its characteristic shape.

Earthy fill

See Mine spoil.

Ecological site

An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Eluviation

The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation

A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian deposit

Sand-, silt-, or clay-sized clastic material transported and deposited primarily by wind, commonly in the form of a dune or a sheet of sand or loess.

Ephemeral stream

A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation

A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion

The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (accelerated)

Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion (geologic)

Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion pavement

A surficial lag concentration or layer of gravel and other rock fragments that remains on the soil surface after sheet or rill erosion or wind has removed the finer soil particles and that tends to protect the underlying soil from further erosion.

Erosion surface

A land surface shaped by the action of erosion, especially by running water.

Escarpment

A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.

Escarpment, bedrock (map symbol)

A relatively continuous and steep slope or cliff, produced by erosion or faulting, that breaks the general continuity of more gently sloping land surfaces. Exposed material is hard or soft bedrock.

Escarpment, nonbedrock (map symbol)

A relatively continuous and steep slope or cliff, generally produced by erosion but in some places produced by faulting, that breaks the continuity of more gently sloping land surfaces. Exposed earthy material is nonsoil or very shallow soil.

Esker

A long, narrow, sinuous, steep-sided ridge of stratified sand and gravel deposited as the bed of a stream flowing in an ice tunnel within or below the ice (subglacial) or between ice walls on top of the ice of a wasting glacier and left behind as high ground when the ice melted. Eskers range in length from less than a kilometer to more than 160 kilometers and in height from 3 to 30 meters.

Extrusive rock

Igneous rock derived from deep-seated molten matter (magma) deposited and cooled on the earth's surface.

Fallow

Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fan remnant

A general term for landforms that are the remaining parts of older fan landforms, such as alluvial fans, that have been either dissected or partially buried.

Fertility, soil

The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat)

The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity

The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fill slope

A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil

Sandy clay, silty clay, or clay.

Firebreak

An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom

An obsolete, informal term loosely applied to the lowest flood-plain steps that are subject to regular flooding.

Flaggy soil material

Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone

A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain

The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

Flood-plain landforms

A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.

Flood-plain splay

A fan-shaped deposit or other outspread deposit formed where an overloaded stream breaks through a levee (natural or artificial) and deposits its material (commonly coarse grained) on the flood plain.

Flood-plain step

An essentially flat, terrace-like alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface still actively modified by fluvial scour and/or deposition. May occur individually or as a series of steps.

Fluvial

Of or pertaining to rivers or streams; produced by stream or river action.

Foothills

A region of steeply sloping hills that fringes a mountain range or high-plateau escarpment. The hills have relief of as much as 1,000 feet (300 meters).

Footslope

The concave surface at the base of a hillslope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb

Any herbaceous plant not a grass or a sedge.

Forest cover

All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type

A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragipan

A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil

The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gilgai

Commonly, a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of clayey soils that shrink and swell considerably with changes in moisture content.

Glaciofluvial deposits

Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur in the form of outwash plains, valley trains, deltas, kames, eskers, and kame terraces.

Glaciolacustrine deposits

Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are bedded or laminated.

Gleyed soil

Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping

Growing crops in strips that grade toward a protected waterway.

Grassed waterway

A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel

Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravel pit (map symbol)

An open excavation from which soil and underlying material have been removed and used, without crushing, as a source of sand or gravel.

Gravelly soil material

Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Gravelly spot (map symbol)

A spot where the surface layer has more than 35 percent, by volume, rock fragments that are mostly less than 3 inches in diameter in an area that has less than 15 percent rock fragments.

Green manure crop (agronomy)

A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water

Water filling all the unblocked pores of the material below the water table.

Gully (map symbol)

A small, steep-sided channel caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage whereas a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock

Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to reclaim

Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Hardpan

A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head slope (geomorphology)

A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Hemic soil material (mucky peat)

Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops

Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill

A generic term for an elevated area of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline. Slopes are generally more than 15 percent. The distinction between a hill and a mountain is arbitrary and may depend on local usage.

Hillslope

A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill.

Horizon, soil

A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

O horizon: An organic layer of fresh and decaying plant residue.

L horizon: A layer of organic and mineral limnic materials, including coprogenous earth (sedimentary peat), diatomaceous earth, and marl.

A horizon: The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon: The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon: The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon: The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon: Soft, consolidated bedrock beneath the soil.

R layer: Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

M layer: A root-limiting subsoil layer consisting of nearly continuous, horizontally oriented, human-manufactured materials.

W layer: A layer of water within or beneath the soil.

Humus

The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups

Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties include depth to a seasonal high water table, the infiltration rate, and depth to a layer that significantly restricts the downward movement of water. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock

Rock that was formed by cooling and solidification of magma and that has not been changed appreciably by weathering since its formation. Major varieties include plutonic and volcanic rock (e.g., andesite, basalt, and granite).

Illuviation

The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil

A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers

Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration

The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity

The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate

The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate

The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Very low: Less than 0.2
Low: 0.2 to 0.4
Moderately low: 0.4 to 0.75
Moderate: 0.75 to 1.25
Moderately high: 1.25 to 1.75
High: 1.75 to 2.5
Very high: More than 2.5

Interfluve

A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

Interfluve (geomorphology)

A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill; shoulders of backwearing hillslopes can narrow the upland or can merge, resulting in a strongly convex shape.

Intermittent stream

A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders

On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions

See Redoximorphic features.

Irrigation

Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin: Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border: Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding: Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation: Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle): Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow: Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler: Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation: Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding: Water, released at high points, is allowed to flow onto an area without controlled distribution.

Kame

A low mound, knob, hummock, or short irregular ridge composed of stratified sand and gravel deposited by a subglacial stream as a fan or delta at the margin of a melting glacier; by a supraglacial stream in a low place or hole on the surface of the glacier; or as a ponded deposit on the surface or at the margin of stagnant ice.

Karst (topography)

A kind of topography that formed in limestone, gypsum, or other soluble rocks by dissolution and that is characterized by closed depressions, sinkholes, caves, and underground drainage.

Knoll

A small, low, rounded hill rising above adjacent landforms.

Ksat

See Saturated hydraulic conductivity.

Lacustrine deposit

Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain

A nearly level surface marking the floor of an extinct lake filled by well sorted, generally fine textured, stratified deposits, commonly containing varves.

Lake terrace

A narrow shelf, partly cut and partly built, produced along a lakeshore in front of a scarp line of low cliffs and later exposed when the water level falls.

Landfill (map symbol)

An area of accumulated waste products of human habitation, either above or below natural ground level.

Landslide

A general, encompassing term for most types of mass movement landforms and processes involving the downslope transport and outward deposition of soil and rock materials caused by gravitational forces; the movement may or may not involve saturated materials. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones

Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Lava flow (map symbol)

A solidified, commonly lobate body of rock formed through lateral, surface outpouring of molten lava from a vent or fissure.

Leaching

The removal of soluble material from soil or other material by percolating water.

Levee (map symbol)

An embankment that confines or controls water, especially one built along the banks of a river to prevent overflow onto lowlands.

Linear extensibility

Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^{1}/_{3}$- or $^{1}/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit

The moisture content at which the soil passes from a plastic to a liquid state.

Loam

Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess

Material transported and deposited by wind and consisting dominantly of silt-sized particles.

Low strength

The soil is not strong enough to support loads.

Low-residue crops

Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Marl

An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal proportions; formed primarily under freshwater lacustrine conditions but also formed in more saline environments.

Marsh or swamp (map symbol)

A water-saturated, very poorly drained area that is intermittently or permanently covered by water. Sedges, cattails, and rushes are the dominant vegetation in marshes, and trees or shrubs are the dominant vegetation in swamps. Not used in map units where the named soils are poorly drained or very poorly drained.

Mass movement

A generic term for the dislodgment and downslope transport of soil and rock material as a unit under direct gravitational stress.

Masses

See Redoximorphic features.

Meander belt

The zone within which migration of a meandering channel occurs; the flood-plain area included between two imaginary lines drawn tangential to the outer bends of active channel loops.

Meander scar

A crescent-shaped, concave or linear mark on the face of a bluff or valley wall, produced by the lateral erosion of a meandering stream that impinged upon and undercut the bluff.

Meander scroll

One of a series of long, parallel, close-fitting, crescent-shaped ridges and troughs formed along the inner bank of a stream meander as the channel migrated laterally down-valley and toward the outer bank.

Mechanical treatment

Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil

Very fine sandy loam, loam, silt loam, or silt.

Mesa

A broad, nearly flat topped and commonly isolated landmass bounded by steep slopes or precipitous cliffs and capped by layers of resistant, nearly horizontal rocky material. The summit width is characteristically greater than the height of the bounding escarpments.

Metamorphic rock

Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement at depth in the earth's crust. Nearly all such rocks are crystalline.

Mine or quarry (map symbol)

An open excavation from which soil and underlying material have been removed and in which bedrock is exposed. Also denotes surface openings to underground mines.

Mine spoil

An accumulation of displaced earthy material, rock, or other waste material removed during mining or excavation. Also called earthy fill.

Mineral soil

Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage

Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area

A kind of map unit that has little or no natural soil and supports little or no vegetation.

Miscellaneous water (map symbol)

Small, constructed bodies of water that are used for industrial, sanitary, or mining applications and that contain water most of the year.

Moderately coarse textured soil

Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil

Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon

A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Moraine

In terms of glacial geology, a mound, ridge, or other topographically distinct accumulation of unsorted, unstratified drift, predominantly till, deposited primarily by the direct action of glacial ice in a variety of landforms. Also, a general term for a landform composed mainly of till (except for kame moraines, which are composed mainly of stratified outwash) that has been deposited by a glacier. Some types of moraines are disintegration, end, ground, kame, lateral, recessional, and terminal.

Morphology, soil

The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil

Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Mountain

A generic term for an elevated area of the land surface, rising more than 1,000 feet (300 meters) above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range. Mountains are formed primarily by tectonic activity and/or volcanic action but can also be formed by differential erosion.

Muck

Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mucky peat

See Hemic soil material.

Mudstone

A blocky or massive, fine grained sedimentary rock in which the proportions of clay and silt are approximately equal. Also, a general term for such material as clay, silt, claystone, siltstone, shale, and argillite and that should be used only when the amounts of clay and silt are not known or cannot be precisely identified.

Munsell notation

A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Natric horizon

A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

Neutral soil

A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules

See Redoximorphic features.

Nose slope (geomorphology)

A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).

Nutrient, plant

Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter

Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low: Less than 0.5 percent
Low: 0.5 to 1.0 percent
Moderately low: 1.0 to 2.0 percent
Moderate: 2.0 to 4.0 percent
High: 4.0 to 8.0 percent
Very high: More than 8.0 percent

Outwash

Stratified and sorted sediments (chiefly sand and gravel) removed or “washed out” from a glacier by meltwater streams and deposited in front of or beyond the end moraine or the margin of a glacier. The coarser material is deposited nearer to the ice.

Outwash plain

An extensive lowland area of coarse textured glaciofluvial material. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

Paleoterrace

An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly does not grade to, a present-day stream or drainage network.

Pan

A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Parent material

The unconsolidated organic and mineral material in which soil forms.

Peat

Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped

An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedisediment

A layer of sediment, eroded from the shoulder and backslope of an erosional slope, that lies on and is being (or was) transported across a gently sloping erosional surface at the foot of a receding hill or mountain slope.

Pedon

The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation

The movement of water through the soil.

Perennial water (map symbol)

Small, natural or constructed lakes, ponds, or pits that contain water most of the year.

Permafrost

Ground, soil, or rock that remains at or below 0 degrees C for at least 2 years. It is defined on the basis of temperature and is not necessarily frozen.

pH value

A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil

A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping

Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitting

Pits caused by melting around ice. They form on the soil after plant cover is removed.

Plastic limit

The moisture content at which a soil changes from semisolid to plastic.

Plasticity index

The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plateau (geomorphology)

A comparatively flat area of great extent and elevation; specifically, an extensive land region that is considerably elevated (more than 100 meters) above the adjacent lower lying terrain, is commonly limited on at least one side by an abrupt descent, and has a flat or nearly level surface. A comparatively large part of a plateau surface is near summit level.

Playa

The generally dry and nearly level lake plain that occupies the lowest parts of closed depressions, such as those on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation and runoff. Playa deposits are fine grained and may or may not have a high water table and saline conditions.

Plinthite

The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan

A compacted layer formed in the soil directly below the plowed layer.

Ponding

Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded

Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Pore linings

See Redoximorphic features.

Potential native plant community

See Climax plant community.

Potential rooting depth (effective rooting depth)

Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning

Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil

The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil

A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use

Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Rangeland

Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Reaction, soil

A measure of acidity or alkalinity of a soil, expressed as pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid: Less than 3.5
Extremely acid: 3.5 to 4.4
Very strongly acid: 4.5 to 5.0
Strongly acid: 5.1 to 5.5
Moderately acid: 5.6 to 6.0
Slightly acid: 6.1 to 6.5
Neutral: 6.6 to 7.3
Slightly alkaline: 7.4 to 7.8
Moderately alkaline: 7.9 to 8.4
Strongly alkaline: 8.5 to 9.0
Very strongly alkaline: 9.1 and higher

Red beds

Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Redoximorphic concentrations

See Redoximorphic features.

Redoximorphic depletions

See Redoximorphic features.

Redoximorphic features

Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features that are defined as follows:

1. Redoximorphic concentrations.—These are zones of apparent accumulation of iron-manganese oxides, including:
   A. Nodules and concretions, which are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure; *and*
   B. Masses, which are noncemented concentrations of substances within the soil matrix; *and*
   C. Pore linings, i.e., zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.
2. Redoximorphic depletions.—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out, including:
   A. Iron depletions, i.e., zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix; *and*
   B. Clay depletions, i.e., zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletans).
3. Reduced matrix.—This is a soil matrix that has low chroma *in situ* but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix

See Redoximorphic features.

Regolith

All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

Relief

The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Residuum (residual soil material)

Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

Rill

A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

Riser

The vertical or steep side slope (e.g., escarpment) of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

Road cut

A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments

Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop (map symbol)

An exposure of bedrock at the surface of the earth. Not used where the named soils of the surrounding map unit are shallow over bedrock or where “Rock outcrop” is a named component of the map unit.

Root zone

The part of the soil that can be penetrated by plant roots.

Runoff

The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil

A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Saline spot (map symbol)

An area where the surface layer has an electrical conductivity of 8 mmhos/cm more than the surface layer of the named soils in the surrounding map unit. The surface layer of the surrounding soils has an electrical conductivity of 2 mmhos/cm or less.

Sand

As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone

Sedimentary rock containing dominantly sand-sized particles.

Sandy spot (map symbol)

A spot where the surface layer is loamy fine sand or coarser in areas where the surface layer of the named soils in the surrounding map unit is very fine sandy loam or finer.

Sapric soil material (muck)

The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturated hydraulic conductivity (Ksat)

The ease with which pores of a saturated soil transmit water. Formally, the proportionality coefficient that expresses the relationship of the rate of water movement to hydraulic gradient in Darcy's Law, a law that describes the rate of water movement through porous media. Commonly abbreviated as "Ksat." Terms describing saturated hydraulic conductivity are:

Very high: 100 or more micrometers per second (14.17 or more inches per hour)
High: 10 to 100 micrometers per second (1.417 to 14.17 inches per hour)
Moderately high: 1 to 10 micrometers per second (0.1417 inch to 1.417 inches per hour)
Moderately low: 0.1 to 1 micrometer per second (0.01417 to 0.1417 inch per hour)
Low: 0.01 to 0.1 micrometer per second (0.001417 to 0.01417 inch per hour)
Very low: Less than 0.01 micrometer per second (less than 0.001417 inch per hour).

To convert inches per hour to micrometers per second, multiply inches per hour by 7.0572. To convert micrometers per second to inches per hour, multiply micrometers per second by 0.1417.

Saturation

Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification

The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Sedimentary rock

A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

Sequum

A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil

A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Severely eroded spot (map symbol)

An area where, on the average, 75 percent or more of the original surface layer has been lost because of accelerated erosion. Not used in map units in which "severely eroded," "very severely eroded," or "gullied" is part of the map unit name.

Shale

Sedimentary rock that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.

Sheet erosion

The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Short, steep slope (map symbol)

A narrow area of soil having slopes that are at least two slope classes steeper than the slope class of the surrounding map unit.

Shoulder

The convex, erosional surface near the top of a hillslope. A shoulder is a transition from summit to backslope.

Shrink-swell

The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Shrub-coppice dune

A small, streamlined dune that forms around brush and clump vegetation.

Side slope (geomorphology)

A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.

Silica

A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio

The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt

As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone

An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt predominates over clay.

Similar soils

Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole (map symbol)

A closed, circular or elliptical depression, commonly funnel shaped, characterized by subsurface drainage and formed either by dissolution of the surface of underlying bedrock (e.g., limestone, gypsum, or salt) or by collapse of underlying caves within bedrock. Complexes of sinkholes in carbonate-rock terrain are the main components of karst topography.

Site index

A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides (pedogenic)

Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.

Slide or slip (map symbol)

A prominent landform scar or ridge caused by fairly recent mass movement or descent of earthy material resulting from failure of earth or rock under shear stress along one or several surfaces.

Slope

The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope alluvium

Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines. Burnished peds and sorting of rounded or subrounded pebbles or cobbles distinguish these materials from unsorted colluvial deposits.

Slow refill

The slow filling of ponds, resulting from restricted water transmission in the soil.

Slow water movement

Restricted downward movement of water through the soil. See Saturated hydraulic conductivity.

Sodic (alkali) soil

A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodic spot (map symbol)

An area where the surface layer has a sodium adsorption ratio that is at least 10 more than that of the surface layer of the named soils in the surrounding map unit. The surface layer of the surrounding soils has a sodium adsorption ratio of 5 or less.

Sodicity

The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na^{+} to Ca^{++} + Mg^{++}. The degrees of sodicity and their respective ratios are:

Slight: Less than 13:1

Moderate: 13-30:1

Strong: More than 30:1

Sodium adsorption ratio (SAR)

A measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration.

Soft bedrock

Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil

A natural, three-dimensional body at the earth’s surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil separates

Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand: 2.0 to 1.0
Coarse sand: 1.0 to 0.5
Medium sand: 0.5 to 0.25
Fine sand: 0.25 to 0.10
Very fine sand: 0.10 to 0.05
Silt: 0.05 to 0.002
Clay: Less than 0.002

Solum

The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Spoil area (map symbol)

A pile of earthy materials, either smoothed or uneven, resulting from human activity.

Stone line

In a vertical cross section, a line formed by scattered fragments or a discrete layer of angular and subangular rock fragments (commonly a gravel- or cobble-sized lag concentration) that formerly was draped across a topographic surface and was later buried by additional sediments. A stone line generally caps material that was subject to weathering, soil formation, and erosion before burial. Many stone lines seem to be buried erosion pavements, originally formed by sheet and rill erosion across the land surface.

Stones

Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony

Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stony spot (map symbol)

A spot where 0.01 to 0.1 percent of the soil surface is covered by rock fragments that are more than 10 inches in diameter in areas where the surrounding soil has no surface stones.

Strath terrace

A type of stream terrace; formed as an erosional surface cut on bedrock and thinly mantled with stream deposits (alluvium).

Stream terrace

One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel, originally formed near the level of the stream; represents the remnants of an abandoned flood plain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.

Stripcropping

Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil

The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are:

Platy: Flat and laminated
Prismatic: Vertically elongated and having flat tops
Columnar: Vertically elongated and having rounded tops
Angular blocky: Having faces that intersect at sharp angles (planes)
Subangular blocky: Having subrounded and planar faces (no sharp angles)
Granular: Small structural units with curved or very irregular faces

Structureless soil horizons are defined as follows:

Single grained: Entirely noncoherent (each grain by itself), as in loose sand
Massive: Occurring as a coherent mass

Stubble mulch

Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil

Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling

Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum

The part of the soil below the solum.

Subsurface layer

Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summer fallow

The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Summit

The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer

The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

Surface soil

The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Talus

Rock fragments of any size or shape (commonly coarse and angular) derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose broken rock formed chiefly by falling, rolling, or sliding.

Taxadjuncts

Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terminal moraine

An end moraine that marks the farthest advance of a glacier. It typically has the form of a massive arcuate or concentric ridge, or complex of ridges, and is underlain by till and other types of drift.

Terrace (conservation)

An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geomorphology)

A steplike surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion.

Terracettes

Small, irregular steplike forms on steep hillslopes, especially in pasture, formed by creep or erosion of surficial materials that may be induced or enhanced by trampling of livestock, such as sheep or cattle.

Texture, soil

The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,” “fine,” or “very fine.”

Thin layer

Otherwise suitable soil material that is too thin for the specified use.

Till

Dominantly unsorted and nonstratified drift, generally unconsolidated and deposited directly by a glacier without subsequent reworking by meltwater, and consisting of a heterogeneous mixture of clay, silt, sand, gravel, stones, and boulders; rock fragments of various lithologies are embedded within a finer matrix that can range from clay to sandy loam.

Till plain

An extensive area of level to gently undulating soils underlain predominantly by till and bounded at the distal end by subordinate recessional or end moraines.

Tilth, soil

The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope

The gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil

The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements

Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tread

The flat to gently sloping, topmost, laterally extensive slope of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.

Tuff

A generic term for any consolidated or cemented deposit that is 50 percent or more volcanic ash.

Upland

An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hillslope continuum.

Valley fill

The unconsolidated sediment deposited by any agent (water, wind, ice, or mass wasting) so as to fill or partly fill a valley.

Variegation

Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Varve

A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

Very stony spot (map symbol)

A spot where 0.1 to 3.0 percent of the soil surface is covered by rock fragments that are more than 10 inches in diameter in areas where the surface of the surrounding soil is covered by less than 0.01 percent stones.

Water bars

Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering

All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth's surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Well graded

Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wet spot (map symbol)

A somewhat poorly drained to very poorly drained area that is at least two drainage classes wetter than the named soils in the surrounding map unit.

Wilting point (or permanent wilting point)

The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow

The uprooting and tipping over of trees by the wind.

APPENDIX TIS

TRAFFIC IMPACT STUDY

Traffic Impact Study

Mooretown Rancheria Project

Butte County

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April 17, 2023

Mooretown Rancheria Project

Butte County

TRAFFIC IMPACT STUDY

1) INTRODUCTION

This traffic impact study describes the existing and future conditions for transportation with and without the proposed project on the Mooretown Rancheria in Butte County. The project would include the following traffic-generating components which would be constructed on the Tribe's Reservation, which is currently held in federal trust:

1) Construction of a 164-unit housing development including 40 single family homes, 64 apartments, and 60 attached senior housing units.
2) Construction of a 1,500-person capacity event/conference center and wine tasting center with approximately 30,000 square feet of building space.
3) Construction of an amphitheater with up to 2,500 seats
4) Conversion of a 2,000 square foot metal shop into office space or a retail store.
5) A new parking structure with 200 parking spaces.
6) 77 acres of agricultural development

This study also describes the regulatory setting; the criterion used for determining the significance of environmental impacts; and summarizes potential environmental impacts and appropriate mitigation measures. This study has been conducted in accordance with the requirements and methodologies set forth by Butte County, the City of Oroville, and Caltrans. This report has been prepared to assess off-reservation impacts of the project in accordance with Appendix B of the Tribe's Tribal-State Compact.

Summary of Required Mitigations and Recommended Improvement Measures - The following is a summary of the proposed mitigation measures to address the transportation impacts of the project. Based on a detailed analysis of traffic operations with and without each of the proposed mitigations, implementation of the following mitigation measures would reduce some of the project impacts to a *less-than-significant* level.

Impact #1 Impacts to intersection operations - The project would contribute to LOS operations exceeding the established standards at the following two intersections under future Friday conditions with a full capacity event in the amphitheater:

Ophir Road/Lower Wyandotte Road at Upper Palermo Road (Intersection #3)
Lower Wyandotte Road at Feather Falls Boulevard (Intersection #5)

The addition of traffic from the proposed project would contribute to these two intersections exceeding the established LOS standards. The following mitigation measures would be forecast to reduce the impacts to a less-than-significant level in all plus project scenarios.

<u>Mitigation Measures</u>

MM 1 (a) <u>Ophir Road/Lower Wyandotte Road at Upper Palermo Road</u> – *Option #1 – Revise the lane markings on the southbound approach to provide a dual left turn movement with a shared through-right lane. Widen the southbound Lower Wyandotte Road approach to the intersection to provide approximately 150 feet of left turn storage. This may require modifications to the traffic signal.*

Option #2 – Widen the southbound Lower Wyandotte Road approach to the intersection to provide approximately 300 feet of left turn storage.

MM 1 (b) <u>Ophir Road/Lower Wyandotte Road at Upper Palermo Road</u> – *Widening of Golf Course Drive to allow for a dual westbound left turn movement. Implement manual traffic control for special events.*

MM 1 (c) <u>*Lower Wyandotte Road at Feather Falls Boulevard*</u> *– Widen the southbound Feather Falls Boulevard approach to the intersection to allow for separate right and left turn lanes with approximately 150 feet of storage.*

2) PROJECT DESCRIPTION

For the purposes of the traffic analysis, the project is expected to include the following traffic-generating components:

1) Construction of a 164-unit housing development including 40 single family homes, 64 apartments, and 60 attached senior housing units.
2) Construction of a 1,500-person capacity event/conference center and wine tasting center with approximately 30,000 square feet of building space.
3) Construction of an amphitheater with up to 2,500 seats
4) Conversion of a 2,000 square foot metal shop into office space or a retail store.
5) 77 acres of agricultural development

Figure 1 shows the project location and the surrounding roadway network. **Figure 2** presents the site plan for the project.

3) EXISTING CONDITIONS

This section of the report describes the roadways, traffic conditions and other existing transportation characteristics in the vicinity of the project. The primary basis of the analysis is the peak hour level of service for the key intersections. The hours identified as the “peak” hours are generally between 7:30 a.m. and 8:30 a.m. and 4:00 p.m. and 5:00 p.m. for the transportation facilities described, based on the intersection turning movement counts collected for this analysis. These peak hours will be identified as the AM and PM peak hours. These volumes represent the conditions on a typical weekday (Tuesday through Thursday). An analysis of project impacts on Friday evening traffic conditions is presented in Section 4.8.

3.1 Project Study Intersections

Figure 1 shows the location of the project study intersections included in the analysis. All access to the site would be via driveways onto Alverda Drive. Five study intersections were analyzed.

3.2 Traffic Analysis Scenarios

The study intersections were evaluated for the six scenarios described below:

- Scenario 1: *Existing Conditions* – Level of Service (LOS) based on the existing weekday peak hour volumes and existing intersection configurations.

- Scenario 2: *Existing Plus Project Conditions* – Existing traffic volumes plus the trips forecast to be generated by the proposed project.

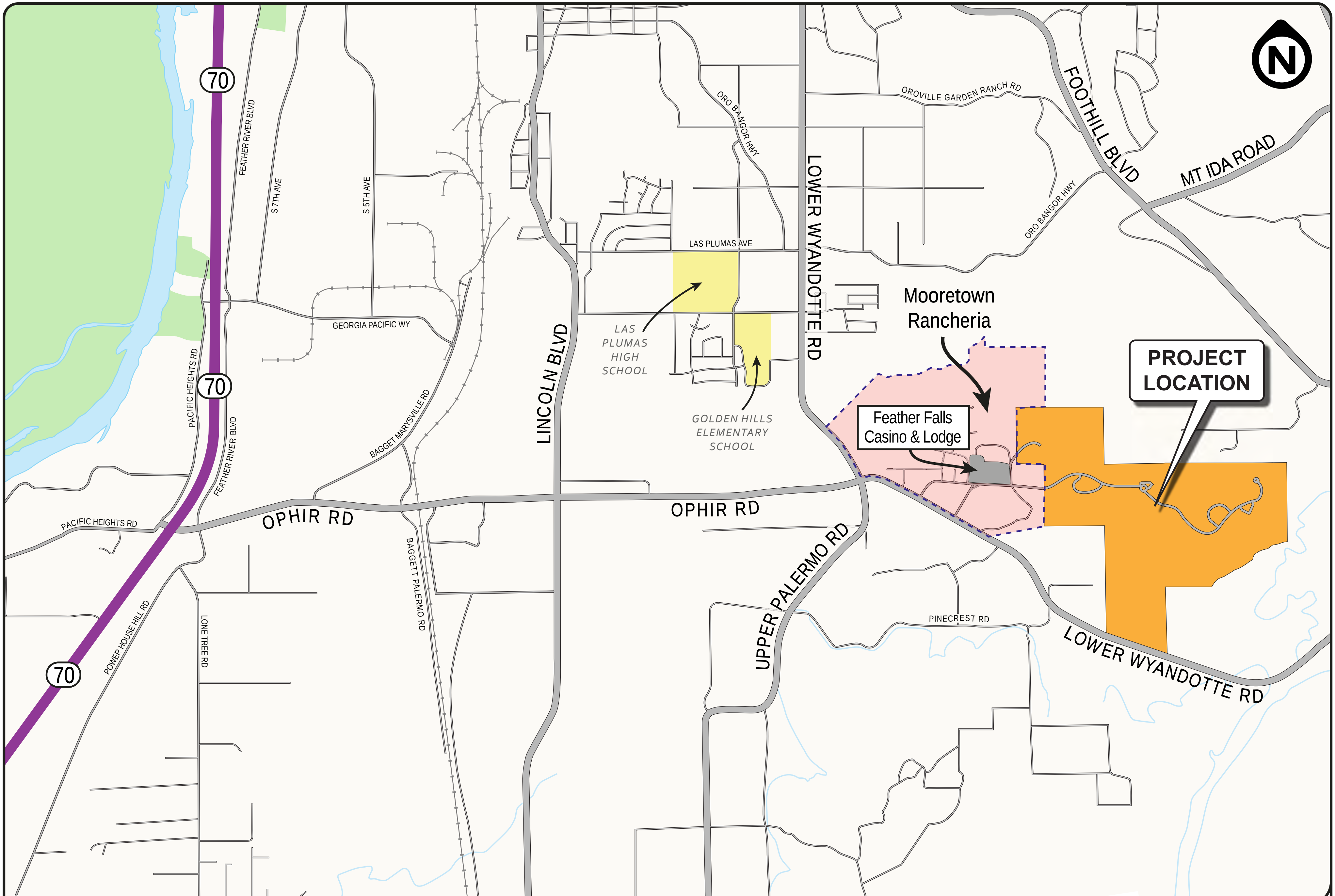

FIGURE 1 | PROJECT LOCATION

TRAFFIC IMPACT STUDY

Mooretown Rancheria Project

Butte County

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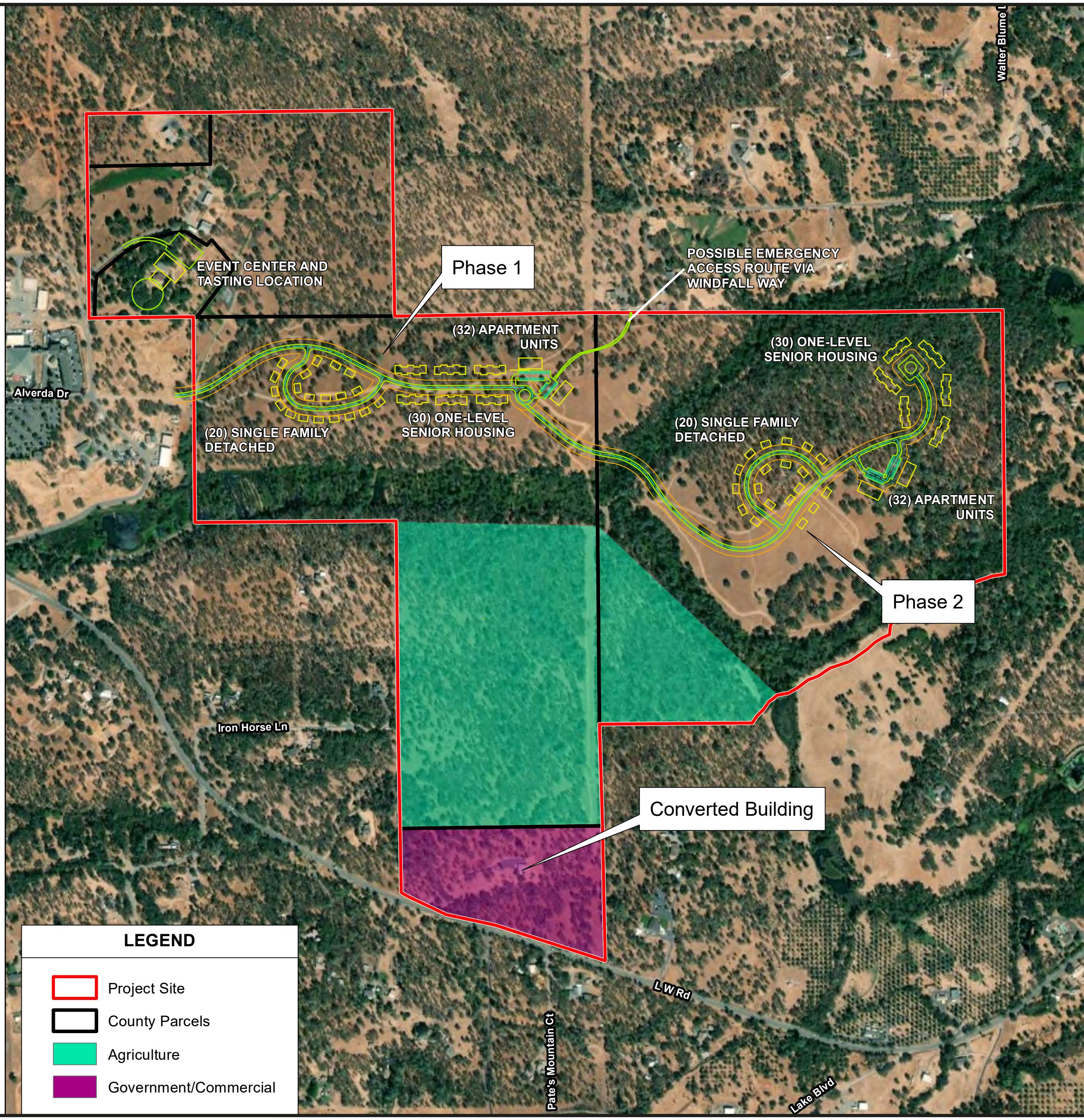

FIGURE 2 | SITE PLAN

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Mooretown Rancheria Project

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- Scenario 3: *Baseline (No Project) Conditions* – The Baseline scenario is based on the existing volumes plus growth in background traffic (for two years) plus the traffic from all reasonably foreseeable developments that could substantially affect the volumes at the project study intersections.

- Scenario 4: *Baseline Plus Project Conditions* – This scenario is based on the Baseline traffic volumes plus the trips from the proposed project.

- Scenario 5: *Cumulative Conditions* – This scenario includes year 2040 cumulative volumes based on planned and approved projects and the Butte County Association of Governments (BCAG) Traffic Model.

- Scenario 6: *Cumulative Plus Project Conditions* – This scenario includes year 2040 cumulative volumes based on the BCAG Traffic Model plus the forecast trips from proposed project.

3.3 Existing Roadway Network

As discussed previously, the project location and the surrounding roadway network are illustrated in **Figure 1**. The following is a more detailed description of some of the main roadways in the area that could be affected by the project:

- **State Route 70** – State Route 70 is a four-lane expressway in the project area that generally runs in a north-south direction. It extends north from SR 99 to the north of Sacramento to terminate at U.S. Route 395 (US 395) near Beckwourth Pass. The posted speed limit on State Route 70 near the study area is 65 mph.

- **Ophir Drive** - Ophir Drive is a two lane east-west minor arterial that extends east from State Route 70 to terminate at Upper Palermo Road, where it becomes Lower Wyandotte Road. The posted speed limit is 55 mph to the west of Lincoln Boulevard and 45 mph to the east of it.

- **Lincoln Boulevard** – Lincoln Boulevard is a north south major arterial that extends south from Lincoln Street to terminate at South Villa Road in Palermo. The posted speed limit is 40 mph.

- **Lower Wyandotte Road** – Lower Wyandotte Road is a north south minor arterial that extends south from Olive Highway (SR 162) and then becomes east west near the project site and terminates to the east at Foothill Boulevard in the Wyandotte community. The posted speed limit is 35 mph in the vicinity of the project site.

- **Alverda Drive** – Alverda Drive is a two lane roadway that extends north from Lower Wyandotte Road through the Mooretown Rancheria. The posted speed limit is 25 mph.

- **Feather Falls Boulevard** – Feather Falls Boulevard is a two lane roadway that serves as the main entrance to the Feather Falls Casino and Lodge and also provides access to the Feather Falls KOA Campground. Feather Falls Boulevard extends north from Lower Wyandotte Road to terminate at Alverda Drive within the Mooretown Rancheria. The posted speed limit is 25 mph.

3.4 Analysis Methodology

Existing operational conditions at the five (5) study intersections have been evaluated according to the requirements set forth by the Butte County and City of Oroville General Plans. Analysis of traffic operations was conducted using the 6th Edition of the *Highway Capacity Manual* (*HCM*) Level of Service (LOS) methodology with Synchro software.[1] Level of service is an expression, in the form of a scale, of the relationship between the capacity of an intersection (or roadway segment) to accommodate the volume of traffic moving through it at any given time. The level of service scale describes traffic flow with six ratings ranging from A to F, with "A" indicating relatively free flow of traffic and "F" indicating stop-and-go traffic characterized by traffic jams. As the amount of traffic moving through a given intersection or roadway segment increases, the traffic flow conditions that motorists experience rapidly deteriorate as the capacity of the intersection or roadway segment is reached. Under such conditions, there is general instability in the traffic flow, which means that relatively small incidents (e.g., momentary engine stall) can cause considerable fluctuations in speeds and delays that lead to traffic congestion. This near-capacity situation is labeled level of service (LOS) E. Beyond LOS E, the intersection or roadway segment capacity has been exceeded, and arriving traffic will exceed the ability of the intersection to accommodate it.

For signalized intersections, The *HCM* methodology determines the capacity of each lane group approaching the intersection. The LOS is then based on average control delay (in seconds per vehicle) for the various movements within the intersection. A combined weighted average control delay and LOS are presented for the intersection. A summary of the HCM results and copies of the detailed HCM LOS calculations are included in the appendix to this report. **Table 1** summarizes the relationship between LOS, average control delay, and the volume to capacity ratio at signalized intersections. For unsignalized intersections (all-way stop controlled and two-way stop controlled) the average control delay and LOS operating conditions are calculated by approach (e.g., northbound) and by movement (e.g., northbound left-turn) for those movements that are subject to delay. In general, the operating conditions for unsignalized intersections are presented for the worst approach. **Table 2** summarizes the relationship between LOS and average control delay at unsignalized intersections.

[1] *6th Edition of Highway Capacity Manual*, Transportation Research Board, Washington D.C., 2016

TABLE 1
SIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Description of Operations	Average Delay (sec/veh)	Volume to Capacity Ratio
A	Insignificant Delays: No approach phase is fully used and no vehicle waits longer than one red indication.	≤ 10	< 0.60
B	Minimal Delays: An occasional approach phase is fully used. Drivers begin to feel restricted.	> 10 to 20	> 0.61 to 0.70
C	Acceptable Delays: Major approach phase may become fully used. Most drivers feel somewhat restricted.	> 20 to 35	> 0.71 to 0.80
D	Tolerable Delays: Drivers may wait through no more than one red indication. Queues may develop but dissipate rapidly without excessive delays.	> 35 to 55	> 0.81 to 0.90
E	Significant Delays: Volumes approaching capacity. Vehicles may wait through several signal cycles and long vehicle queues from upstream.	> 55 to 80	> 0.91 to 1.00
F	Excessive Delays: Represents conditions at capacity, with extremely long delays. Queues may block upstream intersections.	> 80	> 1.00

SOURCES: 6th Edition of the *Highway Capacity Manual*, Transportation Research Board, 2016.

TABLE 2
UNSIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Description of Operations	Average Delay (seconds/vehicle)
A	No delay for stop-controlled approaches.	0 to 10
B	Operations with minor delays.	> 10 to 15
C	Operations with moderate delays.	> 15 to 25
D	Operations with some delays.	> 25 to 35
E	Operations with high delays and long queues.	> 35 to 50
F	Operation with extreme congestion, with very high delays and long queues unacceptable to most drivers.	> 50

SOURCE: 6th Edition of the *Highway Capacity Manual*, Transportation Research Board, 2016.

3.5 Existing Intersection Capacity Conditions (Scenario 1)

The existing intersection geometry at each of the project study intersections can be seen in **Figure 3** and the existing traffic volumes at each are presented in **Figure 4.** Traffic counts at the study intersections were conducted in May, 2022 and March, 2023 at times when local schools were in session. **Table 3** summarizes the associated LOS computation results for the existing weekday AM and PM peak hour conditions. Please note that the corresponding LOS analysis calculation sheets are presented in the appendix to this report. As shown in **Table 3**, all of the project study intersections currently have acceptable conditions operations during the weekday AM and PM peak hours. See Section 3.8 for a description of the applicable intersection thresholds.

TABLE 3
EXISTING INTERSECTION LEVEL OF SERVICE CONDITIONS

INTERSECTION		CONTROL	PEAK HOUR	EXISTING	
				Delay	LOS
1	STATE ROUTE 70 & OPHIR ROAD	Signalized	AM	18.1	B
			PM	22.1	C
2	LINCOLN BOULEVARD & OPHIR ROAD	Signalized	AM	19.6	B
			PM	16.5	B
3	UPPER PALERMO ROAD / LOWER WYANDOTTE ROAD & OPHIR ROAD	Signalized	AM	15.7	B
			PM	15.9	B
4	ALVERDA DRIVE & LOWER WYANDOTTE ROAD	Side Street Stop	AM	10.2	B
			PM	10.8	B
5	FEATHER FALLS BOULEVARD & LOWER WYANDOTTE ROAD	Side Street Stop	AM	10.2	B
			PM	10.5	B

SOURCE: Abrams Associates, 2023 **NOTE:** Delay results are presented in terms of seconds per vehicle.

3.6 Pedestrian and Bicycle Facilities

Bicycle and pedestrian facilities in the project study area are currently very limited with no bike lanes or sidewalks provided in the vicinity of the project, except on Alverda Drive. Bicycle paths, lanes and routes are typical examples of bicycle transportation facilities, which are defined by Caltrans as being in one of the four classes:

Class I – Provides a completely separated facility designed for the exclusive use of bicyclists and pedestrians with crossing points minimized.
Class II – Provides a restricted right-of-way designated lane for the exclusive or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicle parking and cross-flows by pedestrians and motorists permitted.
Class III – Provides a route designated by signs or permanent markings and shared with pedestrians and motorists.

