APPENDIX A
Air Quality and Greenhouse Gas Modeling Data

City Trunk Line South LADWP

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	9.23	1000sqft	0.21	9,227.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	12			**Operational Year**	2023
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	1227.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

.Project Characteristics - Operational year 2023

Land Use - 0.21 acres.

Construction Phase - Construction Scheudle provided by lADWP.

Off-road Equipment - Construction equipment information provided by LADWP.

Off-road Equipment - 74 hp = dust collector, 5,000 CFM dehumidifer is electric, 60KW in-line heater is electric, Blast pot is pneumatic.

Off-road Equipment - Construction equipment information provided by LADWP.

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Off-road Equipment - Construction equipment information provided by LADWP.

Off-road Equipment - Construction equipment information provided by LADWP.

Trips and VMT - Construction trip information provided by LADWP.

Grading - 7,600 cy material exported.

Construction Off-road Equipment Mitigation - Compliance with SCAQMD Rule 403.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	100.00	326.00
tblConstructionPhase	NumDays	1.00	86.00
tblGrading	MaterialExported	0.00	7,600.00
tblLandUse	LandUseSquareFeet	9,230.00	9,227.00
tblOffRoadEquipment	HorsePower	231.00	400.00
tblOffRoadEquipment	HorsePower	231.00	400.00
tblOffRoadEquipment	HorsePower	158.00	345.00
tblOffRoadEquipment	HorsePower	158.00	345.00
tblOffRoadEquipment	HorsePower	158.00	345.00
tblOffRoadEquipment	HorsePower	172.00	74.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblTripsAndVMT	VendorTripNumber	2.00	16.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	WorkerTripNumber	4.00	50.00
tblTripsAndVMT	WorkerTripNumber	18.00	56.00
tblTripsAndVMT	WorkerTripNumber	10.00	50.00
tblTripsAndVMT	WorkerTripNumber	10.00	56.00
tblTripsAndVMT	WorkerTripNumber	1.00	2.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.1482	1.4227	1.3738	3.4700e-003	0.0645	0.0621	0.1266	0.0174	0.0572	0.0746	0.0000	309.3413	309.3413	0.0747	0.0000	311.2096
2022	0.1845	1.6549	1.8157	4.5900e-003	0.0930	0.0700	0.1630	0.0249	0.0656	0.0904	0.0000	409.3768	409.3768	0.0859	0.0000	411.5235
2023	0.1358	1.0581	1.3698	3.3200e-003	0.0753	0.0471	0.1224	0.0200	0.0449	0.0650	0.0000	294.4134	294.4134	0.0485	0.0000	295.6258
Maximum	**0.1845**	**1.6549**	**1.8157**	**4.5900e-003**	**0.0930**	**0.0700**	**0.1630**	**0.0249**	**0.0656**	**0.0904**	**0.0000**	**409.3768**	**409.3768**	**0.0859**	**0.0000**	**411.5235**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.1482	1.4227	1.3738	3.4700e-003	0.0645	0.0621	0.1266	0.0174	0.0572	0.0746	0.0000	309.3410	309.3410	0.0747	0.0000	311.2093
2022	0.1845	1.6549	1.8157	4.5900e-003	0.0928	0.0700	0.1628	0.0248	0.0656	0.0904	0.0000	409.3765	409.3765	0.0859	0.0000	411.5232
2023	0.1358	1.0581	1.3697	3.3200e-003	0.0751	0.0471	0.1221	0.0200	0.0449	0.0649	0.0000	294.4132	294.4132	0.0485	0.0000	295.6256
Maximum	**0.1845**	**1.6549**	**1.8157**	**4.5900e-003**	**0.0928**	**0.0700**	**0.1628**	**0.0248**	**0.0656**	**0.0904**	**0.0000**	**409.3765**	**409.3765**	**0.0859**	**0.0000**	**411.5232**

	ROG	**NOx**	**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**	**0.20**	**0.00**	**0.12**	**0.11**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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

1	**4-1-2021**	**6-30-2021**	0.5557	0.5557
2	**7-1-2021**	**9-30-2021**	0.4984	0.4984
3	**10-1-2021**	**12-31-2021**	0.4993	0.4993
4	**1-1-2022**	**3-31-2022**	0.4259	0.4259
5	**4-1-2022**	**6-30-2022**	0.4297	0.4297
7	**10-1-2022**	**12-31-2022**	0.9708	0.9708
8	**1-1-2023**	**3-31-2023**	0.9895	0.9895
9	**4-1-2023**	**6-30-2023**	0.1932	0.1932
		Highest	0.9895	0.9895

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	7.4000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.3000e-004	2.3000e-004	0.0000	0.0000	2.4000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.4000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.3000e-004**	**2.3000e-004**	**0.0000**	**0.0000**	**2.4000e-004**

Mitigated Operational

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Area	7.4000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.3000e-004	2.3000e-004	0.0000	0.0000	2.4000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.4000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.3000e-004**	**2.3000e-004**	**0.0000**	**0.0000**	**2.4000e-004**

	ROG	**NOx**	**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	Flow Control Station (FCS) Vault Installation	Building Construction	4/1/2021	6/30/2022	5	326	
2	Pit shoring 1	Trenching	5/3/2021	5/14/2021	5	10	
3	Site Preparation - Cut and Cover	Site Preparation	11/1/2022	2/28/2023	5	86	
4	Carbon Fiber Reinforced Polymer (CFRP) Installation	Trenching	11/1/2022	4/28/2023	5	129	
5	Pipe Jacking	Trenching	11/1/2022	4/28/2023	5	129	
6	Pit Shoring 2	Trenching	12/5/2022	1/13/2023	5	30	
7	Architectural Coating	Architectural Coating	4/24/2023	4/28/2023	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.21

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 554

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Flow Control Station (FCS) Vault Installation	Cranes	1	4.00	231	0.29
Flow Control Station (FCS) Vault Installation	Excavators	1	8.00	345	0.38
Flow Control Station (FCS) Vault Installation	Forklifts	2	6.00	89	0.20
Flow Control Station (FCS) Vault Installation	Skid Steer Loaders	1	8.00	65	0.37
Flow Control Station (FCS) Vault Installation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Pit shoring 1	Air Compressors	1	8.00	78	0.48
Pit shoring 1	Cranes	1	8.00	400	0.29
Pit shoring 1	Generator Sets	1	8.00	84	0.74
Pit shoring 1	Skid Steer Loaders	1	8.00	65	0.37
Site Preparation - Cut and Cover	Aerial Lifts	1	8.00	63	0.31
Site Preparation - Cut and Cover	Cranes	1	8.00	231	0.29
Site Preparation - Cut and Cover	Excavators	1	8.00	345	0.38
Site Preparation - Cut and Cover	Forklifts	1	8.00	89	0.20
Site Preparation - Cut and Cover	Graders	0	0.00	187	0.41
Site Preparation - Cut and Cover	Skid Steer Loaders	1	8.00	65	0.37
Site Preparation - Cut and Cover	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Carbon Fiber Reinforced Polymer (CFRP) Installation	Air Compressors	2	8.00	78	0.48
Carbon Fiber Reinforced Polymer (CFRP) Installation	Generator Sets	1	8.00	84	0.74
Carbon Fiber Reinforced Polymer (CFRP) Installation	Other Construction Equipment	1	8.00	74	0.42
Pipe Jacking	Cranes	0	8.00	231	0.29
Pipe Jacking	Excavators	1	8.00	345	0.38
Pipe Jacking	Forklifts	1	8.00	89	0.20
Pipe Jacking	Generator Sets	0	8.00	84	0.74
Pipe Jacking	Pumps	1	8.00	84	0.74
Pipe Jacking	Skid Steer Loaders	0	8.00	65	0.37
Pipe Jacking	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Pit Shoring 2	Air Compressors	1	8.00	78	0.48
Pit Shoring 2	Cranes	1	8.00	400	0.29
Pit Shoring 2	Generator Sets	1	8.00	84	0.74
Pit Shoring 2	Skid Steer Loaders	1	8.00	65	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Flow Control Station (FCS) Vault	7	50.00	16.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Pit shoring 1	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation - Cut and Cover	7	56.00	12.00	950.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Carbon Fiber Reinforced Polymer	4	50.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Pipe Jacking	4	56.00	12.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Pit Shoring 2	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Flow Control Station (FCS) Vault Installation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1163	1.1887	1.1001	2.4300e-003		0.0583	0.0583		0.0536	0.0536	0.0000	213.4991	213.4991	0.0691	0.0000	215.2253

Total	**0.1163**	**1.1887**	**1.1001**	**2.4300e-003**		**0.0583**	**0.0583**		**0.0536**	**0.0536**	**0.0000**	**213.4991**	**213.4991**	**0.0691**	**0.0000**	**215.2253**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.4800e-003	0.1525	0.0378	4.0000e-004	9.9300e-003	3.1000e-004	0.0102	2.8700e-003	2.9000e-004	3.1600e-003	0.0000	38.4775	38.4775	2.4300e-003	0.0000	38.5383
Worker	0.0205	0.0152	0.1716	5.2000e-004	0.0540	4.1000e-004	0.0544	0.0144	3.7000e-004	0.0147	0.0000	47.0663	47.0663	1.2600e-003	0.0000	47.0978
Total	**0.0250**	**0.1677**	**0.2094**	**9.2000e-004**	**0.0640**	**7.2000e-004**	**0.0647**	**0.0172**	**6.6000e-004**	**0.0179**	**0.0000**	**85.5438**	**85.5438**	**3.6900e-003**	**0.0000**	**85.6361**

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	0.1163	1.1887	1.1001	2.4300e-003		0.0583	0.0583		0.0536	0.0536	0.0000	213.4988	213.4988	0.0691	0.0000	215.2250
Total	**0.1163**	**1.1887**	**1.1001**	**2.4300e-003**		**0.0583**	**0.0583**		**0.0536**	**0.0536**	**0.0000**	**213.4988**	**213.4988**	**0.0691**	**0.0000**	**215.2250**

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.4800e-003	0.1525	0.0378	4.0000e-004	9.9300e-003	3.1000e-004	0.0102	2.8700e-003	2.9000e-004	3.1600e-003	0.0000	38.4775	38.4775	2.4300e-003	0.0000	38.5383
Worker	0.0205	0.0152	0.1716	5.2000e-004	0.0540	4.1000e-004	0.0544	0.0144	3.7000e-004	0.0147	0.0000	47.0663	47.0663	1.2600e-003	0.0000	47.0978
Total	**0.0250**	**0.1677**	**0.2094**	**9.2000e-004**	**0.0640**	**7.2000e-004**	**0.0647**	**0.0172**	**6.6000e-004**	**0.0179**	**0.0000**	**85.5438**	**85.5438**	**3.6900e-003**	**0.0000**	**85.6361**

3.2 Flow Control Station (FCS) Vault Installation - 2022

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Off-Road	0.0678	0.6681	0.7091	1.5900e-003		0.0314	0.0314		0.0289	0.0289	0.0000	139.8704	139.8704	0.0452	0.0000	141.0013
Total	**0.0678**	**0.6681**	**0.7091**	**1.5900e-003**		**0.0314**	**0.0314**		**0.0289**	**0.0289**	**0.0000**	**139.8704**	**139.8704**	**0.0452**	**0.0000**	**141.0013**

Unmitigated Construction Off-Site

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

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.7500e-003	0.0947	0.0234	2.6000e-004	6.5000e-003	1.7000e-004	6.6800e-003	1.8800e-003	1.7000e-004	2.0400e-003	0.0000	24.9741	24.9741	1.5300e-003	0.0000	25.0124
Worker	0.0126	8.9700e-003	0.1038	3.3000e-004	0.0354	2.6000e-004	0.0356	9.4000e-003	2.4000e-004	9.6300e-003	0.0000	29.7151	29.7151	7.5000e-004	0.0000	29.7337
Total	**0.0154**	**0.1037**	**0.1272**	**5.9000e-004**	**0.0419**	**4.3000e-004**	**0.0423**	**0.0113**	**4.1000e-004**	**0.0117**	**0.0000**	**54.6891**	**54.6891**	**2.2800e-003**	**0.0000**	**54.7461**

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	0.0678	0.6681	0.7091	1.5900e-003		0.0314	0.0314		0.0289	0.0289	0.0000	139.8703	139.8703	0.0452	0.0000	141.0012
Total	**0.0678**	**0.6681**	**0.7091**	**1.5900e-003**		**0.0314**	**0.0314**		**0.0289**	**0.0289**	**0.0000**	**139.8703**	**139.8703**	**0.0452**	**0.0000**	**141.0012**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.7500e-003	0.0947	0.0234	2.6000e-004	6.5000e-003	1.7000e-004	6.6800e-003	1.8800e-003	1.7000e-004	2.0400e-003	0.0000	24.9741	24.9741	1.5300e-003	0.0000	25.0124
Worker	0.0126	8.9700e-003	0.1038	3.3000e-004	0.0354	2.6000e-004	0.0356	9.4000e-003	2.4000e-004	9.6300e-003	0.0000	29.7151	29.7151	7.5000e-004	0.0000	29.7337
Total	**0.0154**	**0.1037**	**0.1272**	**5.9000e-004**	**0.0419**	**4.3000e-004**	**0.0423**	**0.0113**	**4.1000e-004**	**0.0117**	**0.0000**	**54.6891**	**54.6891**	**2.2800e-003**	**0.0000**	**54.7461**

3.3 Pit shoring 1 - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.6500e-003	0.0662	0.0625	1.1000e-004		3.0900e-003	3.0900e-003		2.9600e-003	2.9600e-003	0.0000	9.8207	9.8207	1.9700e-003	0.0000	9.8700
Total	**6.6500e-003**	**0.0662**	**0.0625**	**1.1000e-004**		**3.0900e-003**	**3.0900e-003**		**2.9600e-003**	**2.9600e-003**	**0.0000**	**9.8207**	**9.8207**	**1.9700e-003**	**0.0000**	**9.8700**

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	2.1000e-004	1.5000e-004	1.7400e-003	1.0000e-005	5.5000e-004	0.0000	5.5000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.4778	0.4778	1.0000e-005	0.0000	0.4782
Total	**2.1000e-004**	**1.5000e-004**	**1.7400e-003**	**1.0000e-005**	**5.5000e-004**	**0.0000**	**5.5000e-004**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**0.4778**	**0.4778**	**1.0000e-005**	**0.0000**	**0.4782**

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	6.6500e-003	0.0662	0.0625	1.1000e-004		3.0900e-003	3.0900e-003		2.9600e-003	2.9600e-003	0.0000	9.8207	9.8207	1.9700e-003	0.0000	9.8700
Total	**6.6500e-003**	**0.0662**	**0.0625**	**1.1000e-004**		**3.0900e-003**	**3.0900e-003**		**2.9600e-003**	**2.9600e-003**	**0.0000**	**9.8207**	**9.8207**	**1.9700e-003**	**0.0000**	**9.8700**

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	2.1000e-004	1.5000e-004	1.7400e-003	1.0000e-005	5.5000e-004	0.0000	5.5000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.4778	0.4778	1.0000e-005	0.0000	0.4782
Total	**2.1000e-004**	**1.5000e-004**	**1.7400e-003**	**1.0000e-005**	**5.5000e-004**	**0.0000**	**5.5000e-004**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**0.4778**	**0.4778**	**1.0000e-005**	**0.0000**	**0.4782**

3.4 Site Preparation - Cut and Cover - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.3000e-004	0.0000	4.3000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	0.0268	0.2746	0.2741	6.3000e-004		0.0121	0.0121		0.0111	0.0111	0.0000	55.0527	55.0527	0.0178	0.0000	55.4978
Total	**0.0268**	**0.2746**	**0.2741**	**6.3000e-004**	**4.3000e-004**	**0.0121**	**0.0125**	**7.0000e-005**	**0.0111**	**0.0112**	**0.0000**	**55.0527**	**55.0527**	**0.0178**	**0.0000**	**55.4978**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.6900e-003	0.0585	0.0133	1.8000e-004	7.1800e-003	1.6000e-004	7.3500e-003	1.8800e-003	1.6000e-004	2.0400e-003	0.0000	17.9313	17.9313	1.2200e-003	0.0000	17.9618
Vendor	7.0000e-004	0.0242	5.9900e-003	7.0000e-005	1.6600e-003	4.0000e-005	1.7100e-003	4.8000e-004	4.0000e-005	5.2000e-004	0.0000	6.3887	6.3887	3.9000e-004	0.0000	6.3985
Worker	4.8200e-003	3.4300e-003	0.0396	1.3000e-004	0.0135	1.0000e-004	0.0136	3.5900e-003	9.0000e-005	3.6800e-003	0.0000	11.3516	11.3516	2.9000e-004	0.0000	11.3587
Total	**7.2100e-003**	**0.0861**	**0.0589**	**3.8000e-004**	**0.0224**	**3.0000e-004**	**0.0227**	**5.9500e-003**	**2.9000e-004**	**6.2400e-003**	**0.0000**	**35.6716**	**35.6716**	**1.9000e-003**	**0.0000**	**35.7190**

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					1.9000e-004	0.0000	1.9000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0268	0.2746	0.2741	6.3000e-004		0.0121	0.0121		0.0111	0.0111	0.0000	55.0526	55.0526	0.0178	0.0000	55.4978
Total	**0.0268**	**0.2746**	**0.2741**	**6.3000e-004**	**1.9000e-004**	**0.0121**	**0.0123**	**3.0000e-005**	**0.0111**	**0.0112**	**0.0000**	**55.0526**	**55.0526**	**0.0178**	**0.0000**	**55.4978**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.6900e-003	0.0585	0.0133	1.8000e-004	7.1800e-003	1.6000e-004	7.3500e-003	1.8800e-003	1.6000e-004	2.0400e-003	0.0000	17.9313	17.9313	1.2200e-003	0.0000	17.9618
Vendor	7.0000e-004	0.0242	5.9900e-003	7.0000e-005	1.6600e-003	4.0000e-005	1.7100e-003	4.8000e-004	4.0000e-005	5.2000e-004	0.0000	6.3887	6.3887	3.9000e-004	0.0000	6.3985
Worker	4.8200e-003	3.4300e-003	0.0396	1.3000e-004	0.0135	1.0000e-004	0.0136	3.5900e-003	9.0000e-005	3.6800e-003	0.0000	11.3516	11.3516	2.9000e-004	0.0000	11.3587
Total	**7.2100e-003**	**0.0861**	**0.0589**	**3.8000e-004**	**0.0224**	**3.0000e-004**	**0.0227**	**5.9500e-003**	**2.9000e-004**	**6.2400e-003**	**0.0000**	**35.6716**	**35.6716**	**1.9000e-003**	**0.0000**	**35.7190**

3.4 Site Preparation - Cut and Cover - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.3000e-004	0.0000	4.3000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0239	0.2375	0.2593	6.0000e-004		0.0101	0.0101		9.2500e-003	9.2500e-003	0.0000	52.5726	52.5726	0.0170	0.0000	52.9977
Total	**0.0239**	**0.2375**	**0.2593**	**6.0000e-004**	**4.3000e-004**	**0.0101**	**0.0105**	**7.0000e-005**	**9.2500e-003**	**9.3200e-003**	**0.0000**	**52.5726**	**52.5726**	**0.0170**	**0.0000**	**52.9977**

Unmitigated Construction Off-Site

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Hauling	1.0700e-003	0.0359	0.0115	1.7000e-004	7.1300e-003	7.0000e-005	7.2000e-003	1.8700e-003	6.0000e-005	1.9300e-003	0.0000	16.4382	16.4382	1.0700e-003	0.0000	16.4649
Vendor	5.0000e-004	0.0174	5.1100e-003	6.0000e-005	1.5900e-003	2.0000e-005	1.6100e-003	4.6000e-004	2.0000e-005	4.8000e-004	0.0000	5.9145	5.9145	3.3000e-004	0.0000	5.9226
Worker	4.3300e-003	2.9600e-003	0.0349	1.2000e-004	0.0129	9.0000e-005	0.0130	3.4300e-003	8.0000e-005	3.5100e-003	0.0000	10.4315	10.4315	2.5000e-004	0.0000	10.4377
Total	**5.9000e-003**	**0.0562**	**0.0515**	**3.5000e-004**	**0.0216**	**1.8000e-004**	**0.0218**	**5.7600e-003**	**1.6000e-004**	**5.9200e-003**	**0.0000**	**32.7842**	**32.7842**	**1.6500e-003**	**0.0000**	**32.8252**

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					1.9000e-004	0.0000	1.9000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0239	0.2375	0.2593	6.0000e-004		0.0101	0.0101		9.2500e-003	9.2500e-003	0.0000	52.5726	52.5726	0.0170	0.0000	52.9976
Total	**0.0239**	**0.2375**	**0.2593**	**6.0000e-004**	**1.9000e-004**	**0.0101**	**0.0102**	**3.0000e-005**	**9.2500e-003**	**9.2800e-003**	**0.0000**	**52.5726**	**52.5726**	**0.0170**	**0.0000**	**52.9976**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0700e-003	0.0359	0.0115	1.7000e-004	7.1300e-003	7.0000e-005	7.2000e-003	1.8700e-003	6.0000e-005	1.9300e-003	0.0000	16.4382	16.4382	1.0700e-003	0.0000	16.4649
Vendor	5.0000e-004	0.0174	5.1100e-003	6.0000e-005	1.5900e-003	2.0000e-005	1.6100e-003	4.6000e-004	2.0000e-005	4.8000e-004	0.0000	5.9145	5.9145	3.3000e-004	0.0000	5.9226
Worker	4.3300e-003	2.9600e-003	0.0349	1.2000e-004	0.0129	9.0000e-005	0.0130	3.4300e-003	8.0000e-005	3.5100e-003	0.0000	10.4315	10.4315	2.5000e-004	0.0000	10.4377
Total	**5.9000e-003**	**0.0562**	**0.0515**	**3.5000e-004**	**0.0216**	**1.8000e-004**	**0.0218**	**5.7600e-003**	**1.6000e-004**	**5.9200e-003**	**0.0000**	**32.7842**	**32.7842**	**1.6500e-003**	**0.0000**	**32.8252**

3.5 Carbon Fiber Reinforced Polymer (CFRP) Installation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0246	0.1965	0.2315	3.8000e-004		0.0115	0.0115		0.0112	0.0112	0.0000	32.5809	32.5809	3.2400e-003	0.0000	32.6618
Total	**0.0246**	**0.1965**	**0.2315**	**3.8000e-004**		**0.0115**	**0.0115**		**0.0112**	**0.0112**	**0.0000**	**32.5809**	**32.5809**	**3.2400e-003**	**0.0000**	**32.6618**

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	4.3100e-003	3.0600e-003	0.0354	1.1000e-004	0.0121	9.0000e-005	0.0122	3.2100e-003	8.0000e-005	3.2900e-003	0.0000	10.1354	10.1354	2.5000e-004	0.0000	10.1417
Total	**4.3100e-003**	**3.0600e-003**	**0.0354**	**1.1000e-004**	**0.0121**	**9.0000e-005**	**0.0122**	**3.2100e-003**	**8.0000e-005**	**3.2900e-003**	**0.0000**	**10.1354**	**10.1354**	**2.5000e-004**	**0.0000**	**10.1417**

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	0.0246	0.1965	0.2315	3.8000e-004		0.0115	0.0115		0.0112	0.0112	0.0000	32.5809	32.5809	3.2400e-003	0.0000	32.6618
Total	**0.0246**	**0.1965**	**0.2315**	**3.8000e-004**		**0.0115**	**0.0115**		**0.0112**	**0.0112**	**0.0000**	**32.5809**	**32.5809**	**3.2400e-003**	**0.0000**	**32.6618**

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	4.3100e-003	3.0600e-003	0.0354	1.1000e-004	0.0121	9.0000e-005	0.0122	3.2100e-003	8.0000e-005	3.2900e-003	0.0000	10.1354	10.1354	2.5000e-004	0.0000	10.1417
Total	**4.3100e-003**	**3.0600e-003**	**0.0354**	**1.1000e-004**	**0.0121**	**9.0000e-005**	**0.0122**	**3.2100e-003**	**8.0000e-005**	**3.2900e-003**	**0.0000**	**10.1354**	**10.1354**	**2.5000e-004**	**0.0000**	**10.1417**

3.5 Carbon Fiber Reinforced Polymer (CFRP) Installation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0442	0.3514	0.4458	7.3000e-004		0.0195	0.0195		0.0190	0.0190	0.0000	62.9334	62.9334	6.0100e-003	0.0000	63.0838

Total	**0.0442**	**0.3514**	**0.4458**	**7.3000e-004**		**0.0195**	**0.0195**		**0.0190**	**0.0190**	**0.0000**	**62.9334**	**62.9334**	**6.0100e-003**	**0.0000**	**63.0838**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8300e-003	5.3500e-003	0.0631	2.1000e-004	0.0233	1.7000e-004	0.0235	6.1900e-003	1.5000e-004	6.3400e-003	0.0000	18.8495	18.8495	4.4000e-004	0.0000	18.8606
Total	**7.8300e-003**	**5.3500e-003**	**0.0631**	**2.1000e-004**	**0.0233**	**1.7000e-004**	**0.0235**	**6.1900e-003**	**1.5000e-004**	**6.3400e-003**	**0.0000**	**18.8495**	**18.8495**	**4.4000e-004**	**0.0000**	**18.8606**

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	0.0442	0.3514	0.4458	7.3000e-004		0.0195	0.0195		0.0190	0.0190	0.0000	62.9333	62.9333	6.0100e-003	0.0000	63.0837
Total	**0.0442**	**0.3514**	**0.4458**	**7.3000e-004**		**0.0195**	**0.0195**		**0.0190**	**0.0190**	**0.0000**	**62.9333**	**62.9333**	**6.0100e-003**	**0.0000**	**63.0837**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8300e-003	5.3500e-003	0.0631	2.1000e-004	0.0233	1.7000e-004	0.0235	6.1900e-003	1.5000e-004	6.3400e-003	0.0000	18.8495	18.8495	4.4000e-004	0.0000	18.8606
Total	**7.8300e-003**	**5.3500e-003**	**0.0631**	**2.1000e-004**	**0.0233**	**1.7000e-004**	**0.0235**	**6.1900e-003**	**1.5000e-004**	**6.3400e-003**	**0.0000**	**18.8495**	**18.8495**	**4.4000e-004**	**0.0000**	**18.8606**

3.6 Pipe Jacking - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0204	0.1783	0.2107	4.9000e-004		8.7200e-003	8.7200e-003		8.3000e-003	8.3000e-003	0.0000	43.0769	43.0769	0.0105	0.0000	43.3406
Total	**0.0204**	**0.1783**	**0.2107**	**4.9000e-004**		**8.7200e-003**	**8.7200e-003**		**8.3000e-003**	**8.3000e-003**	**0.0000**	**43.0769**	**43.0769**	**0.0105**	**0.0000**	**43.3406**

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	7.0000e-004	0.0242	5.9900e-003	7.0000e-005	1.6600e-003	4.0000e-005	1.7100e-003	4.8000e-004	4.0000e-005	5.2000e-004	0.0000	6.3887	6.3887	3.9000e-004	0.0000	6.3985
Worker	4.8200e-003	3.4300e-003	0.0396	1.3000e-004	0.0135	1.0000e-004	0.0136	3.5900e-003	9.0000e-005	3.6800e-003	0.0000	11.3516	11.3516	2.9000e-004	0.0000	11.3587
Total	**5.5200e-003**	**0.0277**	**0.0456**	**2.0000e-004**	**0.0152**	**1.4000e-004**	**0.0153**	**4.0700e-003**	**1.3000e-004**	**4.2000e-003**	**0.0000**	**17.7403**	**17.7403**	**6.8000e-004**	**0.0000**	**17.7573**

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	0.0204	0.1783	0.2107	4.9000e-004		8.7200e-003	8.7200e-003		8.3000e-003	8.3000e-003	0.0000	43.0769	43.0769	0.0105	0.0000	43.3405
Total	**0.0204**	**0.1783**	**0.2107**	**4.9000e-004**		**8.7200e-003**	**8.7200e-003**		**8.3000e-003**	**8.3000e-003**	**0.0000**	**43.0769**	**43.0769**	**0.0105**	**0.0000**	**43.3405**

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	7.0000e-004	0.0242	5.9900e-003	7.0000e-005	1.6600e-003	4.0000e-005	1.7100e-003	4.8000e-004	4.0000e-005	5.2000e-004	0.0000	6.3887	6.3887	3.9000e-004	0.0000	6.3985
Worker	4.8200e-003	3.4300e-003	0.0396	1.3000e-004	0.0135	1.0000e-004	0.0136	3.5900e-003	9.0000e-005	3.6800e-003	0.0000	11.3516	11.3516	2.9000e-004	0.0000	11.3587
Total	**5.5200e-003**	**0.0277**	**0.0456**	**2.0000e-004**	**0.0152**	**1.4000e-004**	**0.0153**	**4.0700e-003**	**1.3000e-004**	**4.2000e-003**	**0.0000**	**17.7403**	**17.7403**	**6.8000e-004**	**0.0000**	**17.7573**

3.6 Pipe Jacking - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0367	0.3108	0.4051	9.5000e-004		0.0144	0.0144		0.0138	0.0138	0.0000	83.2458	83.2458	0.0203	0.0000	83.7521
Total	**0.0367**	**0.3108**	**0.4051**	**9.5000e-004**		**0.0144**	**0.0144**		**0.0138**	**0.0138**	**0.0000**	**83.2458**	**83.2458**	**0.0203**	**0.0000**	**83.7521**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0200e-003	0.0352	0.0103	1.2000e-004	3.2100e-003	4.0000e-005	3.2500e-003	9.3000e-004	4.0000e-005	9.7000e-004	0.0000	11.9698	11.9698	6.6000e-004	0.0000	11.9863
Worker	8.7700e-003	5.9900e-003	0.0706	2.3000e-004	0.0261	1.9000e-004	0.0263	6.9300e-003	1.7000e-004	7.1100e-003	0.0000	21.1114	21.1114	5.0000e-004	0.0000	21.1238
Total	**9.7900e-003**	**0.0412**	**0.0810**	**3.5000e-004**	**0.0293**	**2.3000e-004**	**0.0296**	**7.8600e-003**	**2.1000e-004**	**8.0800e-003**	**0.0000**	**33.0812**	**33.0812**	**1.1600e-003**	**0.0000**	**33.1101**

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	0.0367	0.3108	0.4051	9.5000e-004		0.0144	0.0144		0.0138	0.0138	0.0000	83.2457	83.2457	0.0203	0.0000	83.7520
Total	**0.0367**	**0.3108**	**0.4051**	**9.5000e-004**		**0.0144**	**0.0144**		**0.0138**	**0.0138**	**0.0000**	**83.2457**	**83.2457**	**0.0203**	**0.0000**	**83.7520**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0200e-003	0.0352	0.0103	1.2000e-004	3.2100e-003	4.0000e-005	3.2500e-003	9.3000e-004	4.0000e-005	9.7000e-004	0.0000	11.9698	11.9698	6.6000e-004	0.0000	11.9863
Worker	8.7700e-003	5.9900e-003	0.0706	2.3000e-004	0.0261	1.9000e-004	0.0263	6.9300e-003	1.7000e-004	7.1100e-003	0.0000	21.1114	21.1114	5.0000e-004	0.0000	21.1238
Total	**9.7900e-003**	**0.0412**	**0.0810**	**3.5000e-004**	**0.0293**	**2.3000e-004**	**0.0296**	**7.8600e-003**	**2.1000e-004**	**8.0800e-003**	**0.0000**	**33.0812**	**33.0812**	**1.1600e-003**	**0.0000**	**33.1101**

3.7 Pit Shoring 2 - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0121	0.1166	0.1201	2.3000e-004		5.3000e-003	5.3000e-003		5.0800e-003	5.0800e-003	0.0000	19.6380	19.6380	3.9100e-003	0.0000	19.7358

Total	**0.0121**	**0.1166**	**0.1201**	**2.3000e-004**		**5.3000e-003**	**5.3000e-003**		**5.0800e-003**	**5.0800e-003**	**0.0000**	**19.6380**	**19.6380**	**3.9100e-003**	**0.0000**	**19.7358**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	2.8000e-004	3.2200e-003	1.0000e-005	1.1000e-003	1.0000e-005	1.1100e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	0.9214	0.9214	2.0000e-005	0.0000	0.9220
Total	**3.9000e-004**	**2.8000e-004**	**3.2200e-003**	**1.0000e-005**	**1.1000e-003**	**1.0000e-005**	**1.1100e-003**	**2.9000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**0.9214**	**0.9214**	**2.0000e-005**	**0.0000**	**0.9220**

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	0.0121	0.1166	0.1201	2.3000e-004		5.3000e-003	5.3000e-003		5.0800e-003	5.0800e-003	0.0000	19.6380	19.6380	3.9100e-003	0.0000	19.7358
Total	**0.0121**	**0.1166**	**0.1201**	**2.3000e-004**		**5.3000e-003**	**5.3000e-003**		**5.0800e-003**	**5.0800e-003**	**0.0000**	**19.6380**	**19.6380**	**3.9100e-003**	**0.0000**	**19.7358**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	2.8000e-004	3.2200e-003	1.0000e-005	1.1000e-003	1.0000e-005	1.1100e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	0.9214	0.9214	2.0000e-005	0.0000	0.9220
Total	**3.9000e-004**	**2.8000e-004**	**3.2200e-003**	**1.0000e-005**	**1.1000e-003**	**1.0000e-005**	**1.1100e-003**	**2.9000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**0.9214**	**0.9214**	**2.0000e-005**	**0.0000**	**0.9220**

3.7 Pit Shoring 2 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.5500e-003	0.0523	0.0579	1.1000e-004		2.3000e-003	2.3000e-003		2.2000e-003	2.2000e-003	0.0000	9.8205	9.8205	1.9400e-003	0.0000	9.8689
Total	**5.5500e-003**	**0.0523**	**0.0579**	**1.1000e-004**		**2.3000e-003**	**2.3000e-003**		**2.2000e-003**	**2.2000e-003**	**0.0000**	**9.8205**	**9.8205**	**1.9400e-003**	**0.0000**	**9.8689**

Unmitigated Construction Off-Site

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

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	1.3000e-004	1.4800e-003	0.0000	5.5000e-004	0.0000	5.5000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.4435	0.4435	1.0000e-005	0.0000	0.4438
Total	**1.8000e-004**	**1.3000e-004**	**1.4800e-003**	**0.0000**	**5.5000e-004**	**0.0000**	**5.5000e-004**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**0.4435**	**0.4435**	**1.0000e-005**	**0.0000**	**0.4438**

<u>Mitigated Construction On-Site</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 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	5.5500e-003	0.0523	0.0579	1.1000e-004		2.3000e-003	2.3000e-003		2.2000e-003	2.2000e-003	0.0000	9.8205	9.8205	1.9400e-003	0.0000	9.8689
Total	**5.5500e-003**	**0.0523**	**0.0579**	**1.1000e-004**		**2.3000e-003**	**2.3000e-003**		**2.2000e-003**	**2.2000e-003**	**0.0000**	**9.8205**	**9.8205**	**1.9400e-003**	**0.0000**	**9.8689**

<u>Mitigated Construction Off-Site</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	1.3000e-004	1.4800e-003	0.0000	5.5000e-004	0.0000	5.5000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.4435	0.4435	1.0000e-005	0.0000	0.4438
Total	**1.8000e-004**	**1.3000e-004**	**1.4800e-003**	**0.0000**	**5.5000e-004**	**0.0000**	**5.5000e-004**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**0.4435**	**0.4435**	**1.0000e-005**	**0.0000**	**0.4438**

3.8 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.2800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.8000e-004	3.2600e-003	4.5300e-003	1.0000e-005		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004	0.0000	0.6383	0.6383	4.0000e-005	0.0000	0.6393
Total	**1.7600e-003**	**3.2600e-003**	**4.5300e-003**	**1.0000e-005**		**1.8000e-004**	**1.8000e-004**		**1.8000e-004**	**1.8000e-004**	**0.0000**	**0.6383**	**0.6383**	**4.0000e-005**	**0.0000**	**0.6393**

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	2.0000e-005	1.0000e-005	1.5000e-004	0.0000	5.0000e-005	0.0000	6.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0444	0.0444	0.0000	0.0000	0.0444
Total	**2.0000e-005**	**1.0000e-005**	**1.5000e-004**	**0.0000**	**5.0000e-005**	**0.0000**	**6.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0444**	**0.0444**	**0.0000**	**0.0000**	**0.0444**

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Archit. Coating	1.2800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.8000e-004	3.2600e-003	4.5300e-003	1.0000e-005		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004	0.0000	0.6383	0.6383	4.0000e-005	0.0000	0.6393
Total	**1.7600e-003**	**3.2600e-003**	**4.5300e-003**	**1.0000e-005**		**1.8000e-004**	**1.8000e-004**		**1.8000e-004**	**1.8000e-004**	**0.0000**	**0.6383**	**0.6383**	**4.0000e-005**	**0.0000**	**0.6393**

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	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	2.0000e-005	1.0000e-005	1.5000e-004	0.0000	5.0000e-005	0.0000	6.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0444	0.0444	0.0000	0.0000	0.0444
Total	**2.0000e-005**	**1.0000e-005**	**1.5000e-004**	**0.0000**	**5.0000e-005**	**0.0000**	**6.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0444**	**0.0444**	**0.0000**	**0.0000**	**0.0444**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	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
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.550151	0.042593	0.202457	0.116946	0.015037	0.005825	0.021699	0.034933	0.002123	0.001780	0.004876	0.000710	0.000868

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 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	7.4000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.3000e-004	2.3000e-004	0.0000	0.0000	2.4000e-004
Unmitigated	7.4000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.3000e-004	2.3000e-004	0.0000	0.0000	2.4000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.3000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	6.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.3000e-004	2.3000e-004	0.0000	0.0000	2.4000e-004
Total	**7.4000e-004**	**0.0000**	**1.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.3000e-004**	**2.3000e-004**	**0.0000**	**0.0000**	**2.4000e-004**

Mitigated

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

SubCategory	tons/yr										MT/yr					
Architectural Coating	1.3000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	6.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.3000e-004	2.3000e-004	0.0000	0.0000	2.4000e-004
Total	**7.4000e-004**	**0.0000**	**1.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.3000e-004**	**2.3000e-004**	**0.0000**	**0.0000**	**2.4000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

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

Total		0.0000	0.0000	0.0000	0.0000

Mitigated

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

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

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

Mitigated

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

9.0 Operational Offroad

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

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

City Trunk Line South LADWP

South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	9.23	1000sqft	0.21	9,227.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	12			**Operational Year**	2023
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	1227.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

.Project Characteristics - Operational year 2023

Land Use - 0.21 acres.

Construction Phase - Construction Scheudle provided by lADWP.

Off-road Equipment - Construction equipment information provided by LADWP.

Off-road Equipment - 74 hp = dust collector, 5,000 CFM dehumidifer is electric, 60KW in-line heater is electric, Blast pot is pneumatic.

Off-road Equipment - Construction equipment information provided by LADWP.

Off-road Equipment - Construction equipment information provided by LADWP.

Off-road Equipment - Construction equipment information provided by LADWP.

Off-road Equipment - Construction equipment information provided by LADWP.

Off-road Equipment - Construction equipment information provided by LADWP.

Trips and VMT - Construction trip information provided by LADWP.

Grading - 7,600 cy material exported.

Construction Off-road Equipment Mitigation - Compliance with SCAQMD Rule 403.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	100.00	326.00
tblConstructionPhase	NumDays	1.00	86.00
tblGrading	MaterialExported	0.00	7,600.00
tblLandUse	LandUseSquareFeet	9,230.00	9,227.00
tblOffRoadEquipment	HorsePower	231.00	400.00
tblOffRoadEquipment	HorsePower	231.00	400.00
tblOffRoadEquipment	HorsePower	158.00	345.00
tblOffRoadEquipment	HorsePower	158.00	345.00
tblOffRoadEquipment	HorsePower	158.00	345.00
tblOffRoadEquipment	HorsePower	172.00	74.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblTripsAndVMT	VendorTripNumber	2.00	16.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	WorkerTripNumber	4.00	50.00
tblTripsAndVMT	WorkerTripNumber	18.00	56.00
tblTripsAndVMT	WorkerTripNumber	10.00	50.00
tblTripsAndVMT	WorkerTripNumber	10.00	56.00
tblTripsAndVMT	WorkerTripNumber	1.00	2.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	2.8078	27.0066	26.2983	0.0580	0.7731	1.2168	1.9899	0.2073	1.1431	1.3504	0.0000	5,654.6952	5,654.6952	1.2519	0.0000	5,685.9922
2022	5.2861	46.3538	51.6529	0.1236	2.4186	2.0244	4.4429	0.6427	1.9249	2.5677	0.0000	12,104.1485	12,104.1485	2.1584	0.0000	12,158.1073
2023	4.8889	41.0424	50.4808	0.1223	2.4322	1.7554	4.1876	0.6460	1.6692	2.3152	0.0000	11,982.1933	11,982.1933	2.1312	0.0000	12,035.4736
Maximum	**5.2861**	**46.3538**	**51.6529**	**0.1236**	**2.4322**	**2.0244**	**4.4429**	**0.6460**	**1.9249**	**2.5677**	**0.0000**	**12,104.1485**	**12,104.1485**	**2.1584**	**0.0000**	**12,158.1073**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	2.8078	27.0066	26.2983	0.0580	0.7731	1.2168	1.9899	0.2073	1.1431	1.3504	0.0000	5,654.6952	5,654.6952	1.2519	0.0000	5,685.9922
2022	5.2861	46.3538	51.6529	0.1236	2.4131	2.0244	4.4374	0.6419	1.9249	2.5668	0.0000	12,104.1485	12,104.1485	2.1584	0.0000	12,158.1073
2023	4.8889	41.0424	50.4808	0.1223	2.4267	1.7554	4.1821	0.6452	1.6692	2.3144	0.0000	11,982.1933	11,982.1933	2.1312	0.0000	12,035.4736
Maximum	**5.2861**	**46.3538**	**51.6529**	**0.1236**	**2.4267**	**2.0244**	**4.4374**	**0.6452**	**1.9249**	**2.5668**	**0.0000**	**12,104.1485**	**12,104.1485**	**2.1584**	**0.0000**	**12,158.1073**

	ROG	**NOx**	**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**	**0.20**	**0.00**	**0.10**	**0.11**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.0600e-003	1.0000e-005	9.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.0200e-003	2.0200e-003	1.0000e-005		2.1500e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	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	**4.0600e-003**	**1.0000e-005**	**9.4000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.0200e-003**	**2.0200e-003**	**1.0000e-005**	**0.0000**	**2.1500e-003**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.0600e-003	1.0000e-005	9.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.0200e-003	2.0200e-003	1.0000e-005		2.1500e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	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	**4.0600e-003**	**1.0000e-005**	**9.4000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.0200e-003**	**2.0200e-003**	**1.0000e-005**	**0.0000**	**2.1500e-003**

	ROG	**NOx**	**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	Flow Control Station (FCS) Vault Installation	Building Construction	4/1/2021	6/30/2022	5	326	
2	Pit shoring 1	Trenching	5/3/2021	5/14/2021	5	10	
3	Site Preparation - Cut and Cover	Site Preparation	11/1/2022	2/28/2023	5	86	
4	Carbon Fiber Reinforced Polymer (CFRP) Installation	Trenching	11/1/2022	4/28/2023	5	129	
5	Pipe Jacking	Trenching	11/1/2022	4/28/2023	5	129	
6	Pit Shoring 2	Trenching	12/5/2022	1/13/2023	5	30	
7	Architectural Coating	Architectural Coating	4/24/2023	4/28/2023	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.21

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 554

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Flow Control Station (FCS) Vault Installation	Cranes	1	4.00	231	0.29
Flow Control Station (FCS) Vault Installation	Excavators	1	8.00	345	0.38
Flow Control Station (FCS) Vault Installation	Forklifts	2	6.00	89	0.20
Flow Control Station (FCS) Vault Installation	Skid Steer Loaders	1	8.00	65	0.37
Flow Control Station (FCS) Vault Installation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Pit shoring 1	Air Compressors	1	8.00	78	0.48
Pit shoring 1	Cranes	1	8.00	400	0.29
Pit shoring 1	Generator Sets	1	8.00	84	0.74
Pit shoring 1	Skid Steer Loaders	1	8.00	65	0.37
Site Preparation - Cut and Cover	Aerial Lifts	1	8.00	63	0.31
Site Preparation - Cut and Cover	Cranes	1	8.00	231	0.29

Site Preparation - Cut and Cover	Excavators		1	8.00	345	0.38
Site Preparation - Cut and Cover	Forklifts		1	8.00	89	0.20
Site Preparation - Cut and Cover	Graders		0	0.00	187	0.41
Site Preparation - Cut and Cover	Skid Steer Loaders		1	8.00	65	0.37
Site Preparation - Cut and Cover	Tractors/Loaders/Backhoes		2	8.00	97	0.37
Carbon Fiber Reinforced Polymer (CFRP) Installation	Air Compressors		2	8.00	78	0.48
Carbon Fiber Reinforced Polymer (CFRP) Installation	Generator Sets		1	8.00	84	0.74
Carbon Fiber Reinforced Polymer (CFRP) Installation	Other Construction Equipment		1	8.00	74	0.42
Pipe Jacking	Cranes		0	8.00	231	0.29
Pipe Jacking	Excavators		1	8.00	345	0.38
Pipe Jacking	Forklifts		1	8.00	89	0.20
Pipe Jacking	Generator Sets		0	8.00	84	0.74
Pipe Jacking	Pumps		1	8.00	84	0.74
Pipe Jacking	Skid Steer Loaders		0	8.00	65	0.37
Pipe Jacking	Tractors/Loaders/Backhoes		1	8.00	97	0.37
Pit Shoring 2	Air Compressors		1	8.00	78	0.48
Pit Shoring 2	Cranes		1	8.00	400	0.29
Pit Shoring 2	Generator Sets		1	8.00	84	0.74
Pit Shoring 2	Skid Steer Loaders		1	8.00	65	0.37
Architectural Coating	Air Compressors		1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Flow Control Station (FCS) Vault	7	50.00	16.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Pit shoring 1	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation - Cut and Cover	7	56.00	12.00	950.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Carbon Fiber Reinforced Polymer	4	50.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Pipe Jacking	4	56.00	12.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Pit Shoring 2	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Architectural Coating	1	2.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Flow Control Station (FCS) Vault Installation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1810	12.0678	11.1688	0.0247		0.5914	0.5914		0.5441	0.5441		2,389.2632	2,389.2632	0.7727		2,408.5816
Total	**1.1810**	**12.0678**	**11.1688**	**0.0247**		**0.5914**	**0.5914**		**0.5441**	**0.5441**		**2,389.2632**	**2,389.2632**	**0.7727**		**2,408.5816**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0445	1.5260	0.3621	4.0800e-003	0.1024	3.0700e-003	0.1055	0.0295	2.9400e-003	0.0324		435.9016	435.9016	0.0264		436.5608
Worker	0.2111	0.1369	1.8836	5.5600e-003	0.5589	4.1100e-003	0.5630	0.1482	3.7900e-003	0.1520		553.7017	553.7017	0.0149		554.0739
Total	**0.2556**	**1.6629**	**2.2457**	**9.6400e-003**	**0.6613**	**7.1800e-003**	**0.6685**	**0.1777**	**6.7300e-003**	**0.1844**		**989.6032**	**989.6032**	**0.0413**		**990.6347**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1810	12.0678	11.1688	0.0247		0.5914	0.5914		0.5441	0.5441	0.0000	2,389.2632	2,389.2632	0.7727		2,408.5816
Total	**1.1810**	**12.0678**	**11.1688**	**0.0247**		**0.5914**	**0.5914**		**0.5441**	**0.5441**	**0.0000**	**2,389.2632**	**2,389.2632**	**0.7727**		**2,408.5816**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0445	1.5260	0.3621	4.0800e-003	0.1024	3.0700e-003	0.1055	0.0295	2.9400e-003	0.0324		435.9016	435.9016	0.0264		436.5608
Worker	0.2111	0.1369	1.8836	5.5600e-003	0.5589	4.1100e-003	0.5630	0.1482	3.7900e-003	0.1520		553.7017	553.7017	0.0149		554.0739
Total	**0.2556**	**1.6629**	**2.2457**	**9.6400e-003**	**0.6613**	**7.1800e-003**	**0.6685**	**0.1777**	**6.7300e-003**	**0.1844**		**989.6032**	**989.6032**	**0.0413**		**990.6347**

3.2 Flow Control Station (FCS) Vault Installation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0518	10.3588	10.9937	0.0247		0.4872	0.4872		0.4482	0.4482		2,390.3991	2,390.3991	0.7731		2,409.7267
Total	**1.0518**	**10.3588**	**10.9937**	**0.0247**		**0.4872**	**0.4872**		**0.4482**	**0.4482**		**2,390.3991**	**2,390.3991**	**0.7731**		**2,409.7267**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0418	1.4485	0.3422	4.0400e-003	0.1024	2.6600e-003	0.1051	0.0295	2.5500e-003	0.0320		432.0946	432.0946	0.0254		432.7292
Worker	0.1980	0.1237	1.7418	5.3600e-003	0.5589	4.0000e-003	0.5629	0.1482	3.6800e-003	0.1519		533.8620	533.8620	0.0135		534.1984
Total	**0.2397**	**1.5722**	**2.0840**	**9.4000e-003**	**0.6613**	**6.6600e-003**	**0.6679**	**0.1777**	**6.2300e-003**	**0.1839**		**965.9566**	**965.9566**	**0.0388**		**966.9276**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0518	10.3588	10.9937	0.0247		0.4872	0.4872		0.4482	0.4482	0.0000	2,390.3991	2,390.3991	0.7731		2,409.7267

Total	**1.0518**	**10.3588**	**10.9937**	**0.0247**		**0.4872**	**0.4872**		**0.4482**	**0.4482**	**0.0000**	**2,390.3991**	**2,390.3991**	**0.7731**		**2,409.7267**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0418	1.4485	0.3422	4.0400e-003	0.1024	2.6600e-003	0.1051	0.0295	2.5500e-003	0.0320		432.0946	432.0946	0.0254		432.7292
Worker	0.1980	0.1237	1.7418	5.3600e-003	0.5589	4.0000e-003	0.5629	0.1482	3.6800e-003	0.1519		533.8620	533.8620	0.0135		534.1984
Total	**0.2397**	**1.5722**	**2.0840**	**9.4000e-003**	**0.6613**	**6.6600e-003**	**0.6679**	**0.1777**	**6.2300e-003**	**0.1839**		**965.9566**	**965.9566**	**0.0388**		**966.9276**

3.3 Pit shoring 1 - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3290	13.2485	12.5071	0.0226		0.6174	0.6174		0.5915	0.5915		2,165.0885	2,165.0885	0.4349		2,175.9612
Total	**1.3290**	**13.2485**	**12.5071**	**0.0226**		**0.6174**	**0.6174**		**0.5915**	**0.5915**		**2,165.0885**	**2,165.0885**	**0.4349**		**2,175.9612**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0422	0.0274	0.3767	1.1100e-003	0.1118	8.2000e-004	0.1126	0.0296	7.6000e-004	0.0304		110.7403	110.7403	2.9800e-003		110.8148
Total	**0.0422**	**0.0274**	**0.3767**	**1.1100e-003**	**0.1118**	**8.2000e-004**	**0.1126**	**0.0296**	**7.6000e-004**	**0.0304**		**110.7403**	**110.7403**	**2.9800e-003**		**110.8148**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3290	13.2485	12.5071	0.0226		0.6174	0.6174		0.5915	0.5915	0.0000	2,165.0885	2,165.0885	0.4349		2,175.9612
Total	**1.3290**	**13.2485**	**12.5071**	**0.0226**		**0.6174**	**0.6174**		**0.5915**	**0.5915**	**0.0000**	**2,165.0885**	**2,165.0885**	**0.4349**		**2,175.9612**

Mitigated Construction Off-Site

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

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0422	0.0274	0.3767	1.1100e-003	0.1118	8.2000e-004	0.1126	0.0296	7.6000e-004	0.0304		110.7403	110.7403	2.9800e-003		110.8148
Total	**0.0422**	**0.0274**	**0.3767**	**1.1100e-003**	**0.1118**	**8.2000e-004**	**0.1126**	**0.0296**	**7.6000e-004**	**0.0304**		**110.7403**	**110.7403**	**2.9800e-003**		**110.8148**

3.4 Site Preparation - Cut and Cover - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.9900e-003	0.0000	9.9900e-003	1.5100e-003	0.0000	1.5100e-003			0.0000			0.0000
Off-Road	1.2175	12.4838	12.4570	0.0285		0.5495	0.5495		0.5055	0.5055		2,758.4187	2,758.4187	0.8921		2,780.7219
Total	**1.2175**	**12.4838**	**12.4570**	**0.0285**	**9.9900e-003**	**0.5495**	**0.5595**	**1.5100e-003**	**0.5055**	**0.5071**		**2,758.4187**	**2,758.4187**	**0.8921**		**2,780.7219**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0761	2.5822	0.5848	8.3600e-003	0.3324	7.4500e-003	0.3399	0.0871	7.1300e-003	0.0942		905.5433	905.5433	0.0600		907.0439
Vendor	0.0313	1.0864	0.2567	3.0300e-003	0.0768	2.0000e-003	0.0788	0.0221	1.9100e-003	0.0240		324.0710	324.0710	0.0190		324.5469
Worker	0.2217	0.1385	1.9508	6.0000e-003	0.6260	4.4800e-003	0.6304	0.1660	4.1200e-003	0.1701		597.9254	597.9254	0.0151		598.3022
Total	**0.3292**	**3.8071**	**2.7923**	**0.0174**	**1.0352**	**0.0139**	**1.0491**	**0.2752**	**0.0132**	**0.2884**		**1,827.5396**	**1,827.5396**	**0.0941**		**1,829.8931**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.5000e-003	0.0000	4.5000e-003	6.8000e-004	0.0000	6.8000e-004			0.0000			0.0000
Off-Road	1.2175	12.4838	12.4570	0.0285		0.5495	0.5495		0.5055	0.5055	0.0000	2,758.4187	2,758.4187	0.8921		2,780.7219
Total	**1.2175**	**12.4838**	**12.4570**	**0.0285**	**4.5000e-003**	**0.5495**	**0.5540**	**6.8000e-004**	**0.5055**	**0.5062**	**0.0000**	**2,758.4187**	**2,758.4187**	**0.8921**		**2,780.7219**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0761	2.5822	0.5848	8.3600e-003	0.3324	7.4500e-003	0.3399	0.0871	7.1300e-003	0.0942		905.5433	905.5433	0.0600		907.0439
Vendor	0.0313	1.0864	0.2567	3.0300e-003	0.0768	2.0000e-003	0.0788	0.0221	1.9100e-003	0.0240		324.0710	324.0710	0.0190		324.5469
Worker	0.2217	0.1385	1.9508	6.0000e-003	0.6260	4.4800e-003	0.6304	0.1660	4.1200e-003	0.1701		597.9254	597.9254	0.0151		598.3022
Total	**0.3292**	**3.8071**	**2.7923**	**0.0174**	**1.0352**	**0.0139**	**1.0491**	**0.2752**	**0.0132**	**0.2884**		**1,827.5396**	**1,827.5396**	**0.0941**		**1,829.8931**

3.4 Site Preparation - Cut and Cover - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.9900e-003	0.0000	9.9900e-003	1.5100e-003	0.0000	1.5100e-003			0.0000			0.0000
Off-Road	1.1384	11.3095	12.3492	0.0285		0.4786	0.4786		0.4403	0.4403		2,759.5908	2,759.5908	0.8925		2,781.9035
Total	**1.1384**	**11.3095**	**12.3492**	**0.0285**	**9.9900e-003**	**0.4786**	**0.4886**	**1.5100e-003**	**0.4403**	**0.4418**		**2,759.5908**	**2,759.5908**	**0.8925**		**2,781.9035**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0504	1.6705	0.5328	8.0100e-003	0.3460	3.1000e-003	0.3491	0.0905	2.9600e-003	0.0934		869.6229	869.6229	0.0553		871.0041
Vendor	0.0234	0.8213	0.2313	2.9400e-003	0.0768	9.2000e-004	0.0777	0.0221	8.8000e-004	0.0230		314.2413	314.2413	0.0166		314.6563
Worker	0.2085	0.1253	1.8015	5.7700e-003	0.6260	4.3600e-003	0.6303	0.1660	4.0100e-003	0.1700		575.6409	575.6409	0.0136		575.9807
Total	**0.2822**	**2.6171**	**2.5656**	**0.0167**	**1.0488**	**8.3800e-003**	**1.0572**	**0.2786**	**7.8500e-003**	**0.2864**		**1,759.5050**	**1,759.5050**	**0.0854**		**1,761.6411**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.5000e-003	0.0000	4.5000e-003	6.8000e-004	0.0000	6.8000e-004			0.0000			0.0000

Off-Road	1.1384	11.3095	12.3492	0.0285		0.4786	0.4786		0.4403	0.4403	0.0000	2,759.5908	2,759.5908	0.8925		2,781.9035
Total	**1.1384**	**11.3095**	**12.3492**	**0.0285**	**4.5000e-003**	**0.4786**	**0.4831**	**6.8000e-004**	**0.4403**	**0.4410**	**0.0000**	**2,759.5908**	**2,759.5908**	**0.8925**		**2,781.9035**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0504	1.6705	0.5328	8.0100e-003	0.3460	3.1000e-003	0.3491	0.0905	2.9600e-003	0.0934		869.6229	869.6229	0.0553		871.0041
Vendor	0.0234	0.8213	0.2313	2.9400e-003	0.0768	9.2000e-004	0.0777	0.0221	8.8000e-004	0.0230		314.2413	314.2413	0.0166		314.6563
Worker	0.2085	0.1253	1.8015	5.7700e-003	0.6260	4.3600e-003	0.6303	0.1660	4.0100e-003	0.1700		575.6409	575.6409	0.0136		575.9807
Total	**0.2822**	**2.6171**	**2.5656**	**0.0167**	**1.0488**	**8.3800e-003**	**1.0572**	**0.2786**	**7.8500e-003**	**0.2864**		**1,759.5050**	**1,759.5050**	**0.0854**		**1,761.6411**

3.5 Carbon Fiber Reinforced Polymer (CFRP) Installation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1166	8.9308	10.5219	0.0172		0.5229	0.5229		0.5103	0.5103		1,632.4672	1,632.4672	0.1622		1,636.5222
Total	**1.1166**	**8.9308**	**10.5219**	**0.0172**		**0.5229**	**0.5229**		**0.5103**	**0.5103**		**1,632.4672**	**1,632.4672**	**0.1622**		**1,636.5222**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1980	0.1237	1.7418	5.3600e-003	0.5589	4.0000e-003	0.5629	0.1482	3.6800e-003	0.1519		533.8620	533.8620	0.0135		534.1984
Total	**0.1980**	**0.1237**	**1.7418**	**5.3600e-003**	**0.5589**	**4.0000e-003**	**0.5629**	**0.1482**	**3.6800e-003**	**0.1519**		**533.8620**	**533.8620**	**0.0135**		**534.1984**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1166	8.9308	10.5219	0.0172		0.5229	0.5229		0.5103	0.5103	0.0000	1,632.4672	1,632.4672	0.1622		1,636.5222
Total	**1.1166**	**8.9308**	**10.5219**	**0.0172**		**0.5229**	**0.5229**		**0.5103**	**0.5103**	**0.0000**	**1,632.4672**	**1,632.4672**	**0.1622**		**1,636.5222**

Mitigated Construction Off-Site

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

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1980	0.1237	1.7418	5.3600e-003	0.5589	4.0000e-003	0.5629	0.1482	3.6800e-003	0.1519		533.8620	533.8620	0.0135		534.1984
Total	**0.1980**	**0.1237**	**1.7418**	**5.3600e-003**	**0.5589**	**4.0000e-003**	**0.5629**	**0.1482**	**3.6800e-003**	**0.1519**		**533.8620**	**533.8620**	**0.0135**		**534.1984**

3.5 Carbon Fiber Reinforced Polymer (CFRP) Installation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0394	8.2678	10.4899	0.0172		0.4590	0.4590		0.4477	0.4477		1,632.2875	1,632.2875	0.1560		1,636.1871
Total	**1.0394**	**8.2678**	**10.4899**	**0.0172**		**0.4590**	**0.4590**		**0.4477**	**0.4477**		**1,632.2875**	**1,632.2875**	**0.1560**		**1,636.1871**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1861	0.1119	1.6085	5.1600e-003	0.5589	3.8900e-003	0.5628	0.1482	3.5800e-003	0.1518		513.9651	513.9651	0.0121		514.2685
Total	**0.1861**	**0.1119**	**1.6085**	**5.1600e-003**	**0.5589**	**3.8900e-003**	**0.5628**	**0.1482**	**3.5800e-003**	**0.1518**		**513.9651**	**513.9651**	**0.0121**		**514.2685**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0394	8.2678	10.4899	0.0172		0.4590	0.4590		0.4477	0.4477	0.0000	1,632.2875	1,632.2875	0.1560		1,636.1871
Total	**1.0394**	**8.2678**	**10.4899**	**0.0172**		**0.4590**	**0.4590**		**0.4477**	**0.4477**	**0.0000**	**1,632.2875**	**1,632.2875**	**0.1560**		**1,636.1871**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1861	0.1119	1.6085	5.1600e-003	0.5589	3.8900e-003	0.5628	0.1482	3.5800e-003	0.1518		513.9651	513.9651	0.0121		514.2685
Total	**0.1861**	**0.1119**	**1.6085**	**5.1600e-003**	**0.5589**	**3.8900e-003**	**0.5628**	**0.1482**	**3.5800e-003**	**0.1518**		**513.9651**	**513.9651**	**0.0121**		**514.2685**

3.6 Pipe Jacking - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9261	8.1038	9.5774	0.0224		0.3964	0.3964		0.3772	0.3772		2,158.3729	2,158.3729	0.5284		2,171.5817
Total	**0.9261**	**8.1038**	**9.5774**	**0.0224**		**0.3964**	**0.3964**		**0.3772**	**0.3772**		**2,158.3729**	**2,158.3729**	**0.5284**		**2,171.5817**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0313	1.0864	0.2567	3.0300e-003	0.0768	2.0000e-003	0.0788	0.0221	1.9100e-003	0.0240		324.0710	324.0710	0.0190		324.5469
Worker	0.2217	0.1385	1.9508	6.0000e-003	0.6260	4.4800e-003	0.6304	0.1660	4.1200e-003	0.1701		597.9254	597.9254	0.0151		598.3022
Total	**0.2530**	**1.2249**	**2.2075**	**9.0300e-003**	**0.7028**	**6.4800e-003**	**0.7092**	**0.1881**	**6.0300e-003**	**0.1942**		**921.9964**	**921.9964**	**0.0341**		**922.8491**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9261	8.1038	9.5774	0.0224		0.3964	0.3964		0.3772	0.3772	0.0000	2,158.3729	2,158.3729	0.5284		2,171.5817

Total	0.9261	8.1038	9.5774	0.0224		0.3964	0.3964		0.3772	0.3772	0.0000	2,158.3729	2,158.3729	0.5284		2,171.5817

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0313	1.0864	0.2567	3.0300e-003	0.0768	2.0000e-003	0.0788	0.0221	1.9100e-003	0.0240		324.0710	324.0710	0.0190		324.5469
Worker	0.2217	0.1385	1.9508	6.0000e-003	0.6260	4.4800e-003	0.6304	0.1660	4.1200e-003	0.1701		597.9254	597.9254	0.0151		598.3022
Total	**0.2530**	**1.2249**	**2.2075**	**9.0300e-003**	**0.7028**	**6.4800e-003**	**0.7092**	**0.1881**	**6.0300e-003**	**0.1942**		**921.9964**	**921.9964**	**0.0341**		**922.8491**

3.6 Pipe Jacking - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8638	7.3133	9.5314	0.0225		0.3398	0.3398		0.3234	0.3234		2,159.1235	2,159.1235	0.5253		2,172.2562
Total	**0.8638**	**7.3133**	**9.5314**	**0.0225**		**0.3398**	**0.3398**		**0.3234**	**0.3234**		**2,159.1235**	**2,159.1235**	**0.5253**		**2,172.2562**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0234	0.8213	0.2313	2.9400e-003	0.0768	9.2000e-004	0.0777	0.0221	8.8000e-004	0.0230		314.2413	314.2413	0.0166		314.6563
Worker	0.2085	0.1253	1.8015	5.7700e-003	0.6260	4.3600e-003	0.6303	0.1660	4.0100e-003	0.1700		575.6409	575.6409	0.0136		575.9807
Total	**0.2318**	**0.9466**	**2.0328**	**8.7100e-003**	**0.7028**	**5.2800e-003**	**0.7080**	**0.1881**	**4.8900e-003**	**0.1930**		**889.8822**	**889.8822**	**0.0302**		**890.6370**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8638	7.3133	9.5314	0.0225		0.3398	0.3398		0.3234	0.3234	0.0000	2,159.1235	2,159.1235	0.5253		2,172.2562
Total	**0.8638**	**7.3133**	**9.5314**	**0.0225**		**0.3398**	**0.3398**		**0.3234**	**0.3234**	**0.0000**	**2,159.1235**	**2,159.1235**	**0.5253**		**2,172.2562**

Mitigated Construction Off-Site

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

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0234	0.8213	0.2313	2.9400e-003	0.0768	9.2000e-004	0.0777	0.0221	8.8000e-004	0.0230		314.2413	314.2413	0.0166		314.6563
Worker	0.2085	0.1253	1.8015	5.7700e-003	0.6260	4.3600e-003	0.6303	0.1660	4.0100e-003	0.1700		575.6409	575.6409	0.0136		575.9807
Total	**0.2318**	**0.9466**	**2.0328**	**8.7100e-003**	**0.7028**	**5.2800e-003**	**0.7080**	**0.1881**	**4.8900e-003**	**0.1930**		**889.8822**	**889.8822**	**0.0302**		**890.6370**

3.7 Pit Shoring 2 - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2061	11.6550	12.0068	0.0226		0.5303	0.5303		0.5084	0.5084		2,164.7195	2,164.7195	0.4313		2,175.5014
Total	**1.2061**	**11.6550**	**12.0068**	**0.0226**		**0.5303**	**0.5303**		**0.5084**	**0.5084**		**2,164.7195**	**2,164.7195**	**0.4313**		**2,175.5014**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0396	0.0247	0.3484	1.0700e-003	0.1118	8.0000e-004	0.1126	0.0296	7.4000e-004	0.0304		106.7724	106.7724	2.6900e-003		106.8397
Total	**0.0396**	**0.0247**	**0.3484**	**1.0700e-003**	**0.1118**	**8.0000e-004**	**0.1126**	**0.0296**	**7.4000e-004**	**0.0304**		**106.7724**	**106.7724**	**2.6900e-003**		**106.8397**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2061	11.6550	12.0068	0.0226		0.5303	0.5303		0.5084	0.5084	0.0000	2,164.7195	2,164.7195	0.4313		2,175.5014
Total	**1.2061**	**11.6550**	**12.0068**	**0.0226**		**0.5303**	**0.5303**		**0.5084**	**0.5084**	**0.0000**	**2,164.7195**	**2,164.7195**	**0.4313**		**2,175.5014**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0396	0.0247	0.3484	1.0700e-003	0.1118	8.0000e-004	0.1126	0.0296	7.4000e-004	0.0304		106.7724	106.7724	2.6900e-003		106.8397
Total	**0.0396**	**0.0247**	**0.3484**	**1.0700e-003**	**0.1118**	**8.0000e-004**	**0.1126**	**0.0296**	**7.4000e-004**	**0.0304**		**106.7724**	**106.7724**	**2.6900e-003**		**106.8397**

3.7 Pit Shoring 2 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1099	10.4538	11.5818	0.0226		0.4597	0.4597		0.4407	0.4407		2,165.0463	2,165.0463	0.4272		2,175.7265
Total	**1.1099**	**10.4538**	**11.5818**	**0.0226**		**0.4597**	**0.4597**		**0.4407**	**0.4407**		**2,165.0463**	**2,165.0463**	**0.4272**		**2,175.7265**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0372	0.0224	0.3217	1.0300e-003	0.1118	7.8000e-004	0.1126	0.0296	7.2000e-004	0.0304		102.7930	102.7930	2.4300e-003		102.8537
Total	**0.0372**	**0.0224**	**0.3217**	**1.0300e-003**	**0.1118**	**7.8000e-004**	**0.1126**	**0.0296**	**7.2000e-004**	**0.0304**		**102.7930**	**102.7930**	**2.4300e-003**		**102.8537**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1099	10.4538	11.5818	0.0226		0.4597	0.4597		0.4407	0.4407	0.0000	2,165.0463	2,165.0463	0.4272		2,175.7265

Total	**1.1099**	**10.4538**	**11.5818**	**0.0226**		**0.4597**	**0.4597**		**0.4407**	**0.4407**	**0.0000**	**2,165.0463**	**2,165.0463**	**0.4272**		**2,175.7265**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0372	0.0224	0.3217	1.0300e-003	0.1118	7.8000e-004	0.1126	0.0296	7.2000e-004	0.0304		102.7930	102.7930	2.4300e-003		102.8537
Total	**0.0372**	**0.0224**	**0.3217**	**1.0300e-003**	**0.1118**	**7.8000e-004**	**0.1126**	**0.0296**	**7.2000e-004**	**0.0304**		**102.7930**	**102.7930**	**2.4300e-003**		**102.8537**

3.8 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.5136					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**0.7052**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	7.4500e-003	4.4800e-003	0.0643	2.1000e-004	0.0224	1.6000e-004	0.0225	5.9300e-003	1.4000e-004	6.0700e-003		20.5586	20.5586	4.9000e-004		20.5707
Total	**7.4500e-003**	**4.4800e-003**	**0.0643**	**2.1000e-004**	**0.0224**	**1.6000e-004**	**0.0225**	**5.9300e-003**	**1.4000e-004**	**6.0700e-003**		**20.5586**	**20.5586**	**4.9000e-004**		**20.5707**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.5136					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**0.7052**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

Mitigated Construction Off-Site

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

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	7.4500e-003	4.4800e-003	0.0643	2.1000e-004	0.0224	1.6000e-004	0.0225	5.9300e-003	1.4000e-004	6.0700e-003		20.5586	20.5586	4.9000e-004		20.5707
Total	**7.4500e-003**	**4.4800e-003**	**0.0643**	**2.1000e-004**	**0.0224**	**1.6000e-004**	**0.0225**	**5.9300e-003**	**1.4000e-004**	**6.0700e-003**		**20.5586**	**20.5586**	**4.9000e-004**		**20.5707**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	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

Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.550151	0.042593	0.202457	0.116946	0.015037	0.005825	0.021699	0.034933	0.002123	0.001780	0.004876	0.000710	0.000868

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.0600e-003	1.0000e-005	9.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.0200e-003	2.0200e-003	1.0000e-005		2.1500e-003
Unmitigated	4.0600e-003	1.0000e-005	9.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.0200e-003	2.0200e-003	1.0000e-005		2.1500e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	7.0000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.2700e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.0000e-005	1.0000e-005	9.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.0200e-003	2.0200e-003	1.0000e-005		2.1500e-003
Total	**4.0600e-003**	**1.0000e-005**	**9.4000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.0200e-003**	**2.0200e-003**	**1.0000e-005**		**2.1500e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	7.0000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.2700e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.0000e-005	1.0000e-005	9.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.0200e-003	2.0200e-003	1.0000e-005		2.1500e-003
Total	**4.0600e-003**	**1.0000e-005**	**9.4000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.0200e-003**	**2.0200e-003**	**1.0000e-005**		**2.1500e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

City Trunk Line South LADWP

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	9.23	1000sqft	0.21	9,227.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	12			**Operational Year**	2023
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	1227.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

.Project Characteristics - Operational year 2023

Land Use - 0.21 acres.