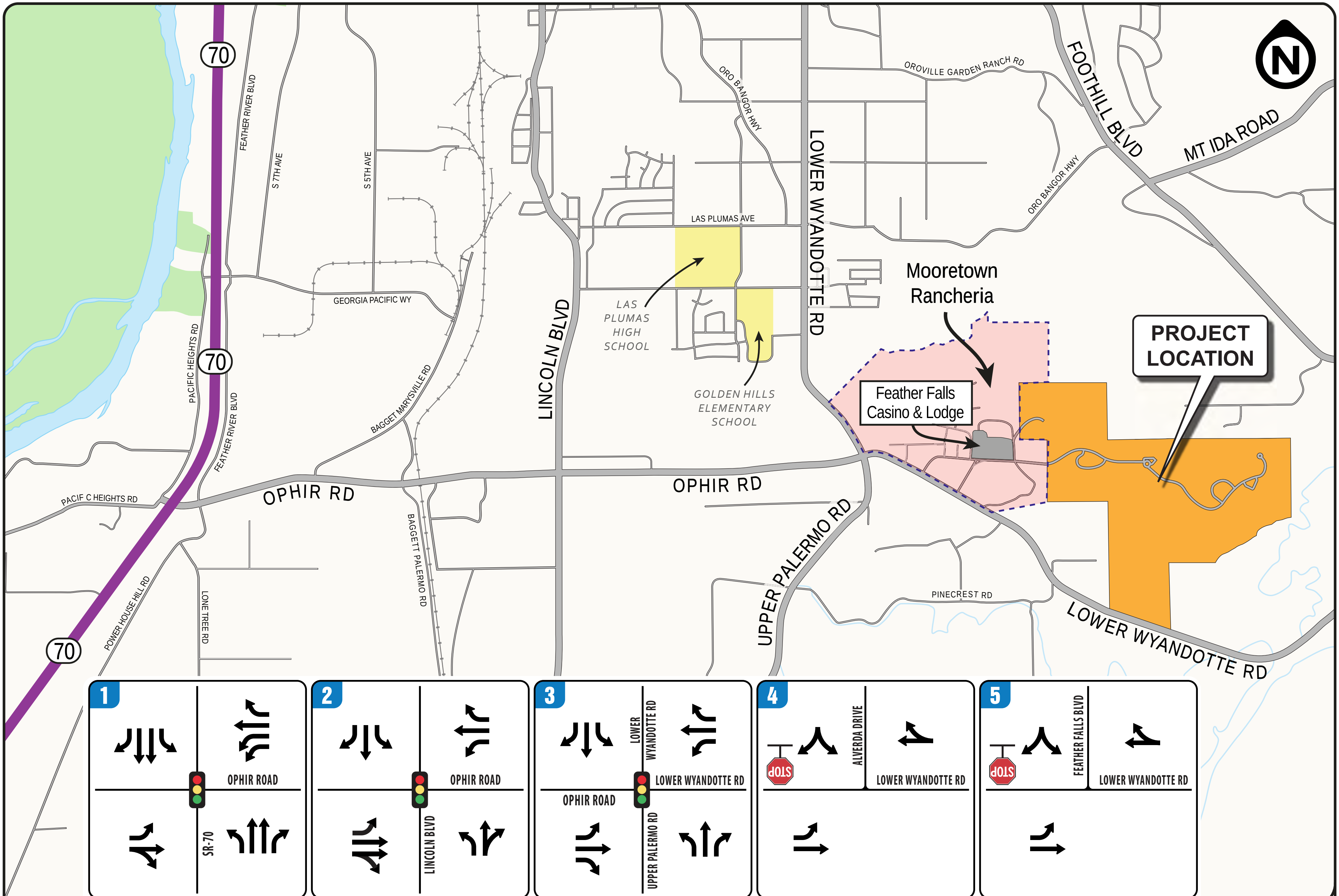

FIGURE 3 | EXISTING LANE CONFIGURATIONS

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Mooretown Rancheria Project

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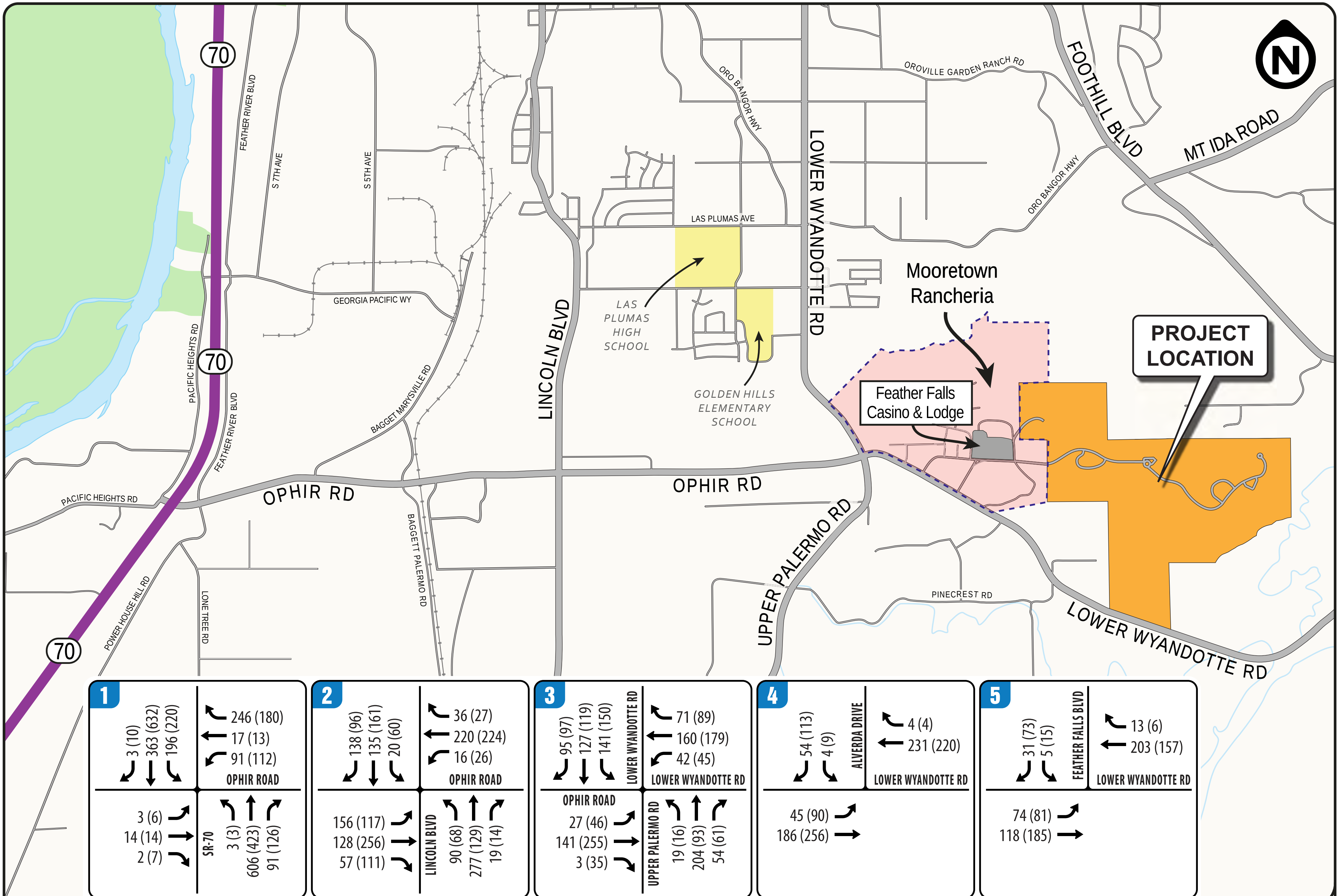

FIGURE 4 | EXISTING AM(PM) PEAK HOUR TRAFFIC VOLUMES

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Class IV – Provides an adjacent bike lane or bikeway that is physically separated from motor vehicle traffic.

3.7 Transit Service

Bus Transit - Bus transit service in the project area is provided by Butte Regional Transit (B-Line). B-Line operates local bus route 30 within the City of Oroville and in the vicinity of the project site. The routes operate on approximately one hour headways Monday through Friday from about 7:30 AM to 6:30 PM. The routes provide connections to regional transit via the Oroville Transit Center. The nearest bus stop to the project site is located on Alverda Drive adjacent to the Feather Falls Casino.

3.8 Standards and Objectives

Existing policies, laws and regulations that apply to the proposed project are summarized below.

Caltrans - The California Department of Transportation (Caltrans) has jurisdiction over State highways. Therefore, Caltrans controls all construction, modification, and maintenance of State highways, such as State Route 70. Any improvements to these roadways would require Caltrans' approval.

Butte County General Plan - The Transportation and Circulation Element included in the Butte County General Plan was prepared pursuant to Section 65302(b) of the California Government Code. The Transportation and Circulation Element addresses the location and extent of existing and planned transportation routes, terminals, and other local public utilities and facilities. The General Plan identifies roadway and transit goals and policies that have been adopted to ensure that the transportation system of the County will have adequate capacity to serve planned growth. These goals and policies are intended to provide a plan and implementation measures for an integrated, multi-modal transportation system that will safely and efficiently meet the transportation needs of all economic and social segments of the County.

City of Oroville General Plan - The Circulation Element included in the City of Oroville General also identifies roadway and transit goals and policies that have been adopted to ensure that the transportation system of the City will continue to have adequate capacity to serve planned growth.

Significance Criteria – For the purposes of this analysis a project would have a significant impact if it would:

- Conflict with an applicable program, plan, ordinance or policy establishing measures of effectiveness for the performance of addressing the circulation system, including transit, roadways, bicycle lanes and pedestrian facilities/paths?

  The goal of Butte County is to maintain a Level of Service (LOS) C during the peak hours, according to the General Plan. The County does not have plans, ordinances, or policies establishing measures of effectiveness for the performance of other parts of its circulation system. Please note this report also includes intersections under the jurisdiction of the City of Oroville and Caltrans. The applicable measures of effectiveness are summarized below:

Signalized and Unsignalized Intersections - Project-related operational impacts on the signalized study intersections in the Butte County are considered significant if project-related traffic causes the Level of Service (LOS) rating to deteriorate from LOS C to LOS D, E or F. Project-related operational impacts on intersections in the City of Oroville are considered significant if project-related traffic causes the Level of Service (LOS) rating to deteriorate from LOS D to LOS E, or F. According to Butte County General Plan Policy CIR-P6.1, within a municipality's SOI, the County shall strive to meet the municipality's LOS goal. As a result, intersections #1 and #2 would fall under the City of Oroville's LOS standard (LOS D) and intersections #3, #4 and #5 would fall under the County's LOS standard (LOS C).

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the off-reservation circulation system, taking into account all modes of transportation including mass transit and nonmotorized travel and relevant components of the circulation system, including, but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?
- Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated off-reservation roads or highways?
- Substantially increase hazards to an off-reservation design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?
- Result in inadequate emergency access for off-reservation responders?

4) TRANSPORTATION IMPACT ANALYSIS

4.1 Project Trip Generation

Project Trip Generation - The peak-hour trip generation of the proposed casino was reviewed based on information published in Institute of Transportation Engineers (ITE) Trip Generation Manual (Eleventh Edition, 2021). As noted above, the project would consist of construction of a 164-unit housing development including 40 single family homes, 64 apartments, and 60 attached senior housing units. It would also include construction of a 1,500-person capacity event/conference center and wine tasting center with approximately 30,000 square feet of building space and construction of an amphitheater with up to 2,500 seats. The project also includes conversion of a 2,000 square foot metal shop into office space or a retail store along with 77 acres of agricultural development.

The resulting trip generation calculations are shown in **Table 4**. The trip generation rates are based on the ITE rates for single family homes (Land Use 210) mid-rise apartments, not close to rail transit (Land Use 222), senior attached housing (Land Use 252), wine tasting room (Land Use 970), and for retail uses (Land Use 822) taken from the 11th Edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual. For the purposes of this analysis the wine tasting room area was assumed to be 5,000 square feet. As shown in **Table 4**, during the normal weekday commute peak hours the Proposed Project is estimated to generate a total of approximately 111 AM peak hour trips (34 inbound and 77 outbound) and 174 PM peak hour trips (101 inbound and 73 outbound). Theater/Special Event trip generation is discussed in Section 4.9.

TABLE 4
MOORETOWN RANCHERIA PROJECT TRIP GENERATION CALCULATIONS

Land Use	ITE Code	Size	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
ITE Single Family Home Trip Rates - Trips per Unit	210		9.43	0.18	0.52	0.70	0.59	0.35	0.94
Single Family Home Trip Generation		40 units	377	7	21	28	24	14	38
ITE Apartment Rates (General Urban/Suburban, Not Close to Rail Transit) - Trips per Unit	221		4.54	0.09	0.28	0.37	0.24	0.15	0.39
Apartment Trip Generation		64 units	291	6	18	24	14	10	25
ITE Senior Attached Housing Trip Rates - Trips per Unit	252		3.24	0.18	0.54	0.72	0.60	0.36	0.96
Senior Housing Trip Generation		60 units	194	11	33	43	36	22	58
ITE Wine Tasting Room Trip Rates - Trips per Square Foot	970		45.96	1.45	0.62	2.07	3.66	3.65	7.31
Wine Tasting Room Trip Generation		5,000 sq. ft.	230	7	3	10	19	18	37
ITE Agricultural Trip Rates - Trips per acre	411		0.78	0.01	0.01	0.02	0.03	0.08	0.11
Agricultural Trip Generation		77 acres	60	1	1	2	2	6	8
ITE Retail Rates - Trips per Square Foot	822		54.45	1.42	0.94	2.36	3.30	3.29	6.59
Office/Retail Trip Generation		*2,000 sq. ft.*	*109*	3	2	5	7	6	13
Reduction for Non-Auto/Pass-By Trips (34%)			*37*	1	1	2	2	2	4
Subtotals for the Office/Retail			*72*	*2*	*1*	*3*	*5*	*4*	*9*
Net New Trip Generation for the Proposed Project			**1,224**	**37**	**77**	**111**	**101**	**73**	**174**

4.2 Project Trip Distribution

The trip distribution assumptions have been based on the project's proximity State Highway 70 and other key travel routes in Butte County, the existing directional split at nearby intersections, and the overall land use patterns in the area. **Figure 5** shows the project trips that are forecast to be added at the study intersections.

4.3 Existing Plus Project Traffic Capacity Conditions (Scenario 2)

This scenario evaluates the existing conditions with the addition of traffic from the proposed project. The traffic volumes for each of the study intersections for Existing Plus Project conditions are shown in **Figure 6**. The capacity calculations for the Existing Plus Project scenario are shown in **Table 5**. The corresponding LOS analysis calculation sheets are presented in the appendix to this report. As shown in **Table 5**, all of the project study intersections would continue to have acceptable conditions (LOS D or better) during the weekday AM and PM peak hours. Please note this scenario represents average weekday conditions that assume there is no event being held at the theater. Theater/Special Event conditions are analyzed in Section 4.9.

TABLE 5
EXISTING PLUS PROJECT INTERSECTION LEVEL OF SERVICE CONDITIONS

INTERSECTION		CONTROL	PEAK HOUR	EXISTING		EXISTING PLUS PROJECT	
				Delay	LOS	Delay	LOS
1	STATE ROUTE 70 & OPHIR ROAD	Signalized	AM	18.1	B	19.0	B
			PM	23.0	C	25.0	C
2	LINCOLN BOULEVARD & OPHIR ROAD	Signalized	AM	19.6	B	20.7	C
			PM	16.5	B	17.0	B
3	UPPER PALERMO ROAD / LOWER WYANDOTTE ROAD & OPHIR ROAD	Signalized	AM	15.7	B	16.5	B
			PM	15.9	B	16.8	B
4	ALVERDA DRIVE & LOWER WYANDOTTE ROAD	Side Street Stop	AM	10.2	B	10.9	B
			PM	10.8	B	11.6	B
5	FEATHER FALLS BOULEVARD & LOWER WYANDOTTE ROAD	Side Street Stop	AM	10.2	B	10.7	B
			PM	10.5	B	11.5	B

SOURCE: Abrams Associates, 2023 **NOTE:** Delay results are presented in terms of seconds per vehicle.

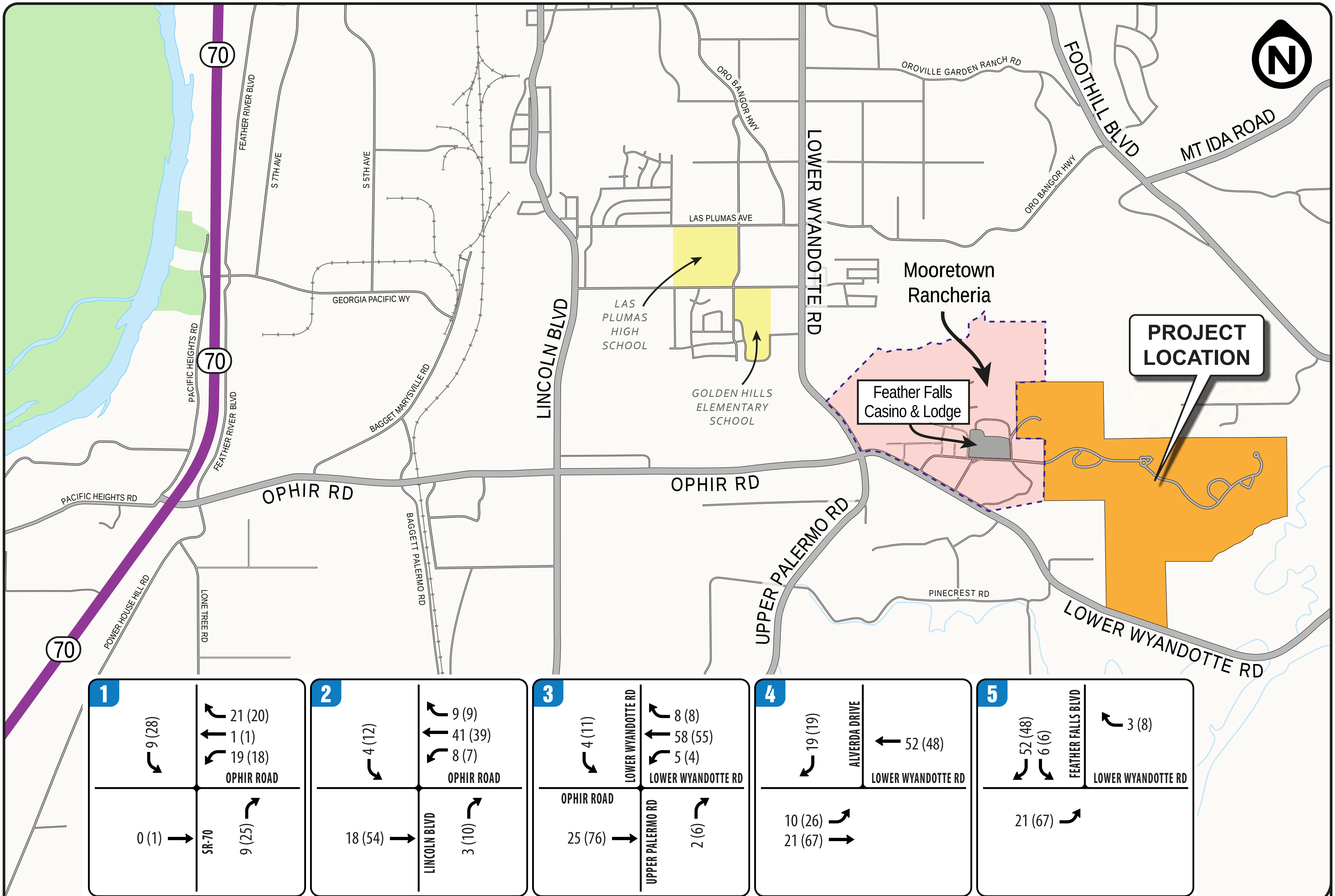

FIGURE 5 | PROJECT AM(PM) PEAK HOUR TRIPS

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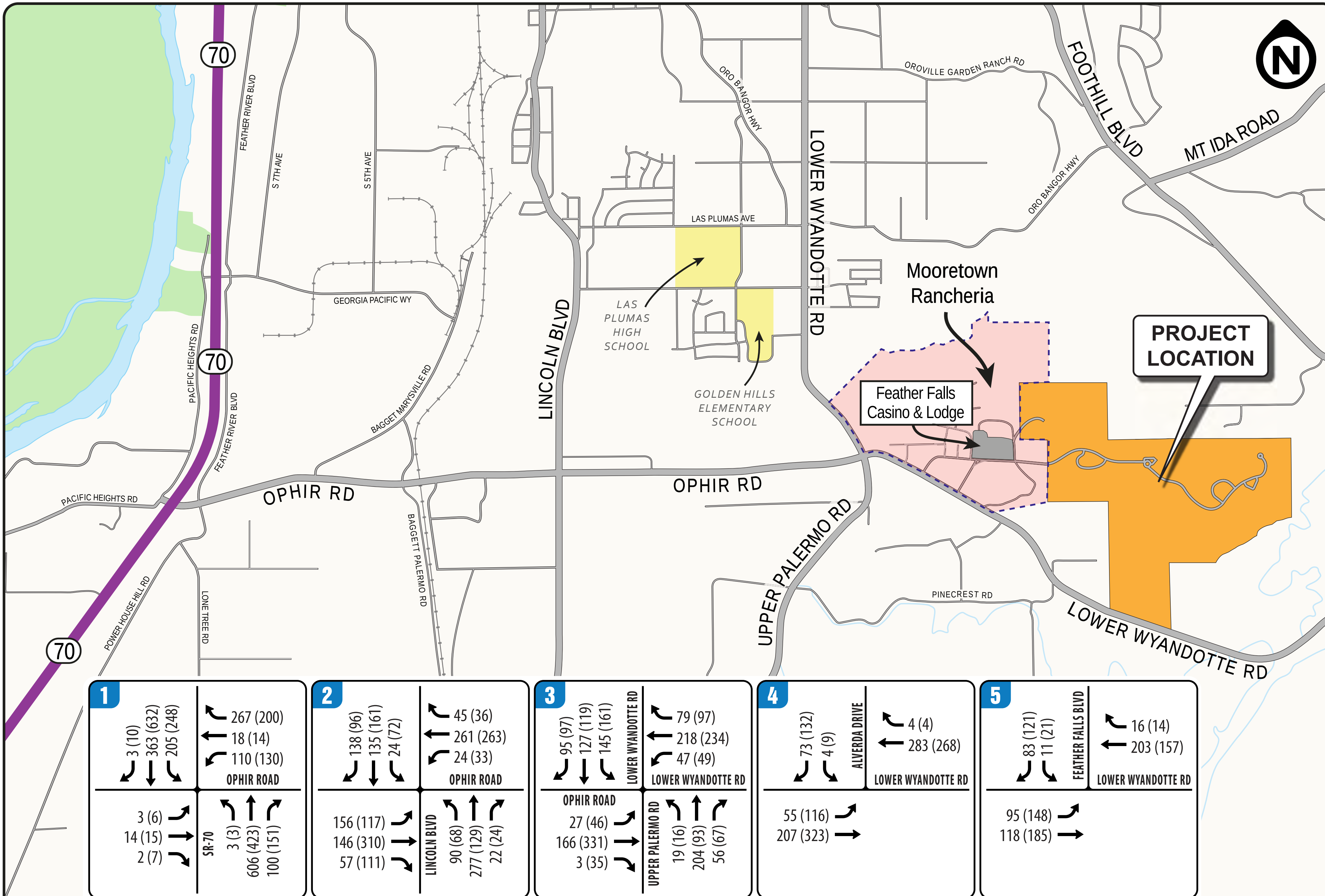

FIGURE 6 | EXISTING PLUS PROJECT AM(PM) PEAK HOUR TRAFFIC VOLUMES

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4.4 Baseline Traffic Capacity Conditions (Scenario 3)

The Baseline scenario evaluates the existing conditions with the addition of traffic from reasonably foreseeable projects in the area and general baseline growth in traffic. For this analysis the baseline volumes were developed based on the assumption that the project completion date would be 2025 with a 10% growth in background traffic (representing approved projects and a partial return to pre-covid conditions). The traffic volumes for each of the study intersections for the Baseline scenario are shown in **Figure 7**. **Table 6** summarizes the associated LOS computation results for the Baseline weekday AM and PM peak hour conditions. As shown in **Table 6**, all of the study intersections would continue to have acceptable conditions under the Baseline scenario during the weekday AM and PM peak hours.

4.5 Baseline Plus Project Traffic Capacity Conditions (Scenario 4)

The Baseline plus proposed project traffic forecasts were developed by adding traffic from the project to the baseline traffic volumes. The traffic volumes for each of the study intersections for the Baseline Plus Project scenario are shown in **Figure 8**. **Table 6** summarizes the LOS results for the Baseline and Baseline Plus Project weekday AM and PM peak hour conditions. The corresponding LOS analysis calculation sheets are presented in the appendix to this report. As shown in **Table 6**, all of the study intersections would continue to have acceptable conditions under the Baseline Plus Project scenario during the weekday AM and PM peak hours. Please note this scenario represents average weekday conditions that assume there are no events being held at the proposed event center or amphitheater. Theater/Special Event conditions are analyzed in Section 4.9.

TABLE 6
BASELINE PLUS PROJECT INTERSECTION LEVEL OF SERVICE CONDITIONS

INTERSECTION		CONTROL	PEAK HOUR	BASELINE		BASELINE PLUS PROJECT	
				Delay	LOS	Delay	LOS
1	STATE ROUTE 70 & OPHIR ROAD	Signalized	AM	20.0	B	21.5	C
			PM	24.2	C	26.3	C
2	LINCOLN BOULEVARD & OPHIR ROAD	Signalized	AM	21.3	C	22.7	C
			PM	17.3	B	17.9	B
3	UPPER PALERMO ROAD / LOWER WYANDOTTE ROAD & OPHIR ROAD	Signalized	AM	16.4	B	17.3	B
			PM	16.5	B	17.6	B
4	ALVERDA DRIVE & LOWER WYANDOTTE ROAD	Side Street Stop	AM	10.5	B	11.2	B
			PM	11.3	B	12.1	B
5	FEATHER FALLS BOULEVARD & LOWER WYANDOTTE ROAD	Side Street Stop	AM	10.5	B	11.1	B
			PM	10.9	B	12.0	B

SOURCE: Abrams Associates, 2020 **NOTE:** Delay results are presented in terms of seconds per vehicle.

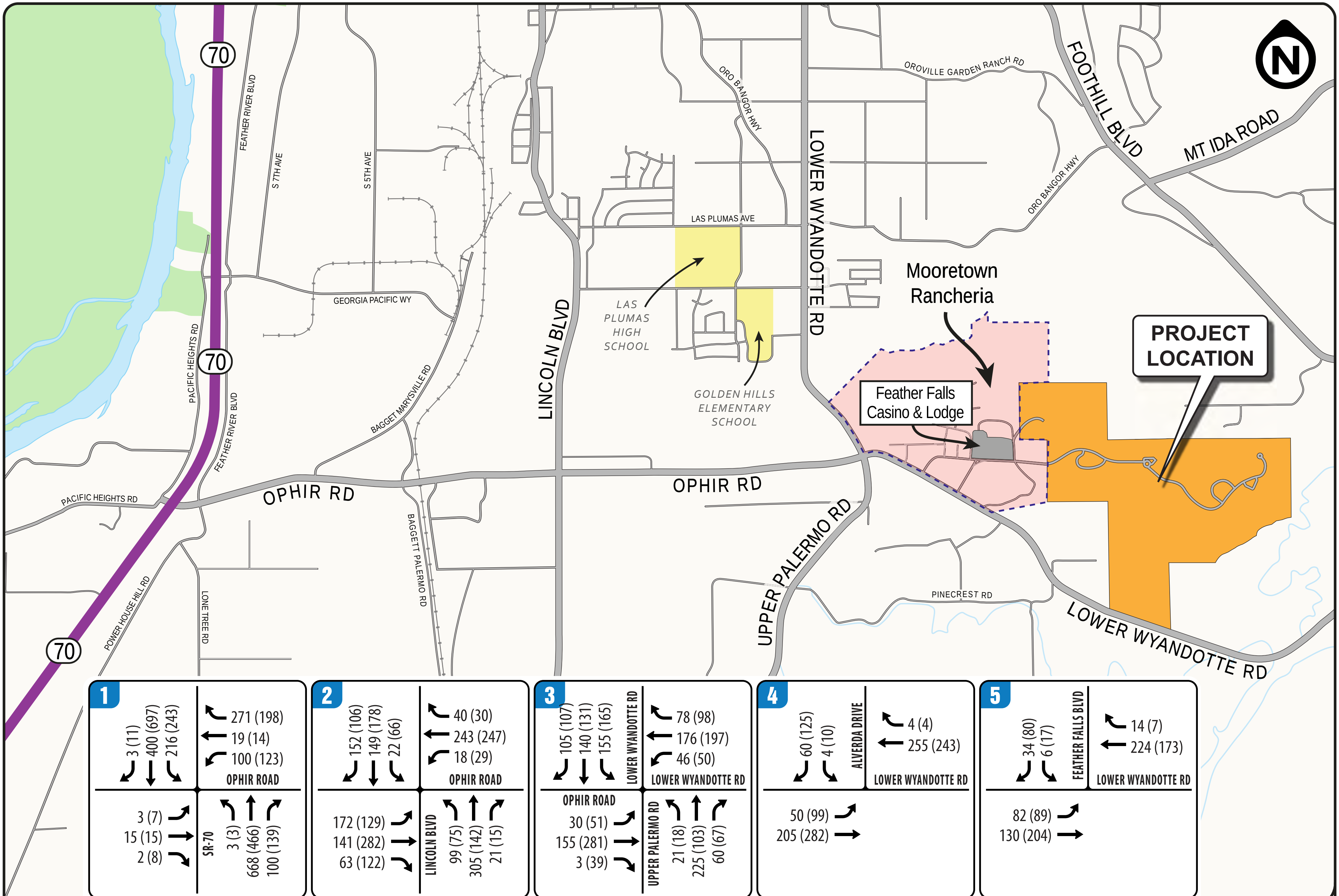

FIGURE 7 | BASELINE AM(PM) PEAK HOUR TRAFFIC VOLUMES

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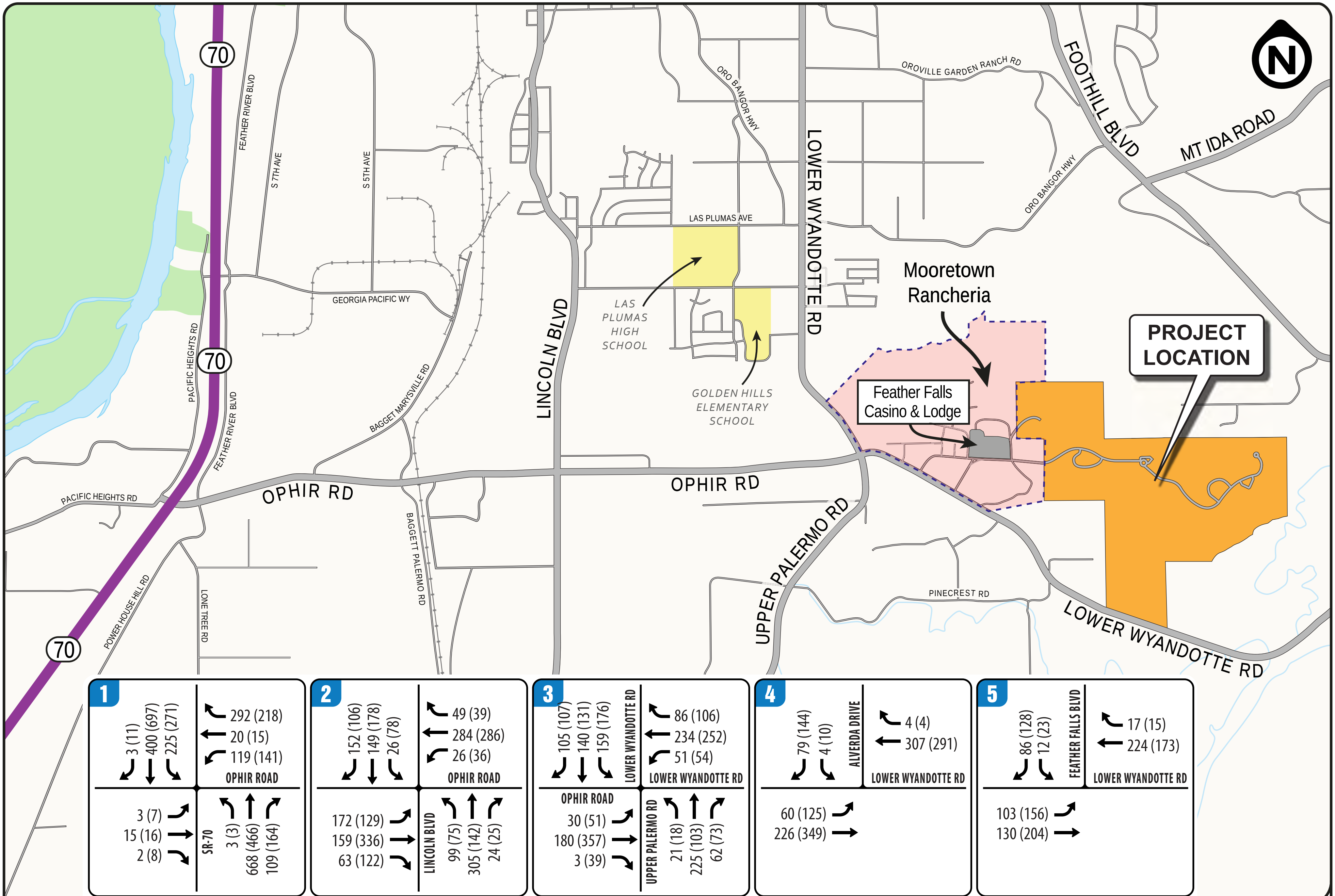

FIGURE 8 | BASELINE PLUS PROJECT AM(PM) PEAK HOUR TRAFFIC VOLUMES

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4.6 Cumulative Traffic Capacity Conditions (Scenario 5)

For the cumulative conditions, the intersection traffic volumes were based on the existing turning movements plus incremental growth in background traffic based on the Butte County Traffic Model and the Northwest Specific Plan DEIR. **Figure 9** presents the cumulative build-out traffic volumes for the project study intersections. **Table 7** summarizes the LOS results for the Cumulative (Year 2040) traffic conditions at each of the project study intersections. As shown on this table, the project study intersections would be forecast to continue to have acceptable operations during the weekday AM and PM peak commute hours.

4.7 Cumulative Plus Project Traffic Capacity Conditions (Scenario 6)

Table 7 summarizes the LOS results for the Cumulative Plus Project (Year 2040) traffic conditions at each of the project study intersection. **Figure 10** presents the cumulative build-out traffic volumes including the traffic from the proposed project. As shown on this table, all of the signalized study intersections would continue to have acceptable conditions during the weekday peak hours. Please note this scenario represents average weekday conditions that assume there is no event being held at the proposed theater. Theater/Special Event conditions are analyzed in Section 4.9. At the intersection of SR 70 and Ophir Road (Intersection #1) the LOS threshold is LOS D, and no impact was identified. This is because this intersection is located within the City of Oroville's sphere of influence and therefore the City's LOS D threshold applies, as discussed in Section 3.8.

TABLE 7
CUMULATIVE PLUS PROJECT INTERSECTION LEVEL OF SERVICE CONDITIONS

INTERSECTION		CONTROL	PEAK HOUR	CUMULATIVE		CUMULATIVE PLUS PROJECT	
				Delay	LOS	Delay	LOS
1	STATE ROUTE 70 & OPHIR ROAD	Signalized	AM	40.7	D	45.9	D
			PM	29.5	C	32.1	C
2	LINCOLN BOULEVARD & OPHIR ROAD	Signalized	AM	25.5	C	27.4	C
			PM	19.1	B	19.8	B
3	UPPER PALERMO ROAD / LOWER WYANDOTTE ROAD & OPHIR ROAD	Signalized	AM	18.2	B	19.2	B
			PM	18.4	B	19.8	B
4	ALVERDA DRIVE & LOWER WYANDOTTE ROAD	Side Street Stop	AM	11.0	B	11.8	B
			PM	12.0	B	13.1	B
5	FEATHER FALLS BOULEVARD & OPHIR ROAD	Side Street Stop	AM	11.1	B	11.8	B
			PM	11.6	B	13.0	B

SOURCE: Abrams Associates, 2023 **NOTE:** Delay results are presented in terms of seconds per vehicle.

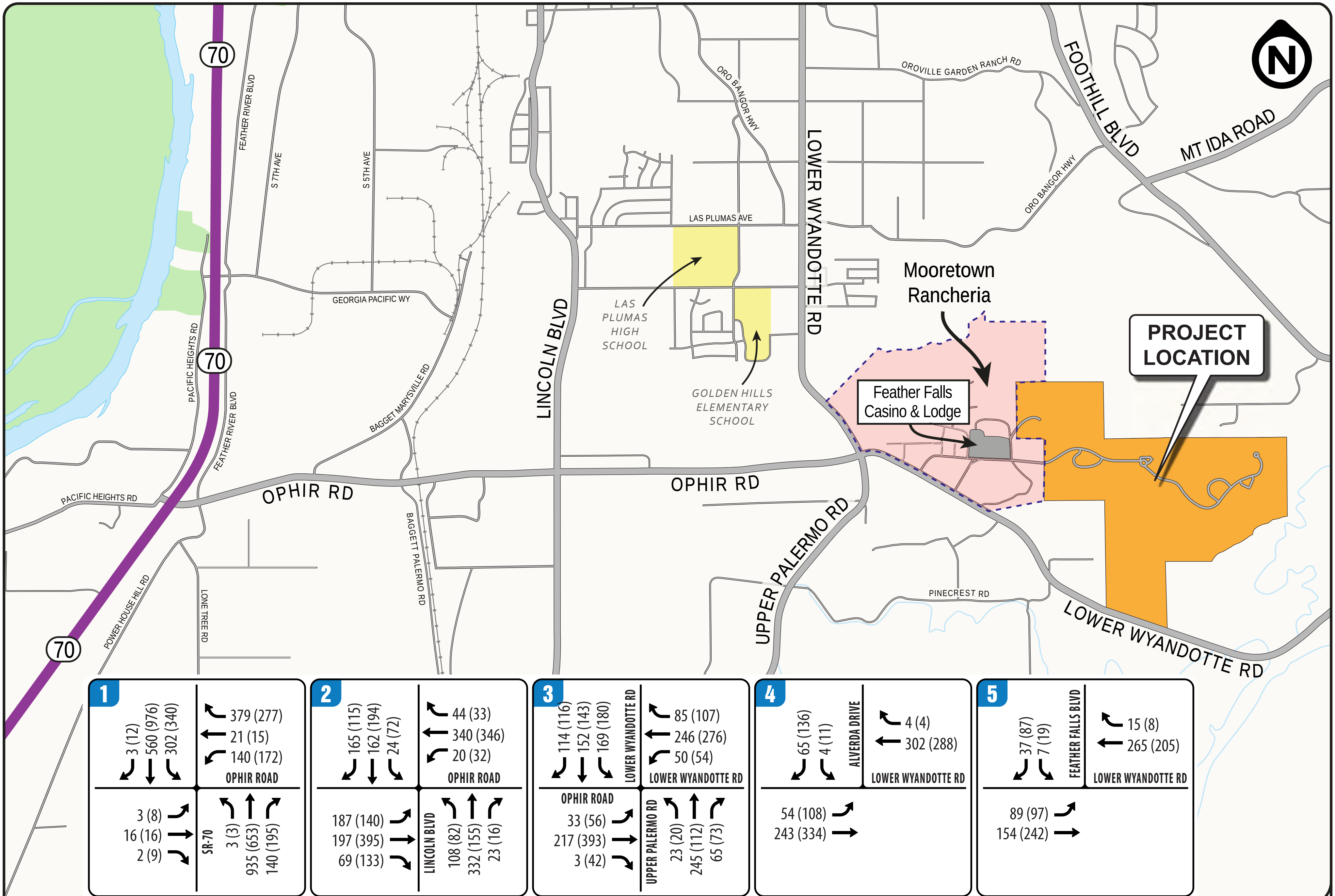

FIGURE 9 | CUMULATIVE AM(PM) PEAK HOUR TRAFFIC VOLUMES

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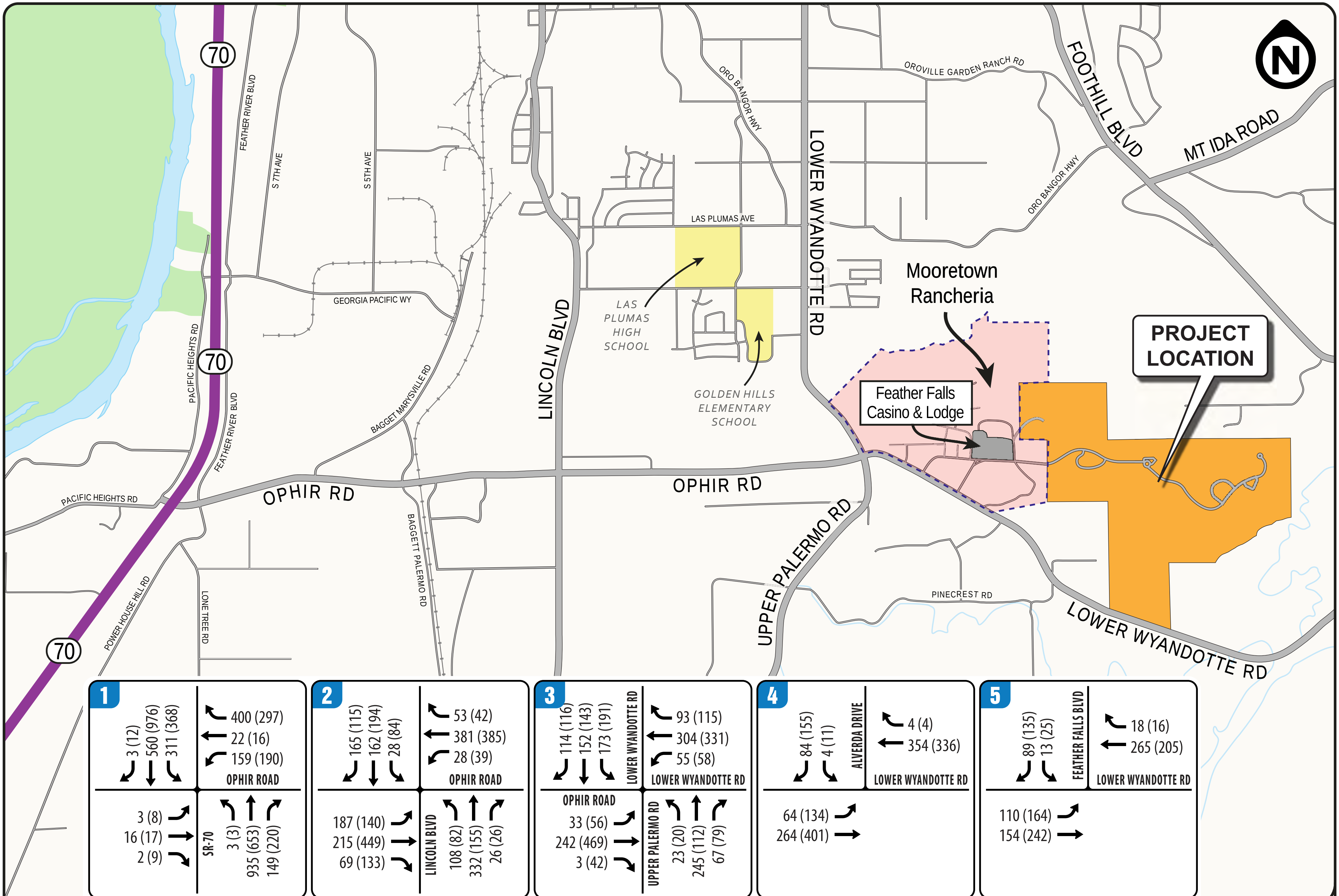

FIGURE 10 | CUMULATIVE PLUS PROJECT AM(PM) PEAK HOUR TRAFFIC VOLUMES

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4.8 Friday Evening Cumulative Plus Project Traffic Capacity Conditions

Traffic counts at all of the project study intersections were conducted from 4 PM to 8 PM on Friday, March 24th, 2023. **Table 8** summarizes the associated LOS computation results for cumulative Friday PM peak hour conditions. Please note that the corresponding LOS analysis calculation sheets for all analysis scenarios are presented in the appendix to this report. For this analysis the Friday Evening cumulative and cumulative plus project conditions are presented in **Table 8**. As shown in **Table 8**, all of the project study intersections would continue to have acceptable operations (LOS D or better) under cumulative plus project conditions during the Friday PM peak hours.

As traffic volumes increase vehicle queues typically will also increase at most intersections. Under Cumulative plus Project Friday conditions, the project traffic would contribute to the average vehicle queues (based on the 95th percentile vehicle queue) potentially extending beyond the available storage for certain movements. Please note these movements are forecast to continue exceeding the available storage regardless of whether or not the proposed project is implemented. Mitigations to address the queuing problems identified are discussed in Section 5. These locations include:

Intersection #3 – Ophir Road/Lower Wyandotte Road and Upper Palermo Road

1) Westbound Lower Wyandotte Road Left Turn

2) Southbound Lower Wyandotte Road Left Turn

4.9 Friday Evening Concert/Special Event Traffic Capacity Conditions

The proposed event/conference center would have a capacity of 1,500 people and the proposed amphitheater would include 2,500 seats. For the purposes of this analysis it is assumed there would not be simultaneous events at the two facilities, so it is assumed the worst case scenario from a trip generation standpoint would be a sold out event at the amphitheater. The resulting trip generation forecasts for the theater and the detailed LOS calculations are included in the technical appendix to this report. The LOS analysis of special event conditions was based on a full capacity show and conservatively assumed that 80% of the pre-event theater traffic would occur during the PM peak commute hour. The trip generation forecasts for amphitheater traffic are based on data from the Tachi Palace Hotel and Casino Expansion Traffic Impact Study.[2]

[2] *Tachi Palace Hotel and Casino Expansion Project Traffic Impact Study*, VRPA Technologies Inc., Fresno, CA, May, 2020. [5]

TABLE 8
FRIDAY EVENING CUMULATIVE PLUS PROJECT
INTERSECTION LEVEL OF SERVICE CONDITIONS

INTERSECTION		CONTROL	CUMULATIVE		CUMULATIVE PLUS PROJECT	
			Delay	LOS	Delay	LOS
1	STATE ROUTE 70 & OPHIR ROAD	Signalized	30.6	C	32.2	C
2	LINCOLN BOULEVARD & OPHIR ROAD	Signalized	20.6	C	21.6	C
3	UPPER PALERMO ROAD / LOWER WYANDOTTE ROAD & OPHIR ROAD	Signalized	21.1	C	23.1	C
4	ALVERDA DRIVE & LOWER WYANDOTTE ROAD	Side Street Stop	12.7	B	14.0	B
5	FEATHER FALLS BOULEVARD & OPHIR ROAD	Side Street Stop	12.7	B	14.6	B

SOURCE: Abrams Associates, 2023 **NOTE:** Delay results are presented in terms of seconds per vehicle.

Table 8 summarizes the associated LOS computation results for the cumulative and cumulative plus project Friday PM peak hour conditions with a sold-out special event at the amphitheater. Please note that the corresponding LOS analysis calculation sheets for all analysis scenarios are presented in the appendix to this report. For this analysis the results are presented in **Table 9**. As shown in this table, all of the study intersections would continue to have acceptable conditions during the weekday peak hours, with the exception of Ophir Road/Lower Wyandotte Road at Upper Palermo Road and Lower Wyandotte Road at Feather Falls Boulevard. The addition of traffic from the proposed project (plus a full capacity event at the theater) would cause the level of service standards to be exceeded these intersections. Mitigations to improve the operations at these intersections are discussed in Section 5. At the intersection of SR 70 and Ophir Road (Intersection #1) the LOS threshold is LOS D, and no impact was identified. This is because this intersection is located within the City of Oroville's sphere of influence and therefore the City's LOS D threshold applies, as discussed in Section 3.8.

4.10 Vehicle Miles Traveled

One performance measure that can be used to quantify the transportation impacts of a project is vehicle miles traveled (VMT). This section presents an analysis of the extent of the VMT-related transportation impacts caused by the Project. OPR recommends that VMT thresholds for residential and employment-based land use projects be set at fifteen percent below the baseline VMT/capita or VMT/employee.[3] In Butte County, if a project meets OPR screening criteria it may be presumed to have a less than significant VMT impact without further study. For this project OPR guidelines indicate that the project's employment generating uses would be considered to have a less than significant impact on VMT. OPR screening guidelines specify

[3] *Technical Advisory on Evaluating Transportation Impacts in CEQA*, Governor's Office of Planning and Research, Sacramento, CA, December, 2018.