Construction Phase - Construction Scheudle provided by lADWP.

Off-road Equipment - Construction equipment information provided by LADWP.

Off-road Equipment - 74 hp = dust collector, 5,000 CFM dehumidifer is electric, 60KW in-line heater is electric, Blast pot is pneumatic.

Off-road Equipment - Construction equipment information provided by LADWP.

Off-road Equipment - Construction equipment information provided by LADWP.

Off-road Equipment - Construction equipment information provided by LADWP.

Off-road Equipment - Construction equipment information provided by LADWP.

Off-road Equipment - Construction equipment information provided by LADWP.

Trips and VMT - Construction trip information provided by LADWP.

Grading - 7,600 cy material exported.

Construction Off-road Equipment Mitigation - Compliance with SCAQMD Rule 403.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	100.00	326.00
tblConstructionPhase	NumDays	1.00	86.00
tblGrading	MaterialExported	0.00	7,600.00
tblLandUse	LandUseSquareFeet	9,230.00	9,227.00
tblOffRoadEquipment	HorsePower	231.00	400.00
tblOffRoadEquipment	HorsePower	231.00	400.00
tblOffRoadEquipment	HorsePower	158.00	345.00
tblOffRoadEquipment	HorsePower	158.00	345.00
tblOffRoadEquipment	HorsePower	158.00	345.00
tblOffRoadEquipment	HorsePower	172.00	74.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblTripsAndVMT	VendorTripNumber	2.00	16.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	WorkerTripNumber	4.00	50.00
tblTripsAndVMT	WorkerTripNumber	18.00	56.00
tblTripsAndVMT	WorkerTripNumber	10.00	50.00
tblTripsAndVMT	WorkerTripNumber	10.00	56.00
tblTripsAndVMT	WorkerTripNumber	1.00	2.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	2.8336	27.0173	26.1123	0.0575	0.7731	1.2169	1.9900	0.2073	1.1432	1.3505	0.0000	5,599.0327	5,599.0327	1.2526	0.0000	5,630.3482
2022	5.3566	46.4129	51.1386	0.1220	2.4186	2.0246	4.4432	0.6427	1.9252	2.5679	0.0000	11,949.3784	11,949.3784	2.1604	0.0000	12,003.3890
2023	4.9561	41.0759	49.9746	0.1209	2.4322	1.7556	4.1878	0.6460	1.6693	2.3154	0.0000	11,833.4605	11,833.4605	2.1324	0.0000	11,886.7700
Maximum	**5.3566**	**46.4129**	**51.1386**	**0.1220**	**2.4322**	**2.0246**	**4.4432**	**0.6460**	**1.9252**	**2.5679**	**0.0000**	**11,949.3784**	**11,949.3784**	**2.1604**	**0.0000**	**12,003.3890**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	2.8336	27.0173	26.1123	0.0575	0.7731	1.2169	1.9900	0.2073	1.1432	1.3505	0.0000	5,599.0327	5,599.0327	1.2526	0.0000	5,630.3482
2022	5.3566	46.4129	51.1386	0.1220	2.4131	2.0246	4.4377	0.6419	1.9252	2.5671	0.0000	11,949.3784	11,949.3784	2.1604	0.0000	12,003.3890
2023	4.9561	41.0759	49.9746	0.1209	2.4267	1.7556	4.1823	0.6452	1.6693	2.3146	0.0000	11,833.4605	11,833.4605	2.1324	0.0000	11,886.7700
Maximum	**5.3566**	**46.4129**	**51.1386**	**0.1220**	**2.4267**	**2.0246**	**4.4377**	**0.6452**	**1.9252**	**2.5671**	**0.0000**	**11,949.3784**	**11,949.3784**	**2.1604**	**0.0000**	**12,003.3890**

	ROG	**NOx**	**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**	**0.20**	**0.00**	**0.10**	**0.11**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.0600e-003	1.0000e-005	9.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.0200e-003	2.0200e-003	1.0000e-005		2.1500e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	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	**4.0600e-003**	**1.0000e-005**	**9.4000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.0200e-003**	**2.0200e-003**	**1.0000e-005**	**0.0000**	**2.1500e-003**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.0600e-003	1.0000e-005	9.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.0200e-003	2.0200e-003	1.0000e-005		2.1500e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	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	**4.0600e-003**	**1.0000e-005**	**9.4000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.0200e-003**	**2.0200e-003**	**1.0000e-005**	**0.0000**	**2.1500e-003**

	ROG	**NOx**	**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	Flow Control Station (FCS) Vault Installation	Building Construction	4/1/2021	6/30/2022	5	326	
2	Pit shoring 1	Trenching	5/3/2021	5/14/2021	5	10	
3	Site Preparation - Cut and Cover	Site Preparation	11/1/2022	2/28/2023	5	86	
4	Carbon Fiber Reinforced Polymer (CFRP) Installation	Trenching	11/1/2022	4/28/2023	5	129	
5	Pipe Jacking	Trenching	11/1/2022	4/28/2023	5	129	
6	Pit Shoring 2	Trenching	12/5/2022	1/13/2023	5	30	
7	Architectural Coating	Architectural Coating	4/24/2023	4/28/2023	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.21

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 554

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Flow Control Station (FCS) Vault Installation	Cranes	1	4.00	231	0.29
Flow Control Station (FCS) Vault Installation	Excavators	1	8.00	345	0.38
Flow Control Station (FCS) Vault Installation	Forklifts	2	6.00	89	0.20
Flow Control Station (FCS) Vault Installation	Skid Steer Loaders	1	8.00	65	0.37
Flow Control Station (FCS) Vault Installation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Pit shoring 1	Air Compressors	1	8.00	78	0.48
Pit shoring 1	Cranes	1	8.00	400	0.29
Pit shoring 1	Generator Sets	1	8.00	84	0.74
Pit shoring 1	Skid Steer Loaders	1	8.00	65	0.37
Site Preparation - Cut and Cover	Aerial Lifts	1	8.00	63	0.31
Site Preparation - Cut and Cover	Cranes	1	8.00	231	0.29

Site Preparation - Cut and Cover	Excavators	1	8.00	345	0.38
Site Preparation - Cut and Cover	Forklifts	1	8.00	89	0.20
Site Preparation - Cut and Cover	Graders	0	0.00	187	0.41
Site Preparation - Cut and Cover	Skid Steer Loaders	1	8.00	65	0.37
Site Preparation - Cut and Cover	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Carbon Fiber Reinforced Polymer (CFRP) Installation	Air Compressors	2	8.00	78	0.48
Carbon Fiber Reinforced Polymer (CFRP) Installation	Generator Sets	1	8.00	84	0.74
Carbon Fiber Reinforced Polymer (CFRP) Installation	Other Construction Equipment	1	8.00	74	0.42
Pipe Jacking	Cranes	0	8.00	231	0.29
Pipe Jacking	Excavators	1	8.00	345	0.38
Pipe Jacking	Forklifts	1	8.00	89	0.20
Pipe Jacking	Generator Sets	0	8.00	84	0.74
Pipe Jacking	Pumps	1	8.00	84	0.74
Pipe Jacking	Skid Steer Loaders	0	8.00	65	0.37
Pipe Jacking	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Pit Shoring 2	Air Compressors	1	8.00	78	0.48
Pit Shoring 2	Cranes	1	8.00	400	0.29
Pit Shoring 2	Generator Sets	1	8.00	84	0.74
Pit Shoring 2	Skid Steer Loaders	1	8.00	65	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Flow Control Station (FCS) Vault	7	50.00	16.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Pit shoring 1	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation - Cut and Cover	7	56.00	12.00	950.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Carbon Fiber Reinforced Polymer	4	50.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Pipe Jacking	4	56.00	12.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Pit Shoring 2	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Architectural Coating	1	2.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Flow Control Station (FCS) Vault Installation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1810	12.0678	11.1688	0.0247		0.5914	0.5914		0.5441	0.5441		2,389.2632	2,389.2632	0.7727		2,408.5816
Total	**1.1810**	**12.0678**	**11.1688**	**0.0247**		**0.5914**	**0.5914**		**0.5441**	**0.5441**		**2,389.2632**	**2,389.2632**	**0.7727**		**2,408.5816**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0469	1.5212	0.4052	3.9700e-003	0.1024	3.1700e-003	0.1056	0.0295	3.0300e-003	0.0325		423.2803	423.2803	0.0283		423.9883
Worker	0.2306	0.1498	1.6927	5.2000e-003	0.5589	4.1100e-003	0.5630	0.1482	3.7900e-003	0.1520		517.8339	517.8339	0.0139		518.1809
Total	**0.2775**	**1.6710**	**2.0979**	**9.1700e-003**	**0.6613**	**7.2800e-003**	**0.6686**	**0.1777**	**6.8200e-003**	**0.1845**		**941.1143**	**941.1143**	**0.0422**		**942.1692**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1810	12.0678	11.1688	0.0247		0.5914	0.5914		0.5441	0.5441	0.0000	2,389.2632	2,389.2632	0.7727		2,408.5816
Total	**1.1810**	**12.0678**	**11.1688**	**0.0247**		**0.5914**	**0.5914**		**0.5441**	**0.5441**	**0.0000**	**2,389.2632**	**2,389.2632**	**0.7727**		**2,408.5816**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0469	1.5212	0.4052	3.9700e-003	0.1024	3.1700e-003	0.1056	0.0295	3.0300e-003	0.0325		423.2803	423.2803	0.0283		423.9883
Worker	0.2306	0.1498	1.6927	5.2000e-003	0.5589	4.1100e-003	0.5630	0.1482	3.7900e-003	0.1520		517.8339	517.8339	0.0139		518.1809
Total	**0.2775**	**1.6710**	**2.0979**	**9.1700e-003**	**0.6613**	**7.2800e-003**	**0.6686**	**0.1777**	**6.8200e-003**	**0.1845**		**941.1143**	**941.1143**	**0.0422**		**942.1692**

3.2 Flow Control Station (FCS) Vault Installation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0518	10.3588	10.9937	0.0247		0.4872	0.4872		0.4482	0.4482		2,390.3991	2,390.3991	0.7731		2,409.7267
Total	**1.0518**	**10.3588**	**10.9937**	**0.0247**		**0.4872**	**0.4872**		**0.4482**	**0.4482**		**2,390.3991**	**2,390.3991**	**0.7731**		**2,409.7267**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0440	1.4427	0.3832	3.9300e-003	0.1024	2.7500e-003	0.1052	0.0295	2.6300e-003	0.0321		419.5108	419.5108	0.0272		420.1919
Worker	0.2169	0.1353	1.5624	5.0100e-003	0.5589	4.0000e-003	0.5629	0.1482	3.6800e-003	0.1519		499.2683	499.2683	0.0125		499.5816
Total	**0.2608**	**1.5781**	**1.9456**	**8.9400e-003**	**0.6613**	**6.7500e-003**	**0.6680**	**0.1777**	**6.3100e-003**	**0.1840**		**918.7790**	**918.7790**	**0.0398**		**919.7735**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0518	10.3588	10.9937	0.0247		0.4872	0.4872		0.4482	0.4482	0.0000	2,390.3991	2,390.3991	0.7731		2,409.7267

Total	**1.0518**	**10.3588**	**10.9937**	**0.0247**		**0.4872**	**0.4872**		**0.4482**	**0.4482**	**0.0000**	**2,390.3991**	**2,390.3991**	**0.7731**		**2,409.7267**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0440	1.4427	0.3832	3.9300e-003	0.1024	2.7500e-003	0.1052	0.0295	2.6300e-003	0.0321		419.5108	419.5108	0.0272		420.1919
Worker	0.2169	0.1353	1.5624	5.0100e-003	0.5589	4.0000e-003	0.5629	0.1482	3.6800e-003	0.1519		499.2683	499.2683	0.0125		499.5816
Total	**0.2608**	**1.5781**	**1.9456**	**8.9400e-003**	**0.6613**	**6.7500e-003**	**0.6680**	**0.1777**	**6.3100e-003**	**0.1840**		**918.7790**	**918.7790**	**0.0398**		**919.7735**

3.3 Pit shoring 1 - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3290	13.2485	12.5071	0.0226		0.6174	0.6174		0.5915	0.5915		2,165.0885	2,165.0885	0.4349		2,175.9612
Total	**1.3290**	**13.2485**	**12.5071**	**0.0226**		**0.6174**	**0.6174**		**0.5915**	**0.5915**		**2,165.0885**	**2,165.0885**	**0.4349**		**2,175.9612**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0461	0.0300	0.3385	1.0400e-003	0.1118	8.2000e-004	0.1126	0.0296	7.6000e-004	0.0304		103.5668	103.5668	2.7800e-003		103.6362
Total	**0.0461**	**0.0300**	**0.3385**	**1.0400e-003**	**0.1118**	**8.2000e-004**	**0.1126**	**0.0296**	**7.6000e-004**	**0.0304**		**103.5668**	**103.5668**	**2.7800e-003**		**103.6362**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3290	13.2485	12.5071	0.0226		0.6174	0.6174		0.5915	0.5915	0.0000	2,165.0885	2,165.0885	0.4349		2,175.9612
Total	**1.3290**	**13.2485**	**12.5071**	**0.0226**		**0.6174**	**0.6174**		**0.5915**	**0.5915**	**0.0000**	**2,165.0885**	**2,165.0885**	**0.4349**		**2,175.9612**

Mitigated Construction Off-Site

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

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0461	0.0300	0.3385	1.0400e-003	0.1118	8.2000e-004	0.1126	0.0296	7.6000e-004	0.0304		103.5668	103.5668	2.7800e-003		103.6362
Total	**0.0461**	**0.0300**	**0.3385**	**1.0400e-003**	**0.1118**	**8.2000e-004**	**0.1126**	**0.0296**	**7.6000e-004**	**0.0304**		**103.5668**	**103.5668**	**2.7800e-003**		**103.6362**

3.4 Site Preparation - Cut and Cover - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.9900e-003	0.0000	9.9900e-003	1.5100e-003	0.0000	1.5100e-003			0.0000			0.0000
Off-Road	1.2175	12.4838	12.4570	0.0285		0.5495	0.5495		0.5055	0.5055		2,758.4187	2,758.4187	0.8921		2,780.7219
Total	**1.2175**	**12.4838**	**12.4570**	**0.0285**	**9.9900e-003**	**0.5495**	**0.5595**	**1.5100e-003**	**0.5055**	**0.5071**		**2,758.4187**	**2,758.4187**	**0.8921**		**2,780.7219**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0783	2.6099	0.6263	8.2000e-003	0.3324	7.5700e-003	0.3400	0.0871	7.2400e-003	0.0944		888.6513	888.6513	0.0625		890.2135
Vendor	0.0330	1.0821	0.2874	2.9500e-003	0.0768	2.0600e-003	0.0789	0.0221	1.9700e-003	0.0241		314.6331	314.6331	0.0204		315.1439
Worker	0.2429	0.1516	1.7499	5.6100e-003	0.6260	4.4800e-003	0.6304	0.1660	4.1200e-003	0.1701		559.1805	559.1805	0.0140		559.5314
Total	**0.3542**	**3.8435**	**2.6635**	**0.0168**	**1.0352**	**0.0141**	**1.0493**	**0.2752**	**0.0133**	**0.2886**		**1,762.4648**	**1,762.4648**	**0.0970**		**1,764.8887**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.5000e-003	0.0000	4.5000e-003	6.8000e-004	0.0000	6.8000e-004			0.0000			0.0000
Off-Road	1.2175	12.4838	12.4570	0.0285		0.5495	0.5495		0.5055	0.5055	0.0000	2,758.4187	2,758.4187	0.8921		2,780.7219
Total	**1.2175**	**12.4838**	**12.4570**	**0.0285**	**4.5000e-003**	**0.5495**	**0.5540**	**6.8000e-004**	**0.5055**	**0.5062**	**0.0000**	**2,758.4187**	**2,758.4187**	**0.8921**		**2,780.7219**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0783	2.6099	0.6263	8.2000e-003	0.3324	7.5700e-003	0.3400	0.0871	7.2400e-003	0.0944		888.6513	888.6513	0.0625		890.2135
Vendor	0.0330	1.0821	0.2874	2.9500e-003	0.0768	2.0600e-003	0.0789	0.0221	1.9700e-003	0.0241		314.6331	314.6331	0.0204		315.1439
Worker	0.2429	0.1516	1.7499	5.6100e-003	0.6260	4.4800e-003	0.6304	0.1660	4.1200e-003	0.1701		559.1805	559.1805	0.0140		559.5314
Total	**0.3542**	**3.8435**	**2.6635**	**0.0168**	**1.0352**	**0.0141**	**1.0493**	**0.2752**	**0.0133**	**0.2886**		**1,762.4648**	**1,762.4648**	**0.0970**		**1,764.8887**

3.4 Site Preparation - Cut and Cover - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.9900e-003	0.0000	9.9900e-003	1.5100e-003	0.0000	1.5100e-003			0.0000			0.0000
Off-Road	1.1384	11.3095	12.3492	0.0285		0.4786	0.4786		0.4403	0.4403		2,759.5908	2,759.5908	0.8925		2,781.9035
Total	**1.1384**	**11.3095**	**12.3492**	**0.0285**	**9.9900e-003**	**0.4786**	**0.4886**	**1.5100e-003**	**0.4403**	**0.4418**		**2,759.5908**	**2,759.5908**	**0.8925**		**2,781.9035**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0518	1.6783	0.5606	7.8600e-003	0.3460	3.1800e-003	0.3492	0.0905	3.0400e-003	0.0935		853.5146	853.5146	0.0572		854.9433
Vendor	0.0246	0.8161	0.2541	2.8500e-003	0.0768	9.7000e-004	0.0778	0.0221	9.3000e-004	0.0230		305.2340	305.2340	0.0177		305.6763
Worker	0.2291	0.1371	1.6128	5.4000e-003	0.6260	4.3600e-003	0.6303	0.1660	4.0100e-003	0.1700		538.3260	538.3260	0.0127		538.6422
Total	**0.3055**	**2.6315**	**2.4275**	**0.0161**	**1.0488**	**8.5100e-003**	**1.0573**	**0.2786**	**7.9800e-003**	**0.2866**		**1,697.0746**	**1,697.0746**	**0.0875**		**1,699.2617**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.5000e-003	0.0000	4.5000e-003	6.8000e-004	0.0000	6.8000e-004			0.0000			0.0000

Off-Road	1.1384	11.3095	12.3492	0.0285		0.4786	0.4786		0.4403	0.4403	0.0000	2,759.5908	2,759.5908	0.8925		2,781.9035
Total	**1.1384**	**11.3095**	**12.3492**	**0.0285**	**4.5000e-003**	**0.4786**	**0.4831**	**6.8000e-004**	**0.4403**	**0.4410**	**0.0000**	**2,759.5908**	**2,759.5908**	**0.8925**		**2,781.9035**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0518	1.6783	0.5606	7.8600e-003	0.3460	3.1800e-003	0.3492	0.0905	3.0400e-003	0.0935		853.5146	853.5146	0.0572		854.9433
Vendor	0.0246	0.8161	0.2541	2.8500e-003	0.0768	9.7000e-004	0.0778	0.0221	9.3000e-004	0.0230		305.2340	305.2340	0.0177		305.6763
Worker	0.2291	0.1371	1.6128	5.4000e-003	0.6260	4.3600e-003	0.6303	0.1660	4.0100e-003	0.1700		538.3260	538.3260	0.0127		538.6422
Total	**0.3055**	**2.6315**	**2.4275**	**0.0161**	**1.0488**	**8.5100e-003**	**1.0573**	**0.2786**	**7.9800e-003**	**0.2866**		**1,697.0746**	**1,697.0746**	**0.0875**		**1,699.2617**

3.5 Carbon Fiber Reinforced Polymer (CFRP) Installation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1166	8.9308	10.5219	0.0172		0.5229	0.5229		0.5103	0.5103		1,632.4672	1,632.4672	0.1622		1,636.5222
Total	**1.1166**	**8.9308**	**10.5219**	**0.0172**		**0.5229**	**0.5229**		**0.5103**	**0.5103**		**1,632.4672**	**1,632.4672**	**0.1622**		**1,636.5222**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2169	0.1353	1.5624	5.0100e-003	0.5589	4.0000e-003	0.5629	0.1482	3.6800e-003	0.1519		499.2683	499.2683	0.0125		499.5816
Total	**0.2169**	**0.1353**	**1.5624**	**5.0100e-003**	**0.5589**	**4.0000e-003**	**0.5629**	**0.1482**	**3.6800e-003**	**0.1519**		**499.2683**	**499.2683**	**0.0125**		**499.5816**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1166	8.9308	10.5219	0.0172		0.5229	0.5229		0.5103	0.5103	0.0000	1,632.4672	1,632.4672	0.1622		1,636.5222
Total	**1.1166**	**8.9308**	**10.5219**	**0.0172**		**0.5229**	**0.5229**		**0.5103**	**0.5103**	**0.0000**	**1,632.4672**	**1,632.4672**	**0.1622**		**1,636.5222**

Mitigated Construction Off-Site

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

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2169	0.1353	1.5624	5.0100e-003	0.5589	4.0000e-003	0.5629	0.1482	3.6800e-003	0.1519		499.2683	499.2683	0.0125		499.5816
Total	**0.2169**	**0.1353**	**1.5624**	**5.0100e-003**	**0.5589**	**4.0000e-003**	**0.5629**	**0.1482**	**3.6800e-003**	**0.1519**		**499.2683**	**499.2683**	**0.0125**		**499.5816**

3.5 Carbon Fiber Reinforced Polymer (CFRP) Installation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0394	8.2678	10.4899	0.0172		0.4590	0.4590		0.4477	0.4477		1,632.2875	1,632.2875	0.1560		1,636.1871
Total	**1.0394**	**8.2678**	**10.4899**	**0.0172**		**0.4590**	**0.4590**		**0.4477**	**0.4477**		**1,632.2875**	**1,632.2875**	**0.1560**		**1,636.1871**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2045	0.1224	1.4400	4.8200e-003	0.5589	3.8900e-003	0.5628	0.1482	3.5800e-003	0.1518		480.6482	480.6482	0.0113		480.9305
Total	**0.2045**	**0.1224**	**1.4400**	**4.8200e-003**	**0.5589**	**3.8900e-003**	**0.5628**	**0.1482**	**3.5800e-003**	**0.1518**		**480.6482**	**480.6482**	**0.0113**		**480.9305**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0394	8.2678	10.4899	0.0172		0.4590	0.4590		0.4477	0.4477	0.0000	1,632.2875	1,632.2875	0.1560		1,636.1871
Total	**1.0394**	**8.2678**	**10.4899**	**0.0172**		**0.4590**	**0.4590**		**0.4477**	**0.4477**	**0.0000**	**1,632.2875**	**1,632.2875**	**0.1560**		**1,636.1871**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2045	0.1224	1.4400	4.8200e-003	0.5589	3.8900e-003	0.5628	0.1482	3.5800e-003	0.1518		480.6482	480.6482	0.0113		480.9305
Total	**0.2045**	**0.1224**	**1.4400**	**4.8200e-003**	**0.5589**	**3.8900e-003**	**0.5628**	**0.1482**	**3.5800e-003**	**0.1518**		**480.6482**	**480.6482**	**0.0113**		**480.9305**

3.6 Pipe Jacking - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9261	8.1038	9.5774	0.0224		0.3964	0.3964		0.3772	0.3772		2,158.3729	2,158.3729	0.5284		2,171.5817
Total	**0.9261**	**8.1038**	**9.5774**	**0.0224**		**0.3964**	**0.3964**		**0.3772**	**0.3772**		**2,158.3729**	**2,158.3729**	**0.5284**		**2,171.5817**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0330	1.0821	0.2874	2.9500e-003	0.0768	2.0600e-003	0.0789	0.0221	1.9700e-003	0.0241		314.6331	314.6331	0.0204		315.1439
Worker	0.2429	0.1516	1.7499	5.6100e-003	0.6260	4.4800e-003	0.6304	0.1660	4.1200e-003	0.1701		559.1805	559.1805	0.0140		559.5314
Total	**0.2759**	**1.2336**	**2.0372**	**8.5600e-003**	**0.7028**	**6.5400e-003**	**0.7093**	**0.1881**	**6.0900e-003**	**0.1942**		**873.8135**	**873.8135**	**0.0345**		**874.6753**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9261	8.1038	9.5774	0.0224		0.3964	0.3964		0.3772	0.3772	0.0000	2,158.3729	2,158.3729	0.5284		2,171.5817

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Total	**0.9261**	**8.1038**	**9.5774**	**0.0224**		**0.3964**	**0.3964**		**0.3772**	**0.3772**	**0.0000**	**2,158.3729**	**2,158.3729**	**0.5284**		**2,171.5817**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0330	1.0821	0.2874	2.9500e-003	0.0768	2.0600e-003	0.0789	0.0221	1.9700e-003	0.0241		314.6331	314.6331	0.0204		315.1439
Worker	0.2429	0.1516	1.7499	5.6100e-003	0.6260	4.4800e-003	0.6304	0.1660	4.1200e-003	0.1701		559.1805	559.1805	0.0140		559.5314
Total	**0.2759**	**1.2336**	**2.0372**	**8.5600e-003**	**0.7028**	**6.5400e-003**	**0.7093**	**0.1881**	**6.0900e-003**	**0.1942**		**873.8135**	**873.8135**	**0.0345**		**874.6753**

3.6 Pipe Jacking - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8638	7.3133	9.5314	0.0225		0.3398	0.3398		0.3234	0.3234		2,159.1235	2,159.1235	0.5253		2,172.2562
Total	**0.8638**	**7.3133**	**9.5314**	**0.0225**		**0.3398**	**0.3398**		**0.3234**	**0.3234**		**2,159.1235**	**2,159.1235**	**0.5253**		**2,172.2562**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0246	0.8161	0.2541	2.8500e-003	0.0768	9.7000e-004	0.0778	0.0221	9.3000e-004	0.0230		305.2340	305.2340	0.0177		305.6763
Worker	0.2291	0.1371	1.6128	5.4000e-003	0.6260	4.3600e-003	0.6303	0.1660	4.0100e-003	0.1700		538.3260	538.3260	0.0127		538.6422
Total	**0.2537**	**0.9531**	**1.8669**	**8.2500e-003**	**0.7028**	**5.3300e-003**	**0.7081**	**0.1881**	**4.9400e-003**	**0.1931**		**843.5600**	**843.5600**	**0.0303**		**844.3184**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8638	7.3133	9.5314	0.0225		0.3398	0.3398		0.3234	0.3234	0.0000	2,159.1235	2,159.1235	0.5253		2,172.2562
Total	**0.8638**	**7.3133**	**9.5314**	**0.0225**		**0.3398**	**0.3398**		**0.3234**	**0.3234**	**0.0000**	**2,159.1235**	**2,159.1235**	**0.5253**		**2,172.2562**

Mitigated Construction Off-Site

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

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0246	0.8161	0.2541	2.8500e-003	0.0768	9.7000e-004	0.0778	0.0221	9.3000e-004	0.0230		305.2340	305.2340	0.0177		305.6763
Worker	0.2291	0.1371	1.6128	5.4000e-003	0.6260	4.3600e-003	0.6303	0.1660	4.0100e-003	0.1700		538.3260	538.3260	0.0127		538.6422
Total	**0.2537**	**0.9531**	**1.8669**	**8.2500e-003**	**0.7028**	**5.3300e-003**	**0.7081**	**0.1881**	**4.9400e-003**	**0.1931**		**843.5600**	**843.5600**	**0.0303**		**844.3184**

3.7 Pit Shoring 2 - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2061	11.6550	12.0068	0.0226		0.5303	0.5303		0.5084	0.5084		2,164.7195	2,164.7195	0.4313		2,175.5014
Total	**1.2061**	**11.6550**	**12.0068**	**0.0226**		**0.5303**	**0.5303**		**0.5084**	**0.5084**		**2,164.7195**	**2,164.7195**	**0.4313**		**2,175.5014**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0434	0.0271	0.3125	1.0000e-003	0.1118	8.0000e-004	0.1126	0.0296	7.4000e-004	0.0304		99.8537	99.8537	2.5100e-003		99.9163
Total	**0.0434**	**0.0271**	**0.3125**	**1.0000e-003**	**0.1118**	**8.0000e-004**	**0.1126**	**0.0296**	**7.4000e-004**	**0.0304**		**99.8537**	**99.8537**	**2.5100e-003**		**99.9163**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2061	11.6550	12.0068	0.0226		0.5303	0.5303		0.5084	0.5084	0.0000	2,164.7195	2,164.7195	0.4313		2,175.5014
Total	**1.2061**	**11.6550**	**12.0068**	**0.0226**		**0.5303**	**0.5303**		**0.5084**	**0.5084**	**0.0000**	**2,164.7195**	**2,164.7195**	**0.4313**		**2,175.5014**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0434	0.0271	0.3125	1.0000e-003	0.1118	8.0000e-004	0.1126	0.0296	7.4000e-004	0.0304		99.8537	99.8537	2.5100e-003		99.9163
Total	**0.0434**	**0.0271**	**0.3125**	**1.0000e-003**	**0.1118**	**8.0000e-004**	**0.1126**	**0.0296**	**7.4000e-004**	**0.0304**		**99.8537**	**99.8537**	**2.5100e-003**		**99.9163**

3.7 Pit Shoring 2 - 2023

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	1.1099	10.4538	11.5818	0.0226		0.4597	0.4597		0.4407	0.4407		2,165.0463	2,165.0463	0.4272		2,175.7265
Total	**1.1099**	**10.4538**	**11.5818**	**0.0226**		**0.4597**	**0.4597**		**0.4407**	**0.4407**		**2,165.0463**	**2,165.0463**	**0.4272**		**2,175.7265**

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0409	0.0245	0.2880	9.6000e-004	0.1118	7.8000e-004	0.1126	0.0296	7.2000e-004	0.0304		96.1296	96.1296	2.2600e-003		96.1861
Total	**0.0409**	**0.0245**	**0.2880**	**9.6000e-004**	**0.1118**	**7.8000e-004**	**0.1126**	**0.0296**	**7.2000e-004**	**0.0304**		**96.1296**	**96.1296**	**2.2600e-003**		**96.1861**

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	1.1099	10.4538	11.5818	0.0226		0.4597	0.4597		0.4407	0.4407	0.0000	2,165.0463	2,165.0463	0.4272		2,175.7265

Total	**1.1099**	**10.4538**	**11.5818**	**0.0226**		**0.4597**	**0.4597**		**0.4407**	**0.4407**	**0.0000**	**2,165.0463**	**2,165.0463**	**0.4272**		**2,175.7265**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0409	0.0245	0.2880	9.6000e-004	0.1118	7.8000e-004	0.1126	0.0296	7.2000e-004	0.0304		96.1296	96.1296	2.2600e-003		96.1861
Total	**0.0409**	**0.0245**	**0.2880**	**9.6000e-004**	**0.1118**	**7.8000e-004**	**0.1126**	**0.0296**	**7.2000e-004**	**0.0304**		**96.1296**	**96.1296**	**2.2600e-003**		**96.1861**

3.8 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.5136					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**0.7052**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	8.1800e-003	4.9000e-003	0.0576	1.9000e-004	0.0224	1.6000e-004	0.0225	5.9300e-003	1.4000e-004	6.0700e-003		19.2259	19.2259	4.5000e-004		19.2372
Total	**8.1800e-003**	**4.9000e-003**	**0.0576**	**1.9000e-004**	**0.0224**	**1.6000e-004**	**0.0225**	**5.9300e-003**	**1.4000e-004**	**6.0700e-003**		**19.2259**	**19.2259**	**4.5000e-004**		**19.2372**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.5136					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**0.7052**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

Mitigated Construction Off-Site

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

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	8.1800e-003	4.9000e-003	0.0576	1.9000e-004	0.0224	1.6000e-004	0.0225	5.9300e-003	1.4000e-004	6.0700e-003		19.2259	19.2259	4.5000e-004		19.2372
Total	**8.1800e-003**	**4.9000e-003**	**0.0576**	**1.9000e-004**	**0.0224**	**1.6000e-004**	**0.0225**	**5.9300e-003**	**1.4000e-004**	**6.0700e-003**		**19.2259**	**19.2259**	**4.5000e-004**		**19.2372**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	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

Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.550151	0.042593	0.202457	0.116946	0.015037	0.005825	0.021699	0.034933	0.002123	0.001780	0.004876	0.000710	0.000868

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

<u>**Mitigated**</u>

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.0600e-003	1.0000e-005	9.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.0200e-003	2.0200e-003	1.0000e-005		2.1500e-003
Unmitigated	4.0600e-003	1.0000e-005	9.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.0200e-003	2.0200e-003	1.0000e-005		2.1500e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	7.0000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.2700e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.0000e-005	1.0000e-005	9.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.0200e-003	2.0200e-003	1.0000e-005		2.1500e-003
Total	**4.0600e-003**	**1.0000e-005**	**9.4000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.0200e-003**	**2.0200e-003**	**1.0000e-005**		**2.1500e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	7.0000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.2700e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.0000e-005	1.0000e-005	9.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.0200e-003	2.0200e-003	1.0000e-005		2.1500e-003
Total	**4.0600e-003**	**1.0000e-005**	**9.4000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.0200e-003**	**2.0200e-003**	**1.0000e-005**		**2.1500e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX B
Biological Technical Report

BIOLOGICAL TECHNICAL REPORT CITY TRUNK LINE SOUTH UNIT 5 PHASE II AND UNIT 6 PROJECT

Prepared for:

Los Angeles Department of Water and Power
Environmental Planning and Assessment
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APRIL 2020

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Biological Technical Report for the City Trunk Line South Unit 5 Phase II and Unit 6 Project

ERRATA

At the time of the Draft IS/MND, the proposed flow control station vault at the LADWP-owned property (3380 Coldwater Canyon Avenue) was in the conceptual design phases. Subsequent to publication of the Draft IS/MND, more detailed engineering designs for this project component have been completed. This new information has not changed the impact conclusions, mitigation measures, or analysis in the IS/MND. However, this information has enabled additional details to be added to this Biological Technical Report (Appendix B of the IS/MND). Details have also been added to this Biological Technical Report based on comments received during the public review period for the Draft IS/MND, and a number of typographical errors have been resolved. The text below shows additions that have been made to the Biological Technical Report based on information that has become available subsequent to the Draft IS/MND, changes made in response to comments received during public review, and corrections of typographical errors.

As demonstrated below, these additional details represent clarification and amplification of the information that was originally presented in this Biological Technical Report. These edits have not changed the impact conclusions in the IS/MND, nor have they revealed a need for new or altered mitigation measures. Rather, this information merely amplifies and clarifies information and conclusions that were already presented in the Draft IS/MND. As such, these changes would not result in a new significant impact or in an increase in the severity of a previously identified significant impact and, therefore, do not warrant recirculation of the IS/MND.

Revisions to this Biological Technical Report (Appendix B of the Draft IS/MND) are shown below and are categorized by section number and page number. Text from the Biological Technical Report that has been removed is shown in strikethrough (i.e., ~~strikethrough~~), and text that has been added as part of the Final IS/MND is shown as underlined (i.e., underline).

Biological Technical Report, Section 6.1 (Vegetation Communities and Land Covers), first paragraph:

One vegetation community and two land cover types were mapped within the action area based on general physiognomy and species composition: coast live oak–southern California walnut woodland (disturbed *Quercus agrifolia – Juglans californica* association), upland mustards and other ruderal forbs, urban/developed land, and park and ornamental plantings. ~~This~~ These land cover types ~~is~~ are described below and acreages within the ~~project site and~~ action area are presented in Table 2, Vegetation Communities and Land Covers Summary. Spatial distribution of this land cover type is presented on Figure 3, Biological Resources.

Table 2. Vegetation Communities and Land Covers Summary

Vegetation Community / Land Cover Type	California Natural Community Codes[a]	Nature-Serve Global-State Rarity Ranks[b]	Action Area (Acres)
Disturbed Coast Live Oak - Southern California Walnut Woodland Association (dQA-JC)	71.060.27	~~G3~~G3/S3	7.38
Upland Mustards and Other Ruderal Forbs (UM)	42.011.05	—	2.07
Urban/Developed Land (DEV)	—	—	46.88
Parks and Ornamental Plantings (ORN)	—	—	0.51

Notes: Numbers may not sum due to rounding.

a Unique codes assigned to alliances and associations.

b NatureServe Global and State rarity ranks per Faber-Langendoen et al. (2012). Natural communities with ~~global or~~ state ranks of 1–3 are considered Sensitive Natural Communities by CDFW and are to be addressed in the environmental review processes of CEQA (CDFW 2020).

Biological Technical Report, Section 6.1.1 (Disturbed Coast Live Oak – Southern California Walnut Woodland Association), first paragraph:

~~Disturbed~~ Coast Live Oak-Southern California Walnut Woodland Association is only known from the Santa Monica Mountains region. This woodland association occurs on moderately steep to very steep slopes with variable aspects. It is dominated by coast live oak and southern California black walnut in the tree layer that constitute from zero to 72 percent of the vegetation cover within the community (Keeler-Wolf, T., and J. Evens 2006). Poison oak (*Toxicodendron diversilobum*) is characteristic in the understory shrub layer and a variety of grasses and forbs occur in the herbaceous layer (Keeler-Wolf, T., and J. Evens 2006). This community is considered sensitive by CDFW (~~2018~~2020).

Biological Technical Report, Section 6.1.2 (Upland Mustards and Other Ruderal Forbs), first paragraph:

Upland mustard (semi-natural stands) is a naturalized vegetation community dominated by a thick layer of herbaceous mustard plants and few other plant species interspersed within an open to continuous canopy. Emergent trees and shrubs may be present at low cover (CNPS 2019b). This habitat often occurs in fallow fields, grasslands, roadsides, levee slopes, disturbed coastal scrub riparian areas, and dumping sites. Characteristic plant species in this community include black mustard (*Brassica nigra*), field mustard (*Brassica rapa*), Asian mustard (*Brassica tournefortii*), shortpod mustard, dyer's woad (*Isatis tinctoria*), and cultivated radish (*Raphanus sativus*) (CNPS 2019b). Black mustard, shortpod mustard, cultivated radish, or other mustards occur with non-native plants at greater than 80-percent relative cover in the herbaceous layer, and mustards are the dominant herbs.

Biological Technical Report, Section 7.2 (Impacts to Vegetation Communities and Land Covers), first paragraph:

Direct and Indirect Impacts

The project site and surrounding action area supports one sensitive vegetation community (coast live oak–southern California walnut woodland association), found within the LADWP-owned property located at 3380 Coldwater Canyon Avenue within the proposed Unit 6 alignment. Due to the proposed installation of the flow control station vault, the project would permanently impact 0.01 acres of coast live oak–southern California walnut woodland association (including several coast live oak and southern California black walnut trees) and would temporarily impact 0.18 acres of coast live oak–southern California walnut woodland association. As such, the project would result in a potentially significant impact to sensitive vegetation communities. (See Figure 5, Impacts to Sensitive Vegetation Communities). The understory of the community within the action area has been regularly disturbed due to fuel reduction required for the surrounding residential properties, which has resulted in nonnative, invasive grass and herbaceous annual species to dominate. As such, ~~Since~~ project impacts would only occur to the tree component of the community (coast live oak and southern California black walnut), which are also trees protected by the City's Protected Tree Ordinance (City of Los Angeles 2006a).~~, direct and indirect impacts to sensitive vegetation communities are discussed in Section 7.7.~~ Mitigation for impacts to coast live oak and southern California black walnut are discussed in Section 8.5. This mitigation would address and reduce the project's impacts to coast live oak–southern California walnut woodland association to below a level of significance. The permanent loss of 0.01 acres of understory dominated by nonnative, invasive species is not significant based upon the small area and the species composition being removed. The 0.18 acres of temporary impacts to the understory would be expected to revert to the existing conditions due to the nature of the nonnative, invasive species present, so the impact would not be significant. As such, impacts to the coast live oak–southern California walnut woodland association would be less than significant after mitigation for impacts to trees; impacts to the understory of this association would not be considered significant and would not require mitigation. Overall, impacts to sensitive vegetation communities would be less than significant with mitigation.

Biological Technical Report, Section 9 (Literature Cited):

~~CDFW (California Department of Fish and Wildlife). 2018. California Natural Community List, October 15, 2018. Accessed August 2019. https://www.wildlife.ca.gov/Data/VegCAMP/Natural-Communities.~~

CDFW. 2020. Natural Communities. Accessed June 2020. https://wildlife.ca.gov/Data/VegCAMP/Natural-Communities.

Biological Technical Report, Figures:

Figure 5, referenced above, is shown on the following page and has been added to this Biological Technical Report as part of the Final IS/MND.

SOURCE: Bing Maps 2019, Open Street Map 2019

Los Angeles Department of Water & Power

Figure 5

Impacts to Sensitive Vegetation Communities

City Trunk Line South Unit 5 Phase II and Unit 6 Project

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APPENDICES

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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
ACOE	U.S. Army Corps of Engineers
AMSL	above mean sea level
BCC	Bird of Conservation Concern
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
FESA	federal Endangered Species Act
IPaC	Information for Planning and Conservation System
ISA	International Society of Arboriculture
LADPW	Los Angeles Department of Public Works
LADWP	Los Angeles Department of Water and Power
MBTA	Migratory Bird Treaty Act
NCCP	Natural Community Conservation Plan
NRCS	National Resources Conservation Service
OHWM	Ordinary High Water Mark
SSC	Species of Special Concern
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

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1 INTRODUCTION

This biological technical report describes the existing biological conditions of the City Trunk Line South Unit 5 Phase II and Unit 6 Project (project) in the Studio City neighborhood of the City of Los Angeles (City), Los Angeles County (County). The Los Angeles Department of Water and Power (LADWP) is proposing the City Trunk Line South Unit 5 Phase II and Unit 6 Project (proposed project) in the Studio City neighborhood of the City of Los Angeles (City), Los Angeles County (County). Implementation of the proposed project would improve capacity, reliability, and flexibility in the water system, and would complete the LADWP's six-phase plan to replace the existing Los Angeles City Trunk Line, which connect the Los Angeles Aqueduct Filtration Plant to the Franklin Reservoir. The proposed project would include the replacement of the existing large-diameter potable water trunk line using the open trench and the pipe jacking methods. The proposed project would also include the installation of a flow control station, the structural relining of portions of the existing pipeline, and interior improvements within the existing Coldwater Canyon Pump Station.

LADWP may pursue funding through the State Water Board California Drinking Water State Revolving Fund for the project. The Clean Water State Revolving Fund Program receives partial funding from the U.S. Environmental Protection Agency, triggering a federal nexus. As such, projects pursuing Clean Water State Revolving Fund funding are required to comply with requirements of the federal authorities and environmental statutes, including Section 7 of the federal Endangered Species Act (FESA) and the Migratory Bird Treaty Act (MBTA), and a biological resources assessment is required to be provided as per the requirements of the Clean Water State Revolving Fund Environmental Package application. Thus, this biological technical report (1) describes the existing conditions of biological resources within the project action area in terms of vegetation, flora, wildlife, and wildlife habitats (including U.S. Fish and Wildlife Service (USFWS) designated critical habitat); (2) describes potential direct and indirect impacts to biological resources that would result from implementation of the proposed action, and describes those impacts in terms of biological significance in view of federal, state, and local laws and policies (including the California Environmental Quality Act (CEQA)); and (3) provides a discussion of the potential impacts associated with the proposed action.

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2 PROJECT SETTING

2.1 Project Location

The proposed project would be located in the Studio City neighborhood of Los Angeles, in the southeastern portion of the San Fernando Valley, approximately 15 miles northwest of Downtown Los Angeles, as shown in Figure 1, Project Location. As shown in Figure 1, Project Location, the Unit 5, Phase II alignment of the proposed project would be located within the Coldwater Canyon Avenue public right-of-way (ROW), and runs south for approximately 1,500 feet from immediately north of Ventura Boulevard, across the Los Angeles River, to terminate at the intersection of Coldwater Canyon Avenue and Dickens Street. Additionally, as shown in Figure 1, would include an additional 20-foot segment, located north of Moorpark Street where a new tie-in connection would connect the existing 64-inch City Trunk Line to the existing 54-inch trunk line.

The Unit 6 alignment would begin approximately 0.5-mile south of the Unit 5, Phase II alignment, and would run south within the public ROW of Coldwater Canyon Avenue, Avenida Del Sol and Oeste Avenue before terminating at the LADWP-owned property (Assessor Identification Number 2384-024-902), located at 3380 Coldwater Canyon Boulevard as shown in Figure 1.

Major freeways in the project vicinity include U.S. Highway 101 South (101-S), which runs in a southeasterly direction approximately 0.5-mile north of the project site and Interstate 405 (I-405), which runs in a north-south direction approximately three miles east of the project alignment.

2.2 Project Description

The proposed project would include the replacement of the existing large-diameter, welded steel pipe (WSP) potable water trunk line, as follows and shown in Figure 2, Project Components:

City Trunk Line South: Unit 5, Phase II

- The installation of 20 feet of 64-inch WSP for the tie-in connection within the Coldwater Canyon ROW, north of Moorpark Street, using the open trench method.
- The installation of 620 linear feet of 60-inch WSP within Coldwater Canyon Avenue starting at Ventura Boulevard and ending at Valleyheart Drive South, using the pipe jacking method.
- The structural relining with carbon fiber reinforced polymer (CFRP) of 175 linear feet of the existing 62-inch RSP where Coldwater Canyon Avenue crosses the Los Angeles River.

- The installation of 50 linear feet of 60-inch WSP for the tie-in connections within Coldwater Canyon Avenue at Dickens Street and just south of the bridge, using the open trench method.

City Trunk Line South: Unit 6

- The installation of 60 linear feet of 60-inch WSP for the tie-in connection to the southerly terminus of the City Trunk Line South, Unit 5, Phase I, in Coldwater Canyon Avenue, using the open trench method.
- The removal and replacement of the existing Flow Control Station (FCS) within Oeste Avenue with 200 linear feet of 60-inch WSP, using the open trench method.
- The structural relining with CFRP of 675 linear feet of 60-inch WSP; 334 linear feet of 51-inch WSP; and, 688 linear feet of 62-inch RSP.
- The installation of an approximately 43.5x34x23-foot, flow control station vault on the LADWP-owned property, located at 3380 Coldwater Canyon Avenue, Studio City.
- Interior improvements within the existing Coldwater Canyon Pump Station (located along Oeste Avenue), consisting of the removal of four existing pump units, installation of four new pump units, replacement of valves within the pump station, and replacement of piping to accommodate the new pumps.

The proposed project would connect the new, large-diameter water trunk line segments to the previously implemented City Trunk Line Unit 5, Phase 1 project, which was completed in March 2016. Implementation of the proposed project would improve capacity, reliability, and flexibility in the water system, and would complete the LADWP's six-phase plan to replace the aging City Trunk Line South, which conveys water from the Los Angeles Reservoir to the Franklin Reservoir.

2.3 Project Construction

Construction of the proposed project would occur within the public ROW of Coldwater Canyon Avenue, Avenida Del Sol and Oeste Avenue. The proposed project would tie into the existing 54-60-, and 64-inch WSP previously installed under Unit 5, Phase I. The portions of the existing City Trunk Line that would not remain in service would be removed or bulkheaded, filled with grout, and abandoned in place. The staging area for equipment and materials would be located within the project's work areas within the public ROW and nearby LADWP properties.

2.3.1 Construction Schedule

Construction of the proposed project is anticipated to commence in November 2021 and would end in May 2023. Construction would occur between the hours of 7:00 a.m. and 6:00 p.m., Monday through Friday. Nighttime construction work is not anticipated; however, in the event that extended hours, including nighttime hours, are required, additional permits would be required.

2.3.2 Construction Methods

The proposed project would include three construction methods through which the trunk line replacements and improvements would be implemented, namely a) pipe jacking; and, b) open trenching. Additionally, segments of existing pipe that would not be replaced using the pipe jacking and open trenching methods would be reinforced with CFRP. These construction methods and the CFRP lining process are described in detail below.

Pipe Jacking

Pipe jacking is a form of tunneling that is utilized to reduce disruptions at busy intersections and to extend underneath surface features along the alignment that are not suitable for open trench construction. would be would be used to install approximately 620 linear feet of 60-inch WSP within Coldwater Canyon Avenue starting at Ventura Boulevard and ending at Valleyheart Drive South. Pipe jacking activities would last approximately six months and would require 28 construction workers. Once the new pipe has been installed along the jacking locations, the shoring system would be dissembled and the pits would be backfilled, compacted, repaved, and restriped.

Open Trench Excavation

Open trench excavation is a construction method that is typically used to install pipelines and their appurtenant features. The process consists of site preparation, excavation and shoring, pipe installation and backfilling, and work site restoration. Construction typically occurs within roadways and encompasses an approximately 800- to 1,000-foot work area. Construction would primarily occur along one side of the street and would progress along the alignment with the maximum length of open trench being approximately 500 feet in length at any one time. In preparation, the existing pavement along the proposed alignment would be removed using a concrete/asphalt saw cutter or pavement breaker. The pavement would be removed from the project site and recycled, reused as backfill or pavement base material, or transported to an appropriate recycling or disposal facility.

The size of the trench required for this project would be approximately 8 feet wide to accommodate the new 60-inch diameter pipeline installation. The depth of the trench would range from 11 feet to 12 feet below ground surface level. If construction occurs in areas with high groundwater, either a watertight shoring system would be implemented, or, the groundwater would be removed during the excavation of the trenches, usually by pumping it from the ground through dewatering wells that have been drilled along the alignment. The extracted groundwater would first be treated for any contaminants, if present, before being discharged to the storm drain system or to the sewer system under Regional Water Quality Control Board permit requirements.

Carbon Fiber Reinforced Polymer Lining

The proposed project would include reinforcing approximately 855 linear feet of the existing trunk line with CFRP. CFRP is an extremely strong composite material made from fiber-reinforced plastic. CFRP is commonly used to reinforce degrading pipelines because 1) it has less impact to the surrounding community; 2) it does not require open trenching; 3) it is generally resistant to corrosion; and, 4) it is more cost-effective and time efficient than other methods.

CFRP would be installed by first saturating sheets of glass fiber and carbon fiber with a 2 part epoxy and then taken inside the pipeline via manhole access where the installer will place the sheets on the pipe and use a squeegee-like tool to adhere them to the pipe and remove any air bubbles. The glass fiber and carbon fiber is left to cure overnight and maintained in a controlled environment (temperature and humidity).

Hydrostatic Testing and Pipeline Disinfection

Hydrostatic testing would be conducted periodically throughout construction. Hydrostatic test water would be discharged to the storm drain system in accordance with Los Angeles Regional Water Quality Control Board dewatering permit requirements or to the sewer system per SCAR Permit requirements. Once hydrostatic testing is completed, the new pipelines would be disinfected.

2.4 Operations and Maintenance

Operational activities would be limited to scheduled maintenance and repair. Maintenance activities would be minimal and would be similar to those that occur under existing conditions. Maintenance includes exercising valves and replacing or repairing worn appurtenances to ensure proper performance over the life of the facilities. No permanent workers would be required to operate or maintain the City Trunk Line South. Activities associated with long-term operations and maintenance would, therefore, be minimal.

2.5 Best Practices

To minimize potential traffic and transportation impacts, the construction of the proposed project would be implemented in accordance with the Standard Specifications for Public Works Construction (Greenbook). Traffic Control Plans (TCP) would be designed, reviewed and approved by LADOT in coordination with LADWP. Implementation of the TCP would allow acceptable levels of service, traffic safety, and emergency access to the site during construction. Equipment necessary for traffic control includes changeable message signs, delineators, arrow boards, and K-rail.

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3 REGULATORY CONTEXT

This section describes the regulatory framework relevant for the project.

3.1 Federal

Federal Endangered Species Act

The federal Endangered Species Act (FESA) of 1973 (16 U.S.C. 1531 et seq.), as amended, is administered by the U.S. Fish and Wildlife Service (USFWS) for most plant and animal species and by the National Oceanic and Atmospheric Administration National Marine Fisheries Service for certain marine species. FESA is intended to provide a means to conserve the ecosystems upon which endangered and threatened species depend, and to provide programs for the conservation of those species, preventing extinction of plants and wildlife. FESA defines an endangered species as "any species that is in danger of extinction throughout all or a significant portion of its range" (16 U.S.C. 1531 et seq.). A threatened species is defined as "any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range" (16 U.S.C. 1531 et seq.). Under FESA, it is unlawful to take any listed species; "take" is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 U.S.C. 1531 et seq.).

FESA allows for the issuance of incidental take permits for listed species under Section 7, which is generally available for projects that also require other federal agency permits or other approvals, and under Section 10, which provides for the approval of habitat conservation plans on private property without any other federal agency involvement. Upon development of a habitat conservation plan, USFWS can issue incidental take permits for listed species.

Clean Water Act

Pursuant to Section 404 of the Clean Water Act, ACOE regulates the discharge of dredged and/or fill material into waters of the United States. The term "wetlands" (a subset of waters) is defined in Title 33, Section 328.3(b), of the Code of Federal Regulations as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." In the absence of wetlands, the limits of ACOE jurisdiction in non-tidal waters, such as intermittent streams, extend to the ordinary high water mark, as defined in Title 33, Section 328.3(e), of the Code of Federal Regulations. Pursuant to Section 10 of the Rivers and Harbors Act of 1899, ACOE regulates any potential obstruction or alteration of any navigable water of the United States.

Migratory Bird Treaty Act

The MBTA was originally passed in 1918 as four bilateral treaties, or conventions, for the protection of a shared migratory bird resource. The primary motivation for the international negotiations was to stop the "indiscriminate slaughter" of migratory birds by market hunters and others (16 U.S.C. 703–712). Each of the treaties protects selected species of birds and provides for closed and open seasons for hunting game birds. The MBTA protects more than 800 species. Two species of eagles that are native to the United States—bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*)—were granted additional protection within the United States under the Bald and Golden Eagle Protection Act (16 U.S.C. 668–668d) to prevent these species from becoming extinct.

3.2 State

California Endangered Species Act

The California Department of Fish and Wildlife (CDFW) administers the California Endangered Species Act (CESA), which prohibits the take of plant and animal species designated by the California Fish and Game Commission as endangered or threatened in California. Under CESA Section 86, "take" is defined as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill" (California Fish and Game Code, Section 86). CESA Section 2053 stipulates that state agencies may not approve projects that will "jeopardize the continued existence of any endangered species or threatened species, or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat which would prevent jeopardy" (California Fish and Game Code, Section 2053).

CESA defines an endangered species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease" (California Fish and Game Code, Section 2050 et seq.). CESA defines a threatened species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter. Any animal determined by the [California Fish and Game] Commission as rare on or before January 1, 1985, is a threatened species" (California Fish and Game Code, Section 2050 et seq.). A candidate species is defined as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the Commission has formally noticed as being under review by the department for addition to either the list of endangered species or the list of threatened species, or a species for which the Commission has published a notice of proposed regulation to add the species to either list" (California Fish and Game Code, Section 2050 et seq.). CESA does not list invertebrate species.

California Fish and Game Code, Sections 3503, 3511, 3513, 3801, 4700, 5050, and 5515

Section 2081(b) and (c) of the California Fish and Game Code authorizes take of endangered, threatened, or candidate species if take is incidental to otherwise lawful activity and if specific criteria are met. These provisions also require CDFW to coordinate consultations with USFWS for actions involving federally listed species that are also state-listed species. In certain circumstances, Section 2080.1 of CESA allows CDFW to adopt a federal incidental take statement or a 10(a) permit as its own, based on its findings that the federal permit adequately protects the species and is consistent with state law. A Section 2081(b) permit may not authorize the take of "fully protected" species or "specified birds" (California Fish and Game Code, Sections 3505, 3511, 4700, 5050, 5515, and 5517). If a project is planned in an area where a fully protected species or a specified bird occurs, an applicant must design the project to avoid take.

California Fish and Game Code, Sections 1600–1602

Pursuant to Section 1602 of the California Fish and Game Code, CDFW regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake that supports fish or wildlife. A streambed alteration agreement is required for impacts to jurisdictional wetlands in accordance with Section 1602 of the California Fish and Game Code.

CEQA

CEQA requires identification of a project's potentially significant impacts on biological resources and ways that such impacts can be avoided, minimized, or mitigated. CEQA also provides guidelines and thresholds for use by lead agencies for evaluating the significance of proposed impacts. Because LADWP may seek funding for the project from the State Water Resources Control Board (State Water Board), the project is also being reviewed in accordance with CEQA+, a process that consists of CEQA and any required federal cross-cutting studies. The CEQA+ process is required by the State Water Board to satisfy the environmental requirements of its Operating Agreement with the U.S. Environmental Protection Agency. In the event that federal funding is requested, this biological technical report would be part of an environmental package that may be submitted to the State Water Board as part of the funding application to fulfill CEQA+ requirements.

Special-Status Plants and Wildlife

The CEQA Guidelines define endangered animals or plants as species or subspecies whose "survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors" (14 CCR 15380(b)(1)). A rare animal or plant is defined in CEQA Guidelines, Section 15380(b)(2), as a species that, although not currently threatened with extinction, exists "in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or . . . [t]he species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered 'threatened' as that term is used in the federal Endangered Species Act" (14 CCR 15380(b)(2)). Additionally, an animal or plant may be presumed to be endangered, rare, or threatened if it meets the criteria for listing as defined further in CEQA Guidelines, Section 15380(c).

Special-Status Vegetation Communities

Section IV, Appendix G (Environmental Checklist Form), of the CEQA Guidelines (14 CCR 15000 et seq.) requires an evaluation of impacts to "any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game[1] or the U.S. Fish and Wildlife Service."

3.3 Local Regulations

City of Los Angeles Protected Tree Ordinance

To ensure the protection of, and to further regulate the removal of, protected trees, a tree inventory and assessment of the project site was performed pursuant to City Ordinance No. 177404 (City of Los Angeles 2006a). The Protected Tree Ordinance defines a protected tree as any of the following Southern California native species that measures 4 inches or more in cumulative diameter, 4.5 feet above the ground level at the base of the tree (City of Los Angeles 2006a):

- Oak tree, including valley oak (*Quercus lobata*), coast live oak (*Quercus agrifolia*), or any other tree of the oak genus indigenous to California, but excluding scrub oak (*Quercus dumosa*)
- Southern California black walnut (*Juglans californica* var. *californica*)
- California sycamore (*Platanus racemosa*)
- California bay (*Umbellularia californica*)

[1] Effective January 1, 2013, the California Department of Fish and Game changed its name to the California Department of Fish and Wildlife.

4 METHODS

Data regarding biological and general jurisdictional resources present within the action area were obtained through a review of pertinent literature and field reconnaissance, as described below.

4.1 Background Research

Prior to conducting the field investigation, a literature review was conducted to evaluate the environmental setting of the project site and identify potential special-status biological resources that may be found on the site. The review centered on the USGS *Van Nuys, CA* 7.5-minute topographical quadrangle (USGS 2018). The following resources were consulted:

- County of Los Angeles GIS data portal (County of Los Angeles 2019)
- Historic aerials and topographic maps (Google 2019, NETR 2019, USGS 2019)
- Wetland Mapper online viewer (USFWS 2019a)
- U.S. Department of Agriculture Natural Resource Conservation Service's Web Soil Survey (USDA 2019a)
- Information for Planning and Conservation System (IPaC) (USFWS 2019b)
- Critical Habitat online viewer (USFWS 2019c)
- California Natural Diversity Database Rarefind 5 (CDFW2019a)
- Biogeographic Information and Observation System (CDFW 2019b)
- eBird's online database of bird distribution and abundance (eBird 2019)

4.2 Resource Mapping

Dudek Senior Biologist Michael Cady surveyed the proposed project alignment on May 29, 2019. The action area was primarily surveyed on foot and all biological resources observed or detected were identified and inventoried. The biological surveys included mapping vegetation communities and land covers present within the action area, an evaluation of the presence of jurisdictional wetlands or waters, and an evaluation of the potential for special-status species to occur in the action area. Table 1, Survey Date and Conditions, includes the survey date and conditions. The Dudek biologist resume is provided in Appendix A, Resumes.

Table 1
Survey Date and Conditions

Date	Time	Personnel	Focus	Conditions
5/29/2019	1030-1330	MC	General biological reconnaissance level survey, vegetation mapping, resources mapping	67°F–75°F, 0% cc, 0–5 mph wind
7/15/2019	0900-1330	RA	Protected tree inventory and evaluation	70°F–87°F, 0% cc, 0–5 mph wind

Notes: MC=Michael Cady; RA=Ryan Allen; °F = degrees Fahrenheit; mph = miles per hour; cc = cloud cover

Vegetation Community and Land Cover Mapping

Vegetation communities and land uses within the study area were mapped in the field directly onto a 400-foot-scale (1 inch = 400 feet) aerial-photograph-based field map of the project site. Following completion of the fieldwork, all vegetation polygons were digitized using ArcGIS, and GIS coverage was created. Vegetation community classifications used in this report are based on the *Manual of California Vegetation, 2nd Edition* (Sawyer et al. 2009), when applicable.

Plant Documentation

All native and naturalized plant species encountered within the study area were identified and recorded. Latin and common names for plant species with a CRPR follow the CNPS *Inventory of Rare, Threatened, and Endangered Plants of California* (CNPS 2019). For plant species without a CRPR, Latin names follow the *Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California* (Jepson Flora Project 2019), and common names follow the Natural Resources Conservation Service Plants Database (USDA 2019a). General information regarding plant species, identification, and nomenclature was obtained from *The Jepson Manual: Vascular Plants of California* (Baldwin et al. 2012).

Wildlife Documentation

Wildlife species observed or detected during field surveys by sight, calls, tracks, scat, or other signs were recorded. In addition to species actually observed, expected wildlife usage of the site was determined according to known habitat preferences of regional wildlife species and knowledge of their relative distributions in the area. No trapping or focused surveys for special-status or nocturnal species was conducted. Latin and common names of animals follow Crother (2012) for reptiles and amphibians, the American Ornithologists' Union (AOU 2016) for birds, and Wilson and Reeder (2005) for mammals.