TABLE 9
FRIDAY EVENING CUMULATIVE PLUS PROJECT AND SPECIAL EVENT INTERSECTION LEVEL OF SERVICE CONDITIONS

INTERSECTION		CONTROL	CUMULATIVE		CUMULATIVE PLUS PROJECT WITH A SOLD-OUT EVENT	
			Delay	LOS	Delay	LOS
1	STATE ROUTE 70 & OPHIR ROAD	Signalized	30.6	C	38.2	D
2	LINCOLN BOULEVARD & OPHIR ROAD	Signalized	20.6	C	25.0	C
3	UPPER PALERMO ROAD / LOWER WYANDOTTE ROAD & OPHIR ROAD	Signalized	21.1	C	**50.3**	**D**
4	ALVERDA DRIVE & LOWER WYANDOTTE ROAD	Side Street Stop	12.7	B	16.1	C
5	FEATHER FALLS BOULEVARD & OPHIR ROAD	Side Street Stop	12.7	B	**38.1**	**E**

SOURCE: Abrams Associates, 2023 **NOTE:** Delay results are presented in terms of seconds per vehicle.

that, absent substantial evidence to the contrary, local-serving retail or other local serving employment projects with less than 50,000 square feet may be presumed to have a less than significant VMT impact. However, the residential portion of the project would not be screened out from VMT analysis because of its location in an area where the average VMT per resident is not more than 15 below the City-wide or region-wide averages.

In Butte County VMT is typically estimated using a regional travel demand model maintained by the Butte County Association of Governments (BCAG). The model calculates VMT based on the number of vehicles multiplied by the typical distance traveled by each vehicle originating from or driving to a certain area. The volume of traffic and distance traveled depends on the mix of land use types, density, and location as well as the existing and planned transportation system, including availability of public transportation. A travel demand model attempts to properly represent these relationships when forecasting vehicle trips and VMT. The model divides areas within the County into transportation analysis zones, or TAZs, which are used for transportation analysis and other planning purposes. The BCAG Travel Model includes TAZs that vary in size from a few city blocks in some areas to much larger zones in lower density areas. Again, as noted above, the BCAG model results indicate the residential portion of the project is located in an area where the average VMT per resident is *not* more than 15 below the City-wide or region-wide averages.

The specific VMT metric used to evaluate project VMT impacts is the home-based VMT per resident metric. This is a residential specific VMT metric and includes trips made by residents of the home using passenger vehicles. The metric complies with methodology and metric recommendations contained in the CEQA Guidelines and OPR Technical Advisory. The total home-based VMT of the project is less than 5,400 miles per weekday. The VMT growth budget estimated for Butte County based on the California Air Resources Board (CARB) scoping plan analysis is about 326,350 per weekday in 2050. This budget is dependent on a number of assumptions but it is our understanding that it did not rely on a variety of state authorities available to decrease VMT such as increasing the cost of vehicle use (e.g., higher fuel taxes, higher vehicle registration costs, or a new VMT tax), reducing the convenience of vehicle use (e.g., reducing or eliminating parking minimums), increasing infill development (e.g., removing local land use restrictions or subsidizing affordable housing), or increasing the effectiveness of transit, walking, bicycling/scootering. Thus, the state has ample ability to meet its VMT/Greenhouse Gas reduction goals such that some capacity for VMT growth is reasonable. The project's weekday VMT estimate (5,400) represents approximately 1.6 percent of the daily ARB VMT budget for Butte County (326,350). Based on the above findings, the proposed project would not jeopardize state plans for long-term VMT reduction; and thus, project-related VMT impacts would be considered less than significant.

4.11 Transit Impacts

The project would not result in degradation of the level of service (or a significant increase in delay) on any roadway segments currently being utilized by bus transit in the area and, as such, no significant impacts to bus transit are expected. The proposed project not be expected to significantly impact the operating capacity any existing Butte Transit bus routes. The proposed project could potentially help support existing bus services with additional transit ridership and would not conflict with any transit plans or goals of the County or B-Line Transit. Although the proposed project does have the potential to increase patronage on bus lines in the area, no significant effects on transit capacity are anticipated given that the additional ridership would be added primarily in the non-peak directions. As a result, the project would not be expected to result in any significant impacts to bus transit service in the area.

4.12 Pedestrians, Bicycles and Non-Motorized Vehicular Travel

The County does not have level of service standards for pedestrian or bicycle facilities. Nevertheless, use of existing facilities by the users of the project would not be expected to overcrowd those facilities or decrease their performance or safety. The project will add some pedestrians and bicyclists in the area but the volumes added would not be expected to significantly impact any existing facilities. In relation to the existing conditions, the proposed project would not cause substantial changes to the pedestrian or bicycle traffic in the area and would not significantly impact or require changes to the design of any existing bicycle or pedestrian facilities. However, consistent with the Butte County General Plan, the project could be asked to contribute to additional pedestrian and bicycle improvement measures in the vicinity of the project.

4.13 Site Access and Circulation

Based on the analysis of the proposed project with an event at the theater, it was determined that excessive queuing could occur on-site without improvements to the intersection of Lower Wyandotte Road and Feather Falls Boulevard. The recommended improvements include widening Feather Falls Boulevard to provide separate right and left turn lanes with approximately 150 feet of storage. The remaining intersections that would provide access to the project are forecast to have acceptable operations. The project would implement a Traffic Control Plan for special events at the even/conference center and the amphitheater. No other site circulation or access issues have been identified that would cause a traffic safety problem or any unusual traffic congestion or delay. Detailed LOS calculations for each of the project entrances under all scenarios are included in the appendix.

4.14 Parking

The proposed project would provide an adequate supply of off-street parking based on the County's requirements. The project is currently proposing to meet the County's parking requirements and based on a review of the proposed parking plan there would be no significant parking impacts expected to the surrounding properties.

5) MITIGATION

The following is a summary of the proposed mitigation measures to address the transportation impacts of the project. Based on a detailed analysis of traffic operations with and without each of the proposed mitigations, implementation of the following mitigation measures would reduce some of the project impacts to a *less-than-significant* level.

Impact #1 Impacts to intersection operations - The project would contribute to LOS operations exceeding the established standards at the following two intersections under future Friday conditions with a full capacity event in the amphitheater:

Ophir Road/Lower Wyandotte Road at Upper Palermo Road (Intersection #3)
Lower Wyandotte Road at Feather Falls Boulevard (Intersection #5)

The addition of traffic from the proposed project would contribute to these two intersections exceeding the established LOS standards. The following mitigation measures would be forecast to reduce the impacts to a less-than-significant level in all plus project scenarios.

<u>Mitigation Measures</u>

MM 1 (a) <u>Ophir Road/Lower Wyandotte Road at Upper Palermo Road</u> – *Option #1 – Revise the lane markings on the southbound approach to provide a dual left turn movement with a shared through-right lane. Widen the southbound Lower Wyandotte Road approach to the intersection to provide approximately 150* *feet of left turn storage. This may require modifications to the traffic signal.*

Option #2 – Widen the southbound Lower Wyandotte Road approach to the intersection to provide approximately 300 feet of left turn storage.

MM 1 (b) Ophir Road/Lower Wyandotte Road at Upper Palermo Road – *Widening of Golf Course Drive to allow for a dual westbound left turn movement. Implement manual traffic control for special events.*

MM 1 (c) *Lower Wyandotte Road at Feather Falls Boulevard – Widen the southbound Feather Falls Boulevard approach to the intersection to allow for separate right and left turn lanes with approximately 150 feet of storage.*

Impact #2 Impacts related to conflicts with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or potential decreases to the performance or safety of such facilities.

The project would not result in degradation of the level of service (or a significant increase in delay) on any roadway segments currently being utilized by bus transit in the area and would not increase ridership beyond existing capacity. As such, no significant impacts to bus transit are expected. In addition, the project would not significantly impact or change the design of any existing transportation facility or create any new safety problems in the area. Therefore, based on the County's significance criteria the project's impacts on alternative transportation would be considered less than significant and no mitigations would be required.

Mitigation Measure(s)
None required.

Impact #3 Demolition and construction activities associated with the proposed project would result in an increase in traffic to and from the site and could lead to unsafe conditions near the project site.

The increase in traffic as a result of demolition and construction activities associated with the proposed project has been quantified assuming a worst-case single phase construction period of 24 months.

Heavy Equipment

Approximately 30 truck trips per day are estimated throughout the demolition and construction of the proposed project. Heavy equipment transport to and from the site could cause traffic impacts in the vicinity of the project site during construction. The project would implement a Traffic Control Plan.

The requirements within the Traffic Control Plan include, but are not limited to, the following: truck drivers would be notified of and required to use the most direct routes; all site ingress and egress would occur only at the main driveways to the project site and construction activities may require installation of temporary traffic signals; specifically designated travel routes for large vehicles would be monitored and controlled by flaggers for large construction vehicle ingress and egress; warning signs indicating frequent truck entry and exit would be posted on Golf Course Drive; and any debris and mud on nearby streets caused by trucks would be monitored daily and may require instituting a street cleaning program. In addition, the ten loads of heavy equipment being hauled to and from the site each month would be short-term and temporary.

Employees

The weekday work is expected to begin around 7:00 AM and end around 4:00 PM. The construction worker arrival peak would occur between 6:30 AM and 7:30 AM, and the departure peak would occur between 4:00 PM and 5:00 PM. These peak hours are slightly before the countywide commute peaks. It should be noted that the number of trips generated during construction would not only be temporary, but would also be substantially less than the proposed project at buildout. Based on estimates of the number of construction workers, the project could require parking for up to 200 vehicles during the peak construction period. Additionally, deliveries, visits, and other activities may generate peak non-worker parking demand of 40 to 50 trucks and automobiles per day. Therefore, up to 250 vehicle parking spaces may be required during the peak construction period for the construction employees. Because the construction of the project can be staged so that employee parking demand is met by using on-site parking, the impacts of construction-related employee traffic and parking are considered less-than-significant.

Construction Material Import/Export

The project would also require removal of existing debris as well as the importation of construction material, including raw materials for the building pads, the buildings, the parking area, and landscaping. During the maximum peak construction period, it is estimated material import and export could generate approximately 50 truck trips per day.

Traffic Control Plan

The Traffic Control Plan would indicate how parking for construction workers would be provided during construction on adjacent land currently held in trust by the Tribe to ensure a safe flow of traffic in the project area during construction. This analysis assumed construction of the entire project in one phase to identify the potential worst-case traffic effects. If the project is built in phases over time, the effects of each phase will be the same or less. Therefore, the demolition and construction activities associated with the proposed project or its individual phases would not lead to noticeable congestion in the vicinity of the site or the perception of decreased traffic safety resulting in a ***less-than-significant*** impact.

Mitigation Measure(s)
None required.

Impact #4 Impacts related to site access and circulation.

Based on the analysis of the proposed project with an event at the theater, it was determined that excessive queuing could occur on-site without improvements to the intersection of Lower Wyandotte Road and Feather Falls Boulevard. The recommended improvements include widening Feather Falls Boulevard to provide separate right and left turn lanes with approximately 150 feet of storage. The remaining intersections that would provide access to the project are forecast to have acceptable operations. The project would implement a Traffic Control Plan for special events at the event/conference center and the amphitheater. No other site circulation or access issues have been identified that would cause a traffic safety problem or any unusual traffic congestion or delay. Detailed LOS calculations for each of the project entrances under all scenarios are included in the technical appendix.

Mitigation Measure(s)

MM 1 (c) Lower Wyandotte Road at Feather Falls Boulevard – Widen the southbound Feather Falls Boulevard approach to the intersection to allow for separate right and left turn lanes with approximately 150 feet of storage.

Impact #5 Impacts regarding emergency vehicle access on and surrounding the proposed project site.

Sufficient emergency access is determined by factors such as number of access points, roadway width, and proximity to fire stations. The land use plan for the proposed project will include a minimum of two entrances onto Alverda Drive and may also have an emergency vehicle access to Windfall Way. All lane widths within the project would meet the minimum width that can accommodate an emergency vehicle; therefore, the width of the internal roadways would be adequate. In addition, with the proposed mitigations the addition of traffic from project traffic would not result in any significant changes to emergency vehicle response times in the area. Therefore, development of the project is expected to have ***less-than-significant*** impacts regarding emergency vehicle access.

Mitigation Measure(s)
None required.

Traffic Impact Study Technical Appendix

Mooretown Rancheria Project

Butte County

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April 17, 2023

Mooretown Rancheria Project
Butte County

2022-2017

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2022															
91702189	20220213	1955	SR-70	OPHIR RD.	0	0	Y	Clear	Broadside	Injury (Complaint of Pain)	0	4	Pedestrian Violation	Other Motor Vehicle	0
91726543	20220301	630	OPHIR ROAD	SR-70	10	E	N	Clear	Sideswipe	Property Damage Only	0	0	Unsafe Starting or Backing	Other Motor Vehicle	0
91728839	20220321	610	STATE HIGHWAY 70	OPHIR ROAD	60	S	N	Clear	Rear End	Injury (Complaint of Pain)	0	1	Unsafe Speed	Other Motor Vehicle	0
91761072	20220423	1833	SR-70	OPHIR ROAD	0	0	Y	Clear	Broadside	Property Damage Only	0	0	DUI	Other Motor Vehicle	Y
91788119	20220529	2055	SR-70	OPHIR RD	12	N	N	Clear	Rear End	Property Damage Only	0	0	DUI	Other Motor Vehicle	Y
91798634	20220611	22	SR-70 S/B	OPHIR ROAD	90	S	N	Clear	Hit Object	Injury (Other Visible)	0	1	DUI	Fixed Object	Y
91845964	20220817	740	RT 70	OPHIR RD.	65	S	N	Clear	Rear End	Property Damage Only	0	0	Unsafe Speed	Motor Vehicle on othe	0
91958430	20221231	1640	SR-70	OPHIR RD	0	0	Y	Cloudy	Head On	Injury (Complaint of Pain)	0	1	Unsafe Speed	Other Motor Vehicle	0
91730829	20220321	1957	LINCOLN BLVD	OPHIR RD	0	0	Y	Clear	Broadside	Injury (Complaint of Pain)	0	1	Traffic Signals and Signs	Other Motor Vehicle	0
91752442	20220414	1135	OPHIR RD	LINCOLN BLVD	0	0	Y	Cloudy	Broadside	Property Damage Only	0	0	Traffic Signals and Signs	Other Motor Vehicle	Y
91883181	20220930	2329	OPHIR ROAD	LINCOLN BLVD	35	W	N	Clear	Sideswipe	Property Damage Only	0	0	Wrong Side of Road	Other Motor Vehicle	0
91956716	20221228	1702	LINCOLN BLVD	OPHIR RD	50	N	N	Clear	Rear End	Property Damage Only	0	0	Unsafe Starting or Backing	Other Motor Vehicle	0
91669728	20220101	2128	OPHIR RD	LOWER WYANDOTTI	30	W	N	Clear	Rear End	Injury (Complaint of Pain)	0	2	Unsafe Speed	Other Motor Vehicle	0
91741630	20220402	850	LOWER WYANDOTTE	FEATHER FALLS BOU	0	0	Y	Clear	Broadside	Property Damage Only	0	0	Automobile Right of Way	Other Motor Vehicle	0

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2021															
91435409	20210321	2205	SR-70	OPHIR RD	0	0	Y	Clear	Broadside	Injury (Complaint of Pain)	0	1	Traffic Signals and Signs	Other Motor Vehicle	0
91459831	20210421	1605	SR-70	OPHIR RD	20	S	N	Clear	Sideswipe	Property Damage Only	0	0	Unsafe Speed	Non-Collision	0
91469893	20210430	1431	SR-70	OPHIR RD	0	0	Y	Clear	Overturned	Property Damage Only	0	0	Unsafe Speed	Non-Collision	0
91493475	20210523	823	SR-70	OPHIR RD	20	S	N	Clear	Rear End	Property Damage Only	0	0	Unsafe Speed	Other Motor Vehicle	0
91522087	20210712	620	SR-70	OPHIR RD	40	N	N	Clear	Sideswipe	Injury (Complaint of Pain)	0	2	Automobile Right of Way	Other Motor Vehicle	0
91533471	20210709	1641	OPHIR RD	STATE HIGHWAY 70	20	E	N	Clear	Rear End	Property Damage Only	0	0	Unsafe Speed	Other Motor Vehicle	0
91546186	20210810	1401	SR-70 NORTHBOUND	OPHIR ROAD	130	S	N	Clear	Rear End	Injury (Severe)	0	2	Unsafe Speed	Other Motor Vehicle	0
91599071	20211011	1950	SR70	OPHIR RD	100	N	N	Clear	Rear End	Property Damage Only	0	0	Unsafe Speed	Other Motor Vehicle	0
91606578	20211022	2143	SR70 N/B	OPHIR ROAD	0	0	Y	Cloudy	Broadside	Injury (Severe)	0	4	DUI	Other Motor Vehicle	Y
91399793	20210128	1005	OPHIR RD	LINCOLN BLVD.	0	0	Y	Cloudy	Broadside	Property Damage Only	0	0	Traffic Signals and Signs	Other Motor Vehicle	0
91424366	20210305	1920	OPHIR RD	LINCOLN BLVD	0	0	Y	Clear	Broadside	Property Damage Only	0	0	Automobile Right of Way	Other Motor Vehicle	0
91642342	20211129	2115	OPHIR ROAD	LINCOLN BLVD	0	0	Y	Clear	Broadside	Injury (Other Visible)	0	2	Unknown	Other Motor Vehicle	0
91673692	20211224	1553	OPHIR ROAD	LOWER WYANDOTTI	0	0	Y	Cloudy	Head On	Property Damage Only	0	0	Traffic Signals and Signs	Other Motor Vehicle	0
91404745	20210129	429	LOWER WYANDOTTE	ALVERDA DR	43	W	N	Cloudy	Broadside	Injury (Other Visible)	0	1	DUI	Other Motor Vehicle	Y
91590550	20211002	1732	LOWER WYANDOTTE	FEATHER FALLS BLVI	95	E	N	Clear	Hit Object	Property Damage Only	0	0	DUI	Fixed Object	Y
91594429	20211009	150	FEATHER FALLS BOUI	LOWER WYANDOTTI	0	0	Y	Clear	Hit Object	Property Damage Only	0	0	DUI	Fixed Object	Y

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2020	0	0	0	0	0	0	0	#N/A	#N/A	Property Damage Only	0	0	Unknown	#N/A	0
91166310	20200105	620	SR-70 E/B	OPHIR RD	0	0	Y	Fog	Broadside	Injury (Complaint of Pain)	0	3	Traffic Signals and Signs	Other Motor Vehicle	0
91181625	20200131	1358	SR 70 N/B	OPHIR RD.	99	S	N	Clear	Rear End	Injury (Severe)	0	3	Unsafe Speed	Other Motor Vehicle	0
91188788	20200212	450	SR-70 N/B	OPHIR RD	12	S	N	Clear	Rear End	Injury (Other Visible)	0	2	Unsafe Speed	Other Motor Vehicle	0
91190198	20200215	1900	SR-70	OPHIR RD	171	S	N	Clear	Rear End	Injury (Severe)	0	1	DUI	Other Motor Vehicle	Y
91202736	20200228	1759	SR-70 N/B	OPHIR RD	50	N	N	Clear	Broadside	Injury (Complaint of Pain)	0	1	Traffic Signals and Signs	Other Motor Vehicle	0
91221065	20200327	1649	STATE ROUTE 70	OPHIR ROAD	0	0	Y	Clear	Head On	Injury (Complaint of Pain)	0	1	Traffic Signals and Signs	Other Motor Vehicle	0
91245512	20200528	1510	SR-70	OPHIR RD	80	N	N	Clear	Rear End	Property Damage Only	0	0	Unsafe Speed	Other Motor Vehicle	0
91257296	20200620	1558	OPHIR ROAD	SR-70	27	E	N	Clear	Head On	Property Damage Only	0	0	Improper Turning	Motor Vehicle on othe	0
91259322	20200625	1958	SR-70	OPHIR RD.	40	S	N	Clear	Rear End	Property Damage Only	0	0	Unsafe Speed	Other Motor Vehicle	0
91320171	20200828	1242	OPHIR RD	SR-70	120	E	N	Clear	Rear End	Injury (Severe)	0	1	DUI	Other Motor Vehicle	0
91380920	20201231	1220	RT 70	OPHIR RD.	50	S	N	Clear	Rear End	Property Damage Only	0	0	Unsafe Speed	Other Motor Vehicle	0
91296914	20200730	1210	OPHIR RD	LINCOLN BLVD	0	0	Y	Clear	Broadside	Property Damage Only	0	0	Traffic Signals and Signs	Other Motor Vehicle	0
91324389	20201013	2340	LINCOLN BOULEVARI	OPHIR ROAD	20	N	N	Clear	Head On	Property Damage Only	0	0	Improper Turning	Other Motor Vehicle	0
91190607	20200218	1920	LOWER WYANDOTTE	OPHIR RD	30	N	N	Clear	Other	Property Damage Only	0	0	Unsafe Starting or Backing	Other Motor Vehicle	0
91206927	20200304	1520	LOWER WYANDOTTE	OPHIR RD	0	0	Y	Clear	Broadside	Injury (Complaint of Pain)	0	1	Traffic Signals and Signs	Other Motor Vehicle	0
91211304	20200310	1550	OPHIR RD	LOWER WYANDOTTI	10	W	N	Clear	Rear End	Property Damage Only	0	0	Unsafe Speed	Other Motor Vehicle	0
91297182	20200820	850	OPHIR RD	LOWER WYANDOTTI	0	0	Y	Clear	Broadside	Injury (Complaint of Pain)	0	1	Traffic Signals and Signs	Other Motor Vehicle	0
91357697	20201201	205	LOWER WYANDOTTE	OPHIR RD	0	0	Y	Clear	Broadside	Injury (Other Visible)	0	2	Automobile Right of Way	Other Motor Vehicle	0
91272129	20200713	1045	LOWER WYANDOTTE	ALVERDA DR	126	W	N	Clear	Hit Object	Injury (Other Visible)	0	2	Wrong Side of Road	Fixed Object	0
91214907	20200318	0	LOWER WYANDOTTE	FEATHER FALLS BLVI	181	E	N	Raining	Hit Object	Property Damage Only	0	0	DUI	Fixed Object	Y
91320981	20201003	25	FEATHER FALLS BLVD	LOWER WYANDOTTI	0	0	Y	Clear	Hit Object	Property Damage Only	0	0	DUI	Fixed Object	Y

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2019	0	0	0	0	0	0	0	#N/A	#N/A	Property Damage Only	0	0	Unknown	#N/A	0
90902580	20190107	845	SR-70	OPHIR RD	8	S	N	Cloudy	Rear End	Injury (Complaint of Pain)	0	2	Unsafe Speed	Other Motor Vehicle	0
90969847	20190416	1405	SR-70	OPHIR RD	0	0	Y	Clear	Sideswipe	Injury (Complaint of Pain)	0	1	Improper Turning	Other Motor Vehicle	0
91070415	20190829	1143	SR-70	OPHIR RD	19	S	N	Clear	Rear End	Injury (Other Visible)	0	2	Unsafe Speed	Other Motor Vehicle	0
91142291	20191202	559	SR-70	OPHIR RD	0	0	Y	Raining	Head On	Injury (Complaint of Pain)	0	4	Traffic Signals and Signs	Other Motor Vehicle	0
91159833	20191228	825	SR-70 N/B	OPHIR RD	60	S	N	Clear	Rear End	Injury (Complaint of Pain)	0	1	Unsafe Speed	Other Motor Vehicle	0
91170772	20190703	1952	SR-70	OPHIR RD	60	N	N	Clear	Rear End	Injury (Complaint of Pain)	0	1	Unsafe Speed	Other Motor Vehicle	0
90965760	20190402	1355	LINCOLN BLVD	OPHIR RD	0	0	Y	Clear	Broadside	Injury (Complaint of Pain)	0	2	Unknown	Other Motor Vehicle	0
91128773	20191117	1558	OPHIR ROAD	LINCOLN BLVD	78	W	N	Clear	Rear End	Property Damage Only	0	0	Unsafe Starting or Backing	Other Motor Vehicle	0
91164445	20191212	1915	LINCOLN BLVD	OPHIR ROAD	0	0	Y	Cloudy	Broadside	Injury (Severe)	0	2	Traffic Signals and Signs	Other Motor Vehicle	0
90940017	20190223	1121	LOWER WYANDOTTE	ALVERDA DR	100	E	N	Clear	Sideswipe	Property Damage Only	0	0	Wrong Side of Road	Other Motor Vehicle	0
90948848	20190318	620	LOWER WYANDOTTE	ALVERDA DR	0	0	Y	Clear	Broadside	Injury (Complaint of Pain)	0	1	Improper Turning	Other Motor Vehicle	0
91006772	20190531	2318	LOWER WYANDOTTE	FEATHER FALLS BLVI	130	E	N	Cloudy	Rear End	Injury (Severe)	0	2	DUI	Other Motor Vehicle	Y
91174627	20190927	1245	LOWER WYANDOTTE	FEATHER FALLS BLVI	0	0	Y	Clear	Head On	Injury (Severe)	0	1	Automobile Right of Way	Other Motor Vehicle	0

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2018	0	0	0	0	0	0	0	#N/A	#N/A	Property Damage Only	0	0	Unknown	#N/A	0
90647659	20180115	1000	SR-70	OPHIR RD	121	S	N	Cloudy	Rear End	Injury (Complaint of Pain)	0	2	Unsafe Speed	Other Motor Vehicle	0
90801568	20180828	1310	RT 70	OPHIR RD	60	S	N	Clear	Rear End	Property Damage Only	0	0	Unsafe Speed	Other Motor Vehicle	0
90828194	20180921	1845	SR-70	OPHIR RD	0	0	Y	Clear	Broadside	Property Damage Only	0	0	DUI	Other Motor Vehicle	Y
90793408	20180816	1325	OPHIR RD	LINCOLN BLVD	50	E	N	Clear	Rear End	Injury (Complaint of Pain)	0	2	Unsafe Speed	Other Motor Vehicle	0
90740657	20180531	2110	LOWER WYANDOTTE	OPHIR RD	30	N	N	Clear	Sideswipe	Property Damage Only	0	0	Wrong Side of Road	Other Motor Vehicle	0
90751142	20180605	1643	LOWER WYANDOTTE	OPHIR RD	80	N	N	Clear	Hit Object	Injury (Complaint of Pain)	0	1	Other than Driver (or Pedestrian)	Fixed Object	0
90684515	20180314	1008	LOWER WYANDOTTE	ALVERDA DR	68	W	N	Cloudy	Hit Object	Injury (Complaint of Pain)	0	1	Improper Turning	Fixed Object	0
90848027	20181027	1750	LOWER WYANDOTTE	ALVERDA DR	100	W	N	Clear	Sideswipe	Property Damage Only	0	0	Improper Turning	Bicycle	0

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2017	0	0	0	0	0	0	0	#N/A	#N/A	Property Damage Only	0	0	Unknown	#N/A	0
90371165	20170101	1500	SR-70	OPHIR RD	92	S	N	Clear	Rear End	Property Damage Only	0	0	Unsafe Speed	Other Motor Vehicle	0
90375896	20170122	1220	OPHIR RD	SR-70	34	E	N	Cloudy	Rear End	Property Damage Only	0	0	Unsafe Speed	Other Motor Vehicle	0
90521041	20170728	1740	OPHIR RD.	SR-70	30	E	N	Clear	Broadside	Injury (Severe)	0	3	DUI	Other Motor Vehicle	Y
90530454	20170823	1550	SR-70	OPHIR RD.	45	S	N	Clear	Rear End	Property Damage Only	0	0	Unsafe Starting or Backing	Other Motor Vehicle	0
90535273	20170827	1910	OPHIR ROAD	SR-70	40	E	N	Clear	Rear End	Injury (Complaint of Pain)	0	1	Unsafe Starting or Backing	Other Motor Vehicle	Y
90554647	20170922	1515	SR-70	OPHIR RD	20	N	N	Clear	Rear End	Injury (Complaint of Pain)	0	3	Unsafe Speed	Other Motor Vehicle	0
90555989	20170922	1755	SR-70	OPHIR RD	70	N	N	Clear	Sideswipe	Property Damage Only	0	0	DUI	Other Motor Vehicle	Y
90575703	20171012	2241	SR-70	OPHIR ROAD	0	0	Y	Clear	Head On	Injury (Complaint of Pain)	0	2	Automobile Right of Way	Other Motor Vehicle	0
90643185	20171227	810	SR-70	OPHIR RD	100	S	N	Clear	Rear End	Property Damage Only	0	0	Unsafe Speed	Other Motor Vehicle	0
90381934	20170111	2005	OPHIR RD.	LINCOLN BLVD	80	E	N	Cloudy	Rear End	Injury (Complaint of Pain)	0	1	Unsafe Speed	Other Motor Vehicle	0
90450840	20170426	1125	LINCOLN BLVD	OPHIR ROAD	0	0	Y	Cloudy	Broadside	Property Damage Only	0	0	Traffic Signals and Signs	Other Motor Vehicle	0
90453392	20170503	1530	LINCOLN BLVD	OPHIR RD	0	0	Y	Clear	Broadside	Injury (Other Visible)	0	1	Traffic Signals and Signs	Bicycle	0
90483221	20170615	1610	OPHIR RD	LINCOLN BLVD	0	0	Y	Clear	Head On	Injury (Complaint of Pain)	0	3	Automobile Right of Way	Other Motor Vehicle	0
90603969	20171127	1715	LINCOLN BLVD	OPHIR RD	0	0	Y	Clear	Broadside	Property Damage Only	0	0	Automobile Right of Way	Other Motor Vehicle	0
90636318	20171208	1700	OPHIR RD	LINCOLN BLVD	50	E	N	Clear	Rear End	Property Damage Only	0	0	Unsafe Speed	Other Motor Vehicle	0
90560565	20170920	1520	LOWER WYANDOTTE	OPHIR RD.	55	N	N	Cloudy	Rear End	Property Damage Only	0	0	Unsafe Speed	Other Motor Vehicle	0
90529654	20170718	1850	FEATHER RIVER BLVD	OPHIR RD	40	N	N	Clear	Other	Property Damage Only	0	0	Unsafe Starting or Backing	Other Motor Vehicle	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	14	2	91	17	246	3	606	91	196	363	3
Future Volume (veh/h)	3	14	2	91	17	246	3	606	91	196	363	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	3	15	2	99	18	267	3	659	99	213	395	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	7	232	31	244	392	333	7	1053	581	276	1590	709
Arrive On Green	0.00	0.14	0.14	0.07	0.21	0.21	0.00	0.30	0.30	0.16	0.45	0.45
Sat Flow, veh/h	1767	1603	214	3428	1856	1572	1767	3526	1572	1767	3526	1572
Grp Volume(v), veh/h	3	0	17	99	18	267	3	659	99	213	395	3
Grp Sat Flow(s),veh/h/ln	1767	0	1817	1714	1856	1572	1767	1763	1572	1767	1763	1572
Q Serve(g_s), s	0.1	0.0	0.4	1.5	0.4	8.8	0.1	8.8	2.3	6.3	3.8	0.1
Cycle Q Clear(g_c), s	0.1	0.0	0.4	1.5	0.4	8.8	0.1	8.8	2.3	6.3	3.8	0.1
Prop In Lane	1.00		0.12	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	7	0	262	244	392	333	7	1053	581	276	1590	709
V/C Ratio(X)	0.42	0.00	0.06	0.41	0.05	0.80	0.42	0.63	0.17	0.77	0.25	0.00
Avail Cap(c_a), veh/h	162	0	599	596	764	647	162	2839	1378	986	4484	2000
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.1	0.0	20.2	24.3	17.2	20.5	27.1	16.5	11.6	22.1	9.3	8.3
Incr Delay (d2), s/veh	34.2	0.0	0.1	1.1	0.0	4.5	34.2	0.6	0.1	4.5	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.2	0.6	0.2	3.3	0.1	3.2	0.7	2.7	1.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.3	0.0	20.3	25.4	17.2	25.0	61.3	17.1	11.7	26.6	9.4	8.3
LnGrp LOS	E	A	C	C	B	C	E	B	B	C	A	A
Approach Vol, veh/h		20			384			761			611	
Approach Delay, s/veh		26.4			24.7			16.6			15.4	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	20.8	8.4	12.4	4.7	29.1	4.7	16.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	30.5	44.0	9.5	18.0	5.0	69.5	5.0	22.5
Max Q Clear Time (g_c+I1), s	8.3	10.8	3.5	2.4	2.1	5.8	2.1	10.8
Green Ext Time (p_c), s	0.6	5.5	0.1	0.0	0.0	3.0	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	18.1
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	156	128	57	16	220	36	90	277	19	20	135	138
Future Volume (veh/h)	156	128	57	16	220	36	90	277	19	20	135	138
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	184	151	67	19	259	42	106	326	22	24	159	162
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	243	770	327	41	380	322	139	446	30	50	389	329
Arrive On Green	0.14	0.32	0.32	0.02	0.21	0.21	0.08	0.26	0.26	0.03	0.21	0.21
Sat Flow, veh/h	1767	2411	1023	1767	1856	1572	1767	1719	116	1767	1856	1572
Grp Volume(v), veh/h	184	109	109	19	259	42	106	0	348	24	159	162
Grp Sat Flow(s),veh/h/ln	1767	1763	1671	1767	1856	1572	1767	0	1835	1767	1856	1572
Q Serve(g_s), s	4.9	2.2	2.3	0.5	6.3	1.1	2.9	0.0	8.4	0.7	3.6	4.4
Cycle Q Clear(g_c), s	4.9	2.2	2.3	0.5	6.3	1.1	2.9	0.0	8.4	0.7	3.6	4.4
Prop In Lane	1.00		0.61	1.00		1.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	243	563	533	41	380	322	139	0	476	50	389	329
V/C Ratio(X)	0.76	0.19	0.21	0.46	0.68	0.13	0.76	0.00	0.73	0.48	0.41	0.49
Avail Cap(c_a), veh/h	780	1899	1801	236	1428	1210	591	0	1412	199	1017	862
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.2	12.0	12.1	23.5	17.9	15.8	22.0	0.0	16.5	23.3	16.7	17.0
Incr Delay (d2), s/veh	4.8	0.2	0.2	7.9	2.1	0.2	8.3	0.0	2.2	6.9	0.7	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.8	0.8	0.3	2.6	0.4	1.4	0.0	3.4	0.3	1.4	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.0	12.2	12.3	31.4	20.0	16.0	30.3	0.0	18.7	30.2	17.3	18.1
LnGrp LOS	C	B	B	C	C	B	C	A	B	C	B	B
Approach Vol, veh/h		402			320			454			345	
Approach Delay, s/veh		18.1			20.2			21.4			18.6	
Approach LOS		B			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	17.2	5.6	20.1	8.3	14.7	11.2	14.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	37.5	6.5	52.5	16.3	26.7	21.5	37.5
Max Q Clear Time (g_c+I1), s	2.7	10.4	2.5	4.3	4.9	6.4	6.9	8.3
Green Ext Time (p_c), s	0.0	2.2	0.0	1.4	0.2	1.4	0.4	1.7

Intersection Summary	
HCM 6th Ctrl Delay	19.6
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	141	3	42	160	71	19	204	54	141	127	95
Future Volume (veh/h)	27	141	3	42	160	71	19	204	54	141	127	95
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	29	153	3	46	174	77	21	222	59	153	138	103
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	61	288	244	90	317	269	46	372	315	207	541	458
Arrive On Green	0.03	0.15	0.15	0.05	0.17	0.17	0.03	0.20	0.20	0.12	0.29	0.29
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	29	153	3	46	174	77	21	222	59	153	138	103
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	0.6	2.9	0.1	1.0	3.2	1.6	0.4	4.1	1.2	3.2	2.1	1.9
Cycle Q Clear(g_c), s	0.6	2.9	0.1	1.0	3.2	1.6	0.4	4.1	1.2	3.2	2.1	1.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	61	288	244	90	317	269	46	372	315	207	541	458
V/C Ratio(X)	0.47	0.53	0.01	0.51	0.55	0.29	0.45	0.60	0.19	0.74	0.26	0.22
Avail Cap(c_a), veh/h	351	1646	1395	491	1794	1520	304	1646	1395	1147	2531	2145
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.9	14.7	13.5	17.5	14.3	13.6	18.1	13.7	12.5	16.1	10.2	10.1
Incr Delay (d2), s/veh	5.5	1.5	0.0	4.5	1.5	0.6	6.8	1.5	0.3	5.1	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.1	0.0	0.4	1.2	0.5	0.2	1.5	0.4	1.4	0.7	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.4	16.2	13.5	22.0	15.8	14.2	24.9	15.2	12.8	21.2	10.5	10.4
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		185			297			302			394	
Approach Delay, s/veh		17.3			16.3			15.4			14.6	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.9	12.1	6.4	10.4	5.5	15.5	5.8	11.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	24.5	33.5	10.5	33.5	6.5	51.5	7.5	36.5
Max Q Clear Time (g_c+I1), s	5.2	6.1	3.0	4.9	2.4	4.1	2.6	5.2
Green Ext Time (p_c), s	0.4	1.5	0.0	0.9	0.0	1.2	0.0	1.3

Intersection Summary	
HCM 6th Ctrl Delay	15.7
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	45	186	231	4	4	54
Future Vol, veh/h	45	186	231	4	4	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	125	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	51	211	263	5	5	61

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	263	0	-	0	576	263
Stage 1	-	-	-	-	263	-
Stage 2	-	-	-	-	313	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1295	-	-	-	477	773
Stage 1	-	-	-	-	779	-
Stage 2	-	-	-	-	739	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1295	-	-	-	458	773
Mov Cap-2 Maneuver	-	-	-	-	549	-
Stage 1	-	-	-	-	749	-
Stage 2	-	-	-	-	739	-

Approach	EB		WB		SB	
HCM Control Delay, s	1.5		0		10.2	
HCM LOS					B	

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1295	-	-	-	752
HCM Lane V/C Ratio	0.039	-	-	-	0.088
HCM Control Delay (s)	7.9	-	-	-	10.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection						
Int Delay, s/veh	2.1					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	74	118	203	13	5	31
Future Vol, veh/h	74	118	203	13	5	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	175	-	-	125	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	84	134	231	15	6	35

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	231	0	-	0	533	231
Stage 1	-	-	-	-	231	-
Stage 2	-	-	-	-	302	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1331	-	-	-	506	806
Stage 1	-	-	-	-	805	-
Stage 2	-	-	-	-	748	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1331	-	-	-	474	806
Mov Cap-2 Maneuver	-	-	-	-	474	-
Stage 1	-	-	-	-	754	-
Stage 2	-	-	-	-	748	-

Approach	EB	WB	SB
HCM Control Delay, s	3	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1331	-	-	-	735
HCM Lane V/C Ratio	0.063	-	-	-	0.056
HCM Control Delay (s)	7.9	-	-	-	10.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	14	7	112	13	180	3	423	126	220	632	10
Future Volume (veh/h)	6	14	7	112	13	180	3	423	126	220	632	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	7	15	8	122	14	196	3	460	137	239	687	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	16	114	61	186	271	230	7	1799	888	279	2341	1044
Arrive On Green	0.01	0.10	0.10	0.05	0.15	0.15	0.00	0.51	0.51	0.16	0.66	0.66
Sat Flow, veh/h	1767	1139	607	3428	1856	1572	1767	3526	1572	1767	3526	1572
Grp Volume(v), veh/h	7	0	23	122	14	196	3	460	137	239	687	11
Grp Sat Flow(s),veh/h/ln	1767	0	1746	1714	1856	1572	1767	1763	1572	1767	1763	1572
Q Serve(g_s), s	0.4	0.0	1.2	3.5	0.7	12.4	0.2	7.5	4.2	13.4	8.3	0.2
Cycle Q Clear(g_c), s	0.4	0.0	1.2	3.5	0.7	12.4	0.2	7.5	4.2	13.4	8.3	0.2
Prop In Lane	1.00		0.35	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	16	0	176	186	271	230	7	1799	888	279	2341	1044
V/C Ratio(X)	0.45	0.00	0.13	0.66	0.05	0.85	0.42	0.26	0.15	0.86	0.29	0.01
Avail Cap(c_a), veh/h	87	0	309	388	447	379	87	1799	888	652	2341	1044
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.1	0.0	41.7	47.1	37.3	42.3	50.5	14.0	10.6	41.7	7.1	5.8
Incr Delay (d2), s/veh	18.9	0.0	0.3	3.9	0.1	9.7	35.8	0.3	0.4	7.5	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.5	1.6	0.3	5.4	0.1	3.0	1.5	6.4	2.9	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.0	0.0	42.0	51.0	37.4	52.0	86.3	14.4	10.9	49.2	7.4	5.8
LnGrp LOS	E	A	D	D	D	D	F	B	B	D	A	A
Approach Vol, veh/h		30			332			600			937	
Approach Delay, s/veh		48.3			51.0			13.9			18.1	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.5	56.4	10.0	14.7	4.9	72.0	5.4	19.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	37.5	35.0	11.5	18.0	5.0	67.5	5.0	24.5
Max Q Clear Time (g_c+I1), s	15.4	9.5	5.5	3.2	2.2	10.3	2.4	14.4
Green Ext Time (p_c), s	0.7	3.7	0.2	0.0	0.0	5.7	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	23.0
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	256	111	26	224	27	68	129	14	60	161	96
Future Volume (veh/h)	117	256	111	26	224	27	68	129	14	60	161	96
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	127	278	121	28	243	29	74	140	15	65	175	104
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	169	657	279	59	390	331	124	287	31	114	312	265
Arrive On Green	0.10	0.27	0.27	0.03	0.21	0.21	0.07	0.17	0.17	0.06	0.17	0.17
Sat Flow, veh/h	1767	2411	1023	1767	1856	1572	1767	1647	176	1767	1856	1572
Grp Volume(v), veh/h	127	201	198	28	243	29	74	0	155	65	175	104
Grp Sat Flow(s),veh/h/ln	1767	1763	1671	1767	1856	1572	1767	0	1824	1767	1856	1572
Q Serve(g_s), s	2.8	3.7	3.9	0.6	4.7	0.6	1.6	0.0	3.0	1.4	3.4	2.3
Cycle Q Clear(g_c), s	2.8	3.7	3.9	0.6	4.7	0.6	1.6	0.0	3.0	1.4	3.4	2.3
Prop In Lane	1.00		0.61	1.00		1.00	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	169	480	455	59	390	331	124	0	318	114	312	265
V/C Ratio(X)	0.75	0.42	0.43	0.47	0.62	0.09	0.60	0.00	0.49	0.57	0.56	0.39
Avail Cap(c_a), veh/h	872	2431	2305	335	1995	1691	604	0	1223	604	1244	1054
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.4	11.8	11.9	18.8	14.2	12.6	17.8	0.0	14.7	18.0	15.1	14.6
Incr Delay (d2), s/veh	6.6	0.6	0.7	5.8	1.6	0.1	4.5	0.0	1.2	4.4	1.6	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	1.2	1.2	0.3	1.8	0.2	0.7	0.0	1.1	0.6	1.3	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.0	12.4	12.5	24.5	15.8	12.7	22.3	0.0	15.9	22.4	16.7	15.6
LnGrp LOS	C	B	B	C	B	B	C	A	B	C	B	B
Approach Vol, veh/h		526			300			229			344	
Approach Delay, s/veh		15.2			16.3			18.0			17.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.1	11.4	5.8	15.3	7.3	11.2	8.3	12.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	13.5	26.5	7.5	54.5	13.5	26.5	19.5	42.5
Max Q Clear Time (g_c+I1), s	3.4	5.0	2.6	5.9	3.6	5.4	4.8	6.7
Green Ext Time (p_c), s	0.1	0.8	0.0	2.7	0.1	1.3	0.3	1.6

Intersection Summary	
HCM 6th Ctrl Delay	16.5
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	255	35	45	179	89	16	93	61	150	119	97
Future Volume (veh/h)	46	255	35	45	179	89	16	93	61	150	119	97
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	50	277	38	49	195	97	17	101	66	163	129	105
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	95	435	369	93	433	367	38	235	199	220	427	362
Arrive On Green	0.05	0.23	0.23	0.05	0.23	0.23	0.02	0.13	0.13	0.12	0.23	0.23
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	50	277	38	49	195	97	17	101	66	163	129	105
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	1.1	5.2	0.7	1.1	3.5	2.0	0.4	2.0	1.5	3.5	2.2	2.1
Cycle Q Clear(g_c), s	1.1	5.2	0.7	1.1	3.5	2.0	0.4	2.0	1.5	3.5	2.2	2.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	95	435	369	93	433	367	38	235	199	220	427	362
V/C Ratio(X)	0.53	0.64	0.10	0.53	0.45	0.26	0.45	0.43	0.33	0.74	0.30	0.29
Avail Cap(c_a), veh/h	444	2307	1955	448	2311	1959	263	908	770	1110	1798	1523
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.0	13.4	11.7	18.0	12.8	12.2	18.9	15.7	15.5	16.5	12.4	12.4
Incr Delay (d2), s/veh	4.5	1.6	0.1	4.5	0.7	0.4	8.0	1.2	1.0	4.8	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.9	0.2	0.5	1.3	0.6	0.2	0.8	0.5	1.5	0.8	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.5	15.0	11.8	22.5	13.5	12.6	26.8	17.0	16.5	21.3	12.8	12.8
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		365			341			184			397	
Approach Delay, s/veh		15.7			14.6			17.7			16.3	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.4	9.4	6.6	13.6	5.3	13.5	6.6	13.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	24.5	19.1	9.9	48.5	5.8	37.8	9.8	48.6
Max Q Clear Time (g_c+I1), s	5.5	4.0	3.1	7.2	2.4	4.2	3.1	5.5
Green Ext Time (p_c), s	0.4	0.6	0.0	1.9	0.0	1.1	0.0	1.5