All wildlife species detected during the field surveys by sight, vocalizations, burrows, tracks, scat, and other signs were recorded. Expected wildlife usage of the site was determined according to known habitat preferences of regional wildlife species and knowledge of their relative distributions in the area.

Jurisdictional Waters

Although a formal wetlands delineation following the methodology described in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (ACOE 2008a), *Wetlands Delineation Manual* (ACOE 1987), and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (ACOE 2008b) was not conducted during the field survey, the project area was evaluated for the potential to support jurisdictional waters regulated under the federal Clean Water Act, California Fish and Game Code, and Porter-Cologne Water Quality Control Act.

Protected Tree Survey

Dudek mapped tree locations using a Trimble Pathfinder Pro XH GPS receiver. The Pathfinder has a horizontal accuracy of 1-meter (1-sigma) using differential code positioning techniques. Since tree canopies can sometimes cause loss of satellite lock by blocking the line-of-sight to satellites, an electronic compass and reflectorless electronic distance measuring device was also used in mapping tree locations. The electronic distance measuring device/compass combination operates in concert with the Pathfinder GPS system to position offsets, and offset information is automatically attached to the GPS position data string. The electronic tree locations were then evaluated using ArcView 10.4 software to determine the position of the trees related to the project site.

The trees throughout the project site were given a unique identification number. Tree diameter was measured using a diameter tape providing adjusted figures for diameter measurements when wrapping the tape around an object's circumference. Diameter measurements were taken using protocol provided by the Council of Tree and Landscape Appraisers (CTLA) in the *Guide for Plant Appraisal*, published by the International Society of Arborists (ISA) (CTLA 2000). The diameter at breast height of each tree was taken at 4.5 feet above the ground along the trunk axis, with common exceptions. In cases where a tree's trunk was located on a slope, the 4.5-foot distance was approximated as the average of the shortest and longest sides of the trunk (i.e., the uphill side and downhill side of a tree's trunk, respectively) and the measurement was made at the circumference of the trunk at this point. Tree height was visually estimated. Tree canopy diameters were typically estimated by "pacing-off" the measurement based on the investigator's knowledge of his stride length or by visually estimating the canopy width. The diameter measurements were always made along an imaginary line intersecting the tree trunk that best approximated the average canopy diameter.

Pursuant to the *Guide for Plant Appraisal*, tree health and structure was evaluated with respect to five distinct tree components: (1) roots, (2) trunk, (3) scaffold branches, (4) small branches, and (5) foliage. Each component of the tree was assessed with regard to health factors such as insect, fungal, or pathogen damage; mechanical damage; presence of decay; presence of wilted or dead leaves; and wound closure. Components were graded as good, fair, poor, and dead, with 'good' representing no apparent problems, and 'dead' representing a dying and/or dead tree. Concurrent with tree health and structural evaluations, each tree was evaluated for its relocation potential. Trees for relocation were noted, if applicable, where tree and site conditions were favorable.

Survey Limitations

Climatic conditions during the survey generally were favorable for identification of wildlife. Potential limitations of the survey included seasonal constraints, a diurnal bias, and the absence of focused trapping for small mammals and reptiles. Surveys were conducted during the daytime to maximize visibility for the detection of plants and most animals; however, many mammal species are primarily active at night. In addition, many species of reptiles and amphibians are secretive in their habits and are difficult to observe using standard meandering transects.

The project site was surveyed during the blooming period for many plant species and the above average rainfall for the year made conditions favorable for flowering. However, most species would not be expected to occur due to lack of suitable habitat along the project alignment. Binocular surveys were conducted in areas where access was limited due to trespassing concerns.

No root crown excavations or investigations, internal probing, or aerial canopy inspections were performed during the tree assessments. Therefore, the presence or absence of internal decay or other hidden or inaccessible inferiorities in individual trees could not be confirmed.

4.3 Special-status Species Habitat Assessments

Endangered, rare, or threatened plant species as defined in Section 15380(b) of the CEQA Guidelines (14 CCR 15000 et seq.) are referred to as "special-status plant species" in this report and include endangered or threatened plant species recognized in the context of CESA and FESA (CDFW 2019c) and plant species with a CRPR 1 through 4 (CNPS 2019a). Species with CRPR 3 or 4 may, but generally do not, qualify for protection under this provision. Species with CRPR 3 and 4 are those that require more information to determine status and plants of limited distribution. Thus, only CRPR 3 and 4 plant species that were also locally recognized (City of Los Angeles 2006a) were analyzed further.

Endangered, rare, or threatened wildlife species as defined in CEQA Guidelines, Section 15380(b) (14 CCR 15000 et seq.), are referred to as "special-status wildlife species" and, as used in this report, include (1) endangered or threatened wildlife species recognized in the context of CESA and FESA (CDFW 2019d); (2) California Species of Special Concern and Watch List species as designated by CDFW (2019e); (3) mammals and birds that are fully protected species as described in the California Fish and Game Code, Sections 4700 and 3511; (4) Birds of Conservation Concern as designated by USFWS (2008); and (5) and locally designated or recognized wildlife species (City of Los Angeles 2006b).

Database queries were conducted to identify special-status biological resources present or potentially present within the vicinity of the project site using the CNDDB (CDFW 2019a), CNPS *Online Inventory of Rare and Endangered Vascular Plants* (CNPS 2019a), and USFWS IPaC (USFWS 2019b). A "nine-quad" query was conducted of the CNPS inventory and CNDDB. A nine-quad query includes the one subject quadrangle (*Van Nuys*) and the eight USGS quadrangles (Burbank, Canoga Park, Oat Mountain, San Fernando, Sunland, Topanga, Beverly Hills, and Hollywood) surrounding the subject quadrangle. Results of the CNPS (2019), CNDDB (CDFW 2019a), and USFWS IPaC (2019b) database queries are provided in Appendix B.

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5 ENVIRONMENTAL SETTING

5.1 Land Use

The proposed Unit 5, Phase II alignment portion of the action area is generally surrounded by multi-family residential and small segments of strip commercial and civic (City of Los Angeles Department of Water and Power, Station 46) land uses. This portion of the project traverses the channelized Los Angeles River. The proposed Unit 6 alignment of the action area generally traverses through single-family residential land uses. There is open space located to the east (Wilacre Park) and the west (Coldwater Canyon Open Space) of the residential land.

5.2 Topography

Elevations within the action area range between approximately 625 feet above mean sea level (AMSL) at the Los Angeles River and 900 feet AMSL at the southern end. The proposed Unit 5, Phase II alignment portion of the action area is relatively flat and the proposed Unit 6 alignment is within a small canyon on the northern slopes of the Santa Monica Mountains

5.3 Soils

Soil mapping is from the LADPW Water Resources Division, Hydrology Section (LADPW 2014). USDA National Resources Conservation Service Soil Survey Geographic database was also used to assist with soil descriptions (USDA 2019a).

The project site and action area contain only three soil types: Tujunga fine sandy loam, upper Los Angeles River, and Yolo loam. The upper Los Angeles River soil type does not have an official soil series description (USDA 2019a). The other two soils series description are described below.

The **Tujunga Series** consists of very deep, somewhat excessively drained soils that formed in alluvium from granitic sources. Tujunga soils are on alluvial fans and floodplains, including urban areas. In urban areas there is usually a thin layer of human-transported materials spread over the surface. Uncultivated areas have a cover of shrubs, annual grasses, and forbs (USDA 2019a). Tujunga fine sandy loam is found north of the Los Angeles River in the proposed Unit 5, Phase II alignment portion of the action area.

The **Yolo Series** are on nearly level to moderately sloping alluvial fans and flood plains. The soils formed in alluvium derived from sedimentary, metamorphic and volcanic rocks. Original vegetation was annual grasses, forbs, and some scattered oak (USDA 2019a). Yolo loam is found in the proposed Unit 5, Phase II alignment portion of the action area, south of the Los Angeles River.

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6 RESULTS

Photo documentation of the study area is provided in Appendix C, Photo Documentation.

6.1 Vegetation Communities and Land Covers

One vegetation community and two land cover types were mapped within the action area based on general physiognomy and species composition: coast live oak–southern California walnut woodland urban/developed. This land cover type is described below and acreages within the project site and action area are presented in Table 2, Vegetation Communities and Land Covers Summary. Spatial distribution of this land cover type is presented on Figure 3, Biological Resources.

Table 2
Vegetation Communities and Land Covers Summary

Vegetation Community / Land Cover Type	California Natural Community Codes[a]	Nature-Serve Global-State Rarity Ranks[b]	Action Area (Acres)
Disturbed Coast Live Oak - Southern California Walnut Woodland Association (dQA-JC)	71.060.27	G3	
Upland Mustards and Other Ruderal Forbs (UM)	42.011.05	—	
Urban/Developed Land (DEV)	—	—	
Parks and Ornamental Plantings (ORN)	—	—	

Notes: Numbers may not sum due to rounding.
[a] Unique codes assigned to alliances and associations.
[b] NatureServe Global and State rarity ranks per Faber-Langendoen et al. (2012). Natural communities with global or state ranks of 1–3 are considered Sensitive Natural Communities by CDFW and are to be addressed in the environmental review processes of CEQA (CDFW).

6.1.1 Disturbed Coast Live Oak - Southern California Walnut Woodland Association

Disturbed Coast Live Oak-Southern California Walnut Woodland Association is only known from the Santa Monica Mountains region. This woodland association occurs on moderately steep to very steep slopes with variable aspects. It is dominated by coast live oak and southern California black walnut in the tree layer. Poison oak (*Toxicodendron diversilobum*) is characteristic in the understory shrub layer and a variety of grasses and forbs occur in the herbaceous layer (Keeler-Wolf, T., and J. Evens 2006). This community is considered sensitive by CDFW (2018).

In the action area, this vegetation community is found in the proposed Unit 6 alignment of the action area. Within the project site it is found at the LADWP-owned property located at 3380 Coldwater Canyon Avenue where the flow control station vault is proposed. The understory of the community within the action area has been regularly disturbed due to fuel reduction required for the surrounding residential properties. The regular intensive annual brush clearance has prohibited a natural shrub layer or understory development, but some immature poison oak was observed during the site visit within the dense, mowed shortpod mustard (*Hirschfeldia incana*) and ripgut brome (*Bromus diandrus*).

6.1.2 Upland Mustards and Other Ruderal Forbs

Upland mustard (semi-natural stands) is a naturalized vegetation community dominated by a thick layer of herbaceous mustard plants and few other plant species interspersed within an open to continuous canopy. Emergent trees and shrubs may be present at low cover (CNPS 2019b). This habitat often occurs in fallow fields, grasslands, roadsides, levee slopes, disturbed coastal scrub riparian areas, and dumping sites. Characteristic plant species in this community include black mustard (*Brassica nigra*), field mustard (*Brassica rapa*), Asian mustard (*Brassica tournefortii*), shortpod mustard, dyer's woad (*Isatis tinctoria*), and cultivated radish (*Raphanus sativus*) (CNPS 2019b).

In the action area, this vegetation community is found in the proposed Unit 6 alignment of the action area. Ripgut brome and wild oats (*Avena* sp.) were codominant with the shortpod mustard. Remnant shrubs and forbs associated with the natural community that was displaced by urban development and fuel modification on the project site and the parcel adjacent to the north-northwest includes laurel sumac (*Malosma laurina*), Nuttall's oak (*Quercus dumosa*), and poison oak.

6.1.3 Urban/Developed Land

Developed lands consist of buildings, structures, homes, parking lots, paved roads, and maintained areas. This land cover type does not support native vegetation. Developed land occurs throughout the proposed project alignment and the action area, composed of residential and commercial development, and paved well-traversed city roads. These areas support limited natural ecological processes, native vegetation, or habitat for wildlife species and, thus, are not considered sensitive by local, state, or federal agencies.

In the action area, this land cover type is found in the proposed Unit 5, Phase II and proposed Unit 6 alignment of the action area. The developed area along Oeste Avenue includes landscaping that includes coast live oak, with most other developed areas having landscaping composed of non-native species that are typical of urban environments in Los Angeles.

6.1.4 Parks and Ornamental Plantings

Ornamental vegetation consists of introduced planting of exotic species as landscaping, including greenbelts, parks, and horticultural plantings throughout the City. Ornamental plantings within the action area are diverse and include ornamental landscaping surrounding single-family residential developments in the area, as well as commercial development and street trees. Ornamental landscaping dominates the area surrounding the single-family residences.

In the action area, this land cover type is found in the proposed Unit 5, at a small park adjacent to the Los Angeles River and Coldwater Canyon Avenue.

6.2 Floral Diversity

A total of 27 species of native or naturalized vascular plants, 6 native (22%) and 21 non-native (78%), were recorded within the action area (see Appendix D). The project is located within an urban setting in which vegetation is dominated by landscaped areas. Additionally, fuel management has removed the natural understory of the native habitats that are present. The proposed project alignment is dominated by development and ornamental plants typically occurring within residential and commercial areas.

6.3 Wildlife Diversity

A total of 10 species of wildlife were recorded within the action area (Appendix E). Overall, the diversity of wildlife species in the project site was low due to the low occurrence of native habitat, which is attributed to the urban development in the action area. Most species observed were birds because of relative species abundance and the diurnal nature of the biological reconnaissance survey. Additionally, given the dense developed areas surrounding the project site, the action area likely supports more urban-adapted species, which is indicative of the species detected on site.

6.4 Special-Status Resources

6.4.1 Special-Status Plant Species

One special-status plant species, southern California black walnut, was identified within the LADWP-owned property located at 3380 Coldwater Canyon Avenue within the proposed Unit 6 alignment during the general biological survey conducted in May 2019. The species is summarized in Table 3, Special-status Plant Species that are Present in the Action Area, and the locations are shown in Figure 4, Protected Tree Locations. No other special-status plant species were determined to have a moderate or high potential to occur within the project site due to the lack of suitable habitat within the project site and the extent of fuel modification and ornamental landscaping that appears to be regularly maintained, where vegetation is present, in the surrounding area.

Table 3
Special-status Plant Species that are Present in the Action Area

Scientific Name	Common Name	Status[1] (Federal/State/CRPR/ City of LA[2])	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur[3]
Juglans californica	southern California black walnut	None/None/4.2/A	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland; alluvial/perennial deciduous tree/Mar–Aug/160–2955	Present. Forty-five (45) southern California black walnut were mapped during the tree inventory within the LADWP-owned property located at 3380 Coldwater Canyon Avenue where the flow control station vault is proposed.

Notes:
1 Status abbreviations:
CRPR List 4: Plants of Limited Distribution - A Watch List
.2 Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
2 Sensitive Species within the City of Los Angeles (City of Los Angeles 2006)
A: Known to occur in Zone 5

The evaluation of each species' potential to occur on site was based on an analysis of elevation, soils, vegetation communities, current site conditions, and past and present land use. None of the other CNDDB and USFWS special-status plant occurrences within the one-mile radius search has a moderate or high potential to occur due to the high level of development within the nine quad query area, as summarized in Appendix F, Special-Status Plant Species Potential to Occur. Special-status plant species that are not expected to occur or have a low potential to occur are not further analyzed in this report because no direct, indirect, or cumulative impacts are expected.

6.4.2 Special-Status Wildlife Species

One special-status wildlife species, Nuttall's woodpecker (*Picoides nuttallii*) was observed on site during the general biological surveys conducted in May 2019. Additionally, one special-status wildlife species, oak titmouse (*Baeolophus inornatus*), was determined to have a moderate potential to occur within the project site due to presence of coast live oak. Table 4, Special-status Wildlife Species that are Present in the Action Area or have a Moderate/High Potential to Occur, summarizes these two species statuses and natural histories.

Table 4
Special-status Wildlife Species that are Present in the Action Area or have a Moderate/High Potential to Occur

Scientific Name	Common Name	Status[1] (Federal/State /City of LA[2])	Habitat	Potential to Occur
Birds				
Baeolophus inornatus (nesting)	oak titmouse	BCC/None/—	Nests and forages in oak woodlands; also open pine forest, pinyon woodland, and riparian and chaparral with oak	Moderate potential to occur. The LADWP-owned property located at 3380 Coldwater Canyon Avenue where the flow control station vault is proposed supports coast live oak that the species may use for nesting.
Picoides nuttallii	Nuttall's woodpecker	BCC/None/A	Wooded canyons and foothills, river woods. In much of range almost always around oaks, especially where oaks meet other trees along rivers, also in pine-oak woods in foothills. In southern California also in riverside cottonwoods, sycamores, willows, even if no oaks present.	Present. The species was observed during the site visit in May 2019 within the LADWP-owned property located at 3380 Coldwater Canyon Avenue where the flow control station vault is proposed. This area supports coast live oak that the species may use for nesting and foraging.

Notes:
1 Status abbreviations:
BCC: U.S. Fish and Wildlife Service Bird of Conservation Concern
2 Sensitive Species within the City of Los Angeles (City of Los Angeles 2006)
A: Potential to occur within Project site since known to occur in Zone 3 (Santa Monica Mountains-Eagle Rock)

Special-status wildlife species known to occur in the surrounding region or observed within the action area are presented in Appendix G, Special-Status Wildlife Species Potential to Occur. For each species listed, a determination was made regarding the potential for the species to occur on site based on information gathered during the literature review and site visits, including the location of the site, vegetation communities or land covers present, current site conditions, and past and present land use. Special-status wildlife species that are either not expected to occur or have a low potential to occur are not further analyzed in this report because no direct, indirect, or cumulative impacts are expected.

6.4.3 Critical Habitat

No USFWS-designated critical habitat for listed wildlife or plant species exists within one-mile of the project site (USFWS 2018a; Figure 3). The closest USFWS-designated critical habitat for wildlife is for Santa Ana sucker (*Catostomus santaanae*) and southwestern willow flycatcher (*Empidonax traillii extimus*), located approximately nine miles to the north of the action area. The closest USFWS-designated critical habitat for plants is for Braunton's milk-vetch (*Astragalus brauntonii*), which is located over eight miles to the southwest of the action area.

6.4.4 Migratory Bird Treaty Act

According to the USFWS IPaC Trust Resource Report (2019b; Appendix A), the following 12 species of migratory birds could occur within the general action area:

1. Allen's hummingbird (breeding) (*Selasphorus sasin*; USFWS Bird of Conservation Concern (BCC))
2. California thrasher (year-round) (*Toxostoma redivivum*; USFWS BCC)
3. saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*; USFWS BCC/CDFW SSC)
4. Costa's hummingbird (breeding) (*Calypte costae*; USFWS BCC)
5. Lawrence's goldfinch (breeding) (*Spinus lawrencei;* USFWS BCC)
6. Lewis' woodpecker (wintering) (*Melanerpes lewis*; USFWS BCC)
7. Nuttall's woodpecker (year-round) (*Picoides nuttallii*; USFWS BCC)
8. Oak titmouse (year-round) (*Baeolophus inornatus*; USFWS BCC)
9. Rufous hummingbird (migration) (*Selasphorus rufus;* USFWS BCC)
10. Suisun song sparrow (year-round) (*Melospiza melodia maxillaris;* USFWS BCC/ CDFW SSC)
11. San Clemente spotted towhee (year-round) (*Pipilo maculatus clementae;* USFWS BCC/CDFW SSC)
12. Wrentit (year-round) (*Chamaea fasciata*; USFWS BCC)

As stated in Section 6.4.2, Nuttall's woodpecker was observed during the site visit in May 2019 within the LADWP-owned property located at 3380 Coldwater Canyon Avenue where the flow control station vault is proposed. This area supports coast live oak that the species may use for nesting and foraging. Oak titmouse may also use this area for nesting in foraging. Migratory bird species that could occasionally occur within the action area include Allen's hummingbird and rufous hummingbird; however, these species, if occurring on site, are unlikely to nest within the action area. Additionally, the vegetation within the action area provides minimal suitable habitat to support other nesting birds protected under the MBTA and/or California Fish and Game Code.

6.5 Jurisdictional Waters

Although an official jurisdictional delineation was not performed, hydrology and vegetation were examined throughout the action area during the site visit to identify potential wetland sites and/or non-wetland waters (e.g., drainages, channels). One jurisdictional water feature, the Los Angeles River, occurs within the action area within proposed Unit 5 (Figure 2). The ACOE has previously determined that the Los Angeles River, from the confluence of Arroyo Calabasas and Bell Creek (over 10 miles to the west of the action area) to San Pedro Bay at the Pacific Ocean, a distance of approximately 51 miles, is a traditional navigable waters and thus a waters of the U.S. (United States Environmental Protection Agency 2010). Within the action area, the Los Angeles River is fully contained within a concrete channel with no riparian vegetation associated with it. Coldwater Canyon Avenue crosses the river via a bridge, from which water and other utilities are attached.

6.6 Wildlife Corridors and Habitat Linkages

Wildlife corridors are linear features that connect large patches of natural open space and provide avenues for dispersal or migration of animals and dispersal of plants (e.g., through wildlife vectors). Wildlife corridors contribute to population viability by assuring continual exchange of genes between populations, which helps maintain genetic diversity; providing access to adjacent habitat areas representing additional territory for foraging and mating; allowing for a greater carrying capacity; and providing routes for colonization of habitat lands following local population extinctions or habitat recovery from ecological catastrophes (i.e., the rescue effect).

Habitat linkages are small patches that join larger blocks of habitat and help reduce the adverse effects of habitat fragmentation. They serve as connections between habitat patches and help reduce the adverse effects of habitat fragmentation. Although individual animals may not move through a habitat linkage, the linkage is a potential route for gene flow and long-term dispersal. Habitat linkages may serve both as habitat and avenues of gene flow for small animals such as reptiles, amphibians, and rodents. Habitat linkages may be represented by continuous patches of habitat or by nearby habitat "islands" that function as stepping stones for dispersal and movement (especially for birds and flying insects). Wildlife corridors and habitat linkages provide avenues for dispersal or migration of animals that also contribute to population viability in several ways, including (1) ensuring continual exchange of genes between populations to aid in maintaining genetic diversity, (2) providing habitat for some species, (3) providing access to adjacent habitat areas representing additional territory for foraging and mating, (4) allowing for a greater carrying capacity, and (5) providing routes for colonization of habitat lands following local population extinctions or habitat recovery from ecological catastrophes.

On a regional level, the action area does not reside within any designated wildlife corridors and/or habitat linkages identified in the South Coast Missing Linkages analysis project (South Coast Wildlands 2008) or California Essential Habitat Connectivity project (Spencer et al. 2010). On a local level, the LADWP-owned property located at 3380 Coldwater Canyon Avenue where the flow control station vault is proposed is within Habitat Block 16 identified in the Eastern Santa Monica Mountains Habitat Linkage Planning Map (SMMC 2017). This habitat block is one of the connections between Wilacre Park to the east and Coldwater Canyon Open Space and Longridge Canyon Park to the west. It would be expected that larger mammal species, such as striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), mule deer (*Odocoileus hemionus*), bobcat (*Lynx rufus*), coyote (*Canis latrans*), and mountain lion (*Puma concolor*) would use portions of the LADWP-owned property located at 3380 Coldwater Canyon Avenue for movement between the larger open space areas.

The remainder of the action area is dominated by developed areas that support minimal vegetation (particularly native vegetation). In addition, the majority of the project alignment is isolated from designated wildlife corridors/habitat linkages and other open spaces by the US-101 freeway and heavily traversed roadways. Although this part of the action area may provide local movement for some urban-adapted wildlife species (i.e., coyote, striped skunk, raccoon, opossum), there are no corridors that readily provide connection between open spaces or undeveloped lands. Thus, the action area, excluding the LADWP-owned property located at 3380 Coldwater Canyon Avenue, is unlikely to serve as a wildlife corridor or habitat linkage.

6.7 City of Los Angeles Protected Trees

There are 79 native trees located within the limits of the project site; 45 of the trees are southern California black walnuts and 34 are coast live oak, which are both considered protected trees, as documented in Appendix H, Protected Tree Report. Two additional southern California black walnuts are included on the map and inventory that do not meet diameter at breast height requirements to be protected, but may reach the standard by the time the project begins. There are no additional native oak species, California sycamore (*Platanus racemosa*), or California bay (*Umbellularia californica*) trees of jurisdictional size located on the project site.

Nineteen of the protected native trees are located on Oeste Avenue, with the remaining 60 protected trees distributed throughout the LADWP property located at 3380 Coldwater Canyon Avenue. The trees are single- and multi-stemmed and have diameters at breast height that range from four to 47 inches. Average tree heights and canopy widths range from six to 55 feet tall and extend six to 50 feet at their widest points.

Nine of the Southern California black walnuts had dieback on the top portion of the canopy with regrowth/sprouting from the base of the trunk. The health conditions of the trees were observed as one to be dead, 18 in poor health, 28 fair health, and 32 in good health. Structurally, the trees were assessed as one dead, 24 poor, 31 fair, and 23 good. Trees in good condition exhibit acceptable vigor, healthy foliage, adequate structure, and lack of any major maladies. Trees in fair condition are typical, with few maladies, but declining vigor. A full account of the physical characteristics and disposition of the 79 protected trees found on the project site is available in the tree information matrix (Appendix H).

6.8 Regional Plans

Species or habitats covered within any Habitat Conservation Plan, Critical Habitat Designations, Natural Community Conservation Plans, Significant Ecological Areas, or other approved conservation plans have not been identified within the action area (CDFW 2017).

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7 IMPACTS

The proposed project would involve open-trench excavation and pipe jacking for WSP installation, the removal and replacement of the existing FCS within Oeste Avenue, the installation of a flow control station vault on the LADWP-owned property located at 3380 Coldwater Canyon Avenue, the structural relining of portions of the existing pipeline, and interior improvements within the existing Coldwater Canyon Pump Station. The proposed project construction and construction staging would primarily occur along the existing public rights-of-way within well-traversed paved streets. Equipment and materials may be staged in the parking lanes of the roadways, with some encroachment potentially occurring along sidewalks.

The project would be implemented in compliance with construction practices including dust control and noise control. Dust control would involve use of a water truck during construction activities that would expose soils. Noise control activities would include maintaining equipment and scheduling construction activities to comply with the City of Los Angeles Noise Ordinance. Any portion of the roadway damaged as a result of construction activities would be repaved and restored to pre-construction conditions. Once the pavement has been restored, traffic delineation (restriping) would also be restored.

Operational activities would be limited to scheduled maintenance, repair, and inspections. These activities would be minimal and would be similar to those that occur under existing general LADWP service area conditions. Maintenance includes exercising valves, replacing or repairing worn appurtenances to ensure proper performance over the life of the facilities, and periodic inspections. No permanent workers would be required to operate or maintain the proposed project. Activities associated with long-term operations and maintenance would, therefore, be minimal.

7.1 Definition of Impacts

7.1.1 Direct Permanent Impacts

Direct permanent impacts refer to the absolute and permanent physical loss of a biological resource due to clearing, grading, and/or construction of structures, which can be determined in four ways: (1) permanent loss of vegetation communities, land covers, and general wildlife and their habitat; (2) permanent loss of or harm to individuals of special-status plant and wildlife species; (3) permanent loss of suitable habitat for special-status species; and (4) permanent loss of wildlife movement and habitat connectivity.

7.1.2 Direct Temporary Impacts

Direct temporary impacts refer to a temporal loss of vegetation communities and land covers resulting from vegetation and land cover clearing. The main criterion for direct temporary impacts is that impacts would occur for a short period of time and would be reversible. Areas currently supporting native vegetation temporarily disturbed by construction activities would be restored and revegetated with a native species mix similar to that which existed prior to disturbance following completion of work in the area such that full biological function can be restored. Areas not currently supporting native vegetation would be adequately restored to prevent adverse effects such as erosion or establishment of invasive species following construction.

7.1.3 Indirect Impacts

Indirect impacts are reasonably foreseeable effects caused by project implementation on remaining or adjacent biological resources outside the direct construction disturbance zone that may occur during construction (i.e., short-term construction related indirect impacts) or later in time as a result of the development (i.e., long-term, or operational, indirect impacts). Indirect impacts may affect areas within the defined action area, but outside the construction disturbance zone. Indirect impacts include short-term effects immediately related to construction activities and long-term or chronic effects related to the human occupation of developed areas (i.e., development-related long-term effects) that are adjacent to naturalized areas.

For the proposed project, it is assumed that the potential indirect impacts resulting from construction activities include fugitive dust from earthmoving activities, leaks or spills from construction equipment, noise from construction activities, and general human presence that may temporarily disrupt species and habitat vitality, as well construction-related soil erosion and runoff that could affect downstream resources.

7.1.4 Explanation of Findings of Significance

Impacts to sensitive vegetation communities or riparian habitat, special-status plant species, special-status wildlife species, wildlife corridors and habitat connectivity, and regional resource planning must be analyzed to determine whether such impacts are significant. CEQA Guidelines Section 15064(b) states that an ironclad definition of "significant" effect is not possible because the significance of an activity may vary with the setting. However, CEQA Guidelines Section 15065(a) lists impacts that are helpful in defining whether a project may have a significant effect on the environment. Mandatory findings of significance, which require preparation of an EIR, occur when there is substantial evidence that a project could: (1) substantially degrade the quality of the environment, (2) substantially reduce the habitat of a fish or wildlife species, (3) cause a fish or wildlife population to drop below self-sustaining levels, (4) threaten to eliminate a plant or animal community, or (5) reduce the number or restrict the range of a rare or endangered plant or animal.

The following are the significance thresholds for biological resources provided in the CEQA Appendix G environmental checklist, which states that a project would potentially have a significant effect if it:

- **Impact BIO-1**. Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as being a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS?
- **Impact BIO-2**. Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by CDFW or USFWS?
- **Impact BIO-3**. Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?
- **Impact BIO-4**. Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impedes the use of native wildlife nursery sites?
- **Impact BIO-5**. Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?
- **Impact BIO-6**. Would the project conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?

The evaluation of whether or not an impact to a particular biological resource is significant must consider both the resource itself and the role of that resource in a regional context. Substantial impacts are those that contribute to, or result in, permanent loss of an important resource, such as a population of a rare plant or animal. Impacts may be important locally because they result in an adverse alteration of existing site conditions but considered not significant because they do not contribute substantially to the permanent loss of that resource regionally. The severity of an impact and the offsetting benefits of mitigation are the primary determinants of whether or not that impact can be mitigated to a less-than-significant level.

7.2 Impacts to Vegetation Communities and Land Covers

Direct and Indirect Impacts

The project site and surrounding action area supports one sensitive vegetation community (coast live oak–southern California walnut woodland association), found within the LADWP-owned property located at 3380 Coldwater Canyon Avenue within the proposed Unit 6 alignment. The understory of the community within the action area has been regularly disturbed due to fuel reduction required for the surrounding residential properties. Since project impacts would only occur to the tree component of the community (coast live oak and southern California black walnut), which are also trees protected by the City's Protected Tree Ordinance (City of Los Angeles 2006a), direct and indirect impacts to sensitive vegetation communities are discussed in Section 7.7.

7.3 Special-Status Plants

Direct and Indirect Impacts

One special-status plant species, southern California black walnut, was observed within the project site or surrounding action area during the site visit conducted in May 2019. Southern California black walnut is considered a sensitive species by the City (2006b). The species is found within the LADWP-owned property located at 3380 Coldwater Canyon Avenue within the proposed Unit 6 alignment. Impacts may occur due to the construction of the proposed flow control station and open trench excavation. Since southern California black walnut is also covered under the City's Protected Tree Ordinance (City of Los Angeles 2006a), direct and indirect impacts to special-status plants are discussed in Section 7.7.

7.4 Special-Status Wildlife

One special-status wildlife species, Nuttall's woodpecker, was observed at the LADWP-owned property located at 3380 Coldwater Canyon Avenue within the proposed Unit 6 alignment. Additionally, one special-status wildlife species, oak titmouse, was determined to have a moderate potential to occur within the same area.

Direct Impacts

One special-status bird species, Nuttall's woodpecker, was observed in the action area and another, oak titmouse, has a moderate potential to occur. These species are USFWS BCC and have potential to nest and/or forage within or immediately adjacent to the proposed project footprint. If these species are determined to occur on the project site prior to construction, project-related direct impacts would occur particularly if construction results in the loss of active nests of the two species. The loss of active nests of these species would be significant. Project implementation of **MM-BIO-1** (i.e., seasonal recommendations, pre-construction survey, avoidance buffers, and monitoring) would reduce potential direct impacts to a less-than-significant level.

The trees and shrubs in the LADWP-owned property located at 3380 Coldwater Canyon Avenue and along Oeste avenue within the proposed Unit 6 alignment provides nesting habitat for bird species protected under the Migratory Bird Treaty Act (MBTA; 16 USC 703-712) and California Fish and Game Code Sections 3503.5, 3503, and 3513. Trimming, pruning, and/or removal of trees and shrubs may occur as a result of construction of the project, and could disrupt breeding activity. There would be no direct temporary impacts; however, there may be a potential for a direct permanent impact to occur to nesting birds (i.e., direct impacts to individuals, active nests, eggs, or young), particularly during the general nesting season of February 1 through August 31. Construction activities that could result in direct impacts to nesting birds include vegetation and tree removal during grading activities. Project implementation of **MM-BIO-1** (i.e., seasonal recommendations, pre-construction survey, avoidance buffers, and monitoring) would reduce potential direct impacts to a less-than-significant level.

The trees and shrubs throughout the majority of the project site provides limited nesting habitat for bird species protected under the Migratory Bird Treaty Act (MBTA; 16 USC 703-712) and California Fish and Game Code Sections 3503.5, 3503, and 3513. Given the heavily urbanized setting and noise prevalent within the action area, the proposed project activities are not anticipated to result in direct and/or indirect impacts to nesting birds throughout most of the alignment.

Indirect Impacts

Potential short-term indirect impacts to special-status wildlife could result from fugitive dust and increased human activity. Noise generated by construction activities, including vegetation removal and grading, that would be conducted during the avian breeding season (February 1 through August 31), could result in indirect impacts to nesting birds. Noise related to these activities has the potential to disrupt reproductive and feeding activities. Nighttime construction is not expected for the project, so indirect impacts on potentially foraging special-status bats is not expected. Potential temporary indirect impacts during construction may cause mortality due to the abandonment of an active nest and would be considered significant, absent mitigation. Project implementation of **MM-BIO-1** (i.e., seasonal recommendations, pre-construction survey, avoidance buffers, and monitoring) would reduce these potential indirect impacts to a less-than-significant level. Long-term indirect impacts to special-status wildlife are not expected.

7.5 Jurisdictional Resources

Direct Impacts

The project crosses the Los Angeles River, which is within a concrete channel, via the Coldwater Canyon Avenue bridge. The project crosses the Los Angeles River, which is within a concrete channel, via the Coldwater Canyon Avenue bridge. The project proposes to structural reline the 175 linear feet of existing 62-inch riveted steel pipe in this section with CFRP. The CFRP lining would be installed from the inside of the pipeline and is not anticipated to result in direct impacts to the Los Angeles River. As such, work within the Los Angeles River is not anticipated as part of this project. However, there is some possibility that this segment of the pipe may need additional reinforcements. This could be achieved by placing a boom outside the river and extending the boom far enough to place a worker under the bridge. If that method of access is not deemed possible during construction, access via the Los Angeles River may be necessary. A boom or scissor lift would be placed in the Los Angeles River for workers to drill holes on the bridge soffit and install steel band and lateral bracing that would add additional support to the existing pipe. To prevent impacts to the river, the boom or scissor lift would be rubber tired and would be lowered into the channel with a crane. Equipment within the river would be removed at the end of each work day and would not remain in the channel overnight. The methods of using rubber-tired equipment, placing the equipment into the channel with a crane, and removing equipment from the river channel after each work day would ensure that direct impacts to the Los Angeles River would be avoided.

Indirect Impacts

Potential temporary indirect impacts to jurisdictional waters (Los Angeles River) in the action area would primarily result from construction activities and would include impacts from the generation of fugitive dust and the introduction of chemical pollutants (including herbicides). Excessive dust can decrease the vigor and productivity of vegetation through effects on light, penetration, photosynthesis, respiration, transpiration, increased penetration of phytotoxic gaseous pollutants, and increased incidence of pests and diseases. Erosion and chemical pollution (releases of fuel, oil, lubricants, paints, release agents, and other construction materials) may affect wetlands/jurisdictional waters. The release of chemical pollutants can reduce the water quality downstream and degrade adjacent habitats. However, during construction, erosion-control measures would be implemented as part of the Storm Water Pollution Prevention Plan (SWPPP) for the project. Prior to the start of construction activities, the Contractor is required to file a Permit Registration Document with the State Water Resources Control Board in order to obtain coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with the Construction and Land Disturbance Activities (Order No

2009-009-DWQ, NPDES No. CAS000002) or the latest approved general permit. This permit is required for earthwork that result in the disturbance of one acre or more of total land area. The required SWPPP will mandate the implementation of best management practices to reduce or eliminate construction-related pollutants in the runoff, including sediment. Therefore, temporary indirect impacts would be less than significant due to compliance with regulations.

7.6 Wildlife Corridors and Habitat Linkages

Direct Impacts

The LADWP-owned property located at 3380 Coldwater Canyon Avenue within Habitat Block 16 identified in the Eastern Santa Monica Mountains Habitat Linkage Planning Map (SMMC 2017). This habitat block is one of the connections between Wilacre Park to the east and Coldwater Canyon Open Space and Longridge Canyon Park to the west. Project components proposed in this location include flow control station vault and approximately 80 feet of excavation trenching. The LADWP-owned property is 99,750 square feet in size (County of Los Angeles 2009). The 80 feet of trenching is a temporary impact on the surface and will not restrict wildlife movement through the area. The flow control station vault is expected to have a footprint of 43.5 feet by 34 feet (1,500 square feet). This leaves 98,250 square feet (2.26 acres) of the property for wildlife movement. The loss of approximately 1.5% of the property would result in less than significant impacts to wildlife corridors and habitat linkages.

The remainder of the proposed project alignment occurs within an urban setting and would neither interfere with or remove access to established native resident or migratory wildlife corridors nor impede the use of native wildlife nursery sites. Urban-adapted wildlife species (i.e., coyote, striped skunk, raccoon, and opossum) may use the action area for local movement, but these species are primarily nocturnal and limited nighttime work and lighting is expected; project construction is scheduled to occur between 7:00 a.m. and 6:00 p.m. Monday through Friday. Therefore, direct and/or indirect impacts to wildlife corridors and habitat linkages are not anticipated, and no avoidance or mitigation measures are recommended.

7.7 City of Los Angeles Protected Trees

Direct and Indirect Impacts

The analysis of affected trees presented below is based on the proposed project footprint. For the purposes of this report, tree removal is conservatively considered necessary when the trunk is located inside or within 2 feet of the proposed limits of development. Encroachment is expected when soil and roots are disturbed within the tree-protected zone (canopy drip line plus 5 feet or 15 feet from trunk, whichever is greater). Typically, specific circumstances allow some protected trees that are being encroached upon to be preserved in place within or adjacent to the development area.

It is estimated that five southern California black walnut and three coast live oak may need to be removed within the LADWP-owned property located at 3380 Coldwater Canyon Avenue and along Oeste Avenue (Dudek 2019; Appendix B). This is a potentially significant impact, absent mitigation. Project implementation of **MM-BIO-2** (i.e., tree replacement) would reduce potential direct impacts to a less than significant level.

An additional 30 trees (eight southern California black walnut and 22 coast live oak) within the LADWP-owned property and along Oeste Avenue could be indirectly impacted due to project activities within the tree protection zone (canopy drip line plus 5 feet or 15 feet from trunk, whichever is greater), which could cause root damage that results in tree mortality (Dudek 2019; Appendix B). However, during construction, tree protection measures would be implemented as required by the conditions of the City-issued tree removal permit (City of Los Angeles 2018). A photograph exhibit must be submitted as part of the application package for the tree removal permit that shows protective fencing around the trees that are not expected to be removed by project activities. The application package must also include construction impact guidelines that avoid or minimize impacts to protected trees. With implementation of the tree removal permit conditions, indirect impacts to protected trees would be less than significant.

7.8 Regional Plans

Species or habitats covered within any Habitat Conservation Plan, Critical Habitat Designations, Natural Community Conservation Plans, Significant Ecological Areas, or other approved conservation plans have not been identified within the action area (CDFW 2019f). As such, the proposed project would not be located within an area affected by or subject to an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Therefore, no impact would occur.

8 MITIGATION MEASURES

The following mitigation measures shall be implemented during the proposed Project to reduce the significant impacts identified in Chapter 7 to a less-than-significant level.

8.1 Impact BIO-1: Sensitive Vegetation Communities

Mitigation measures for impacts to coast live oak–southern California walnut woodland association are discussed in Section 8.5.

8.2 Impact BIO-2: Special-Status Species

Mitigation measures for impacts to southern California black walnut are discussed in Section 8.5. Significant direct and indirect impacts to special-status wildlife species can be mitigated to less than significant with implementation of the following measures:

MM-BIO-1 Direct and Indirect Impacts to Special-Status and Nesting Birds.

Nesting Bird Avoidance. Initiation of construction activities (i.e., initial vegetation clearing) should avoid the migratory bird nesting season (February 1 through August 31), to reduce any potential significant impact to birds that may be nesting on the Project site. If construction activities must be initiated during the migratory bird-nesting season, an avian nesting survey of the Project site and contiguous habitat within 500 feet of all impact areas must be conducted for protected migratory birds and active nests. The avian nesting survey shall be performed by a qualified wildlife biologist within 72 hours prior to the start of construction in accordance with the Migratory Bird Treaty Act (16 USC 703–712) and California Fish and Game Code Sections 3503, 3503.5, and 3513.

If an active bird nest is found, the nest shall be flagged and mapped on the construction plans along with an appropriate no disturbance buffer, which will be determined by the biologist based on the species' sensitivity to disturbance (typically 50 feet for common, urban-adapted species, 300 feet for other passerine species, and 500 feet for raptors and special-status species). The nest area shall be avoided until the nest is vacated and the juveniles have fledged. The nest area shall be demarcated in the field with flagging and stakes or construction fencing. A qualified biologist (with the ability to stop work) shall serve as a construction monitor during those periods when construction activities will occur near active nest areas to ensure that no inadvertent impacts on these nests occur.

8.3 Impact BIO-3: Jurisdictional Wetlands and Waters

Direct and indirect impacts to jurisdictional waters (Los Angeles River) are expected to be less than significant due to project design features and no mitigation is proposed.

8.4 Impact BIO-4: Habitat Linkages and Wildlife Corridors

Direct and indirect impacts to habitat linkages and wildlife corridors are expected to be less than significant and no mitigation is proposed.

8.5 Impact BIO-5: Local Policies or Ordinances

Significant direct and indirect impacts to City protected trees can be mitigated to less than significant with implementation of the following measures:

MM-BIO-2 Direct Impacts to City of Los Angeles Protected Trees

Tree Replacement. Based on removal of eight protected trees from the project site, a minimum of 32 (20 southern California black walnuts and 12 coast live oak) 15-gallon-size protected trees of like species are required to be planted by LADPW[2]. The specific location of individual mitigation tree plantings on site shall be addressed in a mitigation planting plan or landscape design plan prepared for the site. It is estimated that all of the required mitigation trees can be accommodated within the LADWP-owned property located at 3380 Coldwater Canyon Avenue. The mitigation requirement and the approved tree replacement mitigation ratio is at the discretion of the City and subject to the final conditions of the City-issued tree removal permit. As such, the final tree numbers associated with tree replacement and other mitigation components may vary from that presented in the tree inventory and assessment.

All tree plantings will be subject to a five-year monitoring effort by an independent third-party certified arborist. This monitoring effort would consider growth, health, and condition of the subject trees in order to evaluate

[2] The ordinance regarding the preservation of protected trees in Section 46.02(c)1 of the City's Municipal Code (City of Los Angeles 2002) requires that a permittee replace an protected tree approved for removal or relocation "within the same property boundaries by at least two trees of a protected variety." However, as of the date of this protected tree report, the current Board of Public Works has increased the minimum requirements for protected tree replacement to 4:1 (City of Los Angeles 2018).

the proposed project's success. The monitoring effort may result in a recommendation of remedial actions should any of the tree plantings exhibit poor or declining health. In an effort to maintain minimum mitigation tree quantities following the five-year monitoring period, it is recommended that over-planting be done for the required mitigation trees by 50%, resulting in a mitigation planting of 48, 15-gallon-size protected trees of like species.

8.6 Impact BIO-6: Regional Plans

The proposed project would not be located within an area affected by or subject to an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan; therefore, no impact would occur and no mitigation is proposed.

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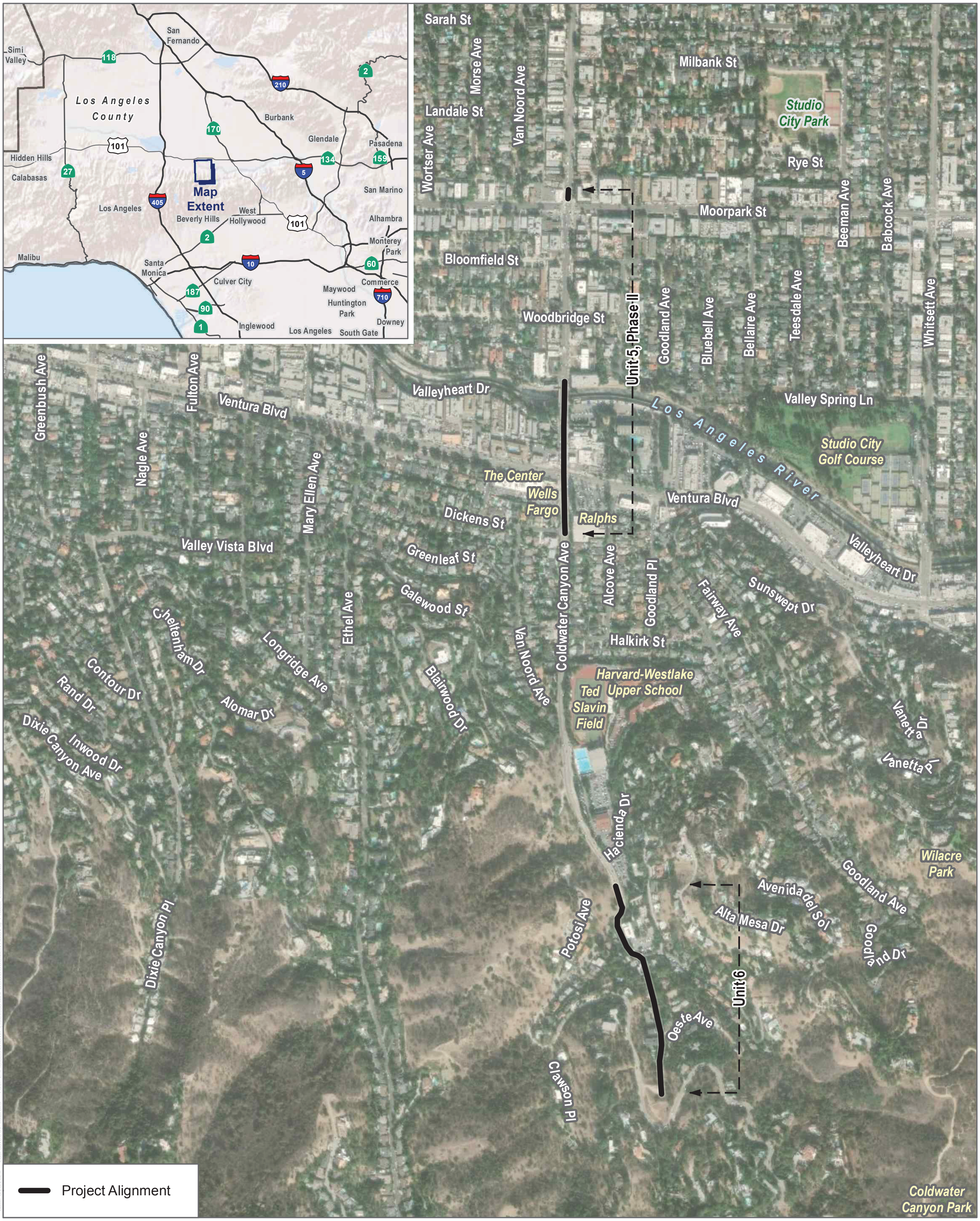

SOURCE: Bing Maps 2019, Open Street Map 2019

Los Angeles Department of Water & Power

FIGURE 1

Project Location

City Trunk Line South Unit 5 Phase II and Unit 6 Project

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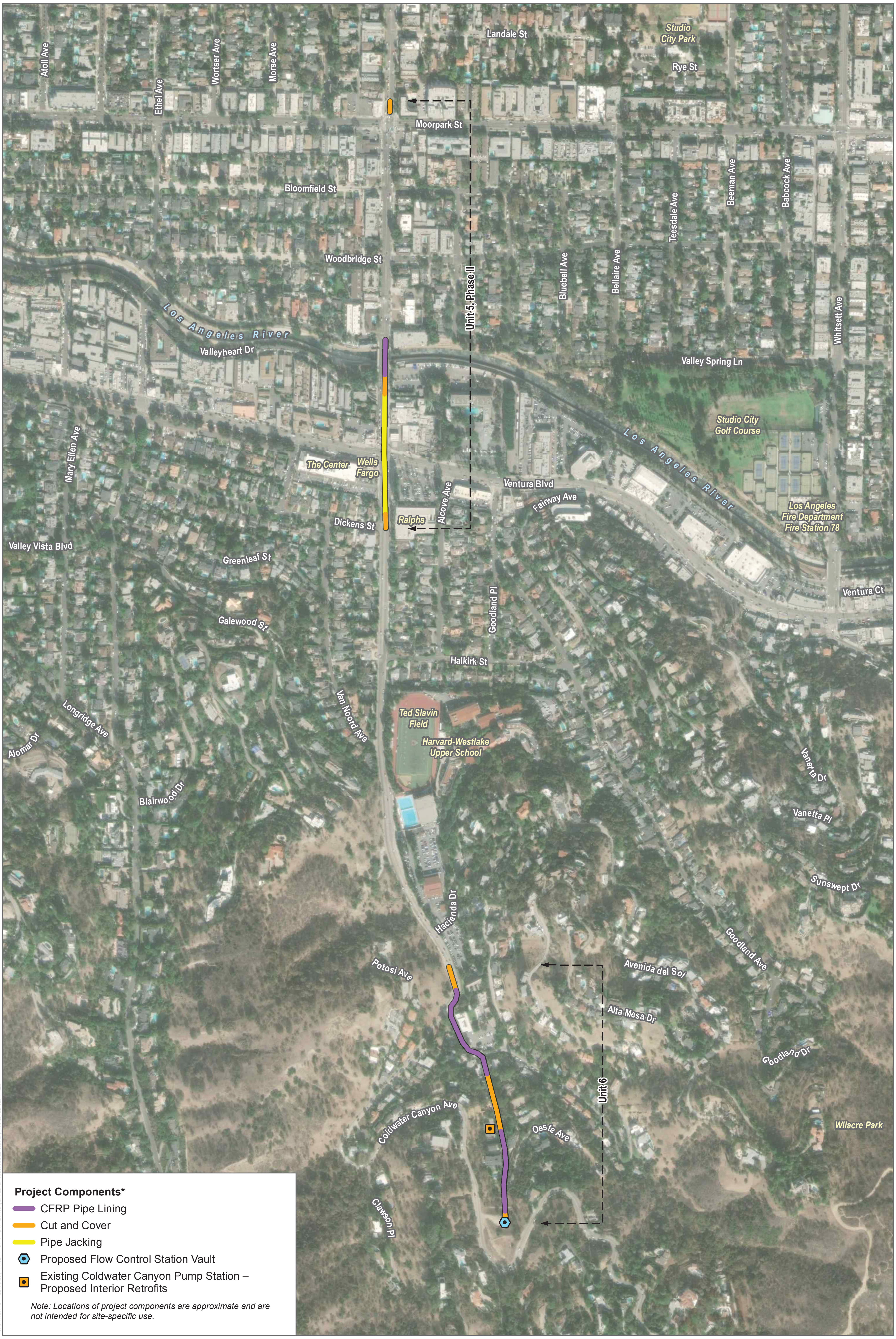

SOURCE: Bing Maps 2019, Open Street Map 2019

Los Angeles Department of Water & Power

0 250 500 Feet

FIGURE 2

Project Components

City Trunk Line South Unit 5 Phase II and Unit 6 Project

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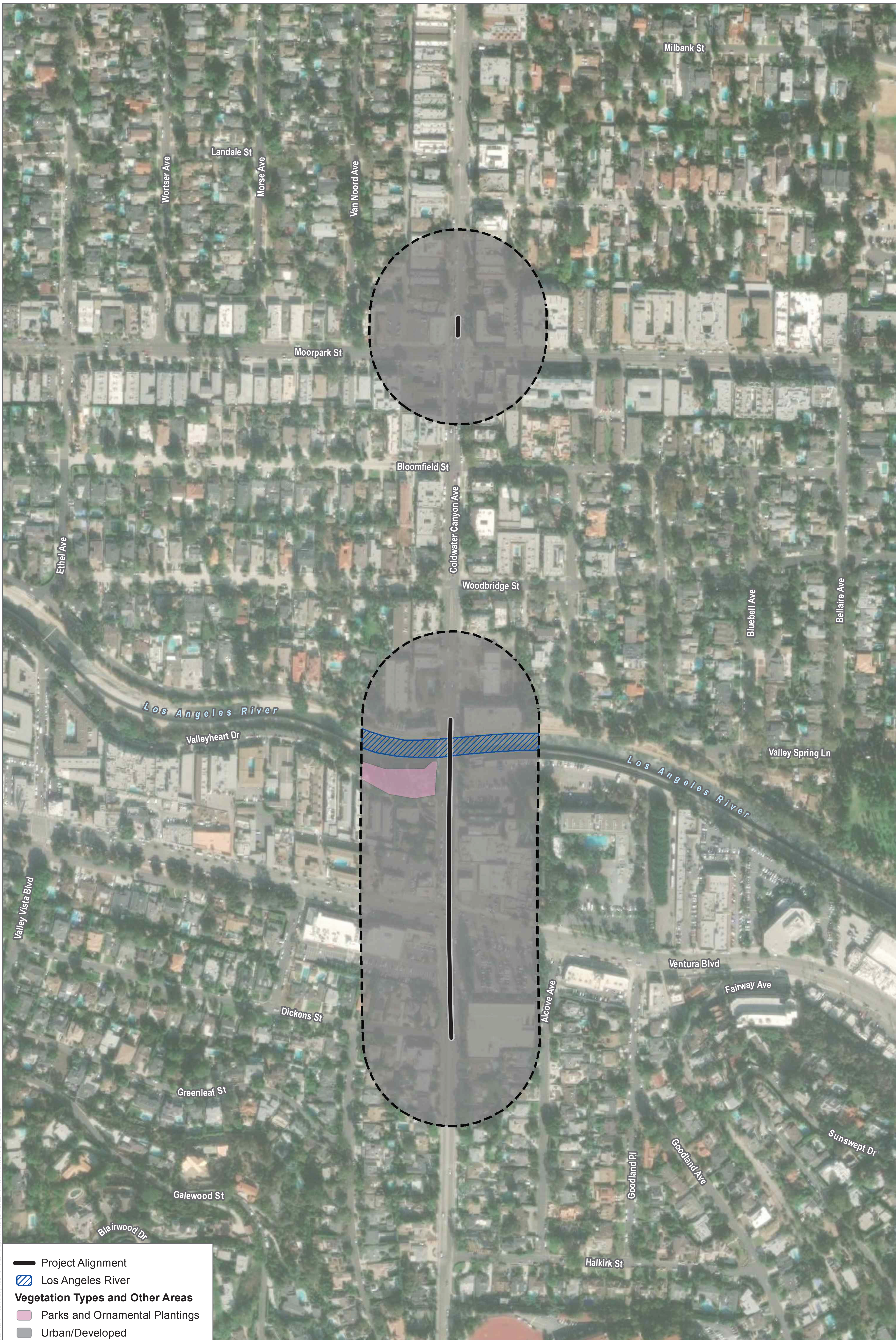

SOURCE: Bing Maps 2019, Open Street Map 2019

LA DWP Los Angeles Department of Water & Power

0 150 300 Feet

FIGURE 3A

Biological Resources Map

City Trunk Line South Unit 5 Phase II and Unit 6 Project

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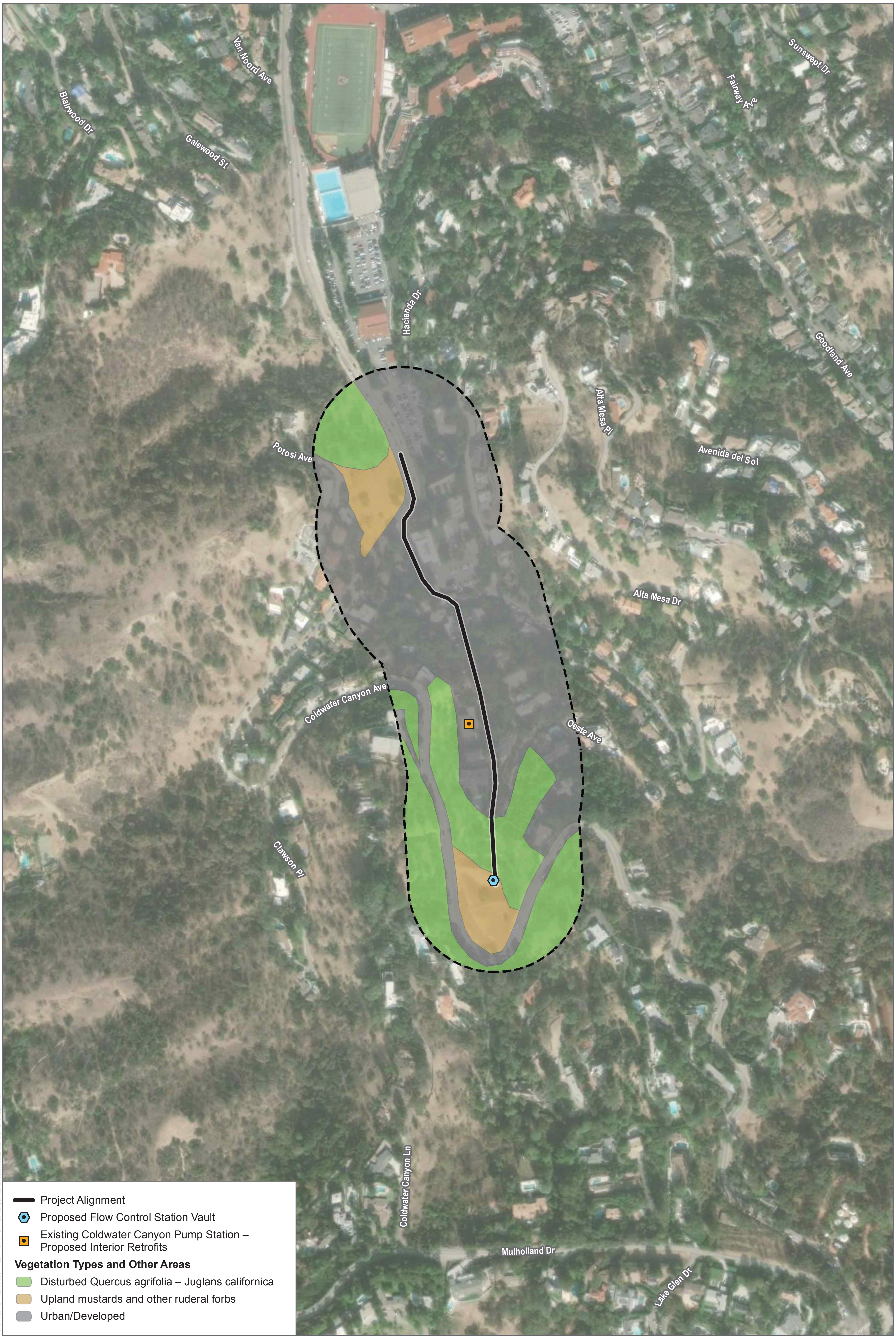

SOURCE: Bing Maps 2019, Open Street Map 2019

LA DWP Los Angeles Department of Water & Power

FIGURE 3B

Biological Resources Map

City Trunk Line South Unit 5 Phase II and Unit 6 Project

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SOURCE: AERIAL-NAIP IMAGERY 2016

LA DWP Los Angeles Department of Water & Power

0 50 100 200 Feet

FIGURE 4

Protected Tree Locations

City Trunk Line South Unit 5 Phase II and Unit 6 Project

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APPENDIX A

Resumes

Michael Cady

Senior Biologist

Michael Cady is a senior biologist with 15 years' experience with fieldwork and the application of environmental regulatory requirements for CEQA/NEPA compliance. Mr. Cady has worked extensively in a variety of habitats and jurisdictions throughout California. He has prepared biological technical reports in support for project and programmatic-level EIRs/EISs, initial studies (ISs), and environmental assessments (EAs). In addition, Mr. Cady has prepared permit applications and documentation to support federal ESA Section 7 and 10 consultations, CESA 2081 ITPs, CWA Section 401 and 404, and CFGC Section 1602 LSA.

Mr. Cady's field experience includes protocol surveys and habitat assessments for a variety of special-status wildlife species, rare plant surveys, general flora and fauna surveys, oak and general tree surveys, vegetation mapping, and nesting bird surveys. He has conducted wetland delineations in accordance with federal and State guidelines for a variety of aquatic resources in California. Mr. Cady's compliance monitoring experience includes both large-scale infrastructure projects and smaller projects within sensitive habitats. He has also provided environmental inspection for simple to complex projects.

Education

California State Polytechnic University, Pomona

BS, Environmental Biology, 2008

Certifications

CDFW Scientific Collecting Permit, No. SC-12259

CDFW State-Listed Plant Voucher Collection Permit, No. 2081(a)-11-15-V

Forestry and Wildlands Resources Certificate, Citrus College

Professional Affiliations

Desert Tortoise Council

Society for the Study of Amphibians and Reptiles

Southern California Botanists

Project Experience

Water/Wastewater

Los Angeles County Department of Public Works (LADPW) Cogswell Dam Restoration Project, Los Angeles County, California. Served as senior biologist for the proposed sediment removal in the Cogswell Dam Reservoir. Provided jurisdictional waters delineation and reporting for Cogswell Reservoir and adjoining streams, along with rare plant and least Bell's vireo protocol surveys.

LADPW Eaton Wash Dam Spillway Access Ramp, Pasadena, California. Served as a field biologist that provided environmental clearance for the commencement of construction of a spillway access ramp. Provided nesting bird surveys and reporting.

LADPW Eaton Canyon Reservoir Vegetation Maintenance, Pasadena, California. Served as a field biologist that provided surveys and monitoring for the clearance of vegetation within the reservoir. Duties included least Bell's vireo surveys and monitoring of the vegetation removal.

Los Angeles County Sanitation District On-Call Biological Services, Los Angeles County, California. Served as project biologist for the construction of various water-supply infrastructure in the Antelope Valley and Los Angeles Basin. Duties included the jurisdictional waters delineation of various wetlands and non-wetlands. Also prepared multiple biological resource assessments for a variety of projects, including the vegetation management plan for the sensitive Piute Ponds. Lead the biological monitoring for the construction of the pipeline and reservoirs. Also provided pre-construction surveys for desert tortoise, burrowing owl, American badger, nesting birds and rare plants on over 1,000 acres of the project area.

Palmdale Water District Water System Master Plan Update, Palmdale, California. Served as senior biologist for the technical studies for an EIR in support of a master plan update for a 43 square mile service area. Provided surveys, studies, and biological technical report preparation. Services provided also included providing CEQA impact-mitigation analysis for the project's EIR and cumulative impacts analysis.

City of Morro Bay Water Reclamation Facility, Morro Bay, California. Served as senior biologist for a proposed wastewater collection system modifications, a new pumping station, a new force main to convey the raw wastewater to the site, advanced water treatment, recycled water storage and pumping facilities, and injection wells for groundwater replenishment. Provided review of biological resources technical reports, jurisdictional waters delineation reports, and special-status focal survey reports for water reclamation facility located within a local coastal plan. Prepared Biological Resources sections for EIRs, including providing appropriate mitigation measures, and cumulative impacts analysis.

Energy

Southern California Edison (SCE) O&M On-call Biological Services, California. Served as Biological Resources Technical Lead, QA/QC Lead, Project Manager, and Field Director for a SCE Operations and Maintenance On-call Contract for Natural and Water Resources Services in multiple counties throughout SCE's service area in California and into Arizona (transmission lines). Work completed included more than 2,000 survey, monitoring, and report production work authorization tasks in support of various utility projects including deteriorated pole replacements, grid reliability and maintenance, GO 131-D, emergency services, vegetation management, and transmission line rating remediation. Projects were located on land administered by numerous agencies including the United States Air Force, the Bureau of Land Management (Barstow, Needles, Bakersfield, Ridgecrest, Palm Springs/South Coast), United States National Forests, The National Park Service, and California State Parks. Projects involved special-status species surveys and habitat assessments, nesting bird surveys, jurisdictional waters delineation and permitting, monitoring, and emergency response work.

Geokinetics Jacalito 3D Seismic Survey, Kern County, California. Served as lead biologist for inventory and monitoring for over 300 square miles in agricultural lands and sensitive native habitats for a seismic survey for oil and gas deposits. Special-status species surveys included blunt-nosed leopard lizard, San Joaquin kit fox, Tipton kangaroo rat, giant kangaroo rat, and burrowing owl. The project resulted in zero take of special-status species and impacts to sensitive habitat were limited to the minimal extent possible.

First Solar Stateline Solar Farm Project, San Bernardino County, California. Served as project manager and compliance manager/environmental compliance monitor for the third-party compliance management program representing the BLM during the construction of a 300-MW PV solar electricity generation project on 1,685 acres near the California-Nevada border. Services provided included review of preconstruction plan submittals, compliance management and daily monitoring, daily and weekly report preparation, variance preparation and management, and development of internal and public websites and periodic updates. Ensured that the SWPPP and all other BMPs were implemented correctly. Provided an interface between the client and BLM to expedite project needs and reduced delays to the project.

Pacific Gas and Electric (PG&E) Third-Party EA Support for Gas Pipeline Maintenance, San Bernardino County, California. Served as senior biologist for proposed maintenance of two PG&E gas pipelines in the Mojave Desert. Both pipelines are located on lands managed by the Bureau of Land Management that are regulated by the Desert Renewable Energy Conservation Plan. Provided review of special-status focal survey reports and preparation of biological resources technical reports and sections. The reporting includes impacts and mitigation analysis using the prescribed Conservation and Management Actions.

Los Angeles Department of Water and Power Victorville-Century 287 kV Transmission Lines, San Bernardino County, California. Served as senior biologist for the clearance of restoration sites on the Victorville-Century 287 kV Transmission Lines. Provided desert tortoise clearance surveys and updated the habitat assessment for the species in the area.

County of Kern Third-Party CEQA Consultant for Solar Energy Projects, Kern County, California. Served as a senior biologist that assisted Kern County with the review of natural resource reports that had been prepared for solar energy projects. Provided review of biological resources technical reports, jurisdictional waters delineation reports, and special-status focal survey reports for numerous solar energy projects. Prepared Biological Resources sections for EIRs, including providing appropriate mitigation measures.