Intersection Summary	
HCM 6th Ctrl Delay	15.9
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	90	256	220	4	9	113
Future Vol, veh/h	90	256	220	4	9	113
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	125	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	100	284	244	4	10	126

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	244	0	-	0	728	244
Stage 1	-	-	-	-	244	-
Stage 2	-	-	-	-	484	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1316	-	-	-	389	792
Stage 1	-	-	-	-	794	-
Stage 2	-	-	-	-	618	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1316	-	-	-	359	792
Mov Cap-2 Maneuver	-	-	-	-	468	-
Stage 1	-	-	-	-	734	-
Stage 2	-	-	-	-	618	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1316	-	-	-	754
HCM Lane V/C Ratio	0.076	-	-	-	0.18
HCM Control Delay (s)	8	-	-	-	10.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.7

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	81	185	157	6	15	73
Future Vol, veh/h	81	185	157	6	15	73
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	175	-	-	125	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	90	206	174	7	17	81

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	174	0	-	0	560	174
Stage 1	-	-	-	-	174	-
Stage 2	-	-	-	-	386	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1397	-	-	-	488	867
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	685	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1397	-	-	-	457	867
Mov Cap-2 Maneuver	-	-	-	-	457	-
Stage 1	-	-	-	-	799	-
Stage 2	-	-	-	-	685	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1397	-	-	-	752
HCM Lane V/C Ratio	0.064	-	-	-	0.13
HCM Control Delay (s)	7.8	-	-	-	10.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.4

HCM 6th Signalized Intersection Summary
1: Ophir Road & SR-70

Existing +Project AM
04/14/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	14	2	110	18	267	3	606	100	205	363	3
Future Volume (veh/h)	3	14	2	110	18	267	3	606	100	205	363	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	3	15	2	120	20	290	3	659	109	223	395	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	7	247	33	256	416	353	7	1037	580	286	1594	711
Arrive On Green	0.00	0.15	0.15	0.07	0.22	0.22	0.00	0.29	0.29	0.16	0.45	0.45
Sat Flow, veh/h	1767	1603	214	3428	1856	1572	1767	3526	1572	1767	3526	1572
Grp Volume(v), veh/h	3	0	17	120	20	290	3	659	109	223	395	3
Grp Sat Flow(s),veh/h/ln	1767	0	1817	1714	1856	1572	1767	1763	1572	1767	1763	1572
Q Serve(g_s), s	0.1	0.0	0.5	1.9	0.5	10.0	0.1	9.3	2.7	6.9	3.9	0.1
Cycle Q Clear(g_c), s	0.1	0.0	0.5	1.9	0.5	10.0	0.1	9.3	2.7	6.9	3.9	0.1
Prop In Lane	1.00		0.12	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	7	0	280	256	416	353	7	1037	580	286	1594	711
V/C Ratio(X)	0.42	0.00	0.06	0.47	0.05	0.82	0.42	0.64	0.19	0.78	0.25	0.00
Avail Cap(c_a), veh/h	155	0	573	571	731	620	155	2718	1329	944	4293	1915
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.4	0.0	20.6	25.3	17.4	21.0	28.4	17.5	12.2	22.9	9.6	8.6
Incr Delay (d2), s/veh	34.2	0.0	0.1	1.3	0.0	4.8	34.2	0.7	0.2	4.6	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.2	0.8	0.2	3.8	0.1	3.5	0.9	3.0	1.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.6	0.0	20.7	26.7	17.4	25.8	62.6	18.1	12.4	27.5	9.7	8.6
LnGrp LOS	E	A	C	C	B	C	E	B	B	C	A	A
Approach Vol, veh/h		20			430			771			621	
Approach Delay, s/veh		27.0			25.7			17.5			16.1	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.7	21.3	8.8	13.3	4.7	30.3	4.7	17.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	30.5	44.0	9.5	18.0	5.0	69.5	5.0	22.5
Max Q Clear Time (g_c+I1), s	8.9	11.3	3.9	2.5	2.1	5.9	2.1	12.0
Green Ext Time (p_c), s	0.6	5.5	0.1	0.0	0.0	3.0	0.0	0.8

Intersection Summary		
HCM 6th Ctrl Delay		19.0
HCM 6th LOS		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	156	146	57	24	261	45	90	277	22	24	135	138
Future Volume (veh/h)	156	146	57	24	261	45	90	277	22	24	135	138
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	184	172	67	28	307	53	106	326	26	28	159	162
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	241	840	315	56	427	362	139	437	35	56	391	331
Arrive On Green	0.14	0.33	0.33	0.03	0.23	0.23	0.08	0.26	0.26	0.03	0.21	0.21
Sat Flow, veh/h	1767	2508	941	1767	1856	1572	1767	1696	135	1767	1856	1572
Grp Volume(v), veh/h	184	119	120	28	307	53	106	0	352	28	159	162
Grp Sat Flow(s),veh/h/ln	1767	1763	1686	1767	1856	1572	1767	0	1831	1767	1856	1572
Q Serve(g_s), s	5.3	2.5	2.7	0.8	8.0	1.4	3.1	0.0	9.3	0.8	3.9	4.7
Cycle Q Clear(g_c), s	5.3	2.5	2.7	0.8	8.0	1.4	3.1	0.0	9.3	0.8	3.9	4.7
Prop In Lane	1.00		0.56	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	241	590	565	56	427	362	139	0	472	56	391	331
V/C Ratio(X)	0.76	0.20	0.21	0.50	0.72	0.15	0.76	0.00	0.75	0.50	0.41	0.49
Avail Cap(c_a), veh/h	726	1768	1691	219	1329	1126	550	0	1312	186	946	802
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.8	12.4	12.5	24.9	18.6	16.0	23.6	0.0	17.9	24.9	17.8	18.2
Incr Delay (d2), s/veh	5.0	0.2	0.2	6.6	2.3	0.2	8.3	0.0	2.4	6.6	0.7	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.9	0.9	0.4	3.3	0.5	1.5	0.0	3.8	0.4	1.6	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.8	12.6	12.7	31.5	20.9	16.2	31.9	0.0	20.2	31.5	18.5	19.3
LnGrp LOS	C	B	B	C	C	B	C	A	C	C	B	B
Approach Vol, veh/h		423			388			458			349	
Approach Delay, s/veh		18.8			21.0			22.9			19.9	
Approach LOS		B			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.2	18.0	6.2	22.0	8.6	15.5	11.6	16.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	37.5	6.5	52.5	16.3	26.7	21.5	37.5
Max Q Clear Time (g_c+I1), s	2.8	11.3	2.8	4.7	5.1	6.7	7.3	10.0
Green Ext Time (p_c), s	0.0	2.2	0.0	1.5	0.2	1.4	0.4	2.1

Intersection Summary	
HCM 6th Ctrl Delay	20.7
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	166	3	47	218	79	19	204	56	145	127	95
Future Volume (veh/h)	27	166	3	47	218	79	19	204	56	145	127	95
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	29	180	3	51	237	86	21	222	61	158	138	103
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	61	348	295	95	384	326	46	362	307	213	538	456
Arrive On Green	0.03	0.19	0.19	0.05	0.21	0.21	0.03	0.20	0.20	0.12	0.29	0.29
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	29	180	3	51	237	86	21	222	61	158	138	103
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	0.7	3.5	0.1	1.1	4.7	1.9	0.5	4.4	1.3	3.5	2.3	2.0
Cycle Q Clear(g_c), s	0.7	3.5	0.1	1.1	4.7	1.9	0.5	4.4	1.3	3.5	2.3	2.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	61	348	295	95	384	326	46	362	307	213	538	456
V/C Ratio(X)	0.48	0.52	0.01	0.54	0.62	0.26	0.46	0.61	0.20	0.74	0.26	0.23
Avail Cap(c_a), veh/h	326	1529	1296	456	1666	1412	283	1529	1296	1065	2351	1992
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.3	14.9	13.4	18.7	14.6	13.5	19.5	15.0	13.7	17.3	11.1	11.0
Incr Delay (d2), s/veh	5.7	1.2	0.0	4.6	1.6	0.4	7.0	1.7	0.3	5.0	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.4	0.0	0.5	1.8	0.6	0.3	1.7	0.4	1.5	0.8	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.0	16.0	13.5	23.4	16.3	13.9	26.5	16.6	14.0	22.3	11.3	11.2
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		212			374			304			399	
Approach Delay, s/veh		17.2			16.7			16.8			15.6	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.4	12.4	6.7	12.1	5.6	16.3	5.9	12.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	24.5	33.5	10.5	33.5	6.5	51.5	7.5	36.5
Max Q Clear Time (g_c+I1), s	5.5	6.4	3.1	5.5	2.5	4.3	2.7	6.7
Green Ext Time (p_c), s	0.4	1.5	0.0	1.0	0.0	1.2	0.0	1.7

Intersection Summary	
HCM 6th Ctrl Delay	16.5
HCM 6th LOS	B

Intersection						
Int Delay, s/veh	2.1					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	55	207	283	4	4	73
Future Vol, veh/h	55	207	283	4	4	73
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	125	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	63	235	322	5	5	83

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	322	0	-	0	683	322
Stage 1	-	-	-	-	322	-
Stage 2	-	-	-	-	361	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1232	-	-	-	413	717
Stage 1	-	-	-	-	732	-
Stage 2	-	-	-	-	703	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1232	-	-	-	392	717
Mov Cap-2 Maneuver	-	-	-	-	498	-
Stage 1	-	-	-	-	695	-
Stage 2	-	-	-	-	703	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1232	-	-	-	701
HCM Lane V/C Ratio	0.051	-	-	-	0.125
HCM Control Delay (s)	8.1	-	-	-	10.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.4

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	95	118	203	16	11	83
Future Vol, veh/h	95	118	203	16	11	83
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	175	-	-	125	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	108	134	231	18	13	94

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	231	0	-	0	581	231
Stage 1	-	-	-	-	231	-
Stage 2	-	-	-	-	350	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1331	-	-	-	474	806
Stage 1	-	-	-	-	805	-
Stage 2	-	-	-	-	711	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1331	-	-	-	436	806
Mov Cap-2 Maneuver	-	-	-	-	436	-
Stage 1	-	-	-	-	740	-
Stage 2	-	-	-	-	711	-

Approach	EB	WB	SB
HCM Control Delay, s	3.5	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1331	-	-	-	733
HCM Lane V/C Ratio	0.081	-	-	-	0.146
HCM Control Delay (s)	7.9	-	-	-	10.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	15	7	130	14	200	3	423	151	248	632	10
Future Volume (veh/h)	6	15	7	130	14	200	3	423	151	248	632	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	7	16	8	141	15	217	3	460	164	270	687	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	16	125	63	207	295	250	7	1702	854	310	2306	1028
Arrive On Green	0.01	0.11	0.11	0.06	0.16	0.16	0.00	0.48	0.48	0.18	0.65	0.65
Sat Flow, veh/h	1767	1167	584	3428	1856	1572	1767	3526	1572	1767	3526	1572
Grp Volume(v), veh/h	7	0	24	141	15	217	3	460	164	270	687	11
Grp Sat Flow(s),veh/h/ln	1767	0	1751	1714	1856	1572	1767	1763	1572	1767	1763	1572
Q Serve(g_s), s	0.4	0.0	1.3	4.2	0.7	13.9	0.2	8.0	5.5	15.4	8.6	0.3
Cycle Q Clear(g_c), s	0.4	0.0	1.3	4.2	0.7	13.9	0.2	8.0	5.5	15.4	8.6	0.3
Prop In Lane	1.00		0.33	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	16	0	188	207	295	250	7	1702	854	310	2306	1028
V/C Ratio(X)	0.45	0.00	0.13	0.68	0.05	0.87	0.43	0.27	0.19	0.87	0.30	0.01
Avail Cap(c_a), veh/h	86	0	305	382	440	373	86	1702	854	642	2306	1028
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.9	0.0	41.7	47.5	36.8	42.4	51.3	15.9	12.0	41.4	7.7	6.2
Incr Delay (d2), s/veh	19.0	0.0	0.3	3.9	0.1	13.4	35.8	0.4	0.5	7.5	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.6	1.9	0.3	6.3	0.1	3.3	2.0	7.3	3.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.9	0.0	42.0	51.5	36.9	55.7	87.1	16.3	12.5	49.0	8.0	6.2
LnGrp LOS	E	A	D	D	D	E	F	B	B	D	A	A
Approach Vol, veh/h		31			373			627			968	
Approach Delay, s/veh		48.3			53.4			15.6			19.4	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.6	54.3	10.7	15.6	4.9	72.0	5.4	20.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	37.5	35.0	11.5	18.0	5.0	67.5	5.0	24.5
Max Q Clear Time (g_c+I1), s	17.4	10.0	6.2	3.3	2.2	10.6	2.4	15.9
Green Ext Time (p_c), s	0.8	3.8	0.2	0.0	0.0	5.7	0.0	0.5

Intersection Summary			
HCM 6th Ctrl Delay			25.0
HCM 6th LOS			C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	310	111	33	263	36	68	129	24	72	161	96
Future Volume (veh/h)	117	310	111	33	263	36	68	129	24	72	161	96
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	127	337	121	36	286	39	74	140	26	78	175	104
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	169	739	261	72	436	369	122	248	46	126	307	260
Arrive On Green	0.10	0.29	0.29	0.04	0.23	0.23	0.07	0.16	0.16	0.07	0.17	0.17
Sat Flow, veh/h	1767	2554	902	1767	1856	1572	1767	1522	283	1767	1856	1572
Grp Volume(v), veh/h	127	231	227	36	286	39	74	0	166	78	175	104
Grp Sat Flow(s),veh/h/ln	1767	1763	1693	1767	1856	1572	1767	0	1805	1767	1856	1572
Q Serve(g_s), s	2.9	4.4	4.6	0.8	5.8	0.8	1.7	0.0	3.5	1.8	3.6	2.4
Cycle Q Clear(g_c), s	2.9	4.4	4.6	0.8	5.8	0.8	1.7	0.0	3.5	1.8	3.6	2.4
Prop In Lane	1.00		0.53	1.00		1.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	169	510	490	72	436	369	122	0	294	126	307	260
V/C Ratio(X)	0.75	0.45	0.46	0.50	0.66	0.11	0.60	0.00	0.56	0.62	0.57	0.40
Avail Cap(c_a), veh/h	833	2322	2231	320	1906	1616	577	0	1156	577	1189	1007
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.2	12.0	12.1	19.4	14.3	12.4	18.7	0.0	16.0	18.7	15.9	15.4
Incr Delay (d2), s/veh	6.6	0.6	0.7	5.2	1.7	0.1	4.7	0.0	1.7	4.8	1.7	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	1.5	1.5	0.4	2.2	0.2	0.8	0.0	1.4	0.8	1.4	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.8	12.6	12.7	24.6	16.0	12.5	23.4	0.0	17.7	23.5	17.6	16.4
LnGrp LOS	C	B	B	C	B	B	C	A	B	C	B	B
Approach Vol, veh/h		585			361			240			357	
Approach Delay, s/veh		15.3			16.5			19.4			18.5	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	11.2	6.2	16.5	7.4	11.3	8.5	14.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	13.5	26.5	7.5	54.5	13.5	26.5	19.5	42.5
Max Q Clear Time (g_c+I1), s	3.8	5.5	2.8	6.6	3.7	5.6	4.9	7.8
Green Ext Time (p_c), s	0.1	0.8	0.0	3.1	0.1	1.3	0.3	1.9

Intersection Summary	
HCM 6th Ctrl Delay	17.0
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	331	35	49	234	97	16	93	67	161	119	97
Future Volume (veh/h)	46	331	35	49	234	97	16	93	67	161	119	97
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	50	360	38	53	254	105	17	101	73	175	129	105
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	92	518	439	96	522	442	38	214	181	235	421	357
Arrive On Green	0.05	0.28	0.28	0.05	0.28	0.28	0.02	0.12	0.12	0.13	0.23	0.23
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	50	360	38	53	254	105	17	101	73	175	129	105
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	1.2	7.5	0.8	1.3	4.9	2.2	0.4	2.2	1.9	4.1	2.5	2.4
Cycle Q Clear(g_c), s	1.2	7.5	0.8	1.3	4.9	2.2	0.4	2.2	1.9	4.1	2.5	2.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	92	518	439	96	522	442	38	214	181	235	421	357
V/C Ratio(X)	0.54	0.70	0.09	0.55	0.49	0.24	0.45	0.47	0.40	0.74	0.31	0.29
Avail Cap(c_a), veh/h	402	2090	1771	406	2095	1775	238	823	698	1006	1629	1381
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.9	13.9	11.5	19.8	12.9	11.9	20.8	17.8	17.7	18.0	13.8	13.8
Incr Delay (d2), s/veh	4.9	1.7	0.1	4.8	0.7	0.3	8.2	1.6	1.4	4.6	0.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	2.8	0.2	0.6	1.8	0.7	0.2	0.9	0.7	1.8	0.9	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.8	15.6	11.6	24.7	13.6	12.2	29.0	19.4	19.1	22.6	14.2	14.2
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		448			412			191			409	
Approach Delay, s/veh		16.3			14.7			20.2			17.8	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.2	9.5	6.8	16.5	5.4	14.3	6.8	16.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	24.5	19.1	9.9	48.5	5.8	37.8	9.8	48.6
Max Q Clear Time (g_c+I1), s	6.1	4.2	3.3	9.5	2.4	4.5	3.2	6.9
Green Ext Time (p_c), s	0.4	0.6	0.0	2.5	0.0	1.1	0.0	2.0

Intersection Summary	
HCM 6th Ctrl Delay	16.8
HCM 6th LOS	B

Intersection						
Int Delay, s/veh	3.1					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	116	323	268	4	9	132
Future Vol, veh/h	116	323	268	4	9	132
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	125	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	129	359	298	4	10	147

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	298	0	-	0	915	298
Stage 1	-	-	-	-	298	-
Stage 2	-	-	-	-	617	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1258	-	-	-	302	739
Stage 1	-	-	-	-	751	-
Stage 2	-	-	-	-	536	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1258	-	-	-	271	739
Mov Cap-2 Maneuver	-	-	-	-	393	-
Stage 1	-	-	-	-	674	-
Stage 2	-	-	-	-	536	-

Approach	EB	WB	SB
HCM Control Delay, s	2.2	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1258	-	-	-	700
HCM Lane V/C Ratio	0.102	-	-	-	0.224
HCM Control Delay (s)	8.2	-	-	-	11.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.9

Intersection						
Int Delay, s/veh	4.3					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	148	185	157	14	21	121
Future Vol, veh/h	148	185	157	14	21	121
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	175	-	-	125	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	164	206	174	16	23	134

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	174	0	-	0	708	174
Stage 1	-	-	-	-	174	-
Stage 2	-	-	-	-	534	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1397	-	-	-	400	867
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	586	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1397	-	-	-	353	867
Mov Cap-2 Maneuver	-	-	-	-	353	-
Stage 1	-	-	-	-	754	-
Stage 2	-	-	-	-	586	-

Approach	EB	WB	SB
HCM Control Delay, s	3.5	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1397	-	-	-	713
HCM Lane V/C Ratio	0.118	-	-	-	0.221
HCM Control Delay (s)	7.9	-	-	-	11.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.4	-	-	-	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	15	2	100	19	271	3	668	100	216	400	3
Future Volume (veh/h)	3	15	2	100	19	271	3	668	100	216	400	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	3	16	2	109	21	295	3	726	109	235	435	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	7	258	32	236	416	353	7	1097	597	296	1673	746
Arrive On Green	0.00	0.16	0.16	0.07	0.22	0.22	0.00	0.31	0.31	0.17	0.47	0.47
Sat Flow, veh/h	1767	1617	202	3428	1856	1572	1767	3526	1572	1767	3526	1572
Grp Volume(v), veh/h	3	0	18	109	21	295	3	726	109	235	435	3
Grp Sat Flow(s),veh/h/ln	1767	0	1819	1714	1856	1572	1767	1763	1572	1767	1763	1572
Q Serve(g_s), s	0.1	0.0	0.5	1.9	0.5	11.0	0.1	11.0	2.8	7.8	4.5	0.1
Cycle Q Clear(g_c), s	0.1	0.0	0.5	1.9	0.5	11.0	0.1	11.0	2.8	7.8	4.5	0.1
Prop In Lane	1.00		0.11	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	7	0	291	236	416	353	7	1097	597	296	1673	746
V/C Ratio(X)	0.42	0.00	0.06	0.46	0.05	0.84	0.42	0.66	0.18	0.79	0.26	0.00
Avail Cap(c_a), veh/h	144	0	533	530	679	576	144	2525	1234	877	3988	1779
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.5	0.0	21.9	27.5	18.7	22.8	30.5	18.4	12.7	24.6	9.7	8.5
Incr Delay (d2), s/veh	34.4	0.0	0.1	1.4	0.0	5.7	34.4	0.7	0.1	4.8	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.2	0.8	0.2	4.3	0.1	4.2	0.9	3.5	1.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.9	0.0	22.0	28.9	18.7	28.4	64.9	19.1	12.8	29.4	9.8	8.5
LnGrp LOS	E	A	C	C	B	C	E	B	B	C	A	A
Approach Vol, veh/h		21			425			838			673	
Approach Delay, s/veh		28.1			28.1			18.4			16.6	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.8	23.6	8.7	14.3	4.7	33.7	4.7	18.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	30.5	44.0	9.5	18.0	5.0	69.5	5.0	22.5
Max Q Clear Time (g_c+I1), s	9.8	13.0	3.9	2.5	2.1	6.5	2.1	13.0
Green Ext Time (p_c), s	0.6	6.1	0.1	0.0	0.0	3.3	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	20.0
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	172	141	63	18	243	40	99	305	21	22	149	152
Future Volume (veh/h)	172	141	63	18	243	40	99	305	21	22	149	152
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	202	166	74	21	286	47	116	359	25	26	175	179
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	261	813	347	44	399	338	153	470	33	53	404	343
Arrive On Green	0.15	0.34	0.34	0.03	0.22	0.22	0.09	0.27	0.27	0.03	0.22	0.22
Sat Flow, veh/h	1767	2405	1028	1767	1856	1572	1767	1715	119	1767	1856	1572
Grp Volume(v), veh/h	202	120	120	21	286	47	116	0	384	26	175	179
Grp Sat Flow(s),veh/h/ln	1767	1763	1671	1767	1856	1572	1767	0	1834	1767	1856	1572
Q Serve(g_s), s	6.0	2.6	2.8	0.6	7.7	1.3	3.5	0.0	10.4	0.8	4.4	5.4
Cycle Q Clear(g_c), s	6.0	2.6	2.8	0.6	7.7	1.3	3.5	0.0	10.4	0.8	4.4	5.4
Prop In Lane	1.00		0.62	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	261	596	565	44	399	338	153	0	503	53	404	343
V/C Ratio(X)	0.77	0.20	0.21	0.48	0.72	0.14	0.76	0.00	0.76	0.49	0.43	0.52
Avail Cap(c_a), veh/h	702	1710	1621	212	1286	1090	532	0	1271	180	916	776
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.2	12.7	12.8	26.0	19.7	17.2	24.2	0.0	18.0	25.8	18.3	18.7
Incr Delay (d2), s/veh	4.8	0.2	0.2	7.7	2.4	0.2	7.6	0.0	2.4	6.9	0.7	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.9	0.9	0.3	3.3	0.4	1.7	0.0	4.2	0.4	1.8	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.0	12.9	13.0	33.7	22.1	17.4	31.7	0.0	20.4	32.8	19.0	19.9
LnGrp LOS	C	B	B	C	C	B	C	A	C	C	B	B
Approach Vol, veh/h		442			354			500			380	
Approach Delay, s/veh		19.4			22.2			23.1			20.4	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.1	19.3	5.9	22.8	9.2	16.3	12.5	16.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	37.5	6.5	52.5	16.3	26.7	21.5	37.5
Max Q Clear Time (g_c+I1), s	2.8	12.4	2.6	4.8	5.5	7.4	8.0	9.7
Green Ext Time (p_c), s	0.0	2.4	0.0	1.5	0.2	1.5	0.5	1.9

Intersection Summary		
HCM 6th Ctrl Delay		21.3
HCM 6th LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	155	3	46	176	78	21	225	60	155	140	105
Future Volume (veh/h)	30	155	3	46	176	78	21	225	60	155	140	105
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	33	168	3	50	191	85	23	245	65	168	152	114
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	68	303	256	94	330	280	50	390	331	227	576	488
Arrive On Green	0.04	0.16	0.16	0.05	0.18	0.18	0.03	0.21	0.21	0.13	0.31	0.31
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	33	168	3	50	191	85	23	245	65	168	152	114
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	0.7	3.4	0.1	1.1	3.8	1.9	0.5	4.9	1.4	3.7	2.5	2.2
Cycle Q Clear(g_c), s	0.7	3.4	0.1	1.1	3.8	1.9	0.5	4.9	1.4	3.7	2.5	2.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	68	303	256	94	330	280	50	390	331	227	576	488
V/C Ratio(X)	0.49	0.56	0.01	0.53	0.58	0.30	0.46	0.63	0.20	0.74	0.26	0.23
Avail Cap(c_a), veh/h	328	1537	1302	459	1674	1419	284	1537	1302	1070	2362	2002
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.1	15.6	14.2	18.7	15.2	14.4	19.4	14.5	13.2	17.0	10.5	10.4
Incr Delay (d2), s/veh	5.3	1.6	0.0	4.6	1.6	0.6	6.5	1.7	0.3	4.7	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.3	0.0	0.5	1.5	0.6	0.3	1.9	0.4	1.6	0.8	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.4	17.2	14.2	23.3	16.8	15.1	25.9	16.2	13.4	21.7	10.7	10.6
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		204			326			333			434	
Approach Delay, s/veh		18.3			17.4			16.3			14.9	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.7	13.0	6.6	11.1	5.6	17.1	6.0	11.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	24.5	33.5	10.5	33.5	6.5	51.5	7.5	36.5
Max Q Clear Time (g_c+I1), s	5.7	6.9	3.1	5.4	2.5	4.5	2.7	5.8
Green Ext Time (p_c), s	0.4	1.7	0.0	0.9	0.0	1.3	0.0	1.4

Intersection Summary		
HCM 6th Ctrl Delay		16.4
HCM 6th LOS		B

Intersection						
Int Delay, s/veh	1.9					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	50	205	255	4	4	60
Future Vol, veh/h	50	205	255	4	4	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	125	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	57	233	290	5	5	68

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	290	0	-	0	637	290
Stage 1	-	-	-	-	290	-
Stage 2	-	-	-	-	347	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1266	-	-	-	440	747
Stage 1	-	-	-	-	757	-
Stage 2	-	-	-	-	713	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1266	-	-	-	420	747
Mov Cap-2 Maneuver	-	-	-	-	519	-
Stage 1	-	-	-	-	723	-
Stage 2	-	-	-	-	713	-

Approach	EB		WB		SB	
HCM Control Delay, s	1.6		0		10.5	
HCM LOS					B	

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1266	-	-	-	727
HCM Lane V/C Ratio	0.045	-	-	-	0.1
HCM Control Delay (s)	8	-	-	-	10.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	82	130	224	14	6	34
Future Vol, veh/h	82	130	224	14	6	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	175	-	-	125	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	93	148	255	16	7	39

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	255	0	-	0	589	255
Stage 1	-	-	-	-	255	-
Stage 2	-	-	-	-	334	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1304	-	-	-	469	781
Stage 1	-	-	-	-	785	-
Stage 2	-	-	-	-	723	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1304	-	-	-	436	781
Mov Cap-2 Maneuver	-	-	-	-	436	-
Stage 1	-	-	-	-	729	-
Stage 2	-	-	-	-	723	-

Approach	EB	WB	SB
HCM Control Delay, s	3.1	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1304	-	-	-	698
HCM Lane V/C Ratio	0.071	-	-	-	0.065
HCM Control Delay (s)	8	-	-	-	10.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	15	8	123	14	198	3	466	139	243	697	11
Future Volume (veh/h)	7	15	8	123	14	198	3	466	139	243	697	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	8	16	9	134	15	215	3	507	151	264	758	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	18	122	69	199	292	248	7	1714	856	304	2306	1029
Arrive On Green	0.01	0.11	0.11	0.06	0.16	0.16	0.00	0.49	0.49	0.17	0.65	0.65
Sat Flow, veh/h	1767	1115	627	3428	1856	1572	1767	3526	1572	1767	3526	1572
Grp Volume(v), veh/h	8	0	25	134	15	215	3	507	151	264	758	12
Grp Sat Flow(s),veh/h/ln	1767	0	1743	1714	1856	1572	1767	1763	1572	1767	1763	1572
Q Serve(g_s), s	0.5	0.0	1.3	4.0	0.7	13.8	0.2	8.9	5.0	15.0	9.8	0.3
Cycle Q Clear(g_c), s	0.5	0.0	1.3	4.0	0.7	13.8	0.2	8.9	5.0	15.0	9.8	0.3
Prop In Lane	1.00		0.36	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	18	0	191	199	292	248	7	1714	856	304	2306	1029
V/C Ratio(X)	0.46	0.00	0.13	0.67	0.05	0.87	0.43	0.30	0.18	0.87	0.33	0.01
Avail Cap(c_a), veh/h	86	0	304	382	441	373	86	1714	856	642	2306	1029
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.8	0.0	41.5	47.6	36.9	42.4	51.3	15.9	11.9	41.6	7.9	6.2
Incr Delay (d2), s/veh	17.3	0.0	0.3	3.9	0.1	13.1	35.8	0.4	0.5	7.5	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.6	1.8	0.3	6.2	0.1	3.6	1.8	7.1	3.5	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.2	0.0	41.8	51.6	37.0	55.5	87.1	16.4	12.3	49.1	8.2	6.2
LnGrp LOS	E	A	D	D	D	E	F	B	B	D	A	A
Approach Vol, veh/h		33			364			661			1034	
Approach Delay, s/veh		48.2			53.3			15.7			18.7	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.2	54.7	10.5	15.8	4.9	72.0	5.5	20.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	37.5	35.0	11.5	18.0	5.0	67.5	5.0	24.5
Max Q Clear Time (g_c+I1), s	17.0	10.9	6.0	3.3	2.2	11.8	2.5	15.8
Green Ext Time (p_c), s	0.7	4.1	0.2	0.0	0.0	6.5	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	24.2
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	129	282	122	29	247	30	75	142	15	66	178	106
Future Volume (veh/h)	129	282	122	29	247	30	75	142	15	66	178	106
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	140	307	133	32	268	33	82	154	16	72	193	115
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	187	699	296	65	410	348	129	300	31	119	326	276
Arrive On Green	0.11	0.29	0.29	0.04	0.22	0.22	0.07	0.18	0.18	0.07	0.18	0.18
Sat Flow, veh/h	1767	2412	1022	1767	1856	1572	1767	1653	172	1767	1856	1572
Grp Volume(v), veh/h	140	223	217	32	268	33	82	0	170	72	193	115
Grp Sat Flow(s),veh/h/ln	1767	1763	1672	1767	1856	1572	1767	0	1825	1767	1856	1572
Q Serve(g_s), s	3.3	4.4	4.5	0.8	5.6	0.7	1.9	0.0	3.6	1.7	4.1	2.8
Cycle Q Clear(g_c), s	3.3	4.4	4.5	0.8	5.6	0.7	1.9	0.0	3.6	1.7	4.1	2.8
Prop In Lane	1.00		0.61	1.00		1.00	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	187	511	484	65	410	348	129	0	331	119	326	276
V/C Ratio(X)	0.75	0.44	0.45	0.49	0.65	0.09	0.64	0.00	0.51	0.60	0.59	0.42
Avail Cap(c_a), veh/h	813	2266	2149	313	1860	1576	563	0	1141	563	1160	983
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.4	12.2	12.3	20.0	15.0	13.1	19.1	0.0	15.7	19.2	16.1	15.5
Incr Delay (d2), s/veh	5.9	0.6	0.7	5.6	1.8	0.1	5.1	0.0	1.2	4.9	1.7	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	1.5	1.5	0.4	2.2	0.2	0.9	0.0	1.4	0.8	1.6	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.3	12.8	12.9	25.6	16.8	13.3	24.2	0.0	16.9	24.1	17.8	16.5
LnGrp LOS	C	B	B	C	B	B	C	A	B	C	B	B
Approach Vol, veh/h		580			333			252			380	
Approach Delay, s/veh		15.6			17.3			19.3			18.6	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	12.2	6.1	16.8	7.6	11.9	9.0	13.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	13.5	26.5	7.5	54.5	13.5	26.5	19.5	42.5
Max Q Clear Time (g_c+I1), s	13.7	5.6	2.8	6.5	3.9	6.1	5.3	7.6
Green Ext Time (p_c), s	0.1	0.9	0.0	3.0	0.1	1.4	0.3	1.8

Intersection Summary	
HCM 6th Ctrl Delay	17.3
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	281	39	50	197	98	18	103	67	165	131	107
Future Volume (veh/h)	51	281	39	50	197	98	18	103	67	165	131	107
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	55	305	42	54	214	107	20	112	73	179	142	116
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	100	461	390	99	459	389	44	225	190	241	432	366
Arrive On Green	0.06	0.25	0.25	0.06	0.25	0.25	0.02	0.12	0.12	0.14	0.23	0.23
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	55	305	42	54	214	107	20	112	73	179	142	116
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	1.2	6.1	0.8	1.2	4.0	2.3	0.5	2.3	1.8	4.0	2.6	2.5
Cycle Q Clear(g_c), s	1.2	6.1	0.8	1.2	4.0	2.3	0.5	2.3	1.8	4.0	2.6	2.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	100	461	390	99	459	389	44	225	190	241	432	366
V/C Ratio(X)	0.55	0.66	0.11	0.55	0.47	0.27	0.46	0.50	0.38	0.74	0.33	0.32
Avail Cap(c_a), veh/h	422	2191	1856	426	2195	1860	249	863	731	1054	1707	1447
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.9	13.9	11.9	18.9	13.1	12.5	19.8	16.9	16.6	17.0	13.1	13.1
Incr Delay (d2), s/veh	4.6	1.6	0.1	4.6	0.7	0.4	7.2	1.7	1.3	4.5	0.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	2.3	0.3	0.6	1.5	0.7	0.3	1.0	0.6	1.7	1.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.5	15.5	12.0	23.5	13.9	12.9	27.0	18.6	17.9	21.5	13.5	13.5
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		402			375			205			437	
Approach Delay, s/veh		16.2			15.0			19.2			16.8	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.1	9.5	6.8	14.7	5.5	14.1	6.8	14.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	24.5	19.1	9.9	48.5	5.8	37.8	9.8	48.6
Max Q Clear Time (g_c+I1), s	6.0	4.3	3.2	8.1	2.5	4.6	3.2	6.0
Green Ext Time (p_c), s	0.4	0.7	0.0	2.1	0.0	1.2	0.0	1.7

Intersection Summary	
HCM 6th Ctrl Delay	16.5
HCM 6th LOS	B

Intersection						
Int Delay, s/veh	3					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	99	282	243	4	10	125
Future Vol, veh/h	99	282	243	4	10	125
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	125	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	110	313	270	4	11	139

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	270	0	-	0	803	270
Stage 1	-	-	-	-	270	-
Stage 2	-	-	-	-	533	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1288	-	-	-	351	766
Stage 1	-	-	-	-	773	-
Stage 2	-	-	-	-	586	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1288	-	-	-	321	766
Mov Cap-2 Maneuver	-	-	-	-	436	-
Stage 1	-	-	-	-	707	-
Stage 2	-	-	-	-	586	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1288	-	-	-	725
HCM Lane V/C Ratio	0.085	-	-	-	0.207
HCM Control Delay (s)	8.1	-	-	-	11.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.8

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	89	204	173	7	17	80
Future Vol, veh/h	89	204	173	7	17	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	175	-	-	125	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	99	227	192	8	19	89

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	192	0	-	0	617	192
Stage 1	-	-	-	-	192	-
Stage 2	-	-	-	-	425	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1375	-	-	-	452	847
Stage 1	-	-	-	-	838	-
Stage 2	-	-	-	-	657	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1375	-	-	-	419	847
Mov Cap-2 Maneuver	-	-	-	-	419	-
Stage 1	-	-	-	-	778	-
Stage 2	-	-	-	-	657	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1375	-	-	-	718
HCM Lane V/C Ratio	0.072	-	-	-	0.15
HCM Control Delay (s)	7.8	-	-	-	10.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	15	2	119	20	292	3	668	109	225	400	3
Future Volume (veh/h)	3	15	2	119	20	292	3	668	109	225	400	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	3	16	2	129	22	317	3	726	118	245	435	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	7	275	34	240	438	371	7	1081	593	305	1675	747
Arrive On Green	0.00	0.17	0.17	0.07	0.24	0.24	0.00	0.31	0.31	0.17	0.48	0.48
Sat Flow, veh/h	1767	1617	202	3428	1856	1572	1767	3526	1572	1767	3526	1572
Grp Volume(v), veh/h	3	0	18	129	22	317	3	726	118	245	435	3
Grp Sat Flow(s),veh/h/ln	1767	0	1819	1714	1856	1572	1767	1763	1572	1767	1763	1572
Q Serve(g_s), s	0.1	0.0	0.5	2.3	0.6	12.4	0.1	11.5	3.2	8.5	4.7	0.1
Cycle Q Clear(g_c), s	0.1	0.0	0.5	2.3	0.6	12.4	0.1	11.5	3.2	8.5	4.7	0.1
Prop In Lane	1.00		0.11	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	7	0	310	240	438	371	7	1081	593	305	1675	747
V/C Ratio(X)	0.42	0.00	0.06	0.54	0.05	0.85	0.42	0.67	0.20	0.80	0.26	0.00
Avail Cap(c_a), veh/h	138	0	510	507	650	551	138	2417	1188	840	3817	1703
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.9	0.0	22.3	28.8	18.9	23.4	31.9	19.4	13.5	25.5	10.1	8.9
Incr Delay (d2), s/veh	34.5	0.0	0.1	1.9	0.0	8.4	34.5	0.7	0.2	4.9	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.2	1.0	0.2	5.1	0.1	4.4	1.1	3.8	1.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.4	0.0	22.4	30.7	19.0	31.8	66.4	20.2	13.6	30.5	10.2	8.9
LnGrp LOS	E	A	C	C	B	C	E	C	B	C	B	A
Approach Vol, veh/h		21			468			847			683	
Approach Delay, s/veh		28.7			30.9			19.4			17.4	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.6	24.2	9.0	15.4	4.8	35.0	4.8	19.7				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	30.5	44.0	9.5	18.0	5.0	69.5	5.0	22.5				
Max Q Clear Time (g_c+I1), s	10.5	13.5	4.3	2.5	2.1	6.7	2.1	14.4				
Green Ext Time (p_c), s	0.7	6.1	0.1	0.0	0.0	3.3	0.0	0.8				
Intersection Summary												
HCM 6th Ctrl Delay			21.5									
HCM 6th LOS			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	172	159	63	26	284	49	99	305	24	26	149	152
Future Volume (veh/h)	172	159	63	26	284	49	99	305	24	26	149	152
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	202	187	74	31	334	58	116	359	28	31	175	179
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	259	879	336	60	445	377	152	461	36	60	407	345
Arrive On Green	0.15	0.35	0.35	0.03	0.24	0.24	0.09	0.27	0.27	0.03	0.22	0.22
Sat Flow, veh/h	1767	2494	953	1767	1856	1572	1767	1699	133	1767	1856	1572
Grp Volume(v), veh/h	202	130	131	31	334	58	116	0	387	31	175	179
Grp Sat Flow(s),veh/h/ln	1767	1763	1684	1767	1856	1572	1767	0	1832	1767	1856	1572
Q Serve(g_s), s	6.4	3.0	3.2	1.0	9.7	1.7	3.7	0.0	11.4	1.0	4.7	5.9
Cycle Q Clear(g_c), s	6.4	3.0	3.2	1.0	9.7	1.7	3.7	0.0	11.4	1.0	4.7	5.9
Prop In Lane	1.00		0.57	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	259	621	593	60	445	377	152	0	497	60	407	345
V/C Ratio(X)	0.78	0.21	0.22	0.52	0.75	0.15	0.76	0.00	0.78	0.52	0.43	0.52
Avail Cap(c_a), veh/h	651	1586	1515	197	1192	1011	494	0	1177	167	849	720
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.0	13.2	13.3	27.7	20.6	17.5	26.1	0.0	19.6	27.7	19.6	20.1
Incr Delay (d2), s/veh	5.1	0.2	0.2	6.8	2.6	0.2	7.6	0.0	2.7	6.8	0.7	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	1.1	1.1	0.5	4.2	0.6	1.8	0.0	4.8	0.5	2.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.1	13.4	13.5	34.5	23.1	17.7	33.7	0.0	22.3	34.5	20.4	21.3
LnGrp LOS	C	B	B	C	C	B	C	A	C	C	C	C
Approach Vol, veh/h		463			423			503			385	
Approach Delay, s/veh		20.3			23.2			24.9			21.9	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.5	20.3	6.5	25.1	9.5	17.3	13.0	18.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	37.5	6.5	52.5	16.3	26.7	21.5	37.5
Max Q Clear Time (g_c+I1), s	3.0	13.4	3.0	5.2	5.7	7.9	8.4	11.7
Green Ext Time (p_c), s	0.0	2.5	0.0	1.7	0.2	1.5	0.4	2.3

Intersection Summary	
HCM 6th Ctrl Delay	22.7
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	180	3	51	234	86	21	225	62	159	140	105
Future Volume (veh/h)	30	180	3	51	234	86	21	225	62	159	140	105
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	33	196	3	55	254	93	23	245	67	173	152	114
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	67	362	307	99	395	335	49	380	322	232	572	485
Arrive On Green	0.04	0.20	0.20	0.06	0.21	0.21	0.03	0.20	0.20	0.13	0.31	0.31
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	33	196	3	55	254	93	23	245	67	173	152	114
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	0.8	4.1	0.1	1.3	5.4	2.2	0.6	5.3	1.5	4.1	2.7	2.4
Cycle Q Clear(g_c), s	0.8	4.1	0.1	1.3	5.4	2.2	0.6	5.3	1.5	4.1	2.7	2.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	67	362	307	99	395	335	49	380	322	232	572	485
V/C Ratio(X)	0.49	0.54	0.01	0.56	0.64	0.28	0.47	0.64	0.21	0.74	0.27	0.24
Avail Cap(c_a), veh/h	304	1426	1208	426	1553	1316	263	1426	1208	993	2192	1857
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.6	15.8	14.2	20.1	15.6	14.3	20.9	15.9	14.4	18.2	11.4	11.2
Incr Delay (d2), s/veh	5.6	1.3	0.0	4.9	1.7	0.4	6.7	1.8	0.3	4.7	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.6	0.0	0.6	2.2	0.7	0.3	2.1	0.5	1.8	0.9	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.1	17.1	14.2	24.9	17.4	14.8	27.6	17.7	14.7	22.9	11.6	11.5
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		232			402			335			439	
Approach Delay, s/veh		18.3			17.8			17.8			16.0	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.2	13.4	6.9	13.0	5.7	17.9	6.1	13.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	24.5	33.5	10.5	33.5	6.5	51.5	7.5	36.5
Max Q Clear Time (g_c+I1), s	6.1	7.3	3.3	6.1	2.6	4.7	2.8	7.4
Green Ext Time (p_c), s	0.4	1.7	0.0	1.1	0.0	1.3	0.0	1.9

Intersection Summary	
HCM 6th Ctrl Delay	17.3
HCM 6th LOS	B

Intersection						
Int Delay, s/veh	2.1					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	60	226	307	4	4	79
Future Vol, veh/h	60	226	307	4	4	79
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	125	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	68	257	349	5	5	90

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	349	0	-	0	742	349
Stage 1	-	-	-	-	349	-
Stage 2	-	-	-	-	393	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1204	-	-	-	382	692
Stage 1	-	-	-	-	712	-
Stage 2	-	-	-	-	680	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1204	-	-	-	361	692
Mov Cap-2 Maneuver	-	-	-	-	473	-
Stage 1	-	-	-	-	672	-
Stage 2	-	-	-	-	680	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0	11.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1204	-	-	-	677
HCM Lane V/C Ratio	0.057	-	-	-	0.139
HCM Control Delay (s)	8.2	-	-	-	11.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.5

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	103	130	224	17	12	86
Future Vol, veh/h	103	130	224	17	12	86
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	175	-	-	125	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	117	148	255	19	14	98

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	255	0	-	0	637	255
Stage 1	-	-	-	-	255	-
Stage 2	-	-	-	-	382	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1304	-	-	-	440	781
Stage 1	-	-	-	-	785	-
Stage 2	-	-	-	-	688	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1304	-	-	-	400	781
Mov Cap-2 Maneuver	-	-	-	-	400	-
Stage 1	-	-	-	-	714	-
Stage 2	-	-	-	-	688	-

Approach	EB	WB	SB
HCM Control Delay, s	3.6	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1304	-	-	-	699
HCM Lane V/C Ratio	0.09	-	-	-	0.159
HCM Control Delay (s)	8	-	-	-	11.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	16	8	141	15	218	3	466	164	271	697	11
Future Volume (veh/h)	7	16	8	141	15	218	3	466	164	271	697	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	8	17	9	153	16	237	3	507	178	295	758	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	18	134	71	219	317	269	7	1616	821	335	2269	1012
Arrive On Green	0.01	0.12	0.12	0.06	0.17	0.17	0.00	0.46	0.46	0.19	0.64	0.64
Sat Flow, veh/h	1767	1142	605	3428	1856	1572	1767	3526	1572	1767	3526	1572
Grp Volume(v), veh/h	8	0	26	153	16	237	3	507	178	295	758	12
Grp Sat Flow(s),veh/h/ln	1767	0	1747	1714	1856	1572	1767	1763	1572	1767	1763	1572
Q Serve(g_s), s	0.5	0.0	1.4	4.6	0.8	15.4	0.2	9.5	6.4	17.0	10.2	0.3
Cycle Q Clear(g_c), s	0.5	0.0	1.4	4.6	0.8	15.4	0.2	9.5	6.4	17.0	10.2	0.3
Prop In Lane	1.00		0.35	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	18	0	204	219	317	269	7	1616	821	335	2269	1012
V/C Ratio(X)	0.46	0.00	0.13	0.70	0.05	0.88	0.43	0.31	0.22	0.88	0.33	0.01
Avail Cap(c_a), veh/h	84	0	300	376	433	367	84	1616	821	632	2269	1012
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.6	0.0	41.5	48.1	36.4	42.4	52.1	18.0	13.5	41.4	8.5	6.7
Incr Delay (d2), s/veh	17.4	0.0	0.3	4.0	0.1	16.9	35.9	0.5	0.6	7.6	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.6	2.1	0.3	7.2	0.1	3.9	2.3	8.0	3.7	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.1	0.0	41.8	52.1	36.4	59.3	88.0	18.5	14.1	49.0	8.9	6.7
LnGrp LOS	E	A	D	D	D	E	F	B	B	D	A	A
Approach Vol, veh/h		34			406			688			1065	
Approach Delay, s/veh		48.2			55.7			17.7			20.0	
Approach LOS		D			E			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.4	52.6	11.2	16.8	4.9	72.0	5.5	22.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	37.5	35.0	11.5	18.0	5.0	67.5	5.0	24.5
Max Q Clear Time (g_c+I1), s	19.0	11.5	6.6	3.4	2.2	12.2	2.5	17.4
Green Ext Time (p_c), s	0.8	4.1	0.2	0.0	0.0	6.5	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	26.3
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	129	336	122	36	286	39	75	142	25	78	178	106
Future Volume (veh/h)	129	336	122	36	286	39	75	142	25	78	178	106
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	140	365	133	39	311	42	82	154	27	85	193	115
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	187	782	281	76	455	385	127	263	46	129	320	271
Arrive On Green	0.11	0.31	0.31	0.04	0.25	0.25	0.07	0.17	0.17	0.07	0.17	0.17
Sat Flow, veh/h	1767	2542	913	1767	1856	1572	1767	1537	270	1767	1856	1572
Grp Volume(v), veh/h	140	251	247	39	311	42	82	0	181	85	193	115
Grp Sat Flow(s),veh/h/ln	1767	1763	1691	1767	1856	1572	1767	0	1807	1767	1856	1572
Q Serve(g_s), s	3.4	5.1	5.2	1.0	6.8	0.9	2.0	0.0	4.1	2.1	4.3	2.9
Cycle Q Clear(g_c), s	3.4	5.1	5.2	1.0	6.8	0.9	2.0	0.0	4.1	2.1	4.3	2.9
Prop In Lane	1.00		0.54	1.00		1.00	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	187	542	520	76	455	385	127	0	309	129	320	271
V/C Ratio(X)	0.75	0.46	0.47	0.51	0.68	0.11	0.65	0.00	0.59	0.66	0.60	0.42
Avail Cap(c_a), veh/h	776	2163	2075	298	1776	1505	537	0	1078	537	1107	938
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.3	12.4	12.5	20.8	15.2	13.0	20.1	0.0	17.0	20.0	17.0	16.4
Incr Delay (d2), s/veh	5.9	0.6	0.7	5.3	1.8	0.1	5.5	0.0	1.8	5.6	1.8	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	1.7	1.7	0.5	2.6	0.3	0.9	0.0	1.6	1.0	1.7	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.2	13.0	13.1	26.1	17.0	13.1	25.5	0.0	18.7	25.6	18.8	17.5
LnGrp LOS	C	B	B	C	B	B	C	A	B	C	B	B
Approach Vol, veh/h		638			392			263			393	
Approach Delay, s/veh		15.7			17.5			20.9			19.9	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.7	12.1	6.4	18.2	7.7	12.2	9.2	15.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	13.5	26.5	7.5	54.5	13.5	26.5	19.5	42.5
Max Q Clear Time (g_c+I1), s	4.1	6.1	3.0	7.2	4.0	6.3	5.4	8.8
Green Ext Time (p_c), s	0.1	0.9	0.0	3.4	0.1	1.4	0.3	2.1

Intersection Summary			
HCM 6th Ctrl Delay			17.9
HCM 6th LOS			B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	357	39	54	252	106	18	103	73	176	131	107
Future Volume (veh/h)	51	357	39	54	252	106	18	103	73	176	131	107
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	55	388	42	59	274	115	20	112	79	191	142	116
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	97	541	458	102	546	462	43	213	181	254	434	368
Arrive On Green	0.05	0.29	0.29	0.06	0.29	0.29	0.02	0.11	0.11	0.14	0.23	0.23
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	55	388	42	59	274	115	20	112	79	191	142	116
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	1.4	8.6	0.9	1.5	5.6	2.6	0.5	2.6	2.1	4.8	2.9	2.8
Cycle Q Clear(g_c), s	1.4	8.6	0.9	1.5	5.6	2.6	0.5	2.6	2.1	4.8	2.9	2.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	97	541	458	102	546	462	43	213	181	254	434	368
V/C Ratio(X)	0.57	0.72	0.09	0.58	0.50	0.25	0.46	0.53	0.44	0.75	0.33	0.32
Avail Cap(c_a), veh/h	378	1962	1662	381	1966	1666	223	773	655	944	1529	1296
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.1	14.6	11.8	21.1	13.4	12.3	22.1	19.1	18.9	18.8	14.6	14.5
Incr Delay (d2), s/veh	5.1	1.8	0.1	5.1	0.7	0.3	7.5	2.0	1.7	4.4	0.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	3.3	0.3	0.7	2.1	0.8	0.3	1.1	0.8	2.0	1.1	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.3	16.4	11.9	26.2	14.1	12.6	29.5	21.1	20.6	23.3	15.0	15.0
LnGrp LOS	C	B	B	C	B	B	C	C	C	C	B	B
Approach Vol, veh/h		485			448			211			449	
Approach Delay, s/veh		17.1			15.3			21.7			18.5	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	9.8	7.1	17.9	5.6	15.2	7.0	18.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	24.5	19.1	9.9	48.5	5.8	37.8	9.8	48.6
Max Q Clear Time (g_c+I1), s	6.8	4.6	3.5	10.6	2.5	4.9	3.4	7.6
Green Ext Time (p_c), s	0.5	0.7	0.0	2.8	0.0	1.2	0.0	2.2

Intersection Summary	
HCM 6th Ctrl Delay	17.6
HCM 6th LOS	B

Intersection						
Int Delay, s/veh	3.1					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	125	349	291	4	10	144
Future Vol, veh/h	125	349	291	4	10	144
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	125	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	139	388	323	4	11	160

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	323	0	-	0	989	323
Stage 1	-	-	-	-	323	-
Stage 2	-	-	-	-	666	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1231	-	-	-	272	716
Stage 1	-	-	-	-	732	-
Stage 2	-	-	-	-	509	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1231	-	-	-	241	716
Mov Cap-2 Maneuver	-	-	-	-	368	-
Stage 1	-	-	-	-	649	-
Stage 2	-	-	-	-	509	-

Approach	EB	WB	SB
HCM Control Delay, s	2.2	0	12.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1231	-	-	-	675
HCM Lane V/C Ratio	0.113	-	-	-	0.253
HCM Control Delay (s)	8.3	-	-	-	12.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.4	-	-	-	1

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	156	204	173	15	23	128
Future Vol, veh/h	156	204	173	15	23	128
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	175	-	-	125	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	173	227	192	17	26	142

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	192	0	-	0	765	192
Stage 1	-	-	-	-	192	-
Stage 2	-	-	-	-	573	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1375	-	-	-	370	847
Stage 1	-	-	-	-	838	-
Stage 2	-	-	-	-	562	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1375	-	-	-	323	847
Mov Cap-2 Maneuver	-	-	-	-	323	-
Stage 1	-	-	-	-	732	-
Stage 2	-	-	-	-	562	-

Approach	EB	WB	SB
HCM Control Delay, s	3.5	0	12
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1375	-	-	-	679
HCM Lane V/C Ratio	0.126	-	-	-	0.247
HCM Control Delay (s)	8	-	-	-	12
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.4	-	-	-	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	16	2	140	21	379	3	935	140	302	560	3
Future Volume (veh/h)	3	16	2	140	21	379	3	935	140	302	560	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	3	17	2	152	23	412	3	1016	152	328	609	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	7	288	34	222	440	373	7	1267	667	370	1991	888
Arrive On Green	0.00	0.18	0.18	0.06	0.24	0.24	0.00	0.36	0.36	0.21	0.56	0.56
Sat Flow, veh/h	1767	1629	192	3428	1856	1572	1767	3526	1572	1767	3526	1572
Grp Volume(v), veh/h	3	0	19	152	23	412	3	1016	152	328	609	3
Grp Sat Flow(s),veh/h/ln	1767	0	1821	1714	1856	1572	1767	1763	1572	1767	1763	1572
Q Serve(g_s), s	0.2	0.0	0.8	4.1	0.9	22.5	0.2	24.6	5.8	17.1	8.6	0.1
Cycle Q Clear(g_c), s	0.2	0.0	0.8	4.1	0.9	22.5	0.2	24.6	5.8	17.1	8.6	0.1
Prop In Lane	1.00		0.11	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	7	0	322	222	440	373	7	1267	667	370	1991	888
V/C Ratio(X)	0.42	0.00	0.06	0.69	0.05	1.10	0.42	0.80	0.23	0.89	0.31	0.00
Avail Cap(c_a), veh/h	93	0	346	344	440	373	93	1636	831	568	2584	1153
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.1	0.0	32.5	43.4	27.9	36.2	47.1	27.3	17.4	36.4	10.9	9.0
Incr Delay (d2), s/veh	35.5	0.0	0.1	3.7	0.0	77.7	35.5	2.3	0.2	10.6	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.4	1.8	0.4	16.5	0.1	10.4	2.1	8.3	3.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	82.6	0.0	32.6	47.1	28.0	113.8	82.6	29.6	17.6	46.9	10.9	9.0
LnGrp LOS	F	A	C	D	C	F	F	C	B	D	B	A
Approach Vol, veh/h		22			587			1171			940	
Approach Delay, s/veh		39.4			93.2			28.2			23.5	
Approach LOS		D			F			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.4	38.6	10.6	21.2	4.9	58.1	4.9	27.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	30.5	44.0	9.5	18.0	5.0	69.5	5.0	22.5
Max Q Clear Time (g_c+I1), s	19.1	26.6	6.1	2.8	2.2	10.6	2.2	24.5
Green Ext Time (p_c), s	0.8	7.5	0.1	0.0	0.0	4.9	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	40.7
HCM 6th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	187	197	69	20	340	44	108	332	23	24	162	165
Future Volume (veh/h)	187	197	69	20	340	44	108	332	23	24	162	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	220	232	81	24	400	52	127	391	27	28	191	194
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	272	1025	348	47	500	424	165	481	33	53	403	342
Arrive On Green	0.15	0.40	0.40	0.03	0.27	0.27	0.09	0.28	0.28	0.03	0.22	0.22
Sat Flow, veh/h	1767	2583	878	1767	1856	1572	1767	1716	118	1767	1856	1572
Grp Volume(v), veh/h	220	156	157	24	400	52	127	0	418	28	191	194
Grp Sat Flow(s),veh/h/ln	1767	1763	1698	1767	1856	1572	1767	0	1834	1767	1856	1572
Q Serve(g_s), s	8.1	4.0	4.2	0.9	13.6	1.7	4.8	0.0	14.4	1.1	6.1	7.5
Cycle Q Clear(g_c), s	8.1	4.0	4.2	0.9	13.6	1.7	4.8	0.0	14.4	1.1	6.1	7.5
Prop In Lane	1.00		0.52	1.00		1.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	272	699	673	47	500	424	165	0	514	53	403	342
V/C Ratio(X)	0.81	0.22	0.23	0.51	0.80	0.12	0.77	0.00	0.81	0.52	0.47	0.57
Avail Cap(c_a), veh/h	561	1367	1317	170	1028	871	426	0	1016	144	732	620
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.7	13.5	13.6	32.5	23.0	18.7	30.0	0.0	22.7	32.3	23.1	23.7
Incr Delay (d2), s/veh	5.6	0.2	0.2	8.1	3.0	0.1	7.4	0.0	3.2	7.7	0.9	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	1.5	1.5	0.5	6.0	0.6	2.3	0.0	6.2	0.6	2.6	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.3	13.7	13.7	40.6	26.1	18.8	37.4	0.0	25.9	40.1	24.0	25.1
LnGrp LOS	C	B	B	D	C	B	D	A	C	D	C	C
Approach Vol, veh/h		533			476			545			413	
Approach Delay, s/veh		21.8			26.0			28.6			25.6	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.5	23.5	6.3	31.3	10.8	19.2	14.9	22.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	37.5	6.5	52.5	16.3	26.7	21.5	37.5
Max Q Clear Time (g_c+I1), s	3.1	16.4	2.9	6.2	6.8	9.5	10.1	15.6
Green Ext Time (p_c), s	0.0	2.6	0.0	2.0	0.2	1.6	0.5	2.6

Intersection Summary		
HCM 6th Ctrl Delay		25.5
HCM 6th LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	217	3	50	246	85	23	245	65	169	152	114
Future Volume (veh/h)	33	217	3	50	246	85	23	245	65	169	152	114
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	36	236	3	54	267	92	25	266	71	184	165	124
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	71	376	319	96	402	341	53	397	337	245	600	508
Arrive On Green	0.04	0.20	0.20	0.05	0.22	0.22	0.03	0.21	0.21	0.14	0.32	0.32
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	36	236	3	54	267	92	25	266	71	184	165	124
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	0.9	5.4	0.1	1.4	6.1	2.2	0.6	6.1	1.7	4.6	3.0	2.7
Cycle Q Clear(g_c), s	0.9	5.4	0.1	1.4	6.1	2.2	0.6	6.1	1.7	4.6	3.0	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	71	376	319	96	402	341	53	397	337	245	600	508
V/C Ratio(X)	0.51	0.63	0.01	0.56	0.66	0.27	0.48	0.67	0.21	0.75	0.28	0.24
Avail Cap(c_a), veh/h	287	1347	1142	402	1468	1244	249	1347	1142	938	2071	1755
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.7	16.8	14.7	21.3	16.5	15.0	22.0	16.6	14.9	19.1	11.6	11.5
Incr Delay (d2), s/veh	5.5	1.7	0.0	5.1	1.9	0.4	6.6	2.0	0.3	4.6	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	2.2	0.0	0.7	2.4	0.7	0.3	2.4	0.6	2.0	1.1	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.2	18.5	14.7	26.4	18.4	15.4	28.6	18.6	15.2	23.7	11.8	11.7
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		275			413			362			473	
Approach Delay, s/veh		19.6			18.8			18.6			16.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.9	14.4	7.0	13.9	5.9	19.4	6.3	14.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	24.5	33.5	10.5	33.5	6.5	51.5	7.5	36.5
Max Q Clear Time (g_c+I1), s	6.6	8.1	3.4	7.4	2.6	5.0	2.9	8.1
Green Ext Time (p_c), s	0.5	1.8	0.0	1.4	0.0	1.4	0.0	1.9

Intersection Summary			
HCM 6th Ctrl Delay			18.2
HCM 6th LOS			B

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	54	243	302	4	4	65
Future Vol, veh/h	54	243	302	4	4	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	125	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	61	276	343	5	5	74

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	343	0	-	0	741	343
Stage 1	-	-	-	-	343	-
Stage 2	-	-	-	-	398	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1210	-	-	-	382	697
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	676	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1210	-	-	-	363	697
Mov Cap-2 Maneuver	-	-	-	-	475	-
Stage 1	-	-	-	-	680	-
Stage 2	-	-	-	-	676	-

Approach	EB	WB	SB
HCM Control Delay, s	1.5	0	11
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1210	-	-	-	679
HCM Lane V/C Ratio	0.051	-	-	-	0.115
HCM Control Delay (s)	8.1	-	-	-	11
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.4

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	89	154	265	15	7	37
Future Vol, veh/h	89	154	265	15	7	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	175	-	-	125	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	101	175	301	17	8	42

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	301	0	-	0	678	301
Stage 1	-	-	-	-	301	-
Stage 2	-	-	-	-	377	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1254	-	-	-	416	736
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	691	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1254	-	-	-	382	736
Mov Cap-2 Maneuver	-	-	-	-	382	-
Stage 1	-	-	-	-	687	-
Stage 2	-	-	-	-	691	-

Approach	EB	WB	SB
HCM Control Delay, s	3	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1254	-	-	-	641
HCM Lane V/C Ratio	0.081	-	-	-	0.078
HCM Control Delay (s)	8.1	-	-	-	11.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	16	9	172	15	277	3	653	195	340	976	12
Future Volume (veh/h)	8	16	9	172	15	277	3	653	195	340	976	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	9	17	10	187	16	301	3	710	212	370	1061	13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	19	159	94	251	386	327	7	1364	724	408	2163	965
Arrive On Green	0.01	0.15	0.15	0.07	0.21	0.21	0.00	0.39	0.39	0.23	0.61	0.61
Sat Flow, veh/h	1767	1095	644	3428	1856	1572	1767	3526	1572	1767	3526	1572
Grp Volume(v), veh/h	9	0	27	187	16	301	3	710	212	370	1061	13
Grp Sat Flow(s),veh/h/ln	1767	0	1740	1714	1856	1572	1767	1763	1572	1767	1763	1572
Q Serve(g_s), s	0.6	0.0	1.5	5.9	0.8	20.6	0.2	17.0	9.3	22.4	18.3	0.4
Cycle Q Clear(g_c), s	0.6	0.0	1.5	5.9	0.8	20.6	0.2	17.0	9.3	22.4	18.3	0.4
Prop In Lane	1.00		0.37	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	19	0	253	251	386	327	7	1364	724	408	2163	965
V/C Ratio(X)	0.47	0.00	0.11	0.75	0.04	0.92	0.43	0.52	0.29	0.91	0.49	0.01
Avail Cap(c_a), veh/h	80	0	285	358	413	350	80	1364	724	602	2163	965
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.1	0.0	40.8	50.0	34.8	42.7	54.7	25.9	18.5	41.2	11.7	8.3
Incr Delay (d2), s/veh	16.4	0.0	0.2	5.0	0.0	28.0	36.1	1.4	1.0	13.0	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.6	2.7	0.3	10.5	0.2	7.3	3.5	11.1	7.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.5	0.0	41.0	55.0	34.9	70.7	90.7	27.3	19.6	54.2	12.5	8.3
LnGrp LOS	E	A	D	E	C	E	F	C	B	D	B	A
Approach Vol, veh/h		36			504			925			1444	
Approach Delay, s/veh		48.4			63.8			25.7			23.2	
Approach LOS		D			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	29.9	47.1	12.5	20.5	4.9	72.0	5.7	27.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	37.5	35.0	11.5	18.0	5.0	67.5	5.0	24.5
Max Q Clear Time (g_c+I1), s	24.4	19.0	7.9	3.5	2.2	20.3	2.6	22.6
Green Ext Time (p_c), s	1.0	5.2	0.2	0.1	0.0	10.3	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	31.3
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	395	133	32	346	33	82	155	16	72	194	115
Future Volume (veh/h)	140	395	133	32	346	33	82	155	16	72	194	115
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	152	429	145	35	376	36	89	168	17	78	211	125
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	201	912	305	68	513	435	126	301	30	117	327	277
Arrive On Green	0.11	0.35	0.35	0.04	0.28	0.28	0.07	0.18	0.18	0.07	0.18	0.18
Sat Flow, veh/h	1767	2594	868	1767	1856	1572	1767	1658	168	1767	1856	1572
Grp Volume(v), veh/h	152	290	284	35	376	36	89	0	185	78	211	125
Grp Sat Flow(s),veh/h/ln	1767	1763	1699	1767	1856	1572	1767	0	1825	1767	1856	1572
Q Serve(g_s), s	4.1	6.4	6.5	1.0	9.1	0.8	2.4	0.0	4.6	2.1	5.3	3.5
Cycle Q Clear(g_c), s	4.1	6.4	6.5	1.0	9.1	0.8	2.4	0.0	4.6	2.1	5.3	3.5
Prop In Lane	1.00		0.51	1.00		1.00	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	201	620	598	68	513	435	126	0	331	117	327	277
V/C Ratio(X)	0.75	0.47	0.47	0.51	0.73	0.08	0.71	0.00	0.56	0.67	0.64	0.45
Avail Cap(c_a), veh/h	693	1933	1863	267	1586	1344	480	0	973	480	989	838
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.3	12.5	12.5	23.4	16.3	13.3	22.6	0.0	18.5	22.7	19.0	18.3
Incr Delay (d2), s/veh	5.7	0.6	0.6	5.9	2.1	0.1	7.1	0.0	1.5	6.3	2.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	2.2	2.2	0.5	3.6	0.3	1.2	0.0	1.9	1.0	2.2	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.0	13.1	13.1	29.3	18.4	13.4	29.7	0.0	20.0	29.0	21.1	19.5
LnGrp LOS	C	B	B	C	B	B	C	A	C	C	C	B
Approach Vol, veh/h		726			447			274			414	
Approach Delay, s/veh		16.0			18.8			23.2			22.1	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.8	13.5	6.4	22.0	8.0	13.3	10.2	18.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	13.5	26.5	7.5	54.5	13.5	26.5	19.5	42.5
Max Q Clear Time (g_c+I1), s	4.1	6.6	3.0	8.5	4.4	7.3	6.1	11.1
Green Ext Time (p_c), s	0.1	0.9	0.0	4.1	0.1	1.5	0.3	2.6

Intersection Summary	
HCM 6th Ctrl Delay	19.1
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	393	42	54	276	107	20	112	73	180	143	116
Future Volume (veh/h)	56	393	42	54	276	107	20	112	73	180	143	116
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	61	427	46	59	300	116	22	122	79	196	155	126
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	102	576	489	100	574	487	47	218	185	259	441	374
Arrive On Green	0.06	0.31	0.31	0.06	0.31	0.31	0.03	0.12	0.12	0.15	0.24	0.24
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	61	427	46	59	300	116	22	122	79	196	155	126
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	1.6	10.1	1.0	1.6	6.5	2.7	0.6	3.0	2.3	5.2	3.4	3.2
Cycle Q Clear(g_c), s	1.6	10.1	1.0	1.6	6.5	2.7	0.6	3.0	2.3	5.2	3.4	3.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	102	576	489	100	574	487	47	218	185	259	441	374
V/C Ratio(X)	0.60	0.74	0.09	0.59	0.52	0.24	0.47	0.56	0.43	0.76	0.35	0.34
Avail Cap(c_a), veh/h	355	1845	1563	359	1848	1567	210	726	616	887	1438	1218
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.4	15.1	11.9	22.5	13.9	12.6	23.4	20.3	20.0	20.0	15.5	15.4
Incr Delay (d2), s/veh	5.5	1.9	0.1	5.5	0.7	0.2	7.2	2.2	1.6	4.5	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	3.9	0.3	0.8	2.4	0.8	0.3	1.3	0.8	2.2	1.3	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.0	17.0	12.0	28.0	14.6	12.8	30.6	22.6	21.6	24.5	16.0	15.9
LnGrp LOS	C	B	B	C	B	B	C	C	C	C	B	B
Approach Vol, veh/h		534			475			223			477	
Approach Delay, s/veh		17.8			15.8			23.0			19.5	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.6	10.2	7.3	19.7	5.8	16.1	7.3	19.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	24.5	19.1	9.9	48.5	5.8	37.8	9.8	48.6
Max Q Clear Time (g_c+I1), s	7.2	5.0	3.6	12.1	2.6	5.4	3.6	8.5
Green Ext Time (p_c), s	0.5	0.7	0.0	3.1	0.0	1.3	0.0	2.3

Intersection Summary	
HCM 6th Ctrl Delay	18.4
HCM 6th LOS	B

Intersection						
Int Delay, s/veh	3					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	108	334	288	4	11	136
Future Vol, veh/h	108	334	288	4	11	136
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	125	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	120	371	320	4	12	151

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	320	0	-	0	931	320
Stage 1	-	-	-	-	320	-
Stage 2	-	-	-	-	611	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1234	-	-	-	295	718
Stage 1	-	-	-	-	734	-
Stage 2	-	-	-	-	540	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1234	-	-	-	266	718
Mov Cap-2 Maneuver	-	-	-	-	391	-
Stage 1	-	-	-	-	663	-
Stage 2	-	-	-	-	540	-

Approach	EB	WB	SB
HCM Control Delay, s	2	0	12
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1234	-	-	-	676
HCM Lane V/C Ratio	0.097	-	-	-	0.242
HCM Control Delay (s)	8.2	-	-	-	12
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.9

Intersection						
Int Delay, s/veh	3.1					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	97	242	205	8	19	87
Future Vol, veh/h	97	242	205	8	19	87
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	175	-	-	125	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	108	269	228	9	21	97

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	228	0	-	0	713	228
Stage 1	-	-	-	-	228	-
Stage 2	-	-	-	-	485	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1334	-	-	-	397	809
Stage 1	-	-	-	-	808	-
Stage 2	-	-	-	-	617	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1334	-	-	-	365	809
Mov Cap-2 Maneuver	-	-	-	-	365	-
Stage 1	-	-	-	-	743	-
Stage 2	-	-	-	-	617	-

Approach	EB	WB	SB
HCM Control Delay, s	2.3	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1334	-	-	-	664
HCM Lane V/C Ratio	0.081	-	-	-	0.177
HCM Control Delay (s)	7.9	-	-	-	11.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	16	2	159	22	400	3	935	149	311	560	3
Future Volume (veh/h)	3	16	2	159	22	400	3	935	149	311	560	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	3	17	2	173	24	435	3	1016	162	338	609	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	7	274	32	243	436	369	7	1264	675	380	2007	895
Arrive On Green	0.00	0.17	0.17	0.07	0.23	0.23	0.00	0.36	0.36	0.21	0.57	0.57
Sat Flow, veh/h	1767	1629	192	3428	1856	1572	1767	3526	1572	1767	3526	1572
Grp Volume(v), veh/h	3	0	19	173	24	435	3	1016	162	338	609	3
Grp Sat Flow(s),veh/h/ln	1767	0	1821	1714	1856	1572	1767	1763	1572	1767	1763	1572
Q Serve(g_s), s	0.2	0.0	0.8	4.7	1.0	22.5	0.2	24.9	6.3	17.8	8.6	0.1
Cycle Q Clear(g_c), s	0.2	0.0	0.8	4.7	1.0	22.5	0.2	24.9	6.3	17.8	8.6	0.1
Prop In Lane	1.00		0.11	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	7	0	306	243	436	369	7	1264	675	380	2007	895
V/C Ratio(X)	0.42	0.00	0.06	0.71	0.06	1.18	0.42	0.80	0.24	0.89	0.30	0.00
Avail Cap(c_a), veh/h	92	0	342	340	436	369	92	1619	834	563	2558	1141
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.6	0.0	33.5	43.5	28.4	36.6	47.6	27.7	17.4	36.5	10.7	8.9
Incr Delay (d2), s/veh	35.6	0.0	0.1	4.1	0.1	104.6	35.6	2.4	0.2	11.7	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.4	2.1	0.4	19.2	0.1	10.5	2.2	8.8	3.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	83.2	0.0	33.6	47.6	28.5	141.3	83.2	30.1	17.6	48.2	10.8	8.9
LnGrp LOS	F	A	C	D	C	F	F	C	B	D	B	A
Approach Vol, veh/h		22			632			1181			950	
Approach Delay, s/veh		40.4			111.4			28.5			24.1	
Approach LOS		D			F			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.1	38.8	11.3	20.6	4.9	59.0	4.9	27.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	30.5	44.0	9.5	18.0	5.0	69.5	5.0	22.5
Max Q Clear Time (g_c+I1), s	19.8	26.9	6.7	2.8	2.2	10.6	2.2	24.5
Green Ext Time (p_c), s	0.8	7.5	0.1	0.0	0.0	4.9	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	45.9
HCM 6th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑	↱	↰	↱		↰	↑	↱
Traffic Volume (veh/h)	187	215	69	28	381	53	108	332	26	28	162	165
Future Volume (veh/h)	187	215	69	28	381	53	108	332	26	28	162	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	220	253	81	33	448	62	127	391	31	33	191	194
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	269	1086	340	59	542	459	164	472	37	59	406	344
Arrive On Green	0.15	0.41	0.41	0.03	0.29	0.29	0.09	0.28	0.28	0.03	0.22	0.22
Sat Flow, veh/h	1767	2643	827	1767	1856	1572	1767	1697	135	1767	1856	1572
Grp Volume(v), veh/h	220	167	167	33	448	62	127	0	422	33	191	194
Grp Sat Flow(s),veh/h/ln	1767	1763	1707	1767	1856	1572	1767	0	1831	1767	1856	1572
Q Serve(g_s), s	8.9	4.5	4.7	1.4	16.6	2.1	5.2	0.0	15.9	1.4	6.6	8.1
Cycle Q Clear(g_c), s	8.9	4.5	4.7	1.4	16.6	2.1	5.2	0.0	15.9	1.4	6.6	8.1
Prop In Lane	1.00		0.48	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	269	724	701	59	542	459	164	0	509	59	406	344
V/C Ratio(X)	0.82	0.23	0.24	0.56	0.83	0.14	0.78	0.00	0.83	0.56	0.47	0.56
Avail Cap(c_a), veh/h	516	1257	1217	156	945	801	391	0	932	132	673	570
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.2	14.1	14.2	35.1	24.3	19.2	32.7	0.0	24.9	35.1	25.0	25.6
Incr Delay (d2), s/veh	6.1	0.2	0.2	8.1	3.3	0.1	7.7	0.0	3.5	8.1	0.8	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	1.7	1.7	0.7	7.4	0.8	2.5	0.0	7.0	0.7	2.9	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.3	14.3	14.3	43.1	27.6	19.3	40.3	0.0	28.5	43.1	25.9	27.1
LnGrp LOS	D	B	B	D	C	B	D	A	C	D	C	C
Approach Vol, veh/h		554			543			549			418	
Approach Delay, s/veh		23.0			27.6			31.2			27.8	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.0	25.0	7.0	34.8	11.3	20.6	15.7	26.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	37.5	6.5	52.5	16.3	26.7	21.5	37.5
Max Q Clear Time (g_c+I1), s	3.4	17.9	3.4	6.7	7.2	10.1	10.9	18.6
Green Ext Time (p_c), s	0.0	2.6	0.0	2.2	0.2	1.6	0.4	2.9

Intersection Summary	
HCM 6th Ctrl Delay	27.4
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	242	3	55	304	93	23	245	67	173	152	114
Future Volume (veh/h)	33	242	3	55	304	93	23	245	67	173	152	114
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	36	263	3	60	330	101	25	266	73	188	165	124
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	70	433	367	100	465	394	52	387	328	248	594	503
Arrive On Green	0.04	0.23	0.23	0.06	0.25	0.25	0.03	0.21	0.21	0.14	0.32	0.32
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	36	263	3	60	330	101	25	266	73	188	165	124
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	1.0	6.3	0.1	1.7	8.1	2.6	0.7	6.6	1.9	5.1	3.3	2.9
Cycle Q Clear(g_c), s	1.0	6.3	0.1	1.7	8.1	2.6	0.7	6.6	1.9	5.1	3.3	2.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	70	433	367	100	465	394	52	387	328	248	594	503
V/C Ratio(X)	0.52	0.61	0.01	0.60	0.71	0.26	0.48	0.69	0.22	0.76	0.28	0.25
Avail Cap(c_a), veh/h	266	1247	1056	372	1358	1151	230	1247	1056	868	1916	1624
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.5	17.1	14.7	23.0	17.0	15.0	23.8	18.2	16.4	20.6	12.7	12.5
Incr Delay (d2), s/veh	5.8	1.4	0.0	5.7	2.0	0.3	6.8	2.2	0.3	4.7	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	2.5	0.0	0.8	3.3	0.8	0.4	2.7	0.6	2.2	1.2	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.3	18.5	14.7	28.6	19.1	15.3	30.6	20.4	16.7	25.3	12.9	12.8
LnGrp LOS	C	B	B	C	B	B	C	C	B	C	B	B
Approach Vol, veh/h		302			491			364			477	
Approach Delay, s/veh		19.7			19.5			20.3			17.8	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.5	14.9	7.3	16.1	6.0	20.5	6.5	17.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	24.5	33.5	10.5	33.5	6.5	51.5	7.5	36.5
Max Q Clear Time (g_c+I1), s	7.1	8.6	3.7	8.3	2.7	5.3	3.0	10.1
Green Ext Time (p_c), s	0.5	1.8	0.0	1.6	0.0	1.4	0.0	2.4

Intersection Summary	
HCM 6th Ctrl Delay	19.2
HCM 6th LOS	B

Intersection						
Int Delay, s/veh	2					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	64	264	354	4	4	84
Future Vol, veh/h	64	264	354	4	4	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	125	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	73	300	402	5	5	95

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	402	0	-	0	848	402
Stage 1	-	-	-	-	402	-
Stage 2	-	-	-	-	446	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1151	-	-	-	330	646
Stage 1	-	-	-	-	673	-
Stage 2	-	-	-	-	643	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1151	-	-	-	309	646
Mov Cap-2 Maneuver	-	-	-	-	432	-
Stage 1	-	-	-	-	631	-
Stage 2	-	-	-	-	643	-

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1151	-	-	-	632
HCM Lane V/C Ratio	0.063	-	-	-	0.158
HCM Control Delay (s)	8.3	-	-	-	11.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.6

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	110	154	265	18	13	89
Future Vol, veh/h	110	154	265	18	13	89
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	175	-	-	125	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	125	175	301	20	15	101

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	301	0	-	0	726	301
Stage 1	-	-	-	-	301	-
Stage 2	-	-	-	-	425	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1254	-	-	-	390	736
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	657	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1254	-	-	-	351	736
Mov Cap-2 Maneuver	-	-	-	-	351	-
Stage 1	-	-	-	-	673	-
Stage 2	-	-	-	-	657	-

Approach	EB	WB	SB
HCM Control Delay, s	3.4	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1254	-	-	-	646
HCM Lane V/C Ratio	0.1	-	-	-	0.179
HCM Control Delay (s)	8.2	-	-	-	11.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	17	9	190	16	297	3	653	220	368	976	12
Future Volume (veh/h)	8	17	9	190	16	297	3	653	220	368	976	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	9	18	10	207	17	323	3	710	239	400	1061	13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	19	170	94	270	407	345	7	1274	692	437	2131	951
Arrive On Green	0.01	0.15	0.15	0.08	0.22	0.22	0.00	0.36	0.36	0.25	0.60	0.60
Sat Flow, veh/h	1767	1121	623	3428	1856	1572	1767	3526	1572	1767	3526	1572
Grp Volume(v), veh/h	9	0	28	207	17	323	3	710	239	400	1061	13
Grp Sat Flow(s),veh/h/ln	1767	0	1743	1714	1856	1572	1767	1763	1572	1767	1763	1572
Q Serve(g_s), s	0.6	0.0	1.5	6.6	0.8	22.5	0.2	18.0	11.2	24.6	19.0	0.4
Cycle Q Clear(g_c), s	0.6	0.0	1.5	6.6	0.8	22.5	0.2	18.0	11.2	24.6	19.0	0.4
Prop In Lane	1.00		0.36	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	19	0	264	270	407	345	7	1274	692	437	2131	951
V/C Ratio(X)	0.47	0.00	0.11	0.77	0.04	0.94	0.43	0.56	0.35	0.92	0.50	0.01
Avail Cap(c_a), veh/h	79	0	281	353	407	345	79	1274	692	593	2131	951
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.9	0.0	40.8	50.4	34.3	42.8	55.5	28.5	20.6	40.9	12.5	8.8
Incr Delay (d2), s/veh	16.5	0.0	0.2	7.3	0.0	32.4	36.1	1.8	1.4	15.6	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.7	3.1	0.4	11.8	0.2	7.8	4.3	12.5	7.4	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.4	0.0	41.0	57.7	34.4	75.2	91.6	30.3	22.0	56.5	13.3	8.8
LnGrp LOS	E	A	D	E	C	E	F	C	C	E	B	A
Approach Vol, veh/h		37			547			952			1474	
Approach Delay, s/veh		48.4			67.3			28.4			25.0	
Approach LOS		D			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.1	44.9	13.3	21.4	4.9	72.0	5.7	29.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	37.5	35.0	11.5	18.0	5.0	67.5	5.0	24.5
Max Q Clear Time (g_c+I1), s	26.6	20.0	8.6	3.5	2.2	21.0	2.6	24.5
Green Ext Time (p_c), s	1.0	5.1	0.2	0.1	0.0	10.2	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	34.0
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	449	133	39	385	42	82	155	26	84	194	115
Future Volume (veh/h)	140	449	133	39	385	42	82	155	26	84	194	115
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	152	488	145	42	418	46	89	168	28	91	211	125
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	201	989	292	77	554	470	123	268	45	124	322	273
Arrive On Green	0.11	0.37	0.37	0.04	0.30	0.30	0.07	0.17	0.17	0.07	0.17	0.17
Sat Flow, veh/h	1767	2683	792	1767	1856	1572	1767	1551	258	1767	1856	1572
Grp Volume(v), veh/h	152	320	313	42	418	46	89	0	196	91	211	125
Grp Sat Flow(s),veh/h/ln	1767	1763	1713	1767	1856	1572	1767	0	1809	1767	1856	1572
Q Serve(g_s), s	4.4	7.3	7.4	1.2	10.6	1.1	2.6	0.0	5.2	2.6	5.5	3.7
Cycle Q Clear(g_c), s	4.4	7.3	7.4	1.2	10.6	1.1	2.6	0.0	5.2	2.6	5.5	3.7
Prop In Lane	1.00		0.46	1.00		1.00	1.00		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	201	650	631	77	554	470	123	0	312	124	322	273
V/C Ratio(X)	0.76	0.49	0.50	0.54	0.75	0.10	0.73	0.00	0.63	0.73	0.66	0.46
Avail Cap(c_a), veh/h	660	1841	1789	254	1511	1281	457	0	919	457	942	798
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.4	12.7	12.7	24.4	16.6	13.2	23.8	0.0	20.0	23.8	20.1	19.4
Incr Delay (d2), s/veh	5.7	0.6	0.6	5.8	2.1	0.1	7.9	0.0	2.1	8.1	2.3	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	2.6	2.5	0.6	4.2	0.4	1.3	0.0	2.2	1.3	2.4	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.2	13.3	13.3	30.3	18.7	13.3	31.7	0.0	22.1	31.9	22.4	20.6
LnGrp LOS	C	B	B	C	B	B	C	A	C	C	C	C
Approach Vol, veh/h		785			506			285			427	
Approach Delay, s/veh		16.2			19.2			25.1			23.9	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.2	13.5	6.8	23.7	8.1	13.5	10.4	20.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	13.5	26.5	7.5	54.5	13.5	26.5	19.5	42.5
Max Q Clear Time (g_c+I1), s	4.6	7.2	3.2	9.4	4.6	7.5	6.4	12.6
Green Ext Time (p_c), s	0.1	1.0	0.0	4.6	0.1	1.5	0.3	2.9

Intersection Summary	
HCM 6th Ctrl Delay	19.8
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	469	42	58	331	115	20	112	79	191	143	116
Future Volume (veh/h)	56	469	42	58	331	115	20	112	79	191	143	116
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	61	510	46	63	360	125	22	122	86	208	155	126
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	97	652	553	99	654	555	46	208	176	269	442	375
Arrive On Green	0.06	0.35	0.35	0.06	0.35	0.35	0.03	0.11	0.11	0.15	0.24	0.24
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	61	510	46	63	360	125	22	122	86	208	155	126
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	1.9	13.5	1.1	1.9	8.6	3.1	0.7	3.4	2.8	6.2	3.8	3.6
Cycle Q Clear(g_c), s	1.9	13.5	1.1	1.9	8.6	3.1	0.7	3.4	2.8	6.2	3.8	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	97	652	553	99	654	555	46	208	176	269	442	375
V/C Ratio(X)	0.63	0.78	0.08	0.63	0.55	0.23	0.48	0.59	0.49	0.77	0.35	0.34
Avail Cap(c_a), veh/h	315	1639	1389	319	1643	1392	187	646	547	789	1278	1083
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.4	15.9	11.9	25.4	14.3	12.5	26.4	23.2	22.9	22.4	17.4	17.3
Incr Delay (d2), s/veh	6.4	2.1	0.1	6.5	0.7	0.2	7.6	2.6	2.1	4.7	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	5.3	0.3	0.9	3.3	1.0	0.4	1.5	1.1	2.7	1.5	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.8	18.0	12.0	31.9	15.0	12.7	33.9	25.8	25.0	27.1	17.9	17.8
LnGrp LOS	C	B	B	C	B	B	C	C	C	C	B	B
Approach Vol, veh/h		617			548			230			489	
Approach Delay, s/veh		18.9			16.4			26.3			21.8	
Approach LOS		B			B			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.9	10.7	7.6	23.8	5.9	17.6	7.5	23.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	24.5	19.1	9.9	48.5	5.8	37.8	9.8	48.6				
Max Q Clear Time (g_c+I1), s	8.2	5.4	3.9	15.5	2.7	5.8	3.9	10.6				
Green Ext Time (p_c), s	0.5	0.7	0.0	3.8	0.0	1.3	0.0	2.8				
Intersection Summary												
HCM 6th Ctrl Delay			19.8									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	134	401	336	4	11	155
Future Vol, veh/h	134	401	336	4	11	155
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	125	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	149	446	373	4	12	172

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	373	0	-	0	1117	373
Stage 1	-	-	-	-	373	-
Stage 2	-	-	-	-	744	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1180	-	-	-	228	671
Stage 1	-	-	-	-	694	-
Stage 2	-	-	-	-	468	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1180	-	-	-	199	671
Mov Cap-2 Maneuver	-	-	-	-	330	-
Stage 1	-	-	-	-	607	-
Stage 2	-	-	-	-	468	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	13.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1180	-	-	-	628
HCM Lane V/C Ratio	0.126	-	-	-	0.294
HCM Control Delay (s)	8.5	-	-	-	13.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.4	-	-	-	1.2

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	164	242	205	16	25	135
Future Vol, veh/h	164	242	205	16	25	135
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	175	-	-	125	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	182	269	228	18	28	150

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	228	0	-	0	861	228
Stage 1	-	-	-	-	228	-
Stage 2	-	-	-	-	633	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1334	-	-	-	325	809
Stage 1	-	-	-	-	808	-
Stage 2	-	-	-	-	527	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1334	-	-	-	281	809
Mov Cap-2 Maneuver	-	-	-	-	281	-
Stage 1	-	-	-	-	698	-
Stage 2	-	-	-	-	527	-