EDF Renewables Valentine Solar Project, Kern County, California. Served as a senior biologist for the initial studies and permitting for a for a 2,000-acre solar project on natural lands. Conducted the jurisdictional waters delineation, vegetation mapping, and habitat assessments for sensitive plant and wildlife species. Also consulted with the regulatory agencies on the necessary permits and extent of impacts to jurisdictional waters.

NextEra San Gorgonio Wind Energy Center, Riverside County, California. Served as a project biologist for the initial studies, reporting, permitting, and monitoring for an 800-acre wind energy project. Conducted jurisdictional waters delineation, reporting, and acquisition of CWA 401 and 404, and CDFG SAA. Focused surveys for rare plants, flat-tailed horned lizard, desert tortoise, Le Conte's thrasher, and burrowing owl. Reporting and permitting for MND/CUP and EA. Produced and implemented a burrowing owl mitigation and monitoring plan. Lead biologist for biological monitors during project construction. Assisted in post-construction bird/bat mortality study setup and habitat restoration monitoring.

NextEra Blue Sky Wind Generation Project, Los Angeles County, California. Served as a senior Biologist for a proposed 7,500 acres wind project located within a Los Angeles County-designated Significant Ecological Area. Provided natural resources support that included vegetation mapping, rare plant surveys, avian point counts, and burrowing owl surveys. Produced the biological constraints analysis and the biological resources technical report.

NextEra WPP-91 Wind Energy Generation Facility Decommissioning, Riverside County, California. Served as a senior biologist for the decommissioning of a 200-acre wind energy facility project. Conducted jurisdictional waters delineation, reporting, and acquisition of CWA 401 and 404, and CDFG SAA. Focused surveys for rare plants, flat-tailed horned lizard, Coachella Valley fringe-toed lizard, and burrowing owl. BLM-approved Field Contact Representative and Designated Biologist during project activities.

NextEra Kramer Junction Solar Energy Center, San Bernardino County, California. Served as a biologist for a proposed 300-acre solar energy facility. Provided surveys, reporting, and permitting. Focused surveys for rare plants, desert tortoise, Le Conte's thrasher, and burrowing owl. Reporting and permitting for MND/CUP and CESA 2081. Also provided habitat assessment for 20 parcels in the project vicinity for potential mitigation.

NextEra Lucerne Valley Solar Energy Center, San Bernardino County, California. Served as a biologist for the initial studies and permitting for a proposed 650-acre solar energy facility. Provided focused surveys for rare plants, desert tortoise, and burrowing owls. Prepared biological technical reports in support of EIR and CUP.

NextEra Dawn Solar Energy Center, Kern County, California. Served as a biologist for the initial studies of a proposed 600-acre solar energy facility. Provided focused surveys for rare plants, desert tortoise, and burrowing owls; conducted a jurisdictional waters delineation; and prepared biological technical reports

NextEra SEGS X Expansion Project, San Bernardino County, California. Served as a biologist for the initial studies for the proposed expansion of a solar energy facility located north of Harper Dry Lake. Provided general surveys, habitat assessment, rare plant surveys, vegetation mapping, and prepared the technical reports for the project.

Iberdrola – Camino Solar Project, Kern County, California. Served as the senior biologist for the initial studies for a proposed solar energy facility located within the Tylerhorse Wind Project. Provided general surveys, habitat assessment, rare plant surveys, vegetation mapping, and jurisdictional waters delineation, and prepared the technical reports for the project.

sPower Renewable Energy Projects, Los Angeles and Kern counties, California. Served as senior biologist for the initial studies for multiple small-scale solar energy facilities in the Antelope Valley. Provided general biological surveys, vegetation mapping, jurisdictional waters delineations, and reporting.

WKN USA Wagner Wind Energy Project, Palm Springs, California. Served as a project biologist for the initial studies, reporting, permitting, and monitoring for a 20-acre wind energy project. Conducted surveys for rare plants, desert tortoise, Le Conte's thrasher, and burrowing owl. Reporting and permitting for MND/CUP. Lead biologist for biological monitors during project construction.

Graham Pass Wind Energy Facility, Riverside County, California. Served as the senior biologist for the initial studies for a proposed wind energy facility located south of Desert Center in critical habitat for desert tortoise. Provided vegetation mapping, habitat assessments, desert tortoise surveys, and the preparation of a Biological Assessment for desert tortoise.

Tehachapi Wind Repower Project, Kern County, California. Served as the senior biologist for the initial studies for a proposed repower of a wind energy facility. Provided general surveys, habitat assessment, rare plant surveys, vegetation mapping, and jurisdictional waters delineation, and prepared the technical reports for the project.

Geokinetics Lake Mendocino 3d Seismic Survey, Colusa County, California. Served as lead biologist for surveys, reporting, and compliance monitoring oversight for a 500-acre seismic survey project. Conducted habitat assessments and focused surveys for Swainson's hawk and giant garter snake. Prepared Biological Resources Assessment report and assisted with FWS consultation, and preparation of an IS/MND. Provided oversight of the monitoring effort.

Plains All American Natural Resources Regulation Training, San Bernardino County, California. Served as biologist for delivering natural resources regulation training to the company's California engineers and project managers. Prepared and delivered the training that focused on CEQA, State and federal ESA, and waters regulations.

Kinder Morgan Meter Stations, Kern County, California. Served as lead biologist for proposed meter stations located in the oil and gas fields near Taft. Provided biological surveys, habitat assessments, and reporting for reports required by DOGGR.

PG&E PSEP Line 167-1 Pipeline Replacement, Butte County, California. Served as environmental inspector and wildlife monitor for 2.2-mile pipeline replacement that crossed jurisdictional waters and habitat associated with special-status species. Duties included enforcing the SWPPP and other BMP measures to limit the environmental impact of the project and to avoid the take of giant gartersnake and nesting raptors. Provided daily and weekly reporting to the client.

PG&E DFM-1815-02 Pipeline Replacement Project, Monterey, County, California. Senior biologist for the replacement of an approximately 11-mile natural gas replacement along State Route 68. Provided general surveys, habitat assessment, rare plant surveys, burrowing owl surveys, California red-legged surveys, and prepared the technical reports for the project.

SCE North Sky River Windhub Transmission Project, Kern County, California. Served as senior environmental monitor for the construction of interconnect transmission line. Ensured that there were no impacts to California condor and other sensitive species, and implemented a worker's environmental plan for the project.

PG&E Willow Creek Native Species Monitoring, Fresno County, California. Served as a field biologist for native species monitoring to keep the client in compliance with FERC regulations for upstream hydroelectric dams. Provided red-legged frog, western pond turtle, and native fish surveys (included electro-shocking).

SCE Fort Irwin Reliability Project, San Bernardino County, California. Served as senior wetland biologist for a transmission line improvement project located on lands administered by the BLM, Department of Defense, and private landowners. Provided oversight on the jurisdictional waters delineation and preparing the necessary permit packages.

Morgan Hills Wind Energy Transmission Line (Segments 1 and 2) and Access Roads, Kern County, California. Served as senior biologist for the proposed construction of transmission lines through a variety of habitats in the Tehachapi Mountains. Lead the vegetation mapping, rare plant surveys, desert tortoise surveys, and burrowing owl surveys, and prepared the reports.

SCE Kern River TLRR Project, Kern and Los Angeles Counties, California. Served as senior wetland biologist for an approximately 70-mile Southern California Edison transmission line improvement project. Provided jurisdictional waters delineation and rare plant surveys.

PG&E Contra-Costa-Moraga 230 kV Reconductoring, Contra Costa County, California. Served as a field biologist for due diligence surveys for a 27-mile long transmission line project. Provided Swainson's hawk and burrowing owl protocol surveys and prepared the technical reports.

SCE San Joaquin Cross Valley Loop Transmission Project, Tulare County, California. Served as a field biologist for initial studies for the construction of a new 19 mile double-circuit 220 kilovolt transmission line. Conducted rare plant surveys and verified jurisdictional waters/wetlands mapping.

Astoria Solar Project Vegetation Management Assistance, Kern County, California. Served as senior biologist for vegetation maintenance guidance that was needed to comply with North American Electric Reliability Commission requirements. Provided vegetation mapping and plant maintenance guidelines for plants beneath and adjacent to the project's gen-tie lines.

NextEra Suncrest Dynamic Reactive Power Support Project, San Diego County, California. Served as the senior biologist for the initial studies of a dynamic reactive device at the existing Suncrest Substation's 230 kilovolt bus. Provided vegetation mapping, habitat assessment, rare plant survey, and jurisdictional waters delineation, reporting, and permitting.

Riverside Energy Resource Center, Unit 3 and 4, Riverside, California. Served as the biologist for the construction of a gas-fired peaking project. Developed a workers environmental awareness plan and provided preconstruction surveys for burrowing owl and nesting birds.

Development

Rancon Group – Ranch Storage and Temescal Canyon Road Improvement Project, Riverside County, California. Served as the project manager and senior biologist for the initial studies of a proposed storage facilities and improvements to the adjacent road. Provided project management, jurisdictional waters delineation and reporting, and a Western Riverside County MSHCP Consistency Analysis and Determination of Biologically Equivalent or Superior Preservation.

Andora Subdivision Project Natural Resources Permitting, Los Angeles, California. Served as the project manager and senior biologist for the natural resources permitting for a proposed 33-lot residential subdivision with an open space lot that was used for mitigation for impacts. Provided project management, jurisdictional waters delineation, rare plant survey, and technical support for a CESA 2081 Incidental Take Permit for Santa Susana tarplant and jurisdictional waters permits. Also prepared the Habitat Mitigation and Monitoring Plan and Land Management Plan for the permits and coordination with agencies. Prepared a Property Analysis Record (PAR) and Land Management Plan in support of establishing a conservation easement on the open space lot.

Copper Creek North and South, Los Angeles County, California. Served as a biologist for the initial studies of a proposed 484 home residential project that included public parks and an elementary school on 453-acres. Provided surveys and studies for biological technical report, environmental permitting, EIR preparation, and biological monitor Services provided included general and sensitive species surveys, vegetation mapping, rare plant surveys, jurisdictional waters delineation, oak tree surveys, oak tree permit, nesting bird surveys, Initial Study preparation, biological resource analysis, CUP/EIR preparation, agency consultation, and 404, 401, 202(p) permits preparation.

Centex Homes – Fagan Canyon Housing Development and Open Space Plan, Ventura County, California. Project biologist for proposed 2,176-acre housing development and open space plan. Lead the delineation of over five linear miles of perennial riparian, adjacent wetlands, and ephemeral drainages. Lead the oak tree assessment and survey. Conducted rare plant surveys and general biological surveys. Also developed a riparian and wetland restoration plan to mitigate project impacts. Surveyed undeveloped properties in the vicinity for potential mitigation sites.

KB Homes Coastal Mission 316 West Subdivision Project, San Marcos, California. Served as senior biologist for 67 multifamily dwelling units on approximately 3.71 acres. Provided surveys, reporting, and impact analysis to support an EIR for the project. Consulted with the U.S. Fish and Wildlife Service (USFWS) to avoid California gnatcatcher take.

Soledad Circle Estates, Santa Clarita, California. Served as the project biologist for a proposed 150 multifamily residential unit subdivision in natural lands. Provided vegetation mapping, habitat assessment, rare plant survey, jurisdictional waters delineation and reporting, waters permit application preparation, and biological resources technical report preparation.

Spring Canyon Residential Subdivision, Santa Clarita, California. Served as the project biologist for a proposed 499 multifamily residential unit subdivision on 550 acres of natural lands. Provided vegetation mapping, habitat assessment, rare plant survey, prepared a rare plant translocation plan, oak tree survey, jurisdictional waters delineation and reporting, waters permit application preparation, and biological resources technical report preparation. Also provided a wildlife corridor-habitat linkage analysis along the Interstate 14 in the vicinity of the project, and conducted extensive surveys for a 80-acre mitigation parcel located in Violin Canyon.

Stephenson Canyon Residential Project, Los Angeles County, California. Served as a biologist for the initials studies for a proposed residential development in natural lands in the foothills of the San Gabriel Mountains. Provided vegetation mapping, habitat assessment, rare plant survey, oak tree survey, jurisdictional waters delineation and reporting, and biological resources technical report preparation.

Verdugo Ranch Riparian Mitigation, Los Angeles County, California. Served as project manager and biologist for the mitigation plan design, implementation, and monitoring for creation of two acres of riparian habitat within a residential development. Monitored the project for five years and helped meet agency criteria for success.

University of California, Irvine Faculty and Staff Housing Project, Irvine, California. Served as project manager and biologist for the initial studies, reporting, permitting, and monitoring for a 20-acre wind energy project. Conducted general habitat assessment and vegetation mapping, and surveys for rare plants and burrowing owl. Prepared the biological resources technical report. Lead biologist for biological monitors during project construction.

Gordon Mull Subdivision Project, Glendora, California. Served as the senior biologist for a 71-acre residential project located in natural lands in the foothills of the San Gabriel Mountains. Provided vegetation mapping, habitat assessment, rare plant survey, jurisdictional waters delineation and reporting, and biological resources technical report preparation.

Lakeshore Town Center, Lake Elsinore, California. Served as senior biologist for the initial studies and permitting for a 24.5 acre mixed-use development on the shore of Lake Elsinore. Conducted general habitat assessment and vegetation mapping, surveys for rare plants and burrowing owl, and jurisdictional waters delineation, reporting, and permitting.

Scholl Canyon Landfill Project, Glendale, California. Served as senior biologist for the initial studies of a new facility within developed and natural lands within the landfill. Provided vegetation mapping, habitat assessment, rare plant survey, protected tree mapping, and biological resources technical report preparation.

Transportation

LOSSAN CP San Onofre to CP Pulgas Double Track Upgrade Project, San Diego County, California. Served as the project biologist for the surveys and reporting for a six mile portion of CP San Onofre to CP Pulgas railway. Services provided included sensitive and general species surveys, habitat assessments for sensitive species (arroyo toad, quino checkerspot butterfly, and San Diego ambrosia), vegetation mapping, and Biological Assessment preparation for ESA Section 7 consultation.

Riverside Municipal Airport Expansion Project, Riverside, California. Served as the biologist for the proposed expansion of the airport. Provided general biological surveys, rare plants surveys, and burrowing owl surveys. Prepared a biological resources technical report in support of an EIR that provided an impact analysis for sensitive biological resources.

Lynwood Urban Bicycle Trail Project, Los Angeles, California. Served as the senior biologist for a proposed two-mile bike path that was located on undeveloped Caltrans land adjacent to the 105 Freeway. Provided a biological survey and NES-MI report preparation.

Burbank Bike Path Project, Los Angeles, California. Served as the project manager and biologist for a proposed three-mile bike path that was located on undeveloped Caltrans land adjacent to the 5 Freeway. Provided a biological survey and NES-MI report preparation.

Azusa Intermodal Parking Facility Project, Azusa, California. Served as the senior biologist for the initial studies for a proposed parking structure. Provided general biological surveys, assisted with the tree survey, and prepared the biological technical report to support the project's EIR.

Los Alamitos Road Interchange Project, Murrieta, California. Served as the biologist for a proposed interchange project on Interstate 15. Provided a biological survey and NES-MI report preparation.

Santa Ysabel Roadway Project, San Diego County, California. Served as senior biologist for roadway improvement project within the Santa Ysabel Reservation. Provided general surveys, habitat assessment, rare plant surveys, vegetation mapping, and prepared the technical reports for the project.

Los Angeles County Metropolitan Transportation Authority Regional Connector Transit Corridor, Los Angeles, California. Served as senior biologist for the QA/QC of project technical documents and prepared the Biological Resources section of the EIR.

Municipality

LADPW Los Rancho Los Amigos South Campus Project, Downey, California. Served as the senior biologist for the construction of three new County administrative buildings on the Rancho Los Amigos Campus. Provided general surveys and habitat mapping, assisted with bat acoustic surveys, prepared the biological resources technical report, and prepared the Biological Resources section of the EIR for the project.

Adelanto North 2035 Comprehensively Sustainable Plan, Adelanto, California. Served as project manager and senior biologist to provide biological support for the development of a community plan for 55 square miles in the City of Adelanto and unincorporated San Bernardino County. Provided biological surveys, vegetation mapping, and reporting.

City of Los Angeles Park and Recreation Vegetation Maintenance Support, Los Angeles, California. Served as project manager and senior biologist for the maintenance of vegetation within the City of Los Angeles parks. Coordinated with the City to provide nesting bird surveys, nesting bird plans, and monitoring for numerous parks.

County of San Bernardino Flood Control District Sheep Creek Channelization Project, San Bernardino County, California. Served as the biologist for the channelization of a creek within the San Gabriel Mountains. Provided vegetation mapping, habitat assessment, and jurisdictional waters delineation, reporting, and permitting.

Compton Creek Master Plan, Compton, California. Biologist for a master plan for revitalizing Compton Creek. Provided general surveys, habitat assessment, and vegetation mapping, and prepared the biological resources technical report.

Resource Management

Los Angeles County Sanitation District Bixby Marshland Restoration Monitoring, Carson, California. Served as project manager and senior biologist for a 17 acres wetland and upland habitat restoration project. Set up a scientific study to provide statistical analysis of the project's progress in meeting agencies' criteria for success. Provided annual reporting over seven years that included recommended measures to counter any losses of established plants. Prepared and provided a nesting bird-training program to the maintenance crew.

Los Angeles County Sanitation District Piute Ponds Maintenance, Los Angeles County, California. Served as project biologist for the long-term maintenance of district facilities at the Piute Ponds. Provided surveys, reporting, and impact mitigation analysis for the highly sensitive habitat located within the Mojave Desert.

California Department of Water Resources Arroyo Toad Study, Ventura County, California. Served as the senior biologist for an arroyo toad population study in Piru Creek and its tributaries. Conducted a breeding season study to determine the population dynamics of arroyo toad as part of the mitigation for Pyramid Lake. Arroyo toads observed in all life stages and nighttime adult male vocal surveys conducted.

Bureau of Land Management Desert Tortoise Population and Threat Analysis, Arizona and Nevada. Served as a field biologist for an assessment of threats on the Gold-Butte Pakoon (Arizona and Nevada) desert tortoise population. Technical experience included conducting transect surveys; locating burrows; scat identification; collecting morphometric data; attaching transmitters; and radio-telemetry.

Department of Defense Fort Irwin Desert Tortoise Headstarting Project, San Bernardino County, California. Served as a field biologist for the study of juvenile desert tortoises that had been raised in protected pens before being released. Technical experience included conducting health assessments; collecting morphometric data; attaching transmitters; and radio-telemetry.

NV Energy Dry Lake Solar Energy Center at Harry Allen, Clark County, Nevada. Served as field biologist for desert tortoise population assessment. Duties included conducting transect surveys; locating burrows; scat identification; health assessments, collecting morphometric data; attaching transmitters; and radio-telemetry.

El Centro Solar Energy Transmission Line Project, Imperial County, California. Served as lead field biologist conducting flat-tailed horned lizard studies. Technical experience included conducting transect surveys; scat identification; handling, and collecting morphometric data; attaching transmitters.

Other

Bureau Veritas Third-Party Review for Verizon Cellular Towers NEPA Compliance, California. Served as senior biologist for the review of No Effect Findings reports for more than 100 proposed cell towers throughout California. For tower locations that were determined to have potential to have an effect on a sensitive biological resource, additional surveys and reporting was conducted, including jurisdictional waters delineations, burrowing owl surveys, desert tortoise surveys, and rare plant surveys.

Verizon Cajon Wash Permitting, San Bernardino, California. Served as senior biologist for after-the-fact permitting for impacts to the Cajon Wash. Provided vegetation mapping, habitat assessment, rare plant survey, jurisdictional waters delineation and reporting, waters permit application preparation, and agency consultation.

Specialized Training

- Desert Tortoise Health Assessment Training. USFWS. (2015)
- Flat-tailed Horned Lizard Survey Training. Bureau of Land Management

Ryan Allen

Urban Forester

Ryan Allen is an urban forester with 11 years' experience providing strategic environmental planning to organizational programs. Mr. Allen's work deepens the positive impact on the communities he serves and increases organizational capacity. He has experience working with elected officials and staff as he builds and maintains strategic partnerships.

Education

Pepperdine University
BA, Communications, (Creative Writing emphasis), 2002

Licenses

Certified Arborist, No. WE 10316A

Tree Risk Assessment Qualified (TRAQ)

Relevant Previous Experience

Urban Forest Management Plan, Downey, California. Currently leading the development of the City's 30-year planning document to expand canopy cover, implement efficient management practices, and increase public awareness of the urban forest. This process has included a through analysis of the current tree inventory, canopy cover analysis, calculating ecological benefits of the urban forest using the i-Tree Eco suite, and determining the current value of the City's trees. We have reviewed current policies and ordinances against urban forest sustainability standards and will update these documents and create new policies as appropriate. Assessed the governance structure, interdepartmental protocols, and management practices of the City through departmental interviews with all staff who effect trees. Completion of the UFMP is expected in October 2019.

UFMP Preliminary Planning and Roadmap, Los Angeles, California. Prepared a comprehensive report on the current conditions of the Los Angeles urban forest and its management as the beginning phase of the City's preparation to begin an urban forest management plan. Developing the report was a 10-month long process that included monthly working group meetings with over 40 urban forest stakeholders, extensive departmental interviews, conducting a public survey with 2,600 responses, and comparing Los Angeles urban forest activities with three other municipal urban forest programs. The report analyzes current funding levels, City planning documents, ordinances, policies, governance structure, and management practices against urban forest sustainability standards. The result of the analysis delivered key findings on the status of the urban forest, and made recommendations on the steps the City needs to take to move toward the completion of an urban forest management plan and implementing sustainable practices.

Los Angeles Beautification Team, Los Angeles, California. Served as director of environmental programs. Oversaw daily operations of community-based environmental projects by generating budgets, maintaining external relationships, and meeting contract deliverables. Served as lead arborist, ensuring arboricultural best management practices were followed by staff on all projects and provided consultation on urban forestry projects with external stakeholders. This included site assessment and species selection for multiple tree planting and maintenance projects with the City of Los Angeles Urban Forest Division, Los Angeles Department of Recreation and Parks, and Los Angeles Unified School District. Built local government relationships and partnerships with the City of Los Angeles, including the Office of Mayor Eric Garcetti, Los Angeles City Council Districts 2, 6, 7, 13, and City Plants.

Koreatown Youth and Community Center, Los Angeles, California. Served as Environmental Services Unit (Unit) manager. Developed and implemented strategic vision for the Unit, which led to an increase in annual revenue from $1.1 million to $2.1 million, adding eight full time staff positions, and the creation of two new programs. Initiated a community-based approach to the Unit's urban forestry program, fostering partnerships within multiethnic low-income neighborhoods with multiple community-based organizations, non-profit organizations, and residents. This approach led to densely planted streets in communities needing to regenerate a depleted tree canopy. Annually the urban forestry program would plant more than 1,000 trees and provide regular maintenance after planting.

City of Los Angeles Community Forest Advisory Committee, Los Angeles, California. Served as chair. Elected Chair to be the lead representative for committee and community members to work with City officials and staff by advising on urban forestry issues, addressing concerns of the community, and developing improvements to City of Los Angeles urban forest policy. Facilitated monthly meetings with committee members, City staff, and community members, as well as prepared and served as liaison on all official communications of the committee with the Board of Public Works Commissioners, elected officials, and City staff.

TreePeople, Los Angeles, California. Served as senior manager of tree care. Directed the growth of the tree care department to become a significant portion of the organization's community engagement efforts by annually holding more than 100 volunteer events and engaging 2,000+ volunteers throughout Los Angeles. Created the Citizen Arborist program, a seven-week-long, intensive training program for community members to become expert tree leaders. Helped develop the 80-page training manual and class presentations with respected arborists and educators to ensure teaching current industry best management practices. Managed multiple corporate volunteer events with organizations including Boeing, Bank of America, and Disney, strengthening corporate partnerships and leading to continuing or new funding.

The Junipers Tree Inventory and Evaluation, San Diego County, California. Conducted the assessment and GPS mapping of trees for proposed large-scale construction project. Trees were assessed according to size, health, and for possible relocation. Trimble GPS units were used for mapping.

Victoria Gardens Tree Inventory and Evaluation, Carson, California. Conducted the assessment and GPS mapping of trees for proposed large-scale construction project. Trees were assessed according to size, health, and for possible relocation. Trimble GPS units were used for mapping and each individual trees were tagged for identification.

Hancock Park Homeowners Association, Los Angeles, California. Completed an inventory of 2,600 public right-of-way street trees that included a level 1 assessment of the health and risk factors, tree species, available locations for new tree planting, and recommendations for pruning and removal. This inventory was completed to prepare the Hancock Park Homeowners Association to begin planning how they would manage the declining canopy within their community.

APPENDIX B

USFWS IPaC Trust Resource Report
CNDDB Results (Rarefind 5.0)
CNPS Search Results

IPaC **U.S. Fish & Wildlife Service**

Last login March 26, 2020 11:52 AM MDT

IPaC resource list

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

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

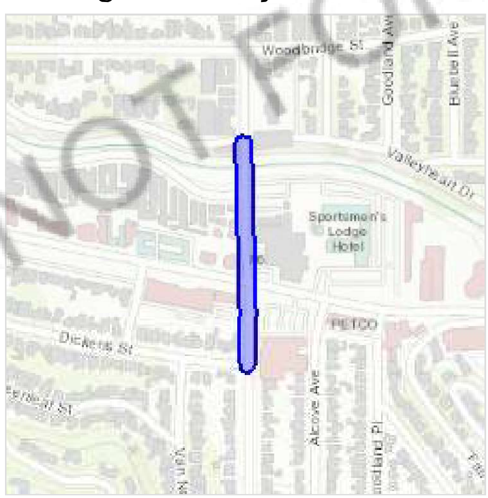
Project information

NAME

City Trunk Line South

LOCATION

Los Angeles County, California



DESCRIPTION

The Los Angeles Department of Water and Power (LADWP) is proposing the replacement of Unit 5, Phase II and Unit 6 of the City Trunk Line South Project (proposed project) in the Studio City neighborhood of the City of Los Angeles (City), Los Angeles County (County). Implementation of the proposed project would improve capacity, reliability, and flexibility in the water system, and would complete the LADWP's six-phase plan to replace the existing Los Angeles City Trunk Line, which connect the Los Angeles Aqueduct Filtration Plant to the Franklin Reservoir. The proposed project would include the replacement of the existing large-diameter potable water trunk line using the open trench and the pipe jacking methods. The proposed project would also include the installation of a flow control station and the structural relining of portions of the existing pipeline.

Local office

Carlsbad Fish And Wildlife Office

(760) 431-9440
(760) 431-5901

2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385

http://www.fws.gov/carlsbad/

Endangered species

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

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

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

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

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

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. 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.

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

Birds

NAME	STATUS

California Condor Gymnogyps californianus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/8193	Endangered
Coastal California Gnatcatcher Polioptila californica californica There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/8178	Threatened
Least Bell's Vireo Vireo bellii pusillus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/5945	Endangered

Flowering Plants

NAME	STATUS
Gambel's Watercress Rorippa gambellii No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4201	Endangered

Critical habitats

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

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

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

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

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

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php

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

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

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

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Allen's Hummingbird Selasphorus sasin This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637	Breeds Feb 1 to Jul 15
California Thrasher Toxostoma redivivum This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Jul 31

Common Yellowthroat Geothlypis trichas sinuosa — Breeds May 20 to Jul 31

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/2084

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

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

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31

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

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

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

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

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

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15

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

Rufous Hummingbird selasphorus rufus — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8002

Song Sparrow Melospiza melodia — Breeds Feb 20 to Sep 5

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Spotted Towhee Pipilo maculatus clementae — Breeds Apr 15 to Jul 20

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/4243

Wrentit *Chamaea fasciata* Breeds Mar 15 to Aug 10

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

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ “Proper Interpretation and Use of Your Migratory Bird Report” before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

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

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

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

Breeding Season (■)

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

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

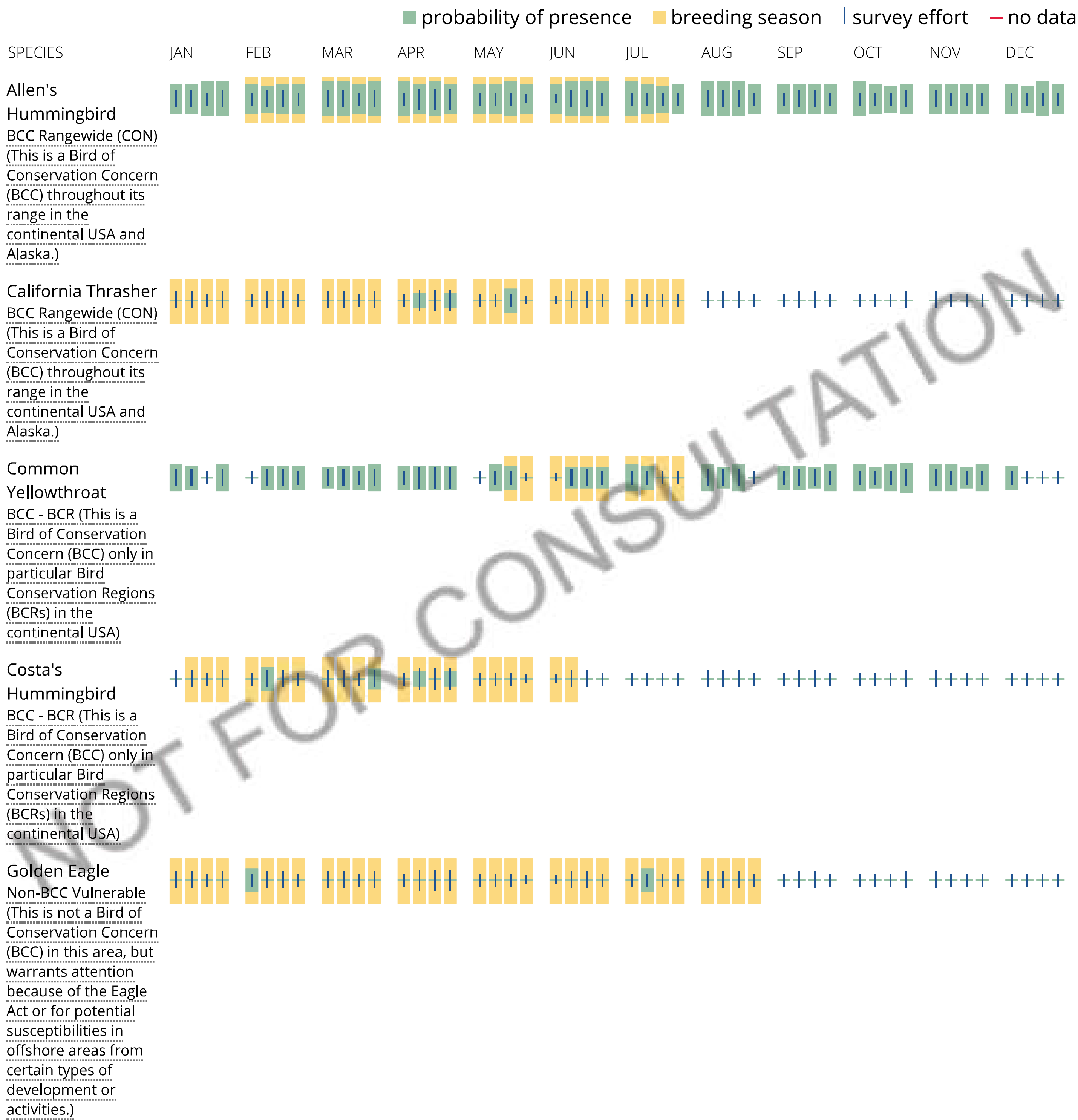
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)

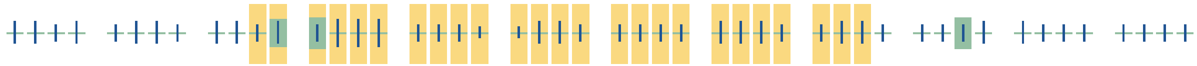
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

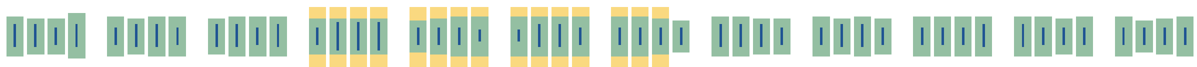
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



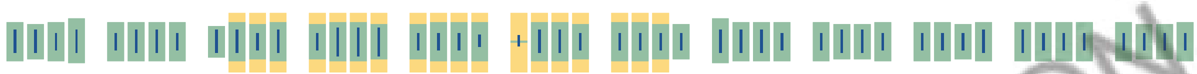
Lawrence's Goldfinch
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



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

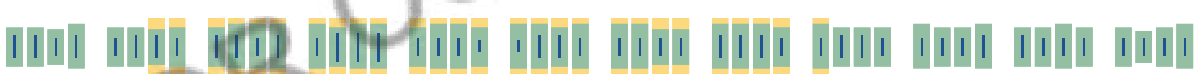


Oak Titmouse
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

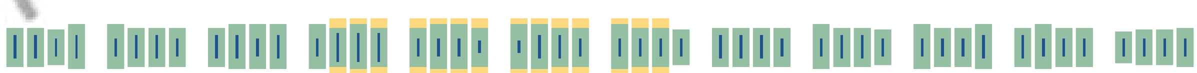


Rufous Hummingbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

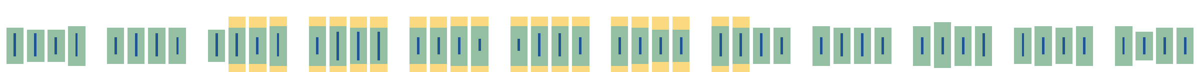
Song Sparrow
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



Spotted Towhee
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



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



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

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

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

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

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

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

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

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

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

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

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

What are the levels of concern for migratory birds?