Approach	EB	WB	SB
HCM Control Delay, s	3.3	0	13
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1334	-	-	-	625
HCM Lane V/C Ratio	0.137	-	-	-	0.284
HCM Control Delay (s)	8.1	-	-	-	13
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.5	-	-	-	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	26	9	186	19	252	3	707	218	354	868	11
Future Volume (veh/h)	9	26	9	186	19	252	3	707	218	354	868	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	10	28	10	202	21	274	3	768	237	385	943	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	21	165	59	265	356	301	7	1380	737	424	2212	987
Arrive On Green	0.01	0.13	0.13	0.08	0.19	0.19	0.00	0.39	0.39	0.24	0.63	0.63
Sat Flow, veh/h	1767	1305	466	3428	1856	1572	1767	3526	1572	1767	3526	1572
Grp Volume(v), veh/h	10	0	38	202	21	274	3	768	237	385	943	12
Grp Sat Flow(s),veh/h/ln	1767	0	1772	1714	1856	1572	1767	1763	1572	1767	1763	1572
Q Serve(g_s), s	0.6	0.0	2.1	6.3	1.0	18.6	0.2	18.5	10.3	23.1	14.8	0.3
Cycle Q Clear(g_c), s	0.6	0.0	2.1	6.3	1.0	18.6	0.2	18.5	10.3	23.1	14.8	0.3
Prop In Lane	1.00		0.26	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	21	0	224	265	356	301	7	1380	737	424	2212	987
V/C Ratio(X)	0.47	0.00	0.17	0.76	0.06	0.91	0.43	0.56	0.32	0.91	0.43	0.01
Avail Cap(c_a), veh/h	81	0	292	330	399	339	81	1380	737	672	2212	987
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.6	0.0	42.6	49.4	36.1	43.2	54.2	25.8	18.1	40.3	10.3	7.6
Incr Delay (d2), s/veh	15.4	0.0	0.4	8.0	0.1	25.7	36.0	1.6	1.2	10.9	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.9	3.0	0.5	9.3	0.2	8.0	3.9	11.2	5.6	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.0	0.0	42.9	57.4	36.1	68.9	90.3	27.5	19.3	51.2	10.9	7.7
LnGrp LOS	E	A	D	E	D	E	F	C	B	D	B	A
Approach Vol, veh/h		48			497			1008			1340	
Approach Delay, s/veh		48.4			62.8			25.7			22.5	
Approach LOS		D			E			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	30.7	47.2	12.9	18.3	4.9	73.0	5.8	25.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	41.5	32.0	10.5	18.0	5.0	68.5	5.0	23.5				
Max Q Clear Time (g_c+I1), s	25.1	20.5	8.3	4.1	2.2	16.8	2.6	20.6				
Green Ext Time (p_c), s	1.1	4.7	0.1	0.1	0.0	8.7	0.0	0.3				
Intersection Summary												
HCM 6th Ctrl Delay			31.0									
HCM 6th LOS			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑	↱	↰	↱		↰	↑	↱
Traffic Volume (veh/h)	164	530	121	26	378	39	78	185	23	72	227	124
Future Volume (veh/h)	164	530	121	26	378	39	78	185	23	72	227	124
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	178	576	132	28	411	42	85	201	25	78	247	135
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	231	1104	252	56	535	454	116	317	39	111	358	304
Arrive On Green	0.13	0.39	0.39	0.03	0.29	0.29	0.07	0.20	0.20	0.06	0.19	0.19
Sat Flow, veh/h	1767	2850	651	1767	1856	1572	1767	1618	201	1767	1856	1572
Grp Volume(v), veh/h	178	356	352	28	411	42	85	0	226	78	247	135
Grp Sat Flow(s),veh/h/ln	1767	1763	1738	1767	1856	1572	1767	0	1819	1767	1856	1572
Q Serve(g_s), s	5.4	8.6	8.7	0.9	11.3	1.1	2.6	0.0	6.4	2.4	6.9	4.2
Cycle Q Clear(g_c), s	5.4	8.6	8.7	0.9	11.3	1.1	2.6	0.0	6.4	2.4	6.9	4.2
Prop In Lane	1.00		0.37	1.00		1.00	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	231	683	674	56	535	454	116	0	356	111	358	304
V/C Ratio(X)	0.77	0.52	0.52	0.50	0.77	0.09	0.73	0.00	0.63	0.70	0.69	0.44
Avail Cap(c_a), veh/h	585	1612	1590	218	1312	1112	389	0	928	490	1053	892
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.5	13.1	13.1	26.6	18.2	14.5	25.6	0.0	20.6	25.7	21.0	19.9
Incr Delay (d2), s/veh	5.4	0.6	0.6	6.8	2.3	0.1	8.6	0.0	1.9	7.8	2.4	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	3.1	3.0	0.5	4.7	0.4	1.3	0.0	2.7	1.2	3.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.9	13.7	13.8	33.5	20.5	14.6	34.2	0.0	22.5	33.5	23.3	20.9
LnGrp LOS	C	B	B	C	C	B	C	A	C	C	C	C
Approach Vol, veh/h		886			481			311			460	
Approach Delay, s/veh		16.8			20.8			25.7			24.3	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	15.4	6.3	26.2	8.2	15.3	11.8	20.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	15.5	28.5	6.9	51.1	12.3	31.7	18.5	39.5
Max Q Clear Time (g_c+I1), s	4.4	8.4	2.9	10.7	4.6	8.9	7.4	13.3
Green Ext Time (p_c), s	0.1	1.2	0.0	5.2	0.1	1.9	0.3	2.8

Intersection Summary	
HCM 6th Ctrl Delay	20.6
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	506	32	78	304	133	18	74	58	227	129	93
Future Volume (veh/h)	70	506	32	78	304	133	18	74	58	227	129	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	76	550	35	85	330	145	20	80	63	247	140	101
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	107	689	584	113	695	589	42	158	134	307	436	370
Arrive On Green	0.06	0.37	0.37	0.06	0.37	0.37	0.02	0.08	0.08	0.17	0.24	0.24
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	76	550	35	85	330	145	20	80	63	247	140	101
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	2.5	15.6	0.8	2.8	8.0	3.7	0.7	2.4	2.2	7.9	3.7	3.1
Cycle Q Clear(g_c), s	2.5	15.6	0.8	2.8	8.0	3.7	0.7	2.4	2.2	7.9	3.7	3.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	107	689	584	113	695	589	42	158	134	307	436	370
V/C Ratio(X)	0.71	0.80	0.06	0.75	0.47	0.25	0.48	0.51	0.47	0.80	0.32	0.27
Avail Cap(c_a), veh/h	355	1809	1533	198	1645	1394	171	571	484	601	1023	867
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.1	16.5	11.9	27.1	14.0	12.7	28.3	25.7	25.6	23.3	18.6	18.4
Incr Delay (d2), s/veh	8.4	2.2	0.0	9.7	0.5	0.2	8.2	2.5	2.6	4.9	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	6.2	0.3	1.4	3.0	1.2	0.4	1.1	0.9	3.5	1.5	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.5	18.7	11.9	36.8	14.5	12.9	36.5	28.2	28.2	28.3	19.0	18.8
LnGrp LOS	D	B	B	D	B	B	D	C	C	C	B	B
Approach Vol, veh/h		661			560			163			488	
Approach Delay, s/veh		20.3			17.5			29.2			23.6	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.7	9.5	8.3	26.3	5.9	18.3	8.1	26.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	20.0	18.1	6.6	57.3	5.7	32.4	11.8	52.1
Max Q Clear Time (g_c+I1), s	9.9	4.4	4.8	17.6	2.7	5.7	4.5	10.0
Green Ext Time (p_c), s	0.5	0.4	0.0	4.3	0.0	1.1	0.1	2.7

Intersection Summary	
HCM 6th Ctrl Delay	21.1
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	138	435	283	11	15	150
Future Vol, veh/h	138	435	283	11	15	150
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	125	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	153	483	314	12	17	167

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	314	0	-	0	1103	314
Stage 1	-	-	-	-	314	-
Stage 2	-	-	-	-	789	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1241	-	-	-	233	724
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	446	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1241	-	-	-	204	724
Mov Cap-2 Maneuver	-	-	-	-	329	-
Stage 1	-	-	-	-	647	-
Stage 2	-	-	-	-	446	-

Approach	EB	WB	SB
HCM Control Delay, s	2	0	12.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1241	-	-	-	653
HCM Lane V/C Ratio	0.124	-	-	-	0.281
HCM Control Delay (s)	8.3	-	-	-	12.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.4	-	-	-	1.1

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	151	290	214	28	19	77
Future Vol, veh/h	151	290	214	28	19	77
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	175	-	-	125	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	168	322	238	31	21	86

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	238	0	-	0	896	238
Stage 1	-	-	-	-	238	-
Stage 2	-	-	-	-	658	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1323	-	-	-	309	798
Stage 1	-	-	-	-	799	-
Stage 2	-	-	-	-	513	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1323	-	-	-	270	798
Mov Cap-2 Maneuver	-	-	-	-	270	-
Stage 1	-	-	-	-	698	-
Stage 2	-	-	-	-	513	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	12.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1323	-	-	-	575
HCM Lane V/C Ratio	0.127	-	-	-	0.186
HCM Control Delay (s)	8.1	-	-	-	12.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.4	-	-	-	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	27	9	204	20	272	3	707	243	382	868	11
Future Volume (veh/h)	9	27	9	204	20	272	3	707	243	382	868	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	10	29	10	222	22	296	3	768	264	415	943	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	21	176	61	285	380	322	7	1282	702	451	2168	967
Arrive On Green	0.01	0.13	0.13	0.08	0.21	0.21	0.00	0.36	0.36	0.26	0.61	0.61
Sat Flow, veh/h	1767	1319	455	3428	1856	1572	1767	3526	1572	1767	3526	1572
Grp Volume(v), veh/h	10	0	39	222	22	296	3	768	264	415	943	12
Grp Sat Flow(s),veh/h/ln	1767	0	1774	1714	1856	1572	1767	1763	1572	1767	1763	1572
Q Serve(g_s), s	0.6	0.0	2.1	7.0	1.0	20.2	0.2	19.5	12.3	25.1	15.4	0.3
Cycle Q Clear(g_c), s	0.6	0.0	2.1	7.0	1.0	20.2	0.2	19.5	12.3	25.1	15.4	0.3
Prop In Lane	1.00		0.26	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	21	0	237	285	380	322	7	1282	702	451	2168	967
V/C Ratio(X)	0.47	0.00	0.16	0.78	0.06	0.92	0.43	0.60	0.38	0.92	0.43	0.01
Avail Cap(c_a), veh/h	81	0	291	359	414	351	81	1282	702	588	2168	967
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.9	0.0	42.1	49.3	35.1	42.7	54.5	28.4	20.2	39.8	11.1	8.2
Incr Delay (d2), s/veh	15.5	0.0	0.3	8.2	0.1	27.2	36.0	2.1	1.5	16.7	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.0	3.3	0.5	10.2	0.2	8.5	4.7	12.9	5.9	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.3	0.0	42.4	57.5	35.2	69.9	90.6	30.5	21.7	56.5	11.7	8.2
LnGrp LOS	E	A	D	E	D	E	F	C	C	E	B	A
Approach Vol, veh/h		49			540			1035			1370	
Approach Delay, s/veh		47.9			63.4			28.4			25.3	
Approach LOS		D			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.5	44.4	13.6	19.2	4.9	72.0	5.8	27.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	36.5	36.0	11.5	18.0	5.0	67.5	5.0	24.5
Max Q Clear Time (g_c+I1), s	27.1	21.5	9.0	4.1	2.2	17.4	2.6	22.2
Green Ext Time (p_c), s	1.0	5.5	0.2	0.1	0.0	8.7	0.0	0.3

Intersection Summary		
HCM 6th Ctrl Delay		33.6
HCM 6th LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	164	584	121	33	417	48	78	185	33	84	227	124
Future Volume (veh/h)	164	584	121	33	417	48	78	185	33	84	227	124
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	178	635	132	36	453	52	85	201	36	91	247	135
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	230	1174	244	67	578	490	113	283	51	118	348	295
Arrive On Green	0.13	0.40	0.40	0.04	0.31	0.31	0.06	0.18	0.18	0.07	0.19	0.19
Sat Flow, veh/h	1767	2906	603	1767	1856	1572	1767	1532	274	1767	1856	1572
Grp Volume(v), veh/h	178	385	382	36	453	52	85	0	237	91	247	135
Grp Sat Flow(s),veh/h/ln	1767	1763	1747	1767	1856	1572	1767	0	1806	1767	1856	1572
Q Serve(g_s), s	5.7	9.8	9.8	1.2	13.1	1.4	2.8	0.0	7.2	3.0	7.3	4.5
Cycle Q Clear(g_c), s	5.7	9.8	9.8	1.2	13.1	1.4	2.8	0.0	7.2	3.0	7.3	4.5
Prop In Lane	1.00		0.35	1.00		1.00	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	230	712	706	67	578	490	113	0	334	118	348	295
V/C Ratio(X)	0.77	0.54	0.54	0.54	0.78	0.11	0.75	0.00	0.71	0.77	0.71	0.46
Avail Cap(c_a), veh/h	635	1709	1693	205	1347	1141	373	0	785	385	819	694
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.7	13.3	13.3	27.7	18.4	14.4	27.0	0.0	22.5	26.9	22.3	21.2
Incr Delay (d2), s/veh	5.4	0.6	0.6	6.6	2.4	0.1	9.7	0.0	2.8	10.0	2.7	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	3.5	3.5	0.6	5.4	0.5	1.4	0.0	3.1	1.5	3.2	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.1	14.0	14.0	34.3	20.8	14.5	36.7	0.0	25.3	37.0	25.0	22.3
LnGrp LOS	C	B	B	C	C	B	D	A	C	D	C	C
Approach Vol, veh/h		945			541			322			473	
Approach Delay, s/veh		17.0			21.1			28.3			26.5	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.4	15.3	6.7	28.2	8.2	15.5	12.2	22.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	12.8	25.5	6.8	56.9	12.4	25.9	21.1	42.6
Max Q Clear Time (g_c+I1), s	5.0	9.2	3.2	11.8	4.8	9.3	7.7	15.1
Green Ext Time (p_c), s	0.1	1.2	0.0	5.8	0.1	1.7	0.4	3.2

Intersection Summary	
HCM 6th Ctrl Delay	21.6
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	582	32	82	359	141	18	74	64	238	129	93
Future Volume (veh/h)	70	582	32	82	359	141	18	74	64	238	129	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	76	633	35	89	390	153	20	80	70	259	140	101
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	100	758	642	115	774	656	41	148	126	315	436	369
Arrive On Green	0.06	0.41	0.41	0.07	0.42	0.42	0.02	0.08	0.08	0.18	0.23	0.23
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	76	633	35	89	390	153	20	80	70	259	140	101
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	2.8	20.5	0.9	3.3	10.4	4.2	0.7	2.8	2.9	9.5	4.2	3.5
Cycle Q Clear(g_c), s	2.8	20.5	0.9	3.3	10.4	4.2	0.7	2.8	2.9	9.5	4.2	3.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	100	758	642	115	774	656	41	148	126	315	436	369
V/C Ratio(X)	0.76	0.84	0.05	0.77	0.50	0.23	0.49	0.54	0.56	0.82	0.32	0.27
Avail Cap(c_a), veh/h	311	1370	1161	250	1306	1107	150	540	457	619	1032	875
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.2	17.8	12.0	30.9	14.4	12.6	32.4	29.7	29.7	26.5	21.2	21.0
Incr Delay (d2), s/veh	11.3	2.5	0.0	10.5	0.5	0.2	8.7	3.0	3.8	5.3	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	8.3	0.3	1.7	4.0	1.4	0.4	1.3	1.2	4.2	1.8	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.4	20.3	12.0	41.4	14.9	12.8	41.1	32.7	33.5	31.9	21.6	21.4
LnGrp LOS	D	C	B	D	B	B	D	C	C	C	C	C
Approach Vol, veh/h		744			632			170			500	
Approach Delay, s/veh		22.2			18.2			34.0			26.9	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.5	9.9	8.9	31.9	6.1	20.3	8.3	32.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	23.5	19.5	9.5	49.5	5.7	37.3	11.8	47.2
Max Q Clear Time (g_c+I1), s	11.5	4.9	5.3	22.5	2.7	6.2	4.8	12.4
Green Ext Time (p_c), s	0.6	0.5	0.1	4.8	0.0	1.1	0.1	3.2

Intersection Summary	
HCM 6th Ctrl Delay	23.1
HCM 6th LOS	C

Intersection						
Int Delay, s/veh	3.3					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	164	502	331	11	15	169
Future Vol, veh/h	164	502	331	11	15	169
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	125	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	182	558	368	12	17	188

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	368	0	-	0	1290	368
Stage 1	-	-	-	-	368	-
Stage 2	-	-	-	-	922	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1185	-	-	-	180	675
Stage 1	-	-	-	-	698	-
Stage 2	-	-	-	-	386	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1185	-	-	-	152	675
Mov Cap-2 Maneuver	-	-	-	-	278	-
Stage 1	-	-	-	-	591	-
Stage 2	-	-	-	-	386	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	14
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1185	-	-	-	605
HCM Lane V/C Ratio	0.154	-	-	-	0.338
HCM Control Delay (s)	8.6	-	-	-	14
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.5	-	-	-	1.5

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	218	290	214	36	25	125
Future Vol, veh/h	218	290	214	36	25	125
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	175	-	-	125	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	242	322	238	40	28	139

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	238	0	-	0	1044	238
Stage 1	-	-	-	-	238	-
Stage 2	-	-	-	-	806	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1323	-	-	-	253	798
Stage 1	-	-	-	-	799	-
Stage 2	-	-	-	-	438	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1323	-	-	-	207	798
Mov Cap-2 Maneuver	-	-	-	-	207	-
Stage 1	-	-	-	-	653	-
Stage 2	-	-	-	-	438	-

Approach	EB	WB	SB
HCM Control Delay, s	3.6	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1323	-	-	-	541
HCM Lane V/C Ratio	0.183	-	-	-	0.308
HCM Control Delay (s)	8.3	-	-	-	14.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.7	-	-	-	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	31	9	209	20	277	3	707	344	490	868	11
Future Volume (veh/h)	9	31	9	209	20	277	3	707	344	490	868	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	10	34	10	227	22	301	3	768	374	533	943	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	21	186	55	287	383	325	7	1052	601	568	2171	968
Arrive On Green	0.01	0.13	0.13	0.08	0.21	0.21	0.00	0.30	0.30	0.32	0.62	0.62
Sat Flow, veh/h	1767	1377	405	3428	1856	1572	1767	3526	1572	1767	3526	1572
Grp Volume(v), veh/h	10	0	44	227	22	301	3	768	374	533	943	12
Grp Sat Flow(s),veh/h/ln	1767	0	1783	1714	1856	1572	1767	1763	1572	1767	1763	1572
Q Serve(g_s), s	0.6	0.0	2.4	7.2	1.1	20.9	0.2	21.7	21.4	32.6	15.6	0.3
Cycle Q Clear(g_c), s	0.6	0.0	2.4	7.2	1.1	20.9	0.2	21.7	21.4	32.6	15.6	0.3
Prop In Lane	1.00		0.23	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	21	0	240	287	383	325	7	1052	601	568	2171	968
V/C Ratio(X)	0.47	0.00	0.18	0.79	0.06	0.93	0.43	0.73	0.62	0.94	0.43	0.01
Avail Cap(c_a), veh/h	79	0	288	324	392	332	79	1052	601	659	2171	968
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.6	0.0	42.7	50.0	35.4	43.3	55.3	35.0	27.8	36.7	11.2	8.3
Incr Delay (d2), s/veh	15.6	0.0	0.4	11.2	0.1	30.9	36.1	4.5	4.8	19.8	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.1	3.5	0.5	10.8	0.2	9.9	8.7	16.9	6.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.2	0.0	43.1	61.3	35.5	74.2	91.4	39.4	32.6	56.5	11.8	8.3
LnGrp LOS	E	A	D	E	D	E	F	D	C	E	B	A
Approach Vol, veh/h		54			550			1145			1488	
Approach Delay, s/veh		48.1			67.3			37.4			27.8	
Approach LOS		D			E			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	40.2	37.7	13.8	19.5	4.9	73.0	5.8	27.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	41.5	32.0	10.5	18.0	5.0	68.5	5.0	23.5
Max Q Clear Time (g_c+I1), s	34.6	23.7	9.2	4.4	2.2	17.6	2.6	22.9
Green Ext Time (p_c), s	1.1	4.2	0.1	0.1	0.0	8.7	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	38.2
HCM 6th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	164	797	121	35	427	50	78	185	74	133	227	124
Future Volume (veh/h)	164	797	121	35	427	50	78	185	74	133	227	124
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	178	866	132	38	464	54	85	201	80	145	247	135
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	225	1212	185	66	567	481	110	254	101	186	453	384
Arrive On Green	0.13	0.40	0.40	0.04	0.31	0.31	0.06	0.20	0.20	0.11	0.24	0.24
Sat Flow, veh/h	1767	3067	467	1767	1856	1572	1767	1263	503	1767	1856	1572
Grp Volume(v), veh/h	178	498	500	38	464	54	85	0	281	145	247	135
Grp Sat Flow(s),veh/h/ln	1767	1763	1771	1767	1856	1572	1767	0	1765	1767	1856	1572
Q Serve(g_s), s	6.8	16.4	16.4	1.5	16.0	1.7	3.3	0.0	10.4	5.5	8.0	4.9
Cycle Q Clear(g_c), s	6.8	16.4	16.4	1.5	16.0	1.7	3.3	0.0	10.4	5.5	8.0	4.9
Prop In Lane	1.00		0.26	1.00		1.00	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	225	697	700	66	567	481	110	0	356	186	453	384
V/C Ratio(X)	0.79	0.71	0.71	0.57	0.82	0.11	0.77	0.00	0.79	0.78	0.55	0.35
Avail Cap(c_a), veh/h	473	1304	1310	177	1061	899	315	0	728	397	852	722
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.3	17.6	17.6	32.7	22.2	17.2	31.9	0.0	26.2	30.1	22.8	21.6
Incr Delay (d2), s/veh	6.2	1.4	1.4	7.6	3.0	0.1	10.7	0.0	4.0	7.0	1.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	6.3	6.3	0.7	6.9	0.6	1.7	0.0	4.5	2.6	3.4	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.5	19.0	19.0	40.3	25.2	17.3	42.6	0.0	30.1	37.1	23.8	22.1
LnGrp LOS	D	B	B	D	C	B	D	A	C	D	C	C
Approach Vol, veh/h		1176			556			366			527	
Approach Delay, s/veh		21.5			25.4			33.0			27.0	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.8	18.4	7.1	31.8	8.8	21.4	13.3	25.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	15.5	28.5	6.9	51.1	12.3	31.7	18.5	39.5
Max Q Clear Time (g_c+I1), s	7.5	12.4	3.5	18.4	5.3	10.0	8.8	18.0
Green Ext Time (p_c), s	0.2	1.5	0.0	7.9	0.1	1.8	0.3	3.1

Intersection Summary	
HCM 6th Ctrl Delay	25.0
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	885	32	84	373	143	18	74	88	283	129	93
Future Volume (veh/h)	70	885	32	84	373	143	18	74	88	283	129	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	76	962	35	91	405	155	20	80	96	308	140	101
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	97	958	812	105	966	819	37	152	128	319	448	379
Arrive On Green	0.06	0.52	0.52	0.06	0.52	0.52	0.02	0.08	0.08	0.18	0.24	0.24
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	76	962	35	91	405	155	20	80	96	308	140	101
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	4.7	57.3	1.2	5.7	14.8	5.8	1.2	4.6	6.6	19.2	6.9	5.8
Cycle Q Clear(g_c), s	4.7	57.3	1.2	5.7	14.8	5.8	1.2	4.6	6.6	19.2	6.9	5.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	97	958	812	105	966	819	37	152	128	319	448	379
V/C Ratio(X)	0.78	1.00	0.04	0.87	0.42	0.19	0.55	0.53	0.75	0.97	0.31	0.27
Avail Cap(c_a), veh/h	188	958	812	105	966	819	91	303	256	319	542	459
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.8	26.8	13.3	51.7	16.3	14.1	53.8	48.9	49.8	45.2	34.6	34.1
Incr Delay (d2), s/veh	12.6	30.1	0.0	48.4	0.3	0.1	12.0	2.8	8.3	41.4	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	31.8	0.4	3.9	6.2	2.1	0.7	2.2	2.9	12.0	3.2	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.3	56.9	13.3	100.2	16.6	14.2	65.9	51.7	58.2	86.6	34.9	34.5
LnGrp LOS	E	F	B	F	B	B	E	D	E	F	C	C
Approach Vol, veh/h		1073			651			196			549	
Approach Delay, s/veh		56.0			27.7			56.3			63.8	
Approach LOS		E			C			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.5	13.6	11.1	61.8	6.8	31.3	10.6	62.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	20.0	18.1	6.6	57.3	5.7	32.4	11.8	52.1
Max Q Clear Time (g_c+I1), s	21.2	8.6	7.7	59.3	3.2	8.9	6.7	16.8
Green Ext Time (p_c), s	0.0	0.4	0.0	0.0	0.0	1.1	0.1	3.3

Intersection Summary	
HCM 6th Ctrl Delay	50.3
HCM 6th LOS	D

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	267	771	344	11	15	174
Future Vol, veh/h	267	771	344	11	15	174
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	125	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	297	857	382	12	17	193

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	382	0	-	0	1833	382
Stage 1	-	-	-	-	382	-
Stage 2	-	-	-	-	1451	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1171	-	-	-	83	663
Stage 1	-	-	-	-	688	-
Stage 2	-	-	-	-	214	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1171	-	-	-	62	663
Mov Cap-2 Maneuver	-	-	-	-	160	-
Stage 1	-	-	-	-	513	-
Stage 2	-	-	-	-	214	-

Approach	EB	WB	SB
HCM Control Delay, s	2.3	0	16.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1171	-	-	-	531
HCM Lane V/C Ratio	0.253	-	-	-	0.395
HCM Control Delay (s)	9.1	-	-	-	16.1
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	1	-	-	-	1.9

Intersection	
Int Delay, s/veh	8.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	487	290	214	68	26	138
Future Vol, veh/h	487	290	214	68	26	138
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	175	-	-	125	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	541	322	238	76	29	153

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	238	0	-	0	1642	238
Stage 1	-	-	-	-	238	-
Stage 2	-	-	-	-	1404	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1323	-	-	-	109	798
Stage 1	-	-	-	-	799	-
Stage 2	-	-	-	-	226	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1323	-	-	-	64	798
Mov Cap-2 Maneuver	-	-	-	-	64	-
Stage 1	-	-	-	-	472	-
Stage 2	-	-	-	-	226	-

Approach	EB	WB	SB
HCM Control Delay, s	6	0	38.1
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1323	-	-	-	283
HCM Lane V/C Ratio	0.409	-	-	-	0.644
HCM Control Delay (s)	9.6	-	-	-	38.1
HCM Lane LOS	A	-	-	-	E
HCM 95th %tile Q(veh)	2	-	-	-	4.1

APPENDIX WATER

WASTEWATER AND WATER FEASIBILITY STUDY

WASTEWATER AND WATER FEASIBILITY STUDY FOR MOORETOWN RANCHERIA DEVELOPMENT

Site Design Services

Montrose Project No. 951-03

Prepared by:

MONTROSE
ENVIRONMENTAL

P.O. Box 584, 1140 Valley Forge Road
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May 2023

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FIGURES

ATTACHMENT

1.0 Introduction

This water and wastewater study was prepared for the Mooretown Rancheria Tribe for Parcels 079-230-004 (the event center), 079-230-005 (Phase 1 residential), and 079-260-001 (Phase 2 residential) in Butte County, California. The purpose of this study is to provide recommendations for wastewater and water supply for the subject parcels.

1.1 Project Description

The project consists of the potential development of three subject parcels: The first is for 1,500-person-capacity, 30,000 square foot event center that is proposed for a parcel consisting of approximately 8.5 acres with the development centered on a small plateau accessed via the northern extension of Alverda Drive.

Phase 1 is approximately 140 acres with a proposed central street extending from the westerly end of Alverda Drive providing access to mixed residential uses that include 20 single family homes, 30 ground floor living townhouses and two 16-unit apartment buildings for a total of 82 dwelling units.

The Phase 2 parcel is approximately 139 acres and accessed via the end of the proposed street in Phase 1. It also consists of a central street providing access to mixed residential uses that include 20 single family homes, 30 ground floor living townhouses and two 16-unit apartment buildings for a total of 82 dwelling units.

The total number of dwelling units for Phase 1 and Phase 2 combined is 164 units.

The event center parcel contains one existing structure that will be removed for the proposed event center. The Phase 1 and 2 parcels are both currently undeveloped with no existing structures with the exception of aerial utility lines that run from south to north along the boundary separating the Phase 1 and Phase 2 parcels.

All proposed sewage flows from the proposed development will connect to the existing gravity system servicing the Feather Falls Casino and the surrounding developed area operated by the Lake Oroville Area Public Utility District (LOAPUD). This gravity system flows to the Mooretown Lift Station located on Lower Wyandotte Road, approximately one mile from the casino.

1.2 Objective

The purpose of this study is to determine the projected water needs, wastewater flows and potential connections to public utility systems that may be available to service the subject properties.

2.0 Water and Sewer Analysis

We have analyzed available data from the Lake Oroville Area Public Utility District which currently operates the sewage collection and treatment facilities serving the Feather Hill Casino, Lodge, and Feather Falls Brewery Company, as well as the surrounding businesses and residential areas. Water supply for the casino and associated businesses, as well as the other area businesses and homes, is provided by South Feather Water and Power. The parcels proposed for the event center and two residential phases are also with South Feather Power and Water’s service area; however, they are not within the LOAPUD service area and will require annexation.

2.1 Wastewater Analysis

Because the subject properties for which the above described development is proposed are not within the LOAPUD's service boundaries, the properties will require annexation into the utility service district prior to connection to LOAPUD's sanitary sewer collection and treatment network. The procedure for annexation is outlined in LOAPUD's Improvement Standards manual, last revised December 2011, and is included as an attachment to this study. Connection to LOAPUD's sanitary sewer system for these uses may also require a capacity study, capacity agreement, and a mitigation agreement. Such studies are outside the scope of this analysis.

It is anticipated that the proposed development will generate the following amounts of wastewater based on the manual's design flow requirements:

- For the 1,500 person-capacity event center / 2,500 capacity amphitheater: Using the larger of the two capacities for this facility at 10 gallons per person, is a design flow rate of 25,000* gallons per day. Note that this is the flow rate at full capacity during an event and should be considered a peak rate. Average flow per day will depend on how often events are held and the average attendance at such events.

- For Phase 1: Single family detached and townhouses - 300 gallons per single family and townhouse dwelling unit x 50 units is a design flow rate of 15,000 gallons per day. Apartment units – 180 gallons per day per unit x 32 units is a design flow rate of 5,760 gallons per day.

    - Total flow rate for Phase 1: 20,760 gallons per day.

- For Phase 2: Single family detached and townhouses - 300 gallons per single family and townhouse dwelling unit x 50 units is a design flow rate of 15,000 gallons per day. Apartment units – 180 gallons per day per unit x 32 units is a design flow rate of 5,760 gallons per day.

    - Total flow rate for Phase 2: 20,760 gallons per day.

*If graywater is recycled, there will be reduction in the amount of sewage effluent sent to the public sanitary sewer system.

Event Center sanitary sewer connection: Given the proposed event center's elevation, a gravity sanitary sewer line from the event center connecting to the existing gravity system in Alverda Drive in the vicinity of the casino will adequately service the facility's sewage connection needs.

Phase 1 sanitary sewer connection: There are significant changes in elevation on the Phase 1 site, notably the valley between the Phase 1 site and existing sewer collection facilities in the vicinity of the casino. It is anticipated all sanitary laterals from the proposed dwelling units and the apartment buildings will connect to a gravity collection system in the Phase 1 street and flow by gravity to the Phase 1 entrance. It is our opinion that a sewage lift station at this location will be necessary to pump effluent via a force main to the existing collection system in Alverda Drive.

Phase 2 sanitary sewer connection: As with Phase 1, there are significant changes in elevation on this site. A valley separates the Phase 1 and Phase 2 sites precluding the Phase 2 site from connecting to the Phase 1 sanitary sewer collection system via standard gravity. Therefore, a second lift station will be needed. It is anticipated all sanitary laterals from the proposed dwelling units and the apartment buildings will connect to a gravity collection system in the Phase 2 street and flow by gravity to a lift station near the stream crossing in the valley between Phases 1 and 2. From there, a force main will convey effluent to the gravity collection system for Phase 1.

According to the manager of the Lake Oroville Area Public Utility District, as of April 2023 the Mooretown Lift Station on Lower Wyandotte Road is near its design capacity. Upgrades to this lift station will be necessary before the development discussed in this report is constructed and ready for use.

Alternative Analysis for Phases 1 and 2: A possible alternative to connecting Phases 1 and 2 to a public sanitary sewer would be to utilize an onsite wastewater treatment system (OSWTS). Soil testing would be needed to determine the suitability of the sites' soils to infiltrate effluent. The site is primarily C and D soils that may have some capacity for some infiltration, but they are not ideally suited to it. It should be noted also that a treatment package plant would be needed for each residential phase in this alternative. While lift stations can be costly, two OSWTSs may be less cost effective than connecting to public sanitary sewer.

2.2 Water Analysis

It is expected that the project water supply demands will mirror the wastewater flows. Based on the expected wastewater demands cited above, it is anticipated the water supply demands for the project will be as follows:

- There will be approximately 25,000* gallons per day of water usage for the event center. Note that this is the water demand full capacity during an event and should be considered peak demand. Average demand per day will depend on how often events are held and the average attendance at such events.

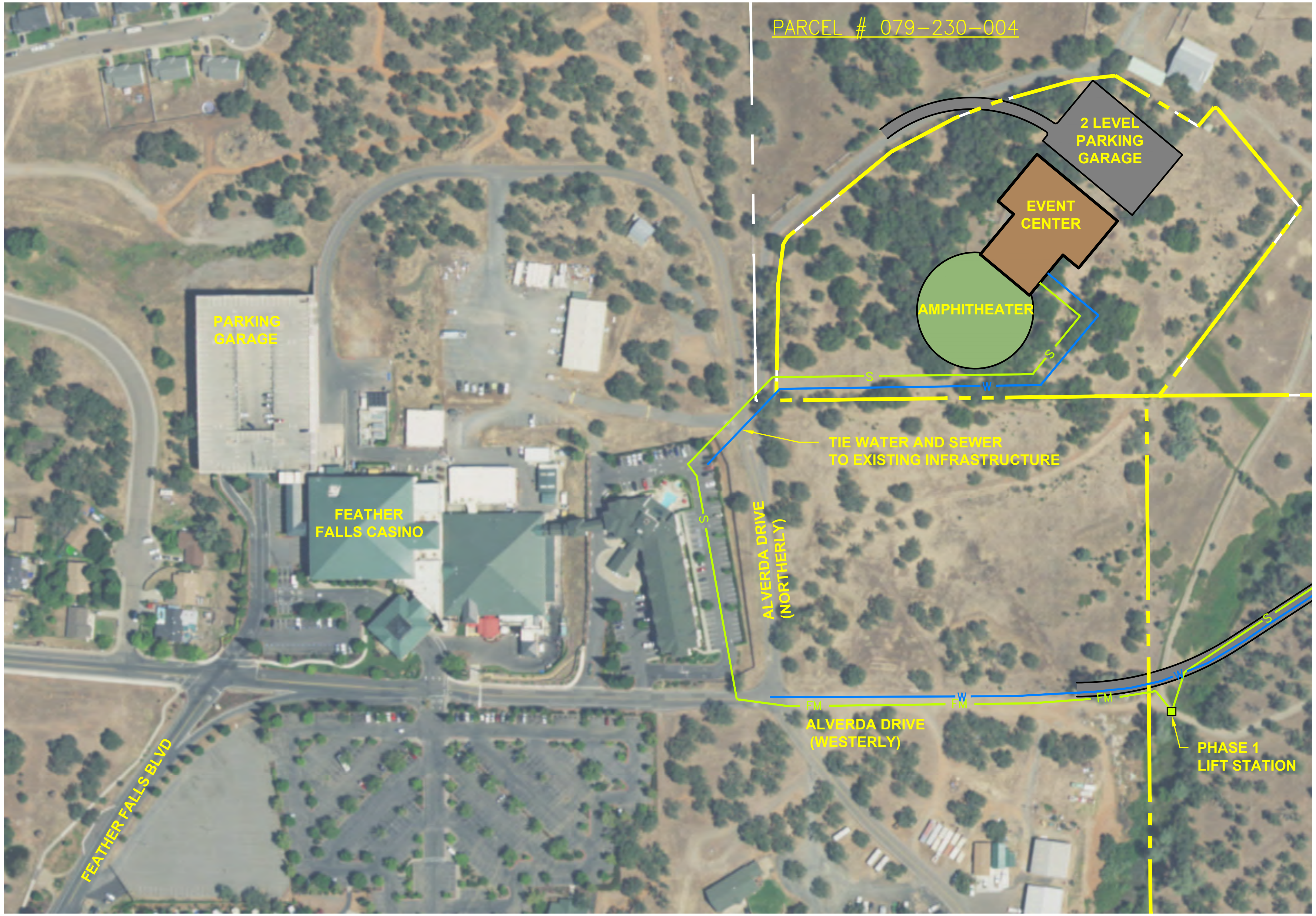
- There will be approximately 41,520 gallons per day of water usage for the proposed dwellings in Phases 1 and 2.

*This should be considered peak demand for 100% attendance at an event. Average daily demand will depend on how often events are held and the average attendance at such events.

The event center and both Phase 1 and Phase 2 of the residential development are within the service area of South Feather Water and Power. There should be no significant impediment to connecting all of the proposed development to the existing water supply system servicing the casino and surrounding development.

Figures

Figure 1 – Event Center Water & Wastewater Exhibit
Figure 2 – Phase 1 Residential Water & Wastewater Exhibit
Figure 3 – Phase 2 Residential Water & Wastewater Exhibit



0' 100' 200' 400'

SCALE 1"=200'

LEGEND

S	PROPOSED SANITARY SEWER
W	PROPOSED WATER LINE
FM	PROPOSED FORCE MAIN

MOORETOWN RANCHERIA TRUST LAND

EVENT CENTER WATER AND WASTE WATER EXHIBIT

MONTROSE ENVIRONMENTAL

MONTROSE ENVIRONMENTAL SOLUTIONS, INC.

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Scale:	1" = 200'
Drawn By:	KHF
Checked By:	BGS
Project Mgr.:	BGS
Originated By:	KHF
Project No.:	951-03 - AES
Drawing Date:	04/12/2023
Sheet No.:	1 OF 3
Revision Number:	0

FIGURE 1

F:\Projects\2022\951-03 - AES - Mooretown Racheria FTT\CAD\DWG\SHEETS\Sanitary Exhibits\Proposed Water and Waste Water Exhibit.dwg, 4/13/2023 11:57:21 AM

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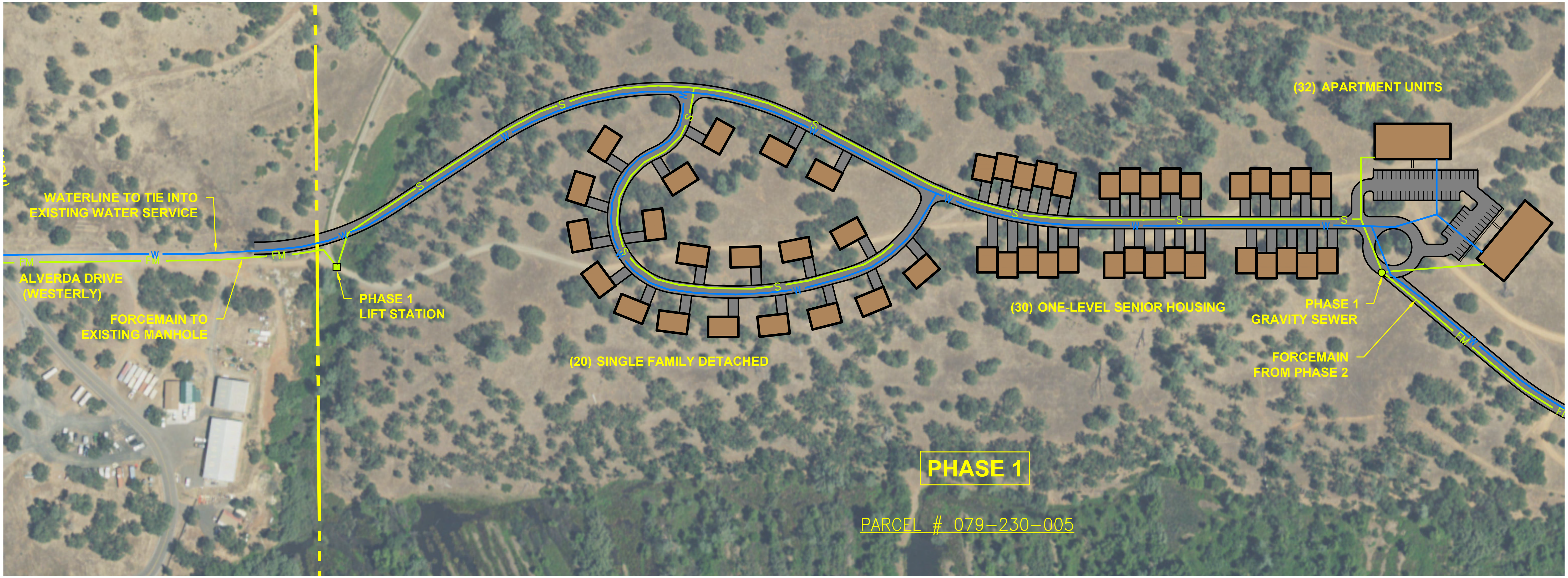

LEGEND

S	PROPOSED SANITARY SEWER
W	PROPOSED WATER LINE
FM	PROPOSED FORCE MAIN

0' 100' 200' 400'

SCALE 1"=200'

MOORETOWN RANCHERIA
TRUST LAND

PHASE 1 RESIDENTIAL
WATER AND WASTE WATER EXHIBIT

MONTROSE ENVIRONMENTAL

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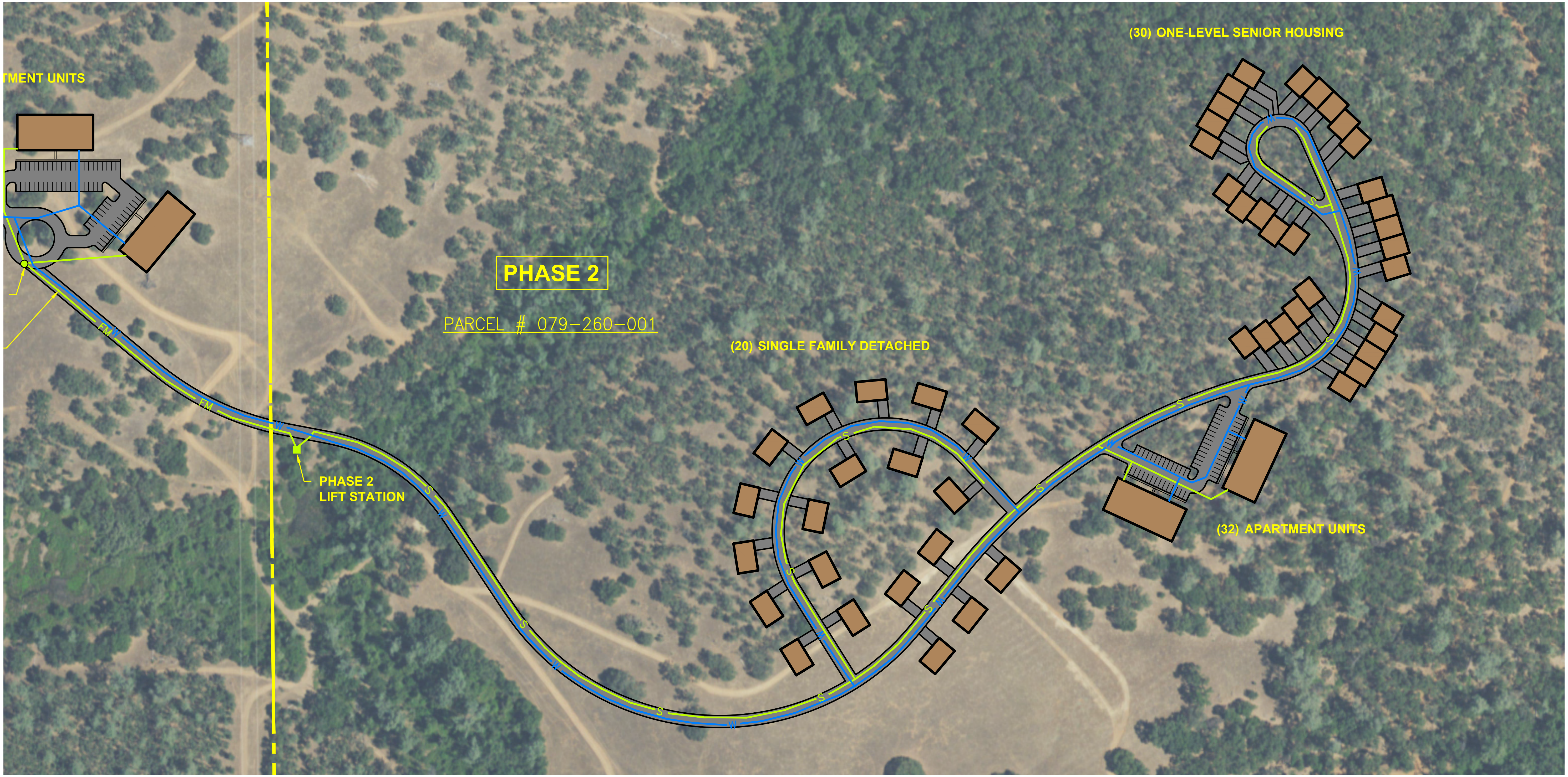
Project No.:	951-03 - AES
Drawing Date:	04/12/2023
Sheet No.:	2 OF 3
Revision Number:	0

EXHIBIT 2



LEGEND

S	PROPOSED SANITARY SEWER
W	PROPOSED WATER LINE
FM	PROPOSED FORCE MAIN

0' 100' 200' 400'

SCALE 1"=200'

MOORETOWN RANCHERIA
TRUST LAND

PHASE 2 RESIDENTIAL
WATER AND WASTE WATER EXHIBIT

MONTROSE ENVIRONMENTAL

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Project Mgr.:	BGS
Originated By:	KHF
Project No.:	951-03 – AES
Drawing Date:	04/12/2023
Sheet No.:	3 OF 3
Revision Number:	0

FIGURE 3

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Lake Oroville Area Public Utility District Improvement Standards

IMPROVEMENT STANDARDS

ADOPTED: 2/80
REVISED: 8/82
9/82
3/83
11/83
8/87
9/88
11/89
7/89
7/94
6/00
7/02
12/11

LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT

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IMPROVEMENT STANDARDS
Lake Oroville Area Public Utility District

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DEVELOPMENT PROCESSING CHECK LIST

1. Depending on the size of the proposed development, approval from Sewerage Commission Oroville Region (SC-OR) may be required, including either a Pre-Annexation Agreement, if the property is outside the District boundaries or a Capacity Agreement, if the project is 20 EDU's or greater and is inside the District boundaries.

2. Property proposed for development must be within the District's annexed boundary. If it is not, procedures to annex the property to the District must have been initiated, and all fees paid in connection therewith.

3. Submit two sets of preliminary plans, details and specifications for initial review by the District's General Manager and District Engineer. Their comments will be annotated on one of the sets of prints and returned to the developer's engineer. Plan Check and Administration Fee must accompany initial submittal. (See Section 1.04 of Improvement Standards)

4. Final submittal, after District's requested corrections have been made, shall include two sets of plans, details, and specifications, engineer's estimate of final sewer project cost, development agreement (see Appendix A of Improvement Standards), easement deed(s) (see Appendix B of Impr. Stds.) and/or tentative or final subdivision map. (See also Sections 1.04 and 1.08 of Improvement Standards)

5. Once the District Board of Directors grants approval of the development agreement (see Appendix A of Impr. Stds.) and for construction of the project, the plan originals will be signed by the General Manager and/or District Engineer.

6. After three sets of prints of the approved plans are submitted for District inspection purposes, the inspection fee is paid (see Section 1.04 of the Improvement Standards), and an encroachment permit from Butte County or City of Oroville Public Works Department has been secured (if necessary, see Section 1.10 of Impr. Stds.), work may commence.

7. Work in progress shall be inspected periodically by LOAPUD personnel. No sewer mains or service laterals may be backfilled prior to District inspection and approval.

8. Upon completion of work, including successful line and manhole testing (see Section 5.06 through 5.08 and 5.10), the following items shall be submitted:

   a. as-built drawings prepared by the developer's engineer (see Section 1.04I of Impr.Stds.);

   b. one-year maintenance surety (see Section 3.i.(4) of Appendix A);

   c. facility conveyance form (see Appendix A).

9. The one-year maintenance period commences on the date the District Board of Directors takes action to declare the project complete and accept the facilities into the District's maintained system.

10. After completion of the one-year maintenance period and/or completion of all necessary remedial work resulting during that time, the District will return the maintenance surety (less amounts drawn for failure to provide adequate remediation) and will assume maintenance of the sewer facilities.

BOARD POLICY
Lake Oroville Area Public Utility District

TITLE: ANNEXATION PROCEDURES **NUMBER: 6030**
ADOPTION DATE: October 11, 1989 **AMENDED DATE: DECEMBER 13, 2011**

6030.1 Property must be annexed to the District prior to receiving sewer service. Unconditional commitments to provide service to property and/or proposed developments will not be granted until said property is annexed to the District.

6030.2 In conformance with Policy No. 6040, District approval of residential, commercial, industrial or other types of development projects will not be granted by the Board of Directors until the entire site has been annexed to the District, or will be granted with the condition that the entire project site be successfully annexed to the District.

6030.3 Annexation Procedures.

6030.3.1 Determine suitability. Property owners or project developers desiring annexation to the District should first determine several factors regarding their property's suitability for sewer service:

6030.3.1.1 Is the property presently within the District's boundaries?

6030.3.1.2 If the property is not within the District's boundaries is the property within the sphere of influence established for the District by the Local Agency Formation Commission (LAFCo)?

6030.3.1.3 Where are the District's existing sewer service facilities relative to the property?

6030.3.1.4 Is there capacity in the District's existing facilities adequate for the property's proposed development density?

6030.3.1.5 Information regarding District annexation, sphere of influence, and the location of existing sewer service facilities and available excess capacity will be provided by District staff upon request. Determination of the property's suitability for development and/or connection to the sewer facilities is the responsibility for the project proponent. Use of professional engineering and/or development consultants is encouraged.

6030.3.2 Application to LAFCo. Among other duties LAFCo has been established by the State Legislature to review and approve or disapprove proposals for annexation of territory to special districts. Approval by LAFCo of any annexation proposal is required before the District can approve the annexation and provide sewer service.

6030.3.2.1 To initiate the LAFCo application procedure, owners of the property proposed for annexation, or the registered voters residing within the area proposed for annexation, shall submit a petition (§56704, Ca. Gov. Code) to LAFCo. The contents of the petition, itemized below, shall conform to §56700 of the California Government Code.

6030.3.2.2 With the petition, annexation proponents shall submit to LAFCo a map and legal description of the proposal. The contents of the map and legal description, itemized below, shall conform to LAFCo and the State Board of Equalization requirements.

6030.3.2.3 Also with the petition, annexation proponents shall submit to LAFCo a completed application form and appropriate filing and environmental review fees.

6030.3.3 Application to District. If annexation proponents desire to receive confirmation of District acceptance of their proposal prior to initiating the LAFCo application, the petition, map, legal description and LAFCo application form, discussed in 6030.3.2.3 above, should be submitted to the District office. A deposit must also accompany said submittal to cover LAFCo's filing and environmental review fees, State Board of Equalization fees, and District processing costs. When the annexation process is complete or terminated, cost overruns will be billed to the applicant, and underruns will be refunded.

6030.3.3.1 The Board of Directors will consider the annexation proposal at a regularly scheduled meeting. Acceptance by the Board of the proposed annexation shall be formalized by the adoption of a resolution. Said resolution shall contain the following:

(a) all of the information required in the petition, as itemized below, excepting provisions regarding signatories and signatures;
(b) the annexation map and legal description as attachments;
(c) verification that the District desires to annex the subject territory;
(d) authorization for the resolution to be submitted as an application for annexation approval by LAFCo; and,

(e) a request that LAFCo approve and authorize the District to conduct proceedings for the annexation without notice and hearing and without an election (only if the petition has been signed by all of the owners of land within the boundaries of the proposed annexation).

6030.3.4 District Approval of Annexation. If LAFCo accepts the annexation proposal it will adopt a resolution and forward same to the District. After confirmation of LAFCo acceptance, and after the annexation proponent(s) tenders to the District applicable annexation fees (discussed below) and appropriate recording and State Board of Equalization fees, as determined by LAFCo, the District's Board of Directors, at a regularly scheduled meeting, will consider approval of the proposed annexation. Approval by the Board of the proposed annexation shall be formalized by the adoption of a resolution.

6030.3.4.1 Said resolution shall contain the following provisions:

(a) That a description of the annexed lands shall be attached to said resolution;

(b) The annexed land shall be subject to the District's policies, rules and regulations, charges made, and assessments levied pursuant to the provisions of the laws pertaining to public utility districts to pay for outstanding obligations of said district, and also shall be subject to all and any combination of assessments, tolls and charges as may exist at the adoption of the resolution and as thereafter may be established and/or levied by the County of Butte and/or the District for any District purpose;

(c) The District shall be under no obligation to install a sewer service system or any facilities in connection with the subject annexation and the owners of the land to be annexed shall install, as and when sewer service is desired, without cost, charge or obligation to the District, a complete sewer service system as may be specified by the District, in accordance with plans and specifications approved by the District Engineer and/or General Manager, in a manner meeting his/her approval, and shall convey, at no cost to the District, all of said sewer service system, including rights of way over all parts thereof, to the District; and,

(d) The project developers and/or owners of the annexed property, and their heirs, successors and assigns shall agree to abide by all Board policies, rules and regulations of the District presently established and as shall be established by the Board in the future.

6030.3.4.2 After adoption of said resolution of approval by the Board of Directors, it shall be sent to LAFCo along with necessary fees, for processing of State filings, local recordings, and filing with the State Board of Equalization.

6030.3.5 Annexation Petition. In accordance with §56700 of the California Government Code, the petition proposing annexation of property to the District shall do all of the following:

6030.3.5.1 State that the proposal is made pursuant to said §56700;

6030.3.5.2 State the nature of the proposal (i.e., annexation of property to Lake Oroville Area Public Utility District);

6030.3.5.3 Include a description of the boundaries of the affected territory accompanied by a map showing the boundaries;

6030.3.5.4 State any proposed terms and conditions;

6030.3.5.5 Explain the reason for the proposal (e.g., to receive sewer service);

6030.3.5.6 State whether the petition is signed by registered voters or owners of land;

6030.3.5.7 Designate no more than three persons as chief petitioners, including their names and mailing addresses;

6030.3.5.8 Request that proceedings be taken for the proposal pursuant to said §56700; and,

6030.3.5.9 State whether the proposal is consistent with the sphere of influence designated by LAFCo for the District.

6030.3.6 Descriptions and Maps. In accordance with State Board of Equalization and District requirements, annexation descriptions and maps shall conform to the following conditions:

6030.3.6.1 All documents must be capable of producing a readable photographic image;

6030.3.6.2 Every description must be self-sufficient within itself and without the necessity of reference to any extraneous document, with references to deeds of record used only as a secondary reference;

6030.3.6.3 When writing a metes and bounds description of a contiguous annexation, all details of the contiguous portion(s) of the boundary may be omitted, with the points of departure from the existing boundary clearly established;

6030.3.6.4 A specific parcel description in sectionalized land is permissible without a metes and bounds description of the perimeter boundary;

6030.3.6.5 A parcel description making reference only to a subdivision or a lot within a subdivision is not acceptable, unless all dimensions needed to plot the boundaries are shown on an accompanying plat, and the relationship of lot lines with street rights of way must be clearly indicated;

6030.3.6.6 Every map must clearly indicate all existing streets, roads and highways within and adjacent to the lands to be annexed, together with the current names of these thoroughfares;

6030.3.6.7 Every map shall be drawn to scale with a North arrow;

6030.3.6.8 The point of beginning of the legal description must be shown on the map;

6030.3.6.9 The boundaries of the lands to be annexed must be distinctively shown on the map without obliterating any essential geographic or political features;

6030.3.7 All maps must be professionally drawn or copies (rough sketches of maps or plats will not be accepted); and,

6030.3.7.1 All descriptions must be prepared by a surveyor or civil engineer licensed in the State of California to practice land surveying and his/her stamp and signature shall be affixed to said description.

6030.3.8 In addition to LAFCo filing, environmental review, State filing, recording, State Board of Equalization and any other applicable non-District fees, an annexation fee shall be paid to the District prior to adoption by the Board of Directors of the resolution approving any annexation. Said annexation fee shall be at the currently adopted charge per acre or fraction thereof and may be adjusted from time to time by the Board of Directors.

DESIGN CHECK LIST

Sewer improvement plans submitted for District review and approval should contain the following:

[ ] Administration Fee ($1.00/lf of sewer mainline) subject to periodic change;
[ ] Plan Check Fee deposit (actual cost will be District Engineer's time and materials);
[ ] 3 sets of check prints;
[ ] Itemized sewer project construction cost estimate;
[ ] Computation sheets for all alignment (horizontal and vertical);
[ ] Computation sheets verifying adequate flow capacity;
[ ] Stamp and signature of RCE on all plan sheets, calculations and estimates;
[ ] Plan sheets on 24" x 36" paper;
[ ] Vicinity/location map on title sheet of plans;
[ ] Index of sheets on title sheet of plans;
[ ] Legend of symbols;
[ ] Title block on each sheet showing sheet title, number, date, scale, name and registration number of project engineer, and name of project and/or subdivision;
[ ] Signature blocks for District's General Manager and District Engineer
[ ] Note referencing District Improvement Standards;
[ ] Bench mark(s) and datum description;
[ ] Stationing oriented left to right and south to north, where feasible;
[ ] North arrow and scales on all plan sheets;
[ ] Overall plan layout on single sheet;
[ ] Locations (horizontal) of all existing utilities within project area;
[ ] Locations (horizontal and vertical) of all proposed underground facilities (e.g., storm drains, gas, water, electric, etc.);
[ ] Adjacent subdivisions, including names, lot lines and lot numbers;
[ ] Property lines (existing and proposed);
[ ] Public easements correctly dimensioned;
[ ] Section and grant lines and corners within project area;
[ ] Street names and widths (existing and proposed);
[ ] Pertinent topographic features;
[ ] Contours and elevations;
[ ] Typical detail of proposed roadway section(s);
[ ] Existing ground profile above proposed sewer improvements;
[ ] Profile of proposed underground facilities (sewer and others in vicinity);
[ ] Sewer invert elev.'s annotated at 50' intervals (25' through vert. curves);
[ ] Rates of grade, vertical curve lengths and other alignment data;
[ ] Plans scale to be 1"=20', 40' or 50' where feasible;
[ ] Profile scales to be 1"=2', 4' or 5' where feasible;
[ ] Computations to be accurate within 0.01'+/-, and 0.001%+/-.

Review Sections 1.04 and 3.11 of the Improvement Standards.

IMPROVEMENT STANDARDS

LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT

SECTION 1 - General Requirements

1.01 Jurisdiction

These Standards shall apply to design and construction of all sewerage system facilities which will be offered for dedication to be operated and/or maintained by Lake Oroville Area Public Utility District (hereinafter referred to as "District").

1.02 Agency Approvals

It shall be the responsibility of the Developer or project sponsor (hereinafter referred to as "Owner") to obtain all approvals required from applicable public agencies regarding the proposed project. Approval shall be obtained from the following agencies as applicable:

1. South Feather Water and Power
2. California Water Service Company
3. Butte County Environmental Health Department
4. Butte County Development Services
5. Butte County Department of Public Works (for all work within existing or proposed County rights of way)
6. Caltrans (for all work within existing or proposed State highway rights of way)
7. State Department of Public Health
8. El Medio Fire Protection District
9. City of Oroville

It shall be the Owner/Developer's responsibility to contact all other agencies which have jurisdiction over the project. Such agencies may include the California Department of Fish and Game, and the Central Valley Regional Water Quality Control Board.

1.03 Compliance With Laws

The Owner/Developer, the Project Engineer and the Contractor shall keep themselves fully informed of, and shall comply with all applicable federal and state laws, county, municipal and special district ordinances, resolutions, rules and regulations which in any manner affect the design, construction or operation of the project or its appurtenances.

1.04 Submission of Plans, Approvals & Construction Inspection

A. Plans by Licensed Civil Engineer - All plans and specifications for sanitary sewer improvements, private and public, which are to be accepted for maintenance by the District shall be prepared by a Civil Engineer, currently licensed by the State of California.

B. Approved Plans - Complete plans and specifications for all proposed sewerage systems, including any necessary dedications, easements, and rights of entry, shall be submitted to the General Manager and/or District Engineer for approval. This approval must be substantiated by the signature of the General Manager and/or District Engineer or his/her authorized representative following the Development Agreement approval prior to the commencement of construction of any such improvements. The General Manager and/or District Engineer, or his/her representative shall order any Contractor to cease work on any project if said Contractor does not have properly approved plans on-site.

C. Reference to District Specifications and Standards - The general notes and/or special provisions of all project plans, specifications and contract documents shall include the following note:

> *All construction and materials shall be in accordance with the latest edition of the Lake Oroville Area Public Utility District Improvement Standards and Standard Details.*

D. Improvement Plan Submittal - The initial submittal of improvement plans to the District shall consist of the following:

a. Three (3) sets of plans, complete and in accordance with these Improvement Standards, together with any required specifications, computations for all horizontal and vertical alignment, test data, and other material requested by the General Manager and/or District Engineer.

b. An itemized cost estimate for construction of all proposed sewer system improvements.

c. Copies of transmittal letters by which preliminary project plans were submitted to involved utility companies for their review.

d. Administration Fee computed on the basis of $1.00 per lineal foot of sewer main line, said fee subject to periodic change.

e. Plan Check Fee deposit computed on District Engineer's time and materials.

Should there be required alterations or revisions to the plans submitted, the General Manager and/or District Engineer will return one copy with the corrections annotated thereon. If the plans submitted are not prepared in accordance with these Standards or are not in keeping with the standards of the profession, the General Manager and/or District Engineer may return them unmarked and unapproved.

E. Improvement Plan Resubmittal - Plans being resubmitted shall consist of three complete sets of plans. Additional sets may be required by the General Manager and/or District Engineer.

Any revisions or alterations on resubmitted plans other than those required by the General Manager and/or District Engineer on previously corrected plans shall be brought to the attention of the General Manager and/or District Engineer by the Project Engineer.

F. Plan Approval - At such time as the Project Engineer preparing the plans has made the necessary revisions and the Owner/Developer has executed a Development Agreement approved by the General Manager and/or District Engineer (see Appendix A for sample form), the District Board of Directors, at the next regularly scheduled meeting, will consider approving the plans and the project for construction. Upon the Board's approval, the General Manager and/or District Engineer will sign the plan originals in the space provided, if they have been signed by the Project Engineer. The Board's approval of the plans and project is valid for a period of twelve months. Should work not commence within the 12-month period, the plans shall be submitted for reapproval. Also, if construction commences and then is halted for more than one year, project approval shall expire. (See Board Policy No. 6040.)

G. Final Plans Required - The Project Engineer shall deliver three sets of approved plans to the District office. Additional improvement plan sets may be requested by the General Manager and/or District Engineer, and these shall be furnished to the District without cost.

H. Improvement Plan Revisions During Construction - Should changes become necessary during construction, the Project Engineer shall first obtain the approval of the General Manager and/or District Engineer

I. Record Drawings - The Project Engineer and Contractor shall keep an accurate record of all approved deviations from the plans and shall, upon completion of the work and before final approval of the completed improvements, annotate the original plans to reflect this information and submit a diazo mylar along with 2 digital versions (one .pdf and one .cad format) of the "record drawings" tracings to the District. (See Section 3.i of Appendix A, Development Agreement.)

J. Conflict, Errors and Omissions - Excepted from approval are any features of the plans that are contrary to, in conflict with, or do not conform to any California State Law, Butte County or City of Oroville Code or Resolution, conditions of approval, or generally accepted good engineering practice, in keeping with the standards of the profession, even though such errors, omissions or conflicts may have been overlooked in the District's review of the plans.

K. Existing Utilities - All existing utilities are to be shown on the plans. In addition, the Project Engineer shall submit the preliminary and approved plans to the utility companies involved. This is necessary for the utilities to properly plan their relocation projects and additional facility requirements. Copies of the transmittal letters to the utility companies shall be provided to the General Manager and/or District Engineer.

L. Partial Plan - Where the improvement plans submitted are for only a portion of the ultimate development, the plans submitted shall be accompanied by the approved tentative plan, or a study if there is no approved tentative plan, showing topographic features of ultimate development at an adequate scale to clearly show the proposed future improvements.

M. Other Agency Notifications - The Project Engineer is responsible for obtaining the approval and necessary permits from all governmental agencies when their facilities are involved.

N. Construction Inspection Fee - Construction inspection fees, subject to periodic change, shall be paid to the District prior to commencement of construction and shall be computed on the following basis:

Estimated Sewer Project Cost	Fee
$0.00 to $10,000.00	4.25% of Estimate
$10,000.01 to $50,000.00	3.60% of Estimate
$50,000.01 to $100,000.00	3.20% of Estimate
Over $100,000.00	2.85% of Estimate

O. Inspection Requirements - Any improvement constructed for which District acceptance and maintenance is intended, shall be inspected during construction by a District representative. Any improvements constructed without inspections as provided above or constructed contrary to the order of instructions of the General Manager and/or District Engineer will be deemed as not complying with these Standards and will not be accepted by Lake Oroville Area Public Utility District for ownership and maintenance purposes.

The Project Engineer shall notify the General Manager and/or District Engineer one week prior to the commencement of project construction.

When all project sewer improvements are complete and within forty-eight (48) hours after receiving the request for final inspection from the Project Engineer or Owner/Developer, the General Manager and/or District Engineer or his/her representative shall inspect the completed work. The Contractor shall proceed to correct any such defects or deficiencies at the earliest possible date. At such time as the remedial work has been completed, a second inspection shall be made by the General Manager and/or District Engineer or his/her representative to determine if the previously mentioned defects have been repaired, altered and/or completed in accordance with the plans. At such time as the General Manager and/or District Engineer approves the work, and after the Owner/Developer has complied with the provisions of the Development Agreement regarding "Conveyance" (see Appendix A, Section 3.i) the District Board of Directors will consider, at their next regularly scheduled meeting, accepting the improvements into the District's maintained system. Upon said acceptance, the Contractor, Project Engineer and Owner/Developer will be notified.

On projects where Lake Oroville Area Public Utility District participates in the costs thereof, quantities will be measured in the presence of the General Manager and/or District Engineer, Project Engineer, and Contractor, and witnessed accordingly.

P. Special Notices and Permits - The Project Engineer shall be responsible for advising the Contractor to give the following notices and have in his/her possession the following permits and plans:

a. Contractor shall notify all utility companies involved in the development prior to beginning work;

b. Contractor shall notify "Underground Service Alert" (phone 811 or 800-227-2600) forty-eight (48) hours in advance of any work.;

c. Contractor shall be responsible for the protection of all existing survey monuments.

1.05 Control of Materials

The Owner/Developer shall furnish samples of materials as deemed necessary by General Manager and/or District Engineer for testing to verify conformance with manufacturer's specifications and these Standards. Sample shall be furnished at no cost to the District.

All tests of materials will be made in accordance with recognized standards of national organizations. The cost of testing for materials which are found to be in conformance with specifications and these Standards shall be charged as a part of the inspection fee to the District. The cost of testing for materials which do not conform to specifications and these Standards shall be paid by the Owner/Developer in addition to said inspection fee.

At the discretion of the General Manager and/or District Engineer, materials may be approved for use when accompanied by a manufacturer's certificate of compliance stating that the material complies with all requirements of the specifications and these Standard. The certificate shall be signed by a representative of the manufacturer. The certificate of compliance shall be furnished with each lot of material delivered to the work site and the lot so certified shall be clearly indicated in the certificate.

All materials may be sampled and tested at any time. The certificate of compliance shall not relieve the Owner/Developer of responsibility for furnishing material which conforms to the requirement of specifications and these Standards. Any material not conforming to said requirements will be subjected to rejection regardless of its stage of installation.

1.06 Control of Work

A minimum of forty-eight (48) hours notice shall be given to the District prior to commencement of any work. A minimum of forty-eight (48) hours notice shall be given to the District prior to any phase of the work requiring disruption of existing sewer service. Connection to existing District facilities or conflicts with other utilities shall be discussed well in advance of the commencement of that phase of the work.

It shall be the Contractor's responsibility to ascertain possible conflicts, potholing as necessary,with underground utilities, locate said utilities in advance of the work, and notify all applicable agencies and acquire any and all required permission and/or permits.

1.07 Rights of Way

All facilities to be operated and/or maintained by the District shall be located in public rights of way wherever possible. When facilities cannot be so located, they shall be located in public utility or sewer easements dedicated specifically to the District, the City of Oroville or the County of Butte for acceptance for use by the public. The location and width of easements shall be subject to approval by the General Manager and/or District Engineer. All necessary easements shall be deeded to and accepted by the District Board of Directors prior to conveyance of the completed sewer improvements by the Owner/Developer to the District. Said deeds shall include that language specified in the sample easement deed form included herewith as Appendix B.

1.08 Conveyance of Facilities

Within ninety (90) days after completion of construction of the project's sewer improvements in accordance with the approved plans and these Standards, the Owner Developer shall convey title of the completed works to the District without cost and free and clear of all liens and encumbrances, by appropriate conveying documents (sample Dedication Form included herewith as Appendix A). The Owner/Developer shall also comply with the provisions specified in Section 3.i of the sample Development Agreement included herewith as Appendix A.

1.09 Connections to Facilities

No connections will be permitted to any portions of the project's sewer improvements which are not completed in accordance with these Standards and accepted by the District's Board of Directors, unless guaranteed as to completion and acceptance by means of faithful performance bond and a labor and material bond, each in the amount of not less than 100% of the total Project Engineer's estimate of the work, as approved by the General Manager and/or District Engineer.

1.10 Work Within Rights of Way

1.101. Butte County Department of Public Works
All Contractors performing work in connection with District facilities within County rights of way, for which application for an encroachment permit by Lake Oroville Area Public Utility District is required by the Butte County Department of Public Works, must comply with all agency requirements, and have certificate of general liability insurance on file with Public Works with at least $1,000,000 general liability coverage with Butte County Public Works listed as additional insured and Butte County listed as a certificate holder, and have a valid Class A Contracting License.

1.102 City of Oroville Department of Public Works

All Contractors performing work in connection with District facilities within City of Oroville rights of way, for which application for an encroachment permit by Lake Oroville Area Public Utility District is required by the City of Oroville Department of Public Works, must comply with all agency requirements, and have a certificate of general liability insurance on file with Public Works with at least $1,000,000 general liability coverage with City of Oroville Public Works listed as additional insured and City of Oroville listed as certificate holder, provide an excavation bond, and have a valid Class A Contracting License.

SECTION 2 - Materials

2.01 Pipes, Joints and Fittings

All pipes, joints and fittings shall be of either polyvinyl chloride plastic or ductile iron materials as described below. Only one single type of pipe shall be used in any given project unless otherwise approved by the General Manager and/or District Engineer.

2.011 Polyvinyl Chloride Pipe (PVC)

Polyvinyl chloride pipe shall be of a type as manufactured by Johns-Manville Co. under the brand name "Ring Type PVC Pipe," Certainteed Products Corporation's "PVC Gravity Sewer Pipe," or approved equal. Pipe shall be polyvinyl chloride plastic gravity sewer pipe and integral wall, bell and spigot O-ring type joints. Pipe and fittings shall meet the extra strength minimum of SDR-35 of the requirements of ASTM designation D-3034. All fittings such as wyes, tees, bends, reducers and connections shall be of the same material and manufacturer as the pipe. Rubber rings shall conform to ASTM designation D-1869. No solvent cement joints shall be used.

All PVC shall have a home mark to indicate full penetration at the spigot when the joint is made. PVC and fittings shall not be stored with direct exposure to sunlight for any extended period of time. If storage for a long period is necessary, pipe and fittings shall be covered with opaque material, providing air circulation, or otherwise protected in a manner approved by the General Manager and/or District Engineer.

2.012 Ductile Iron (DI)

<u>Ductile Iron Pipe (DIP)</u> Class 50 (Class 51 for 4" DIP) Ductile iron pipe shall conform to the ANSI Specifications A.21.51, and AWWA C151 for Tyton joint pipe. Rubber gasket joints shall conform to ANSI A.21.11.

Fittings for ductile iron and PVC pipe used as force main shall be ductile iron compact fittings conforming to AWWA C153 Class 350.

All ductile iron pipe and fittings shall be lined with a PROTECTO 401 ceramic epoxy interior lining or approved equal. Methods of application, touch up, and repair shall be in accordance with the manufacturer's recommendations. The pipe and fitting manufacturers must provide certification confirming that the liner was installed in accordance with the lining manufacturer's recommendations.

2.02 Force Main Pipe

All force main pipe shall be Polyvinyl Chloride Pipe (PVC) C-900 - PVC C-900, Class 150 pipe shall conform to AWWA Standard C-900 for four (4) inch through 12 inch pressure water pipe or equal. Rubber rings shall conform to ASTM designation D-1869. No solvent weld joints shall be used. Storage specifications apply as in Section 2.011, above.

2.03 Manholes

Precast manhole bases shall be as manufactured by Cook Precast Concrete, Inc., or approved equal. Poured in place manholes shall have 3000 psi concrete bases with precast reinforced concrete pipe sections, tapered sections and adjustment rings. Reinforced concrete parts shall conform to ASTM designation C-76, and pipe sections shall be four (4) feet inside diameter.

Manhole joints shall be sealed against infiltration and exfiltration by means of sand-cement mortar between and both inside and out, or by means of joint sealing compound as manufactured by K.T. Schneider Co., Houston, Texas, under the brand name "Ram-Nek", or "Quick-Seal" as manufactured by Associated Concrete Products, Inc., or approved equal. Appropriate primers and preparation as specified by manufacturers shall be used.

Cast in place manhole bases, drop structures and appurtenances shall be as set forth in the Standard Details, included herewith as Appendix D, and these Standards.

2.04 Castings

All castings shall be grey iron conforming to ASTM designation A-159 class G-3000, asphalt paint dipped.

Bolted manhole castings shall be D&L Foundry A-1024 with no gasket or approved equal and shall be H-20 traffic loading rated. Non-bolted manhole castings shall be D&L Foundry A-1024 with no gasket or approved equal and shall be H-20 traffic loading rated.

Composite manhole castings shall be GMI Series 3800 or approved equal composite manhole cover and frame set. Composite castings shall be H-20 traffic loading rated and include a quarter turn locking system with security bolts.

Flushing hole (clean out) castings shall be D&L Foundry H-6530 Lamp Hole Cover or approved equal, depending on the type and size of pipe used.

2.05 Concrete and Patching Mortars

Concrete shall conform to the State of California Standard Specifications in the latest edition and shall be class B unless otherwise shown on the approved plans or specified herein.

Patching and sealing mortars shall be of a portland cement base and shall be as of a type manufactured by Tamms Industries Co., Bellflower, California, under the brand name "Speed-Crete," or approved equal.

2.06 Couplings and Special Fittings

Flexible couplings shall be Fernco Strong Back RC Series or approved equal. Tapping saddles shall be Fernco Sewer Saddles of cast iron material, o-ring type seal with stainless steel bands. Tapping saddles shall be appropriate for the diameter and type of the sewer being tapped and shall be subject to approval by the General Manager and/or District Engineer.

Stub-out fittings for tapping shall be of the type specified for use with the specific size and type of pipe by the pipe manufacturer. Installation shall be in accordance with the manufacturer's specifications and as approved by the General Manager and/or District Engineer.

2.07 Casings

Casings for underground pipelines shall be as required by the State of California Standard Specifications, latest edition.

SECTION 3 - Design Standards

3.01 Design Flow

An average flow of 100 gallons per person per day or 350 gallons per dwelling unit shall be used for design of sewers with peak flows calculated using the factors from the peak flow factor formulas below. All sewers shall be designed to carry peak flows without surcharging the manholes.

a. PWWF (in MGD) = ADWF X PF +I/I
b. ADWF (in MGD) = (350 gpd/EDU) / 1,000,000
c. $PF = 3.5 – 1.8Q^{0.05}$ where Q = average ADWF (in MGD), with a minimum value of 1.2
d. I/I = 1400 gpd/acre for new pipelines (under 5 years old); I/I = 1600 gpd/acre for existing pipelines

The estimated population used for design including population equivalents for commercial, industrial and institutional uses shall be submitted prior to commencement of design of improvements.

Sewer mains subject to extension in the future shall be sized to serve the entire area tributary to the proposed development. The Project Engineer shall submit a study substantiating the proposed size of sewer in such cases. Discussion of parameters with the General Manager and/or District Engineer is advised prior to the study.

3.02 Gradients

Sewer pipe gradients shall be designed to provide a minimum flow velocity of two feet per second when pipes are flowing full or half full. The following table indicates slopes which will provide that velocity. These shall be the minimum slopes for design of sanitary sewers unless flatter slopes are specifically approved by the General Manager and/or District Engineer.

MINIMUM SEWER GRADIENTS

Diameter	Slope
4 " (service)	.0200 (1/4" per foot)
6"	.0050
8"	.0035
10"	.0025
12"	.0020
15"	.0015
18"	.0012

At changes in pipe size the invert of the pipe flowing from the manhole shall be sufficiently lower than the incoming pipe in order that the inside crown elevation of both pipes is the same.

At manhole locations where angles of deflection occur in the alignment of the sewer, the pipe invert shall have a minimum drop from inlet to outlet according to the following table:

MINIMUM FLOW LINE DROP THROUGH MANHOLE

Angle of Deflection	Invert Drop (Inlet to Outlet)
0 to 45 degrees	.05 feet
45 to 90 degrees	.10 feet
90 degrees plus	.20 feet

A drop manhole shall be constructed at any location where there is a drop in the sewer invert of more than 1.5 feet. Inside drop manhole structures shall only be used in accordance with the Standard Details (See Appendix D).

3.03 Pipe Size

Sewer pipe sizes shall be adequate to carry the peak design flows at the design gradient with a minimum size of eight (8) inch diameter except for service lines. Minimum size for mainline sewers downstream of the last manhole on any given collector line shall be 8 inches unless otherwise approved by the General Manager and/or District Engineer. Lower laterals shall be four (4) inch diameter minimum except where estimated floor requires a larger size (see Appendix C)

3.04 Pipe Strength Class

Manufacturer's specifications shall apply as to the proper class of pipe required for installation except where these Standards are more stringent. The Project Engineer may be required to substantiate the proposed class of pipe, as directed by the General Manager and/or District Engineer.

3.05 Location and Alignment

Sanitary sewers shall be installed within rights of way dedicated for public streets or roads where practicable. If not located in street or road rights of way, sewers shall be installed within the center ten (10) feet of a twenty (20) foot wide permanent easement deeded to and accepted by the District, City of Oroville or the County of Butte as a sewer or public utilities easement. In case of hardship in providing a twenty (20) foot width, lesser widths may be approved on an individual basis by the General Manager and/or District Engineer.

When a curved alignment is necessary, the minimum radius of curvature shall be 400 feet, unless otherwise approved by the General Manager and/or District Engineer. In no case shall the maximum deflection of pipe joints exceed the recommendation of the pipe manufacturer. Location of sewer lines relative to domestic water facilities and improvements shall be in accordance with applicable public health and water company/district standards. The permissible location and installation requirements for any sanitary sewer being installed in existing streets or roads or in newly designed rights of way shall be in accordance with the requirements of the City of Oroville or Butte County Public Works Departments, unless these Standards require more stringent provisions.

3.06 Minimum Depth

The depth of any sanitary sewer shall be adequate to provide a minimum cover of three (3) feet in any traveled way. Exceptions must be by prior approval of the General Manager and/or District Engineer. All service lines will, wherever practicable, be maintained at four (4) feet cover at the property line. Minimum cover on service lines shall be two and one half (2.5) feet throughout the length of the line within the public rights of way.

3.07 Manhole Locations

Manholes shall be constructed at all pipeline intersections except service lines, at angle points, at changes in pipe size or gradient, at the terminus of lines (see subsection 3.08, below), and at maximum intervals of four hundred (400) feet on sewers not greater than twelve (12) inches in diameter, or at intervals of five hundred (500) feet on sewers greater than twelve (12) inches in diameter. Where manhole locations are fixed by intersections, the spacing of intervening manholes shall be approximately equal.

3.08 Cleanouts or Flushing Holes

Cleanouts or flushing holes may be used in lieu of manholes at the terminus of any sewer where the distance from the terminus to the next manhole does not exceed two hundred (200) feet. Exceptions may be permitted by approval of the General Manager and/or District Engineer. Cleanouts on service lines shall be in conformance with the California Plumbing Code, and as specified in Appendix C, included herewith.

Temporary cleanouts are required at the terminus of lines intended for future extension and to which service lines connect.

3.09 Stubs for Future Extension

Stub pipes shall be installed in manholes with appropriate plugs or caps, where shown on the drawings, for anticipated future extension. The location and size of stubs is subject to approval by the General Manager and/or District Engineer.

3.10 Service Lines

Service lines shall be installed for each and every residence or structure. Cleanouts shall be installed as specified in subsection 3.08, above, except as otherwise directed by the General Manager and/or District Engineer. Building sewers within the property lines shall be in conformance with District Building Sewer Standards, included herewith as Appendix C.

3.11 Plan Sheet Requirements

A. Paper Details - All improvement plans shall be, prepared on 24" x 36" sheets.

B. Scales - Horizontal scales shall be 1"= 20', 40' or 50'. Corresponding vertical scales shall be 1”= 2', 4' or 5'.
C. Title Sheet - On improvement plans exceeding three (3) sheets in a set, a title sheet shall Be prepared showing the following.

- a. the entire project;
- b. street names and widths;
- c. section lines, grant lines and corners;
- d. adjacent subdivisions, including names, lot lines and lot numbers;
- e. property lines;
- f. public easements;
- g. location map;
- h. scale of drawings; index of sheets; legend of symbols
- k. signature block for District Manager
- l. signature block District Engineer; and
- m. signature block for Project Engineer.

Improvement plans consisting of three (3) or less sheets shall not: be required to include a title sheet, but shall be required to show all of the above in the plans.

D. Title Block - Each sheet within the set of drawings shall have an approved title block showing the sheet title, number, date, scale, and the Project Engineer's name, signature and license number the name of the District and the name of the subdivision or assessment district and the Owner/Developer's name.

Approved blocks shall conform to the following:

ENGINEER'S CERTIFICATE

These improvement plans have been prepared and submitted under my direct supervision and are deemed by me to be sufficient and correct.

Engineer R.C.E. No. Date

____

DISTRICT'S CERTIFICATE

Approved for Construction:

____

, Date
General Manager
Lake Oroville Area Public Utility District

Approved for Construction:

____

, P.E. Date
District Engineer
RCE No. exp.
Lake Oroville Area Public Utility District

E. Sewer Layout - On subdivision plans, the sanitary sewer systems shall be shown on an overall plan layout, In addition, the sanitary sewer systems shall be shown on the street plans. On all other plans, an overall plan layout will not be required, but the facilities shall be shown within the development and on the street plans .

F. Plan Details - In addition to the other requirements of these Standards, the following details shall be shown on plans submitted for approval. This does not in any way exempt the Project Engineer preparing the plans from the responsibility of preparing neat, accurate and comprehensive plans in keeping with the standards of the profession.

a. Right of way lines, the boundaries of lots fronting on the street, drainage easements, utility easements, planting easements, section lines and corners, land grant lines and temporary construction easements, both existing and proposed shall be shown on the plans. All right of way and easement lines shall be properly dimensioned.

b. All pertinent topographic features shall be shown, such as street lines, medians, driveways, curbs, sidewalks, shoulders, location and size of storm and sanitary sewer lines, high water and frequent inundation levels, water lines, gas lines, telephone conduits, other underground utilities, existing structures, houses, trees (6" and larger), other foliage, traffic signals, street lights and pullboxes, underground electrical conduits and cable, drainage ditches, utility poles, fire hydrants, retaining walls , masonry structures, and all other features of the area which might affect the design requirements for the area.

c. Existing contours or supporting elevations shall be shown on all plans submitted for subdivisions, commercial improvements, planned unit developments, or assessment and improvement districts.

d. The plans shall show the existing ground profile for a minimum distance of two hundred (200) feet beyond temporary endings to facilitate setting proper vertical alignment within the proposed improvement limits. The two hundred (200) foot minimum shall be increased when requested by the General Manager and/or District Engineer.

e. The stationing on plan and profile shall read from left to right. Stationing shall increase from south to north or from west to east. Plans shall be so arranged that the North arrow points toward the top or upper 180 degrees, insofar as practical.

f. The bench marks and datum shall be clearly delineated on the plans both as to location, description and elevations, When a proposed project is adjacent to or in the vicinity of a project for which District approved bench marks exist, the design datum of the proposed project shall be the same as that of said approved bench marks.

g. Special notes shall be clearly indicated, and it shall be conspicuously noted on the plans that all construction work and installations shall conform to the Lake Oroville Area Public Utility District Improvement Standards and Standard Details, and that all work is subject to the approval of the General Manager and/or District Engineer. Notes shall contain a statement regarding obtaining encroachment permits from other agencies when applicable.

G. Degree of Accuracy - All calculated dimensions and elevations shown on the improvement plans shall be allowed a computation accuracy tolerance of +0.01. Rates of grade shown on the improvement plans shall be allowed a computation accuracy tolerance of +0.001 %.

SECTION 4 -Lift Stations and Force Main Design

4.0 General

It is the policy of the District's Board of Directors that lift stations be installed only at locations that facilitate providing sewer service on a regional basis, to all parcels within natural water shed areas. Project proposals that include a site-specific lift station that would preclude serving other properties within the project site's natural drainage area will not be approved.

Lift station and force main designs shall be submitted by the Project Engineer along with supporting data and calculations. Discussion of parameters with the General Manager and District Engineer prior to design is advised.

If Project Engineer specifies a factory built and tested "package" unit, detailed calculations, shop and construction drawings and complete specifications for materials must be submitted prior to project approval.

Detailed calculations, shop and construction drawings, and complete specifications for materials must be submitted and approved by the District Engineer prior to project approval by the Board of Directors. The following shall be required:

Site specific design criteria for the pump stations will be provided by the District.

a. calculations used for determining station design flow;
b. pump design criteria including pump performance curves;
c. load calculations for station and valve box lid and cover;
d. specifications for concrete;
e. specifications for protective concrete coating;
f. method of sealing concrete rings;
g. mechanical drawings showing exact locations of pumps, disconnects, pipes, valves, etc. (all components shall be dimensioned adequately for proper assembly);
h. detailed drawings and specifications of all hardware and components used in the wet well and valve box;
i. method used for anchoring components to concrete slab and/or walls.
j. buoyancy calculations for underground facilities.

4.10 Design Considerations

4.101 Wet Well Sizing

The usable wet well volume (dead-band volume) shall be calculated using the following formula:

$$V = TQ / 4$$

where: V = dead-band volume, gallons
T = cycle time (time between starts), minutes
Q = design pump flow rate, gpm

The minimum value of T shall be 10 minutes based on a maximum of 6 starts per hour. The value of T may be increased according to pump manufacturer's recommendations.

4.102 Pump Capacity

The design pump capacity for sewer lift stations shall be based on peak wet weather flow for the area being served. Peak flow shall be calculated in accordance with the District's Improvement Standards **Section 3.01 Design Flow**. Historic flows may be considered in determining design flow where adequate information is available.

4.103 Pump Configuration

Submersible or above ground pump installations may be considered acceptable by the District depending on local conditions. A minimum of two pumps (duplex) shall be required where each pump is capable of pumping the design flow with the second pump acting as a back-up. Operation of pumps shall automatically alternate to maintain even wear. The District may require a three pump (triplex) system based on conditions of operation or where a higher level of reliability is required.

4.104 Manditory Emergency Storage

Emergency storage shall be required for all lift station installations. The amount of storage will be based on design flows, environmental sensitivity, and estimated time for District personnel to respond to the emergency and reestablish station operation. Design criteria for quantity of emergency storage will be provided by the District.

4.105 Standby Power

On-site standby power shall be required for all lift stations. Standby generators shall be sized to accommodate pumping the maximum design flow. Standby power systems shall include automatic transfer to the generator during power outages. Systems shall also include a manual transfer switch and receptacle to accommodate the District's portable generator. Generators shall be diesel or propane fuel powered with minimum fuel storage to allow 24 hours of pump operation. Diesel powered generators secondary fuel containment shall conform with the District

“Spill Prevention Control & Countermeasures Plan” and “Hazardous Material Release Response Plan.”

4.106 Bypass Pipe

All stations shall be equipped with bypass pipelines to allow pumping from the wet well to the force main through a portable pump. Suction and discharge bypass pipes shall be 6-inch diameter with Bauers quick disconnect and cap for connection to pump hoses. Suction pipe shall include a drop pipe installed in the wet well to within 6 inches of the invert. The discharge pipe shall be installed in the force main downstream from the pump check valves and shall include an isolation valve between the force main and disconnect.

4.107 Alarms

Lift station equipment shall include alarms for the following conditions; low water level, high water level, pump failure, generator failure, station power failure, fire, security, and low fuel on generator.

4.108 Force Main Design

Force mains shall be designed to reduce energy costs and prevent settling of solids in the line. Optimum velocities for reducing costs and preventing accumulation of solids range from 3.0 feet per second to 5.0 feet per second. Force mains shall be designed using restrained joints or concrete thrust blocks to prevent movement of pipeline and fittings under pressure. Force mains shall include air/vacuum release valves at all high points.

4.109 Pigging Port

All lift stations shall include a pigging port to allow insertion of a pipe cleaning pig into the force main. Pigging port shall be installed downstream of the pump check valves.

4.110 Odor Control

Depending on the local conditions and proximity to potentially sensitive receptors, odor control may be required at sewer lift stations. Odor control may include chemical treatment or forced air ventilation through filter media at the discretion of the District.

4.111 Noise Control

Depending on the local conditions and proximity to potentially sensitive receptors, noise control may be required at sewer lift stations. Noise control may include sound deadening insulation in buildings and/or mechanical sound attenuation for equipment such as standby generators at the discretion of the District.

4.112 Location and Access

Sewer lift stations and force mains shall be located to allow access to all facilities by District service vehicles. Lift station sites shall include adequate driveways, parking, and turnaround space to allow District service vehicles access to wet well and valve vault hatches and building doorways. Lift stations shall be located so as to minimize potential adverse environmental impacts in the event of an overflow or spill. Where lift stations must be placed near open water courses, they must include adequate protection such as emergency storage and grading and drainage modifications to prevent discharge into surface waters.

4.113 Pump/Motor Handling Equipment

Where lift stations include pumps, motors, or other equipment which cannot be accessed or lifted with the District's standard service equipment, pump/motor handling equipment may be required. Pump/motor handling equipment may include cranes, trolleys, hoists, or other equipment determined necessary by the District.

4.114 Comminution

Depending on the nature of the customers being served and the level of reliability required, comminution may be required. The need for comminution will be determined by the District on a case by case basis.

4.115 Buildings

Buildings shall be required for all sewer lift stations utilizing above ground pump systems. Buildings shall include at least one standard entry door and one minimum 8-foot wide roll-up door.

4.116 Outside Security Lighting

All sewer lift stations shall be equipped with outdoor security lighting. Security lighting shall operate on an automatic photo/motion sensor with a manual override.

4.117 Vibration

Regardless of the type of unit constructed, maximum vibration measured around the upper circumference of the motor of the completed and functioning sewer lift stations shall be less than one (1) mil peak measured around the upper circumference of the motor. Vibration will be measured before station is accepted by the Board of Directors. Corrections for excess vibration shall be the responsibility of the Contractor.

4.118 Telemetry Communication

The District utilizes a radio based communications system for alarm notification, trending and reports, and remote operation through its existing SCADA system. All new lift stations shall be equipped with radio communication systems. A point-to-point radio path survey will be required to determine antenna design criteria.

4.20 Materials

4.201 Wet Well Material

Lift station wet wells shall be constructed of reinforced concrete pipe conforming to ASTM Designation C76/AASHTO M170 or precast manhole sections conforming to ASTM C 478. Joints for concrete pipe or manhole sections shall be water-tight flush bell joints with rubber gaskets conforming to ASTM C443 / AASHTO M198 or approved equal. Interior concrete walls shall be coated with a protective coating suitable for use in contact with raw sewage.

4.202 Pipe and Fittings

Station piping and fittings for installation above ground and in the wet well shall be flanged ductile iron. Force main pipe shall be either ductile iron or polyvinyl chloride (PVC).

Ductile iron pipe and fittings used as station piping shall have minimum 125 lb flange connections and shall conform in all respects to ANSI/AWWA C115/A21.15-94 and C110/A21.10-93 standards as appropriate.

All ductile iron pipe and fittings shall be lined with a PROTECTO 401 ceramic epoxy interior lining or approved equal. Methods of application, touch up, and repair shall be in accordance with the manufacturer's recommendations. The pipe and fitting manufacturers must provide certification confirming that the liner was installed in accordance with the lining manufacturer's recommendations.

Fittings for ductile iron and PVC pipe used as force main shall be ductile iron compact fittings conforming to AWWA C153 Class 350.

Polyvinyl chloride pipe shall have a maximum dimension ratio (DR) of 18 (minimum pressure class 150), unless otherwise specified and shall conform to AWWA Standards C900. Outside diameter (OD) pipe shall be manufactured to cast iron pipe (CIP) equivalent. Pipe shall be furnished in minimum standard lengths of 20 ft.

4.203 Check Valves

Check valves shall be installed in the discharge line of each pump. Check valves shall be swing check valves and shall be constructed of heavy cast iron body with a bronze seat ring. Check valves shall include an exterior lever and weight to allow adjustment of the closure rate and manual operation of the valve. The valves shall be APCO Series 6000CLW Convertible Swing Check Valve (per Bulletin 579) or approved equal.

4.204 Eccentric Plug Valves

Isolation valves shall be eccentric plug type valves. The isolation valves shall have flanged ends conforming to ANSI B16.1 Class 125 standard. Valves within the valve vault shall have mechanical actuators with handwheels. Buried valves shall include mechanical actuators with 2" operating nuts and shall be designed for underground applications. The isolation valves shall be M & H Style 820 X-Centric plug valves or approved equal.

4.205 Pressure Gauges

A pressure gauge shall be mounted on each force main. Pressure gauges shall be 4.5" Ashcroft Duragauge style 1279 or approved equal. Gauges shall be glycerin filled and shall include isolation valves and stainless steel diaphragm seals as recommended by the gauge manufacturer for wastewater applications.

4.206 Wet Well and Valve Vault Access Covers

The wet well and valve vault access doors for the top of the vaults shall be furnished in the size and configuration as approved by the District. The door panels shall be stainless steel or aluminum diamond plate, reinforced to withstand a live load of the H-20 designation. Doors shall include automatic lock with stainless steel hold open arms with release handles and enclosed stainless steel compression spring assists. Doors shall close flush with the frame. Hinges and all fastening hardware shall be stainless steel. Units shall lock with stainless steel slam locks with removable keys and have a non-corrosive handle. Doors shall be manufactured by Halliday Products, Inc. or approved equal.

4.207 Flow Meter

Flow meters shall be installed at all sewer lift stations. Flow meters shall be magnetic flow meters and shall be the MX magnetic flow meter as manufactured by McCrometer or approved equal.

4.208 Level Sensing Devices

A pressure sensing device shall be installed for measurement of the liquid level in the wet well. Level sensing devices shall be either a bubbler system or submersible pressure transmitter. The pressure sensing device shall be specifically designed for a wastewater, pump/lift station application.

In addition to the pressure sensing device, a set of redundant float type liquid level sensing devices shall be installed in the station to indicate the high-high water alarm condition and the low-low water alarm condition. Floats shall be ITT Flygt ENM-10 Liquid Level Sensors or approved equal.

4.209 Building

Where buildings are required they shall consist of a concrete slab floor, split face masonry block walls, and steel roof. Colors of block and roof shall be chosen to match station surroundings.

4.210 Pump Controls

Lift station pump controls shall be Tesco L2000 Progammable Logic Controller with Reactive Air Monitoring System and Ethernet connections.

4.211 Auto Dialer

All lift stations shall be equipped with an auto-dialing, voice synthesized remote monitor telemetry system. Auto-dialer shall be “real voice” type Verbatim or Chatterbox as manufactured by Raco.

4.212 Telemetry Communication

Lift stations shall be equipped with Ethernet radios provided by the pump controller supplier in order to communicate with the District’s existing SCADA system. Installation shall also include antenna, tower and/or mast, and cabling as required. Radio communication design criteria will be provided by the District.

Radio equipment shall be manufactured by Microwave Data Systems, SD9 “smart radio” or approved equal. The radios shall meet all of FCC part 94 out-of-band emission requirements and shall be capable of transmitting data at 9600 baud, operating half duplex. The R.F. transmitters shall be directly frequency modulated by a built-in digital modem from the digital data stream furnished by the PLC.

The radio assembly for each site shall consist of a non-protected transmitter, receiver, power supply and digital modem capable of operating in the 928 to 952 MHz band. Each assembly shall be capable of transmitting and receiving digital data at a rate of 9600 Baud over a 12.5 KHz FCC assigned channel. The radio shall include both Ethernet (10/100 BaseT) and serial (RS-232) connections and shall support encryption for radio traffic.

The antennas for all sites shall be heavy duty yagi type and shall have a frequency range of 928 to 960 MHz.

Transmission lines shall be Andrew Corporation Heliax Type LDF4-50A 1/2” diameter foam dielectric coaxial cable or approved equal.

SECTION 5 – Mainline Construction Requirements

5.01 Excavation

Except by specific approval of the General Manager and/or District Engineer, no more than three hundred (300) feet of open trench shall be excavated in advance of laying of the sewer pipe. The trench shall be backfilled, compacted and open to traffic where applicable at the end of each day's work.

Width of trench shall be uniform from top to bottom and shall be a minimum of eight (8) inches wider than the external diameter of the pipe. The maximum width of the trench measured at the top of the pipe shall not exceed the external width of the pipe plus twenty four (24) inches exclusive of bells, collars and fittings.

Stripping of top soil and separate storage thereof will be required in areas where it is deemed necessary by the General Manager and/or District Engineer to preserve the quality of top soil.

Shoring of trenches shall be in accordance with appropriate State and Federal safety regulations and the dictates of good construction practice. Safe access to the trench for inspection purposes shall be provided at all times. The requirements of the California Division of Industrial Safety shall be complied with. Instructions, or the lack thereof, from the General Manager and/or District Engineer or his/her representative in no way waive the Contractor's responsibility with regard to safety.

The depth of trench shall be in accordance with the lines and grades shown on the plans with proper allowance for bedding and thickness of pipe and for the type of fittings specified. Any portion of the trench excavated below the proper grade shall be backfilled with approved bedding material and compacted to 95% relative compaction at the Contractor's expense and at the direction of the General Manager and/or District Engineer. All areas of unsuitable material required by the General Manager and/or District Engineer to be removed shall be replaced in the same manner.

Removal and disposal shall be required of all water entering the excavation, disposal of water shall be done in a manner to prevent damage and nuisance to adjacent properties or to the public. A Dewatering plan as required by the Regional Water Quality Control Board shall be in place. Sufficient pumping equipment shall be provided by the Contractor in a manner so as to maintain the trench in a dry condition during the bedding and initial backfilling of pipe. Appropriate precautions shall be taken to prevent drainage water from entering the sewer line being constructed.

5.02 Bedding

Bedding for sewer pipe shall be of a granular material appropriate to the conditions present in the construction. Depending on said conditions, clean sand, pit run gravel, pea gravel or road base may be required for pipe bedding. Type, method of placement and preparation of bedding shall be approved in advance of the construction by the General Manager and/or District Engineer and any changes necessitated by the work or available supply of materials shall be approved by the General Manager and/or District Engineer. A minimum of six (6) inch compacted depth of bedding shall underlie the pipe in all cases. Bedding shall be placed to fit the underside of the pipe barrel with excavation made for bells or pipe couplings.

Concrete encasement of the pipe may be required by the General Manager and/or District Engineer under certain circumstances.

5.03 Alignment and Grade Control

Construction alignment and grade control shall be set by a licensed civil engineer or land surveyor. At a minimum, alignment and grade of each manhole change in alignment, and cleanout shall be set. When the distance between manholes or a cleanout is greater than 300' an intervisible point between both manholes shall be staked. Cut sheets shall be provided to the General Manager and/or District Engineer. The General Manager and/or District Engineer shall determine the adequacy of the proposed method and shall set the tolerances required for the work. The General Manager and/or District Engineer, at any time during the course of the work, may require alterations of the grade control method to conform to the required conditions of the work.

Horizontal alignment shall be such as to maintain a true line between manholes. Any deviation therefrom must meet the approval of the General Manager and/or District Engineer.

Unless otherwise approved by the General Manager and/or District Engineer, line and grade shall be staked by a licensed civil engineer or licensed land surveyor. The General Manager and/or District Engineer may at any time check the alignment and grade from staking. The Contractor shall take appropriate means to preserve, as is practicable, all stakes, bench marks and control used in the setting of alignment and grade. Where, in the judgment of the General Manager and/or District Engineer, the loss of stakes and/or other reference points from whatever cause, requires restaking, such restaking shall be performed when and as directed by the General Manager and/or District Engineer and shall be done at the cost of the Owner/Developer.

5.04 Pipe Installation

The pipe shall be laid in strict conformity with the prescribed alignment and grade, as staked, and brought to the work by the approved method. Pipe laying shall proceed upgrade with the bell ends of the pipe placed upstream. Each section of pipe shall be laid true to line and grade and in such a manner as to form a water tight concentric joint with the adjoining pipe. The interior of the sewer shall be kept clear of all dirt and debris during the work process. Plugs shall be placed in the open end of pipe during all waiting periods in the construction process.

All pipe laying and joining, including the maximum deflection of joints in curved alignment shall be in accordance with the pipe manufacturer's specifications and as directed by the General Manager and/or District Engineer.

The bedding shall be shaped to fit the barrel of the pipe and give uniform support throughout its length. Pipe bedding should be excavated from beneath the bell ends or couplings of the pipe so as to avoid any bridging effect. No wedging or support of the pipe with wood or any other type of material than the approved bedding shall be permitted.

Initial backfill shall be placed in an approved manner so that the bottom one-third (1/3) of the pipe rests on a densely compacted bed of approved granular material. Slicing with a shovel tip, tamping with a T-bar, compaction by foot or other approved mechanical equipment may be used to meet such requirement. In case of light weight pipe (PVC), sufficient material must be placed on the pipe to keep it from moving out of line and grade. In the case of PVC, jetting of the pipe zone material as approved by the General Manager and/or District Engineer may be required.

5.05 Backfill

Backfill shall consist of compacted initial backfill and intermediate backfill. Backfill within the roadway structural section shall conform to Butte County or City of Oroville Standards.

a. Initial Backfill – Initial backfill shall be placed from the springline of the pipe to a point twelve (12) inches above the top of the pipe. Initial backfill material shall be the same type imported material used for pipe bedding. Initial backfill shall be placed after the bedding material has been placed and the pipe joints have been inspected and passed by the District inspector. Initial backfill shall be on-site prior to inspection by the District inspector.

b. Intermediate Backfill - Intermediate backfill for projects outside the city or county right of way shall be placed from twelve (12) inches above the pipe to the surface. Intermediate backfill material shall be screened excavated (native) material, free from roots, organic matter, trash, and debris, and shall contain no rocks greater than three (3) inches in diameter. All material containing rocks shall have adequate fines to fill all voids. Where excavated material cannot meet this specification it should be properly disposed of and imported backfill material used. Intermediate backfill shall only be placed after the line has been tested and approved by the District inspector. Excavations shall not remain open overnight outside of private property unless approved by the District. All trench backfill shall be completed within a maximum of five (5) working days. Intermediate backfill within the roadway structural section shall conform to City of Oroville or Butte County standards.

5.06 Mainline Pipe Line Testing

A. Testing for Leakage - The completed pipe line may be tested for leakage at the option of the Contractor prior to completion of backfill and surfacing. Retesting may be required by the General Manager and/or District Engineer following backfill operations. Testing of pipe lines for leakage shall be done prior to acceptance of the completed Facility by the Board of Directors.

All pipe lines shall be air tested under the terms of the Ramseier Method as interpreted and reduced below.

The pipe line to be tested shall be plugged and pumped full of air to a pressure of not more than four (4.0) psi above the average back pressure created by any ground water that may submerge the pipe. A stabilization period of not less than five (5) minutes shall follow filling prior to beginning the test unless waived by the General Manager and/or District Engineer. The pressure at the beginning of the test shall be not less than three (3.0) psi. The allowable time for the pressure to drop a maximum of one-half (0.5) psi is shown below per size of pipe.

Pipe Size	Allowable Time for 0.5 psi Drop
4"	125 seconds
6"	185 seconds
8"	245 seconds
10"	310 seconds
12"	370 seconds
15"	460 seconds
18"	550 seconds
24"	735 seconds

If the pressure drop exceeds one-half (0.5) psi over the time allowed, that section of pipe shall have failed the test and the Contractor shall locate and repair the faulty portion or portions and successfully retest.

Prior to air testing the Contractor shall satisfy the General Manager and/or District Engineer that the thus far completed lines are free of obstructions to the point that the air test is deemed valid by the General Manager and/or District Engineer. Balling and flushing may be done at this time, however, balling and flushing is required after completion of all surface work and final paving, if any, and installation of manhole castings, final leveling thereof and any and all remaining manhole work. Where service lines extend through or into easements final air testing shall be performed after the completion of all work in the easements.

Hydrostatic testing of lines may be substituted for air testing if and as approved by the General Manager and/or District Engineer.

B. Tests for Obstructions - All pipe lines shall be tested for obstructions and cleaned by balling and flushing or the use of a high pressure sewer cleaner. Balling and flushing shall be done with a commercial sewer cleaning ball such as the Wayne Sewer Cleaning Ball or the Flexible Sewer Ball or approved equal. The ball shall be controlled by a tag line or rope or sewer rods and permitted to move slowly through the sewer. The ball shall be passed freely through the test section and all debris flushed ahead of it shall be caught and removed at the first manhole. If the ball is stopped or prevented from moving freely by debris, damaged pipe, alignment, irregularity or any other cause, the Contractor shall locate and remedy or repair the obstruction and shall retest the conduit by balling and flushing as well as air testing to the satisfaction of the General Manager and/or District Engineer.

Jet rodding shall be done with a high pressure sewer cleaner as approved by the General Manager and/or District Engineer.

C. Test for Deflection/Out-of-Roundness (PVC) - Following the placement and compaction of backfill and prior to the placing of permanent surfacing, all plastic pipe mains shall be cleaned and then mandrelled in the presence of the General Manager and/or District Engineer or his/her representative to determine the existence of obstructions (deflections, joint offsets and lateral pipe intrusions).

A rigid mandrel that is approved by the General Manager and/or District Engineer, with a circular cross section having a diameter of at least 95% of the specified average inside diameter of the pipe, shall be pulled through the pipe by hand. The minimum length of the circular portion of the mandrel shall be equal to the nominal diameter of the pipe. Any obstructions encountered by the mandrel shall be properly repaired or replaced and rechecked as directed by the General Manager and/or District Engineer at no expense to the District.

Approximately eleven (11) months after acceptance of the work (at least twenty (20) days but not more than fifty (50) days prior to expiration of the one year maintenance period) all plastic pipe mains shall again be mandrelled in the presence of the General Manager and/or District Engineer or his/her representative. A rigid mandrel that is approved by the General Manager and/or District Engineer, with a circular cross section having a diameter of at least 90% of the specified average inside diameter of the pipe, shall be pulled through the pipe by hand. The minimum length of the circular portion of the mandrel shall be equal to the nominal diameter of the pipe. All obstructions encountered by the mandrel shall be properly repaired or replaced and rechecked as directed by the General Manager and/or District Engineer at no expense to the District.

5.07 Manholes

All manholes shall be of concrete construction and shall conform to the Standard Details unless otherwise approved and specified. The manhole base shall be of sound concrete, placed in accordance with good practice and of proper slump for use in the work. Control of water in the manhole excavation shall be to the satisfaction of the General Manager and/or District Engineer. Precautions shall be taken to assure that sewer pipe entering and leaving the manholes does not move from the installed alignment and grade. Sufficient material should be placed on said sewer lines to prevent such movement. Appropriate plugs, as approved by the General Manager and/or District Engineer shall be placed in the ends of the pipes in order to prevent concrete from entering the lines during the manhole pour. In case of straight through lines, the pipe may be laid through the manhole excavation with the base being poured around the pipe. The upper half of the pipe shall then be cut or broken out to form the channel in an approved method.

Care should be taken to set the manhole barrels at the appropriate time during the cure of the concrete to insure proper penetration and allow for sufficient clearance between the bottom of barrel and top of pipe. Initial setting and removal of barrels and rings or the use of a ring form to make the indentation in the base is subject to approval by the General Manager and/or District Engineer.

Sufficient care should be taken during the manhole pour operation to observe the rate of cure of concrete and to properly work the surfaces and channels so as to arrive at the required shapes and surfaces and avoid poor results. The channels shall be shaped in flowing curves as indicated on the drawings to insure proper hydraulic characteristics for the flow of sewage. A smooth, clean, hand rubbed finish shall be given to the surfaces of the manhole base and to any joint mortar work. Transitions between different sizes of pipes shall be smooth and regular. Excessive concrete, mortar or improperly shaped or surfaced channels shall be chipped back and built up again to insure the proper shape and surface. All cracks, joints, holes, etc., shall be sealed by mortar, sealing compounds or dry pack as approved by the General Manager and/or District Engineer to insure water tight manholes with workmanlike appearance.

During the pour of the manhole base, adequate care shall be taken to insure the proper bond between the sewer pipe and the concrete to prevent leakage in that location.

Care shall be taken in setting of barrels, tapered sections and risers to achieve good elevation control so that no more than twelve (12) vertical inches of grade rings are necessary to adjust the level of the manhole castings (12 inch maximum between top of tapered section and bottom of manhole casting).

Backfill shall be placed uniformly around the outside of the manhole so as not to create differential forces and the possibility of dislodging the manhole sections.

Drop connection inside manholes shall be in accordance with the Standard Details and shall be constructed in a manner to leastwise restrict maneuverability within the manhole.

5.08 Manhole Testing

All manholes shall be tested by the placing of suitable plugs in the inlet and outlet lines and filling with water to the top of the casting. A one (1) hour minimum absorption may be required following which the testing of any leakage shall be observed. There shall be no measurable drop in water level observed by the District following the 15 minute test period.

If the manhole leakage exceeds the allowable amount, the manhole shall have failed the test and the Contractor shall repair and retest the manhole to the General Manager and/or District Engineer's satisfaction.

5.09 Installation of Casings; Boring and Jacking

In case of installation of sewer line in a casing, whether by trenching methods or by boring and jacking, the grade of the installed casing shall be checked with regard to the design slope of the sewer being installed. The sewer line shall be installed by the method out lined in the latest edition, “State of California Standard Specifications,” as amended by specific pipe manufacturer's recommendations, and approved by the General Manager and/or District Engineer. The pipe skids shall be shaped and installed in a manner so as to compensate for any misalignment or grade problems in the installed casings. All procedures and equipment used in the installation of a sewer in the casing shall be subject to prior review and approval of the General Manager and/or District Engineer. Any filling, sacking, drainage and protection of the casing ends shall be as directed by the General Manager and/or District Engineer.

All requirements of agencies having jurisdiction over the roadway, railroad or other type of embankment through which the casing is placed, shall be observed.

5.10 Cleanup

During the progress of the work the Contractor shall maintain the entire job site in a clean and orderly condition as required by all agencies having jurisdiction. The Contractor shall promptly attend to the concerns of any persons having contact with the work and shall repair or replace any damage caused by his/her operation as directed by the General Manager and/or District Engineer.

<u>**DEVELOPMENT AGREEMENT**</u>
for
DEVELOPER
SUBDIVISION LINE EXTENSION

THIS AGREEMENT, made and entered into this ____ day of____________, by and between LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT, a local public agency of the State of California, hereinafter referred to as "District", and___________________, hereinafter referred to as "Developer";

WITNESSETH:

WHEREAS, Developer is the owner, in fee, of that certain real property located within Butte County, California, bearing Assessor's Parcel Number________________________; and,

WHEREAS, Developer intend to develop said property for business purposes, as more particularly shown and described in Exhibit "A", attached hereto and made a part hereof; and,

WHEREAS, Developer is planning to construct a sanitary sewer system, which system, together with all necessary lands, easements, and rights of way therefor, is hereinafter called "the Sewer System"; and,

WHEREAS, Developer has caused its engineer to prepare complete plans and specification for the construction of the Sewer System, consisting of sewer main extension and all appurtenances thereto, all in accordance with District's Improvement Standards, Board Policies, and the requirements and conditions hereinafter agreed upon; and,

WHEREAS, the facilities and lands to be served by the Sewer System lie within the annexed boundaries of District; and,

WHEREAS, Developer desires District to accept the Sewer System into District's wastewater collection system upon completion thereof and thereafter to operate, maintain, repair and replace said works as necessary; and, District is willing to do so, provided the Sewer System is properly constructed in accordance with the approved plans therefor, and in accordance with its Standards and Policies.

NOW, THEREFORE, District and Developer mutually agree as follows:

1. **ACCEPTANCE OF PLANS AND SPECIFICATIONS:** Developer certifies that the completed plans and specifications as described above for the Sewer System have been prepared in conformance with District Improvement Standards, Standard Details, and the requirements of the General Manager and District Engineer.

2. **ACCEPTANCE OF PLANS AND SPECIFICATIONS:** The plans and specifications prepared by Developer are in a form acceptable to the General Manager and District Engineer and Developer is authorized to proceed to construct the Sewer System is accordance therewith. Developer shall reimburse District for its expenses incurred in checking the plans and specifications from the fees described in paragraph 7 hereof.

3. **REVISION OF PLANS:** Any changes in the approved plans and specifications shall be submitted by Developer to District and shall not be incorporated into the construction of the Sewer System without the prior written approval of the General Manager and District Engineer.

4. **RIGHTS OF WAY:** Developer will provide to District, at no cost to District and in a form acceptable to the General Manager and District Engineer, appropriate easements and rights of way providing unrestricted right in the District for the ownership, operation, maintenance, repair, and replacement of all Sewer System main line facilities. Facilities placed within existing county maintained streets, non-exclusive public utility easements, and/or sanitary sewer easements will be acceptable in lieu of deeded easements.

5. **CONSTRUCTION:** Developer shall, without expense to District, construct the Sewer System pursuant to the approved plans or any approved modification thereof. Developer shall provide in any contract for construction of the Sewer System that all contractor's and material supplier's guarantees thereunder, shall be effective for at least one (1) year on the completed improvements after acceptance by District, shall inure to the benefit of District. Developer shall also provide in any contract for construction of the Sewer System that the contractor's public liability and property damage insurance shall be extended to cover Developer and District and their agents, officers and employees as additional insured with liability and bodily injury limits of not less than $1,000,000, and property damage coverage of not less than $100,000.

6. **PAYMENT OF PREVAILING WAGES:** Developer understands that the State of California (State) Attorney General has opined that, in certain circumstances, construction of facilities for provision of public utility service, with the understanding that said facilities will be turned over to District for ownership, operation and maintenance at the conclusion of construction, may be subject to the prevailing wage laws of the State. Developer has determined that, at this time, said opinion of the Attorney General does not affect the wages paid by Developer to laborers employed on said facilities constructed pursuant to this Agreement. Developer agrees, however, that should it be determined that the prevailing wage laws of the State (Labor Code Section 1770, et seq.) apply to the work performed in accordance with this Agreement, then Developer shall defend and hold District harmless from any liability, claims, damages, or costs in any way associated with said determination by the State and Developer shall, as further consideration of District entering into this Agreement, take all necessary and appropriate action, including payment of back wages, and any associated penalties which may be required, due to enforcement of the prevailing wage laws in connection with construction of the Sewer System. Developer agrees that District has not represented or in any way advised Developer in connection with this matter except to advise Developer of their potential liability and Developer does not in any way rely upon any

opinion or information of District in making its determination in connection with the payment or nonpayment of such wages for the work performed under this Agreement.

The obligation of Developer to, if required, pay prevailing wages for the work performed in accordance with this Agreement shall be a continuing obligation and shall bind the heirs, successors and assigns of Developer and District's obligation to provide operation and maintenance on the facilities to be turned over to District, and to provide sewage collection therein, shall be dependent upon Developer' continuing compliance with this provision.

7. **INSPECTION OF CONSTRUCTION:** The General Manager or his/her agent(s) shall inspect the construction of the Sewer System to ensure that the works are installed in accordance with the approved plans. Said inspection shall be funded by a Plan Check and Inspection Fee in the initial amount of ________, being ________%____of the cost of the Sewer System () as estimated by the Project Engineer, paid by Developer as specified in District's Improvement Standards (§1.04, §O). Said Fee shall be subject to adjustment based on actual costs of plan check and inspection at such time as the work is completed. Plans and Specification shall not be deemed approved, and construction of the Sewer System shall not commence, until said fee is paid. The General Manager or District Engineer shall notify Developer as to any deviation or failure to construct pursuant to the approved plans as soon as such deviation or failure is brought to the General Manager or District Engineer's attention, and Developer shall correct such deviation or failure. Failure of the General Manager or the Districts Engineer to observe and/or to report such deviation shall not relieve Developer of the obligation to cure, at Developer's expense, all defects in material and workmanship and deviations from the approved Plans and Specifications.

8. **HOLD HARMLESS:** District is not, by inspection of the construction or installation of the Sewer System, representing to Developer that the System is constructed without defects or deviations nor does District's inspection relieve the Developer of the responsibility for the inspection and control of the work by Developer. Any inspections and observations of the work by District are for the sole purpose of providing notice of stage and character of the work. Any failure of District to note variances in the work from the plans does not excuse or exempt Developer from complying with all terms of the plans. The fact that District inspects the construction of work and notifies Developer of deviations or failures to construct them pursuant to the approved plans shall not be deemed to constitute a guarantee by District that the works have been built in accordance with the approved plans. During construction and prior to conveyance thereof to and acceptance thereof by District, Developer shall hold District harmless against any and all claims, demands and charges by third parties arising out of alleged deviations or failures to construct pursuant to the approved plans.

9. **CONVEYANCE:** Within ninety (90) days after completion of construction of the Sewer System in accordance with the approved plans therefor and District's Improvement Standards:

a. Developer shall offer to dedicate the completed works and associated rights of way to District without cost and free and clear of all liens and encumbrances, by the documents of conveyance in Exhibit B or in such other form as is acceptable to the General Manager. Conveyance by the Developer shall not be complete, nor shall service from the Sewer System be provided until acceptance is authorized by the Board of Directors.

b. Developer shall provide District with one set of 24"x 36" reproducible record drawings of the completed project, including street centerline station ties to house service line/main line connection points, on matte mylar (5 mil minimum) one digital .pdf format and one digital .cad format;

c. Developer shall provide easements acceptable to District as specified in Paragraph 4, above;

d. Developer shall furnish to District a bond, irrevocable letter of credit, cash deposit, or other form of surety meeting District's approval in the amount of_________, being ____________ ______% of the actual cost of the Sewer System (__________________) as determined by the Project Engineer, __________________of ________________, protecting District against any failure of the work due to natural phenomenon or catastrophe, faulty materials, poor workmanship, or defective equipment within a period of one (1) year after acceptance of the Sewer System by the District's Board of Directors. Said cash deposit, bond or irrevocable letter of credit shall name Developer as Principal and District as Obligee. The amount of said surety may be adjusted after construction is complete and the actual construction costs are known. However, the amount of said surety must be acceptable to the General Manager to insure adequate funding for those failures described above; and,

e. District shall accept conveyance of title of the completed Sewer System by action of its Board of Directors and include it as part of its system, and shall thereafter operate and maintain said Sewer System.

10. **DEVELOPER'S RESPONSIBILITIES FOR FACILITIES AFTER CONVEYANCE:** After District's acceptance of the Sewer System, Developer shall have no obligation for the operation, maintenance, repair or replacement thereof, except that to the extent Developer retains ownership of any parcel to which service from such works is available. If Developer subdivides the Project subsequent to construction of the Sewer System and a building sewer service stub installed in accordance with the approved plans is not physically situated so as to provide service to a lot resulting from said subsequent subdivision; and, the installation of a new building sewer service line is deemed necessary by District to provide adequate sewer service to said lot, or requested by Developer or the purchaser of a resulting lot, Developer shall, without expense to District, remove said nonfunctional building sewer service stub, and install a functionally located building sewer service line in accordance with District Improvement Standards and Standard Details.

11. **APPLICATION FOR SEWERAGE SERVICE:** No sewage shall be delivered to or conveyed by or through the Sewer System, other than for testing purposes, until the Sewer System is conveyed to District and formally accepted by District as specified in Paragraph 9, above, and proper applications for sewer service having been filed with District accepted.

12. **OBLIGATION FOR PIPELINE AND/OR FACILITIES:** District shall be under no obligation to provide additional pipelines and/or facilities in order to serve the Project. Upon acceptance of the

Sewer System by District, it shall become the sole property of District and shall be used and operated as District's sole discretion.

13. **DEVELOPER RESPONSIBILITY FOR RATES, FEES AND CHARGES FOR SERVICE:** All sanitary sewer service made available by District to users within the Project shall be at the established rates and charges as fixed by District's Board of Directors from time to time, including all applicable connection and capacity fees, periodic service charges, and surcharges required to retire the loan to the District made by the USDA Rural Development . Prior to connecting any residential structure or other structure requiring wastewater discharge to the Sewer System, payment of District's Sewer Connection Fee, District's Capacity Charge and Sewage Commission Oroville Region's (SC-OR) Regional Facility Charge shall be made. Developer agrees that if any such rates, fees, charges or surcharges established by the District are not paid when due, then Developer's service by District may be discontinued until such time as all required charges, and any interest and penalties thereon, are paid.

14. **NOTICES:** Notices or requests from any party to this Agreement to the remaining parties thereof shall be in writing and delivered or mailed, postage prepaid, to the following addresses:

LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT
1960 Elgin Street
Oroville, California 95966
Attention: , General Manager

DEVELOPER
123 MY STREET.
ANY TOWN CA 91919
Attention:

15. **SUCCESSORS AND ASSIGNS:** This Agreement shall be binding upon and inure to the benefit of the successors and assigns of both parties. Developer shall not assign any of his rights, duties or obligations under this Agreement without the prior written consent of District, which consent shall not be unreasonably withheld.

16. **DISTRICT POWERS:** Nothing herein contained shall be deemed to limit, restrict, or modify any right, duty, or obligation given, granted, or imposed upon District by the laws of the State of California now in effect, or hereafter adopted, not to limit or restrict the power or authority of District, including the enactment of any rules, regulations, resolutions or ordinances, and in the event that any part of provision herein contained in this Agreement or incorporated herein, be found to be illegal or unconstitutional by a court of competent jurisdiction, such findings shall not affect the remaining parts, portions, or provisions hereof.

17. **TERMINATION:** This Agreement shall terminate and be of no further force and effect at District's discretion if District determines that construction of the Sewer System has not commenced within twelve (12) months from the date of this Agreement. Developer shall be solely responsible to

request extension of said twelve (12) month period, the grant of which shall be in the sole discretion of the Board.

18. **REIMBURSEMENT AGREEMENT:** If applicable the District and the Developer shall enter into a Reimbursement Agreement per Board Policy No. 6122, said agreement shall be attached hereto.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the day and year first above written.

LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT:

____
By: President

ATTEST:

____
, District Secretary

DEVELOPER/OWNERS:

By:
____ for DEVELOPER

EXHIBIT "B"

DEDICATION

TO: LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT
1960 Elgin Street
Oroville, California 95966

I/We hereby offer to convey, transfer and dedicate all right, title and interest in and to that certain sewerage system and appurtenances, including all necessary rights of access and easements required for District to have unrestricted right and access to own, operate, maintain, repair and replace said system and appurtenances more particularly described in Exhibit "A", attached to the Development Agreement by and between Lake Oroville Area Public Utility District and_____________________________, for ____dated ____________________ 20____, a copy of which is on file in the District office located at the address noted above; to Lake Oroville Area Public Utility District. The undersigned further warrant to said District that the Sewer System is free and clear of all liens, encumbrances and other expenses and that it has been constructed in accordance with the Plans and Specifications approved by the District.

Dated: ___________________________

DEVELOPER/OWNERS:

By:___________________________________
for Developer

RECORDING REQUESTED BY

Lake Oroville Area
Public Utility District

WHEN RECORDED MAIL TO:

Lake Oroville Area
Public Utility District
1960 Elgin Street
Oroville, CA 95966

AP: 000-000-000 **SPACE ABOVE THIS LINE FOR RECORDER'S USE**

Conveyance to governmental entity R&T Code 11922

EASEMENT GRANT DEED

KNOW ALL MEN BY THESE PRESENTS:

For good and valuable consideration receipt of which is hereby acknowledged:

OWNER

hereinafter referred to as GRANTORS, grant to LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT, hereinafter referred to as GRANTEE, a public agency in the State of California, duly organized, existing and acting pursuant to the laws thereof, with its principle place of business in Butte County, California, and to its successor and assigns, a perpetual easement with the right to erect, construct, install, and lay, and thereafter use, operate, inspect, repair, maintain, replace, and remove sewer pipes, pumps, pump vaults, electrical controls, electrical services and facilities incidental thereto, and in addition to a temporary construction easement over, across and through a portion of the lands of the GRANTORS situate in Butte County, State of California, said land being described as follows: All lands, as described in deed to GRANTORS as filed January 7, 2009 at Serial No. 2009-0000000 of the Official Records of the County of Butte, State of California.

In connection with GRANTEE'S right of access for installation, repair, replacement and maintenance of said facilities, GRANTORS further grant to GRANTEE the right of ingress to, and egress from, the easements granted herewith, over and across GRANTORS' land, by means of any routes as shall occasion the least practical damage and inconvenience to GRANTORS and grant the right for GRANTEE to use said routes to provide access to GRANTEE'S easements and facilities, on GRANTORS' lands and on lands adjacent to GRANTORS' lands; dedicated roads owned and maintained by Butte County as may be reasonably necessary in connection with the installation, repair, replacement, and maintenance of GRANTEE'S facilities.

The easement shall be over all that real property as described in Exhibit "A", attached hereto and by this reference made a part hereof.

The hereinabove described easement is generally depicted as shown on Exhibit "B" attached hereto and made a part hereof by reference.

The grant and other provisions of this easement shall constitute a covenant running with the land for the benefit of the GRANTEE, its successors and assigns.

IN WITNESS WHEREOF, the GRANTORS have executed this instrument this ____________ day of ______________________________, 20 ________.

GRANTOR: ____________________________________
OWNER

GRANTOR: ____________________________________
OWNER

State of California
County of_______________ }

On _______________ before me, ________________________________Notary Public personally appeared ____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 authorized capacity, 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.

Notary Signature _________________________________

State of California
County of_______________

On _______________ before me, _________________________________Notary Public personally appeared ____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 authorized capacity, 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.

Notary Signature __________________________________

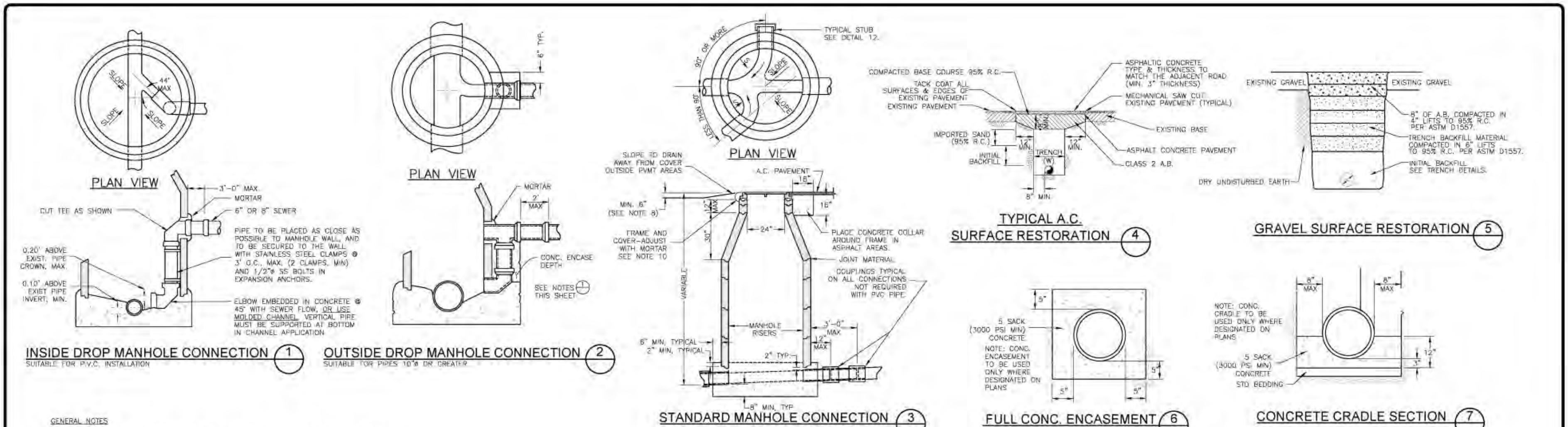
ACCEPTANCE AND AUTHORIZATION:

This is to certify that the easement upon real property conveyed by grant deed dated ________________ from ____ to Lake Oroville Area Public Utility District a government agency is hereby accepted by the undersigned officer on behalf of the Lake Oroville Area Public Utility District pursuant to the authority conferred by Resolution No. 15-02 of the Lake Oroville Area Public Utility District, adopted October 8, 2002 and the grantee consents to recordation thereof by its duly authorized officer.

Dated:_________________________ By:__________________________________

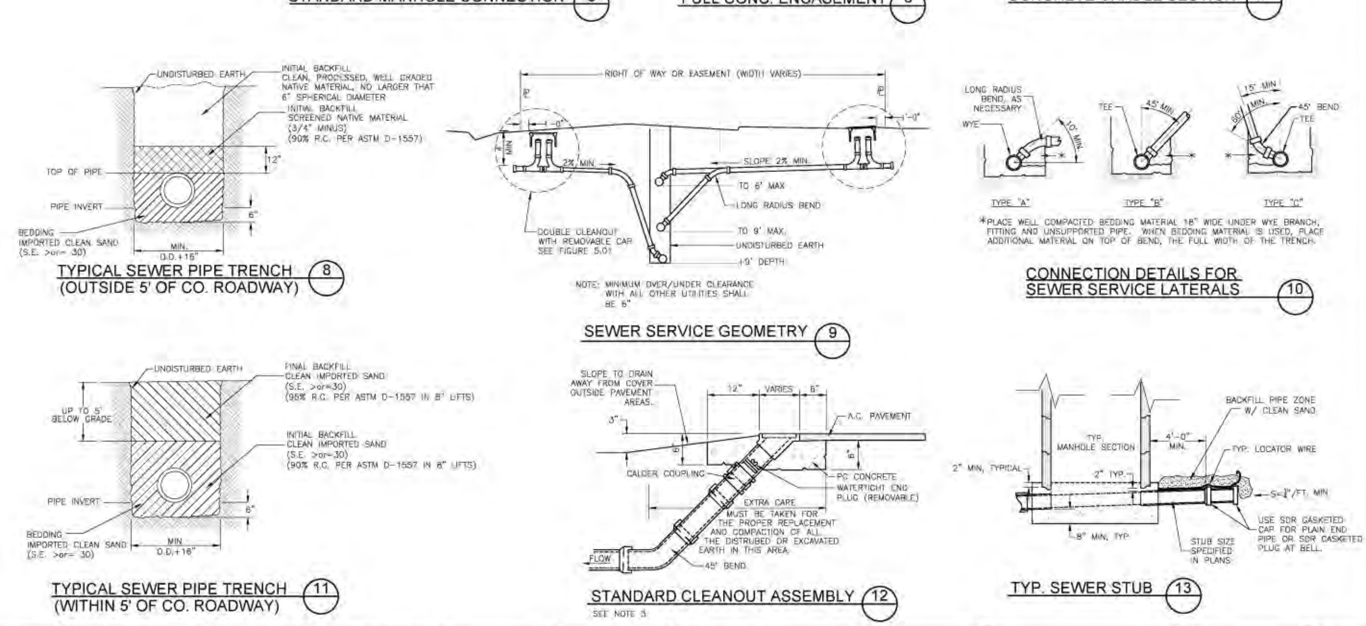
Clerk of the Board

Lake Oroville Area Public Utility District



GENERAL NOTES

1. PIPE ZONE BEDDING AND BACKFILL SHALL BE CLEAN SAND, OR IN CASE OF EXCESS WATER IN TRENCH, $\frac{1}{2}$" PEA GRAVEL. COMPACT SAND BEDDING AT OPTIMUM MOISTURE TO 90% R.C. PER ASTM D-1557.
2. CONNECTIONS OF PIPE TO MANHOLES SHALL UTILIZE A-LOK PIPE OR APPROVED EQUAL. FOR PRECAST BASES, CONNECTION OF THE PIPE TO THE MANHOLE SHALL UTILIZE A RESILIENT CONNECTOR CONFORMING TO ASTM C923 SUCH AS A-LOK, KOR-N-SEAL, OR EQUAL.
3. TEMPORARY CLEAN OUT SHALL BE IDENTICAL TO STANDARD CLEAN OUT ASSEMBLY. TEMPORARY CLEAN OUTS ARE REQUIRED ON ALL SEWERS WHICH HAVE SERVICE LATERALS AND ARE PLANNED FOR EXTENSION IN THE FUTURE. TEPORARY CLEANOUT ASSEMBLYS SHALL INCLUDE LOCATOR WIRE SUFFICIENT FOR DETECTION.
4. A TRENCH PLUG OR DAM OF CLAYEY MATERIAL MAY BE REQUIRED TO SERVE AS A WATERSTOP PREVENTING MOVEMENT OF WATER IN THE TRENCH. LENGTH AND SPECIFIC TYPE OF MATERIAL TO BE SPECIFIED BY L.O.A.P.U.D ENGINEER. CONCRETE EROSION PROTECTION COLLARS MAY BE REQUIRED ON STEEP SLOPES.
5. PIPE SHALL STOP AT INSIDE FACE OF MANHOLE OR SHALL BE CONTINOUS THROUGH MANHOLE. IF PIPE LAID CONTINUOUS, TOP HALF SHALL BE REMOVED AFTER BASE IS POURED.
6. USE OF ECCENTRIC CONES OR SHALLOW (FLAT TOP) MANHOLES SUBJECT TO APPROVAL BY L.O.A.P.U.D. ENGINEER.
7. USE OF PRECAST MANHOLE BASES SUBJECT TO APPROVAL BY L.O.A.P.U.D. ENGINEER. NO FIBERGLASS MANHOLES WILL BE PERMITTED.
8. MANHOLE LIDS SHALL EXTEND 12" ABOVE HIGHWATER LINE WHERE SEWER FOLLOWS DRAINAGE COURSE.
9. COUPLINGS MAY BE FERNCO STRONGBACK RC SERIES OR APPROVED EQUAL. PIPE MAY BE LAID THRU AND CUT BY SAW OR CHAIN TYPE BREAKER AFTER POUR, IN ORDER TO FACILITATE MAINTENANCE OF GRADE DURING POURING OF MANHOLE BASE.
10. MORTAR SHALL BE PLACED OUTSIDE AROUND THE JOINT BETWEEN CASTING AND THE TOP GRADE RING TO FORM ADDITIONAL SUPPORT AGAINST JOINT FRACTURE DO TO VIBRATION.
11. TEST WYES AT PROPERTY LINE ON SERVICE LATERALS SHALL HAVE SUFFICIENT METAL ATTACHED TO CAPS TO PROVIDE FOR DETECTION.
12. ALL CONSTRUCTION TO CONFORM TO L.O.A.P.U.D. STANDARDS.
13. SIX (6) INCHES OF 3/4" CRUSHED GRAVEL BEDDING IS REQUIRED UNDER ALL MANHOLE BASES.
14. STRUCTURAL SECTION ELEMENTS MAY BE INCREASED WHERE REQUIRED BY THE AGENCY HAVING JURISDICTION, DUE TO SOIL CONDITIONS AND TRAFFIC CONSIDERATIONS. THE REPLACEMENT STRUCTURAL SECTION SHALL EQUAL THE EXISTING STRUCTURAL SECTION AS A MINIMUM REQUIREMENT. THE SECTION SHOWN IS AN ABSOLUTE MINIMUM.
15. THE RELATIVE DENSITY REQUIREMENTS FOR ASPHALT RESURFACING ARE AS FOLLOWS: FOR THE TOP 5': 95% UNDER ROADWAY, 95% OUTSIDE OF THE TRAVELED WAY (SUCH AS INTERSECTIONS, CROSSOVERS, TURNOUTS, ETC.), 95% SHOULDER PAVEMENT. FOR 5' BELOW GRADE TO TRENCH BOTTOM: 90% RELATIVE COMPACTION. ALL COMPACTION TESTING IS IN ACCORDANCE WITH ASTM TEST METHOD D-1557.



KSK DESIGNED BY
CBJ DRAFTED BY
DDM CHECKED BY
00-001-01 PROJECT NO.
DECEMBER 2011 DATE

NO. | BY | DATE | APP'D | REVISIONS

BENCHMARK: ELEV. DATUM
DESCRIPTION:

Sauers Engineering, Inc.
Civil and Environmental Engineers
440 Lower Grass Valley Road, Suite A, Nevada City, CA 95959
Telephone (530) 265-8021

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES
HORIZ. SCALE:
VERT. SCALE:
(E)CONTOUR INTERVAL

LAKE OROVILLE AREA PUBLIC UTILITY DISTRICT
1960 ELGIN STREET
OROVILLE, CA 95966
TEL. (530) 533-2000

LOAPUD STANDARD DETAILS

DRAWING SD1
SHEET 1 OF 1