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

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

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

Details about birds that are potentially affected by offshore projects

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

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

What if I have eagles on my list?

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

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ “What does IPaC use to generate the migratory birds potentially occurring in my specified location”. Please be aware this report provides the “probability of presence” of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the “no data” indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ “Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds” at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

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

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

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

RIVERINE
  R2UBHr

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

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

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

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

Data exclusions

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

Data precautions

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

IPaC **U.S. Fish & Wildlife Service**

Last login March 26, 2020 11:52 AM MDT

IPaC resource list

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

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

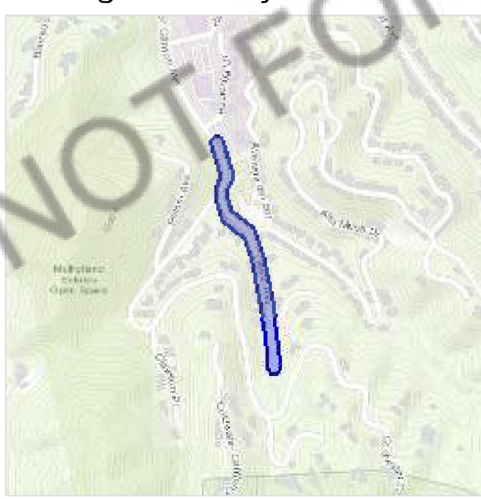
Project information

NAME

City Trunk Line South

LOCATION

Los Angeles County, California



DESCRIPTION

The Los Angeles Department of Water and Power (LADWP) is proposing the replacement of Unit 5, Phase II and Unit 6 of the City Trunk Line South Project (proposed project) in the Studio City neighborhood of the City of Los Angeles (City), Los Angeles County (County). Implementation of the proposed project would improve capacity, reliability, and flexibility in the water system, and would complete the LADWP's six-phase plan to replace the existing Los Angeles City Trunk Line, which connect the Los Angeles Aqueduct Filtration Plant to the Franklin Reservoir. The proposed project would include the replacement of the existing large-diameter potable water trunk line using the open trench and the pipe jacking methods. The proposed project would also include the installation of a flow control station and the structural relining of portions of the existing pipeline.

Local office

Carlsbad Fish And Wildlife Office

(760) 431-9440
(760) 431-5901

2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385

http://www.fws.gov/carlsbad/

Endangered species

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

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

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

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

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

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. 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.

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

Birds

NAME	STATUS

California Condor Gymnogyps californianus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/8193	Endangered
Coastal California Gnatcatcher Polioptila californica californica There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/8178	Threatened
Least Bell's Vireo Vireo bellii pusillus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/5945	Endangered

Flowering Plants

NAME	STATUS
Gambel's Watercress Rorippa gambellii No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4201	Endangered

Critical habitats

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

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

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

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

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

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php

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

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

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

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Allen's Hummingbird Selasphorus sasin This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637	Breeds Feb 1 to Jul 15
California Thrasher Toxostoma redivivum This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Jul 31

Common Yellowthroat Geothlypis trichas sinuosa — Breeds May 20 to Jul 31

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/2084

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

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

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31

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

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

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

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

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

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15

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

Rufous Hummingbird selasphorus rufus — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8002

Song Sparrow Melospiza melodia — Breeds Feb 20 to Sep 5

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Spotted Towhee Pipilo maculatus clementae — Breeds Apr 15 to Jul 20

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/4243

Wrentit *Chamaea fasciata* Breeds Mar 15 to Aug 10

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

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ “Proper Interpretation and Use of Your Migratory Bird Report” before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

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

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

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

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

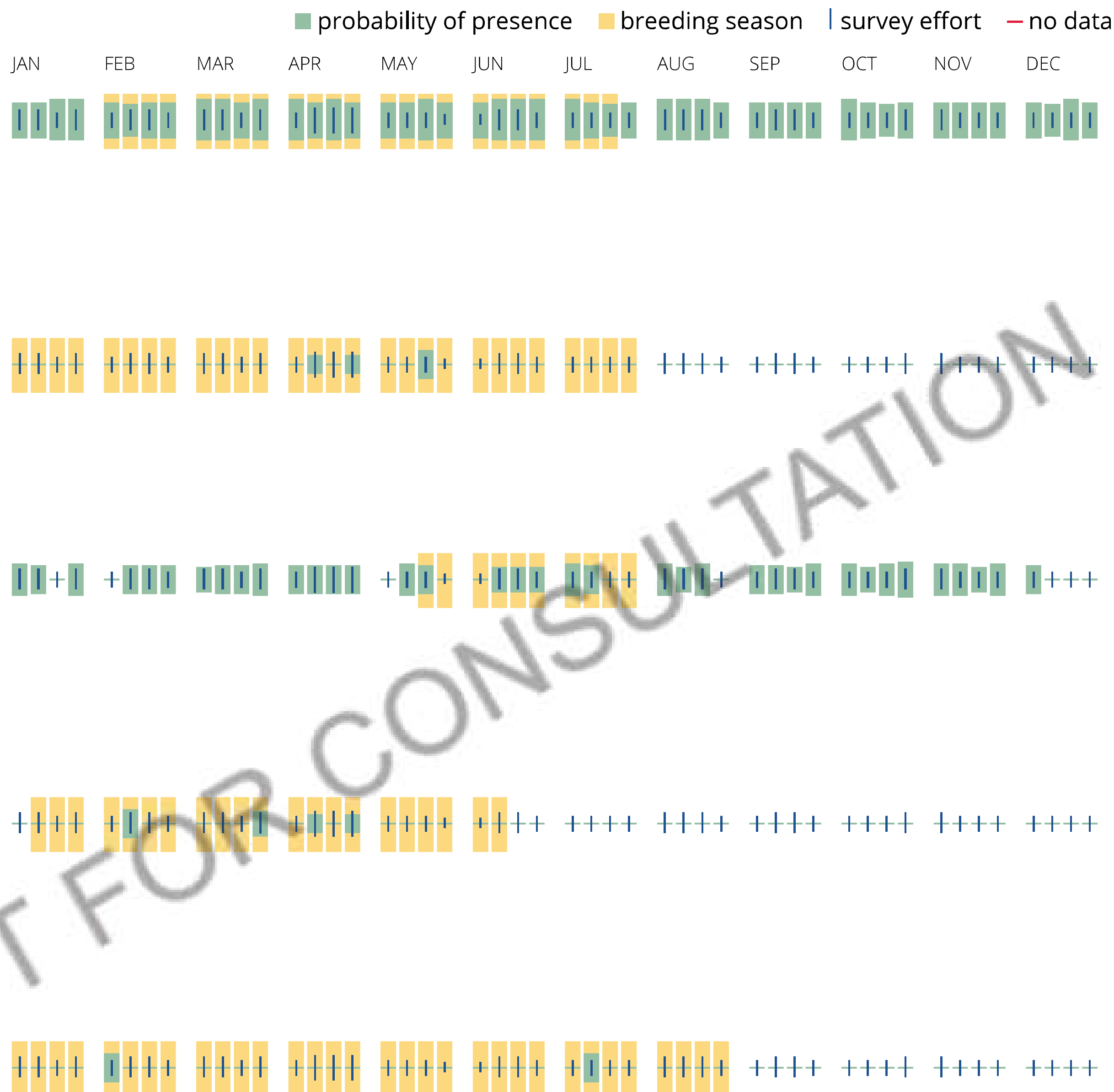
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

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

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

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



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

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

Common Yellowthroat
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

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

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

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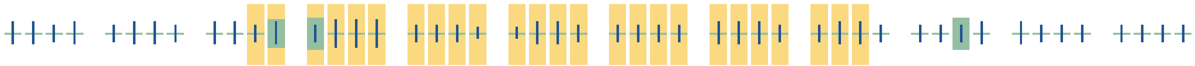

Nuttall's Woodpecker
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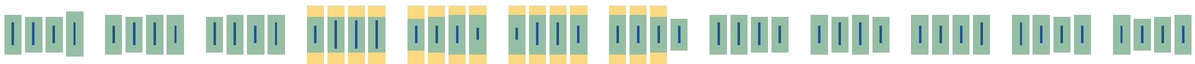

Oak Titmouse
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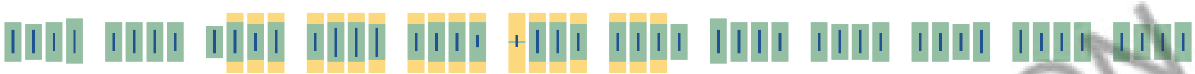

Rufous Hummingbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Song Sparrow
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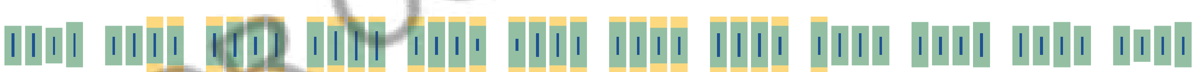
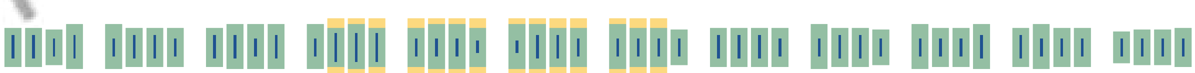
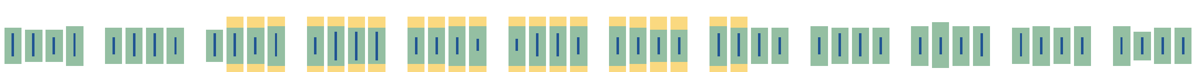


Spotted Towhee
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



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



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

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

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

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

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

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

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

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

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

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

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

What are the levels of concern for migratory birds?

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

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

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

Details about birds that are potentially affected by offshore projects

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

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

What if I have eagles on my list?

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

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

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

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

THERE ARE NO KNOWN WETLANDS AT THIS LOCATION.

Data limitations

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

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

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

Data exclusions

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

Data precautions

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

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Oat Mountain (3411835) OR San Fernando (3411834) OR Sunland (3411833) OR Canoga Park (3411825) OR Van Nuys (3411824) OR Burbank (3411823) OR Topanga (3411815) OR Beverly Hills (3411814) OR Hollywood (3411813))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G2G3	S1S2	SSC
Aglaothorax longipennis Santa Monica shieldback katydid	IIORT32020	None	None	G1G2	S1S2	
Aimophila ruficeps canescens southern California rufous-crowned sparrow	ABPBX91091	None	None	G5T3	S3	WL
Anaxyrus californicus arroyo toad	AAABB01230	Endangered	None	G2G3	S2S3	SSC
Anniella sp. California legless lizard	ARACC01070	None	None	G3G4	S3S4	SSC
Anniella stebbinsi southern California legless lizard	ARACC01060	None	None	G3	S3	SSC
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Arenaria paludicola marsh sandwort	PDCAR040L0	Endangered	Endangered	G1	S1	1B.1
Arizona elegans occidentalis California glossy snake	ARADB01017	None	None	G5T2	S2	SSC
Aspidoscelis tigris stejnegeri coastal whiptail	ARACJ02143	None	None	G5T5	S3	SSC
Astragalus brauntonii Braunton's milk-vetch	PDFAB0F1G0	Endangered	None	G2	S2	1B.1
Astragalus pycnostachyus var. lanosissimus Ventura Marsh milk-vetch	PDFAB0F7B1	Endangered	Endangered	G2T1	S1	1B.1
Astragalus tener var. titi coastal dunes milk-vetch	PDFAB0F8R2	Endangered	Endangered	G2T1	S1	1B.1
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Atriplex coulteri Coulter's saltbush	PDCHE040E0	None	None	G3	S1S2	1B.2
Atriplex pacifica south coast saltscale	PDCHE041C0	None	None	G4	S2	1B.2
Atriplex parishii Parish's brittlescale	PDCHE041D0	None	None	G1G2	S1	1B.1
Atriplex serenana var. davidsonii Davidson's saltscale	PDCHE041T1	None	None	G5T1	S1	1B.2
Berberis nevinii Nevin's barberry	PDBER060A0	Endangered	Endangered	G1	S1	1B.1

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Bombus crotchii Crotch bumble bee	IIHYM24480	None	Candidate Endangered	G3G4	S1S2	
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
California Walnut Woodland California Walnut Woodland	CTT71210CA	None	None	G2	S2.1	
Calochortus clavatus var. gracilis slender mariposa-lily	PMLIL0D096	None	None	G4T2T3	S2S3	1B.2
Calochortus plummerae Plummer's mariposa-lily	PMLIL0D150	None	None	G4	S4	4.2
Calystegia felix lucky morning-glory	PDCON040P0	None	None	G1Q	S1	1B.1
Carolella busckana Busck's gallmoth	IILEM2X090	None	None	G1G3	SH	
Catostomus santaanae Santa Ana sucker	AFCJC02190	Threatened	None	G1	S1	
Centromadia parryi ssp. australis southern tarplant	PDAST4R0P4	None	None	G3T2	S2	1B.1
Chloropyron maritimum ssp. maritimum salt marsh bird's-beak	PDSCR0J0C2	Endangered	Endangered	G4?T1	S1	1B.2
Chorizanthe parryi var. fernandina San Fernando Valley spineflower	PDPGN040J1	Proposed Threatened	Endangered	G2T1	S1	1B.1
Cicindela hirticollis gravida sandy beach tiger beetle	IICOL02101	None	None	G5T2	S2	
Coccyzus americanus occidentalis western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
Coelus globosus globose dune beetle	IICOL4A010	None	None	G1G2	S1S2	
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Coturnicops noveboracensis yellow rail	ABNME01010	None	None	G4	S1S2	SSC
Danaus plexippus pop. 1 monarch - California overwintering population	IILEPP2012	None	None	G4T2T3	S2S3	
Deinandra minthornii Santa Susana tarplant	PDAST4R0J0	None	Rare	G2	S2	1B.2
Diadophis punctatus modestus San Bernardino ringneck snake	ARADB10015	None	None	G5T2T3	S2?	
Dithyrea maritima beach spectaclepod	PDBRA10020	None	Threatened	G1	S1	1B.1
Dodecahema leptoceras slender-horned spineflower	PDPGN0V010	Endangered	Endangered	G1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Dudleya blochmaniae ssp. blochmaniae Blochman's dudleya	PDCRA04051	None	None	G3T2	S2	1B.1
Dudleya cymosa ssp. ovatifolia Santa Monica dudleya	PDCRA040A5	Threatened	None	G5T1	S1	1B.1
Dudleya multicaulis many-stemmed dudleya	PDCRA040H0	None	None	G2	S2	1B.2
Empidonax traillii extimus southwestern willow flycatcher	ABPAE33043	Endangered	Endangered	G5T2	S1	
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Eumops perotis californicus western mastiff bat	AMACD02011	None	None	G5T4	S3S4	SSC
Gila orcuttii arroyo chub	AFCJB13120	None	None	G2	S2	SSC
Harpagonella palmeri Palmer's grapplinghook	PDBOR0H010	None	None	G4	S3	4.2
Helianthus nuttallii ssp. parishii Los Angeles sunflower	PDAST4N102	None	None	G5TH	SH	1A
Horkelia cuneata var. puberula mesa horkelia	PDROS0W045	None	None	G4T1	S1	1B.1
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G5	S3S4	
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	
Lasiurus xanthinus western yellow bat	AMACC05070	None	None	G5	S3	SSC
Lasthenia glabrata ssp. coulteri Coulter's goldfields	PDAST5L0A1	None	None	G4T2	S2	1B.1
Lepidium virginicum var. robinsonii Robinson's pepper-grass	PDBRA1M114	None	None	G5T3	S3	4.3
Lepus californicus bennettii San Diego black-tailed jackrabbit	AMAEB03051	None	None	G5T3T4	S3S4	SSC
Lupinus paynei Payne's bush lupine	PDFAB2B580	None	None	G1Q	S1	1B.1
Macrotus californicus California leaf-nosed bat	AMACB01010	None	None	G4	S3	SSC
Malacothamnus davidsonii Davidson's bush-mallow	PDMAL0Q040	None	None	G2	S2	1B.2
Microtus californicus stephensi south coast marsh vole	AMAFF11035	None	None	G5T1T2	S1S2	SSC
Monardella hypoleuca ssp. hypoleuca white-veined monardella	PDLAM180A5	None	None	G4T3	S3	1B.3

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Nama stenocarpa mud nama	PDHYD0A0H0	None	None	G4G5	S1S2	2B.2
Nasturtium gambelii Gambel's water cress	PDBRA270V0	Endangered	Threatened	G1	S1	1B.1
Navarretia prostrata prostrate vernal pool navarretia	PDPLM0C0Q0	None	None	G2	S2	1B.1
Neotoma lepida intermedia San Diego desert woodrat	AMAFF08041	None	None	G5T3T4	S3S4	SSC
Nyctinomops macrotis big free-tailed bat	AMACD04020	None	None	G5	S3	SSC
Oncorhynchus mykiss irideus pop. 10 steelhead - southern California DPS	AFCHA0209J	Endangered	None	G5T1Q	S1	
Onychomys torridus ramona southern grasshopper mouse	AMAFF06022	None	None	G5T3	S3	SSC
Orcuttia californica California Orcutt grass	PMPOA4G010	Endangered	Endangered	G1	S1	1B.1
Perognathus longimembris brevinasus Los Angeles pocket mouse	AMAFD01041	None	None	G5T1T2	S1S2	SSC
Phrynosoma blainvillii coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
Polioptila californica californica coastal California gnatcatcher	ABPBJ08081	Threatened	None	G4G5T2Q	S2	SSC
Pseudognaphalium leucocephalum white rabbit-tobacco	PDAST440C0	None	None	G4	S2	2B.2
Quercus dumosa Nuttall's scrub oak	PDFAG050D0	None	None	G3	S3	1B.1
Rana muscosa southern mountain yellow-legged frog	AAABH01330	Endangered	Endangered	G1	S1	WL
Rhinichthys osculus ssp. 3 Santa Ana speckled dace	AFCJB3705K	None	None	G5T1	S1	SSC
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Riversidian Alluvial Fan Sage Scrub Riversidian Alluvial Fan Sage Scrub	CTT32720CA	None	None	G1	S1.1	
Sidalcea neomexicana salt spring checkerbloom	PDMAL110J0	None	None	G4	S2	2B.2
Socalchemmis gertschi Gertsch's socalchemmis spider	ILARAU7010	None	None	G1	S1	
Southern California Arroyo Chub/Santa Ana Sucker Stream Southern California Arroyo Chub/Santa Ana Sucker Stream	CARE2330CA	None	None	GNR	SNR	
Southern Coast Live Oak Riparian Forest Southern Coast Live Oak Riparian Forest	CTT61310CA	None	None	G4	S4	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Southern Cottonwood Willow Riparian Forest Southern Cottonwood Willow Riparian Forest	CTT61330CA	None	None	G3	S3.2	
Southern Mixed Riparian Forest Southern Mixed Riparian Forest	CTT61340CA	None	None	G2	S2.1	
Southern Sycamore Alder Riparian Woodland Southern Sycamore Alder Riparian Woodland	CTT62400CA	None	None	G4	S4	
Southern Willow Scrub Southern Willow Scrub	CTT63320CA	None	None	G3	S2.1	
Spea hammondii western spadefoot	AAABF02020	None	None	G3	S3	SSC
Spermolepis lateriflora western bristly scaleseed	PDAPI23080	None	None	G5	SH	2A
Symphyotrichum defoliatum San Bernardino aster	PDASTE80C0	None	None	G2	S2	1B.2
Symphyotrichum greatae Greata's aster	PDASTE80U0	None	None	G2	S2	1B.3
Taricha torosa Coast Range newt	AAAAF02032	None	None	G4	S4	SSC
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Thamnophis hammondii two-striped gartersnake	ARADB36160	None	None	G4	S3S4	SSC
Thelypteris puberula var. sonorensis Sonoran maiden fern	PPTHE05192	None	None	G5T3	S2	2B.2
Valley Oak Woodland Valley Oak Woodland	CTT71130CA	None	None	G3	S2.1	
Vireo bellii pusillus least Bell's vireo	ABPBW01114	Endangered	Endangered	G5T2	S2	

Record Count: 96

CNPS California Native Plant Society

Inventory of Rare and Endangered Plants

*The database used to provide updates to the Online Inventory is under construction. View updates and changes made since May 2019 here.

Plant List

50 matches found. *Click on scientific name for details*

Search Criteria

Found in Quads 3411835, 3411834, 3411833, 3411825, 3411824, 3411823, 3411815 3411814 and 3411813;

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

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Arenaria paludicola	marsh sandwort	Caryophyllaceae	perennial stoloniferous herb	May-Aug	1B.1	S1	G1
Astragalus brauntonii	Braunton's milk-vetch	Fabaceae	perennial herb	Jan-Aug	1B.1	S2	G2
Astragalus pycnostachyus var. lanosissimus	Ventura marsh milk-vetch	Fabaceae	perennial herb	(Jun)Aug-Oct	1B.1	S1	G2T1
Astragalus tener var. titi	coastal dunes milk-vetch	Fabaceae	annual herb	Mar-May	1B.1	S1	G2T1
Atriplex coulteri	Coulter's saltbush	Chenopodiaceae	perennial herb	Mar-Oct	1B.2	S1S2	G3
Atriplex pacifica	South Coast saltscale	Chenopodiaceae	annual herb	Mar-Oct	1B.2	S2	G4
Atriplex parishii	Parish's brittlescale	Chenopodiaceae	annual herb	Jun-Oct	1B.1	S1	G1G2
Atriplex serenana var. davidsonii	Davidson's saltscale	Chenopodiaceae	annual herb	Apr-Oct	1B.2	S1	G5T1
Berberis nevinii	Nevin's barberry	Berberidaceae	perennial evergreen shrub	(Feb)Mar-Jun	1B.1	S1	G1
Calandrinia breweri	Brewer's calandrinia	Montiaceae	annual herb	(Jan)Mar-Jun	4.2	S4	G4
Calochortus catalinae	Catalina mariposa lily	Liliaceae	perennial bulbiferous herb	(Feb)Mar-Jun	4.2	S3S4	G3G4
Calochortus clavatus var. gracilis	slender mariposa lily	Liliaceae	perennial bulbiferous herb	Mar-Jun(Nov)	1B.2	S2S3	G4T2T3
Calochortus plummerae	Plummer's mariposa lily	Liliaceae	perennial bulbiferous herb	May-Jul	4.2	S4	G4
Calystegia felix	lucky morning-glory	Convolvulaceae	annual rhizomatous herb	Mar-Sep	1B.1	S1	G1Q
Calystegia peirsonii	Peirson's morning-glory	Convolvulaceae	perennial rhizomatous herb	Apr-Jun	4.2	S4	G4

Camissoniopsis lewisii	Lewis' evening-primrose	Onagraceae	annual herb	Mar-May(Jun)	3	S4	G4
Canbya candida	white pygmy-poppy	Papaveraceae	annual herb	Mar-Jun	4.2	S3S4	G3G4
Centromadia parryi ssp. australis	southern tarplant	Asteraceae	annual herb	May-Nov	1B.1	S2	G3T2
Cercocarpus betuloides var. blancheae	island mountain-mahogany	Rosaceae	perennial evergreen shrub	Feb-May	4.3	S4	G5T4
Chloropyron maritimum ssp. maritimum	salt marsh bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	May-Oct(Nov)	1B.2	S1	G4?T1
Chorizanthe parryi var. fernandina	San Fernando Valley spineflower	Polygonaceae	annual herb	Apr-Jul	1B.1	S1	G2T1
Convolvulus simulans	small-flowered morning-glory	Convolvulaceae	annual herb	Mar-Jul	4.2	S4	G4
Deinandra minthornii	Santa Susana tarplant	Asteraceae	perennial deciduous shrub	Jul-Nov	1B.2	S2	G2
Dithyrea maritima	beach spectaclepod	Brassicaceae	perennial rhizomatous herb	Mar-May	1B.1	S1	G1
Dodecahema leptoceras	slender-horned spineflower	Polygonaceae	annual herb	Apr-Jun	1B.1	S1	G1
Dudleya cymosa ssp. ovatifolia	Santa Monica dudleya	Crassulaceae	perennial herb	Mar-Jun	1B.1	S1	G5T1
Dudleya multicaulis	many-stemmed dudleya	Crassulaceae	perennial herb	Apr-Jul	1B.2	S2	G2
Helianthus nuttallii ssp. parishii	Los Angeles sunflower	Asteraceae	perennial rhizomatous herb	Aug-Oct	1A	SH	G5TH
Heuchera caespitosa	urn-flowered alumroot	Saxifragaceae	perennial rhizomatous herb	May-Aug	4.3	S3	G3
Hordeum intercedens	vernal barley	Poaceae	annual herb	Mar-Jun	3.2	S3S4	G3G4
Horkelia cuneata var. puberula	mesa horkelia	Rosaceae	perennial herb	Feb-Jul(Sep)	1B.1	S1	G4T1
Hulsea vestita ssp. gabrielensis	San Gabriel Mountains sunflower	Asteraceae	perennial herb	May-Jul	4.3	S3	G5T3
Juglans californica	Southern California black walnut	Juglandaceae	perennial deciduous tree	Mar-Aug	4.2	S4	G4
Lasthenia glabrata ssp. coulteri	Coulter's goldfields	Asteraceae	annual herb	Feb-Jun	1B.1	S2	G4T2
Lepidium virginicum var. robinsonii	Robinson's pepper-grass	Brassicaceae	annual herb	Jan-Jul	4.3	S3	G5T3
Lilium humboldtii ssp. ocellatum	ocellated Humboldt lily	Liliaceae	perennial bulbiferous herb	Mar-Jul(Aug)	4.2	S4?	G4T4?
Linanthus concinnus	San Gabriel linanthus	Polemoniaceae	annual herb	Apr-Jul	1B.2	S2	G2
Lupinus paynei	Payne's bush lupine	Fabaceae	perennial shrub	Mar-Apr(May-Jul)	1B.1	S1	G1Q
Malacothamnus davidsonii	Davidson's bush-mallow	Malvaceae	perennial deciduous shrub	Jun-Jan	1B.2	S2	G2
	white-veined	Lamiaceae	perennial herb	(Apr)May-	1B.3	S3	G4T3

Monardella hypoleuca ssp. hypoleuca	monardella			Aug(Sep-Dec)			
Nama stenocarpa	mud nama	Namaceae	annual / perennial herb	Jan-Jul	2B.2	S1S2	G4G5
Nasturtium gambelii	Gambel's water cress	Brassicaceae	perennial rhizomatous herb	Apr-Oct	1B.1	S1	G1
Phacelia hubbyi	Hubby's phacelia	Hydrophyllaceae	annual herb	Apr-Jul	4.2	S4	G4
Pseudognaphalium leucocephalum	white rabbit-tobacco	Asteraceae	perennial herb	(Jul)Aug-Nov(Dec)	2B.2	S2	G4
Quercus dumosa	Nuttall's scrub oak	Fagaceae	perennial evergreen shrub	Feb-Apr(May-Aug)	1B.1	S3	G3
Sidalcea neomexicana	salt spring checkerbloom	Malvaceae	perennial herb	Mar-Jun	2B.2	S2	G4
Spermolepis lateriflora	western bristly scaleseed	Apiaceae	annual herb	Mar-Apr	2A	SH	G5
Symphyotrichum defoliatum	San Bernardino aster	Asteraceae	perennial rhizomatous herb	Jul-Nov(Dec)	1B.2	S2	G2
Symphyotrichum greatae	Greata's aster	Asteraceae	perennial rhizomatous herb	Jun-Oct	1B.3	S2	G2
Thelypteris puberula var. sonorensis	Sonoran maiden fern	Thelypteridaceae	perennial rhizomatous herb	Jan-Sep	2B.2	S2	G5T3

Suggested Citation

California Native Plant Society, Rare Plant Program. 2019. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 06 September 2019].

APPENDIX C

Photo Documentation

APPENDIX C
Photo Documentation

	
Photo 1: Disturbed habitat at 3380 Coldwater Canyon Avenue where the flow control station vault is proposed.	**Photo 2:** California Live Oak - Southern California Walnut Woodland on the slopes at 3380 Coldwater Canyon Avenue.
	
Photo 3: Disturbed habitat at 3380 Coldwater Canyon Avenue where the flow control station vault is proposed.	**Photo 4:** Existing flow station within Oeste Avenue.

	
Photo 5: Developed and ornamental vegetation along Oeste Avenue.	**Photo 6:** The Los Angeles River channel at Coldwater Canyon Avenue.
	
Photo 7: The Los Angeles River channel at Coldwater Canyon Avenue, beneath the bridge.	**Photo 8:** Ornamental vegetation adjacent to the intersection of the Los Angeles River channel at Coldwater Canyon Avenue.

APPENDIX D

Plant Compendium

APPENDIX D
Plant Compendium

* signifies introduced (non-native) species

VASCULAR SPECIES

GYMNOSPERMS AND GNETOPHYTES

PINACEAE—PINE FAMILY

* *Pinus canariensis*—Canary Island pine

MONOCOTS

AGAVACEAE—AGAVE FAMILY

Agave americana—century plant

ARECACEAE—PALM FAMILY

* *Phoenix canariensis*—Canary Island date palm
* *Washingtonia robusta*—Mexican fan palm

POACEAE—GRASS FAMILY

* *Avena barbata*—slender oat
* *Bromus madritensis* ssp. *rubens*—red brome
* *Stipa miliacea*—smilo grass

EUDICOTS

ANACARDIACEAE—SUMAC OR CASHEW FAMILY

Malosma laurina—laurel sumac
* *Schinus molle*—Peruvian peppertree
Toxicodendron diversilobum—poison oak

APOCYNACEAE—DOGBANE FAMILY

* *Nerium oleander*—oleander

ASTERACEAE—SUNFLOWER FAMILY

Baccharis salicifolia—mulefat
* *Carduus pycnocephalus*—Italian thistle
* *Centaurea melitensis*—Maltese star-thistle
* *Sonchus oleraceus*—common sowthistle

BRASSICACEAE—MUSTARD FAMILY

* *Brassica nigra*—black mustard
* *Hirschfeldia incana*—shortpod mustard
* *Sisymbrium officinale*—hedge mustard

FAGACEAE—OAK FAMILY

Quercus agrifolia—coast live oak
Quercus dumosa—Nuttall's scrub oak

GERANIACEAE—GERANIUM FAMILY

* *Erodium cicutarium*—redstem stork's bill

HAMAMELIDACEAE—WITCH-HAZEL FAMILY

* *Liquidambar styraciflua*—sweetgum

JUGLANDACEAE—WALNUT FAMILY

Juglans californica—Southern California black walnut

MALVACEAE—MALLOW FAMILY

* *Brachychiton populneusa*—kurrajong

MYRTACEAE—MYRTLE FAMILY

* *Eucalyptus camaldulensis*—river redgum

PLANTAGINACEAE—PLANTAIN FAMILY

* *Plantago major*—English plantain

PLATANACEAE—SYCAMORE FAMILY

* *Platanus x hispanica*—London planetree

APPENDIX E

Wildlife Compendium

APPENDIX E
Wildlife Compendium

REPTILES

LIZARDS

PHRYNOSOMATIDAE—IGUANID LIZARDS

Sceloporus occidentalis—western fence lizard

BIRD

FINCHES

FRINGILLIDAE—FRINGILLINE AND CARDUELINE FINCHES AND ALLIES

Haemorhous mexicanus—house finch
Spinus psaltria—lesser goldfinch

FLYCATCHERS

TYRANNIDAE—TYRANT FLYCATCHERS

Contopus sordidulus—western wood-pewee

JAYS, MAGPIES AND CROWS

CORVIDAE—CROWS AND JAYS

Aphelocoma californica—California scrub-jay

SWALLOWS

HIRUNDINIDAE—SWALLOWS

Petrochelidon pyrrhonota—cliff swallow

SWIFTS

APODIDAE—SWIFTS

Aeronautes saxatalis—white-throated swift

WATERFOWL

ANATIDAE—DUCKS, GEESE, & SWANS

Anas platyrhynchos—mallard

WOODPECKERS

PICIDAE—WOODPECKERS & ALLIES

Dryobates nuttallii—Nuttall's woodpecker

NEW WORLD SPARROWS

PASSERELLIDAE—NEW WORLD SPARROWS

Pipilo maculatus—spotted towhee

APPENDIX F

Special-Status Plant Species Potential to Occur

APPENDIX F
Special-Status Plant Species Potential to Occur

Scientific Name	Common Name	Status[1] (Federal/State/CRPR/ City of LA[2])	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur[3]
Arenaria paludicola	marsh sandwort	FE/SE/1B.1	Marshes and swamps (freshwateror brackish); sandy, openings/perennial stoloniferous herb/May–Aug/5–560	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Astragalus brauntonii	Braunton's milk-vetch	FE/None/1B.1	Chaparral, Coastal scrub, Valley and foothill grassland; recent burns or disturbed areas, usually sandstone with carbonate layers/perennial herb/Jan–Aug/10–2100	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Astragalus pycnostachyus var. *lanosissimus*	Ventura marsh milk-vetch	FE/SE/1B.1	Coastal dunes, Coastal scrub, Marshes and swamps (edges, coastal salt or brackish)/perennial herb/(June)Aug–Oct/0–115	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species.
Astragalus tener var. *titi*	coastal dunes milk-vetch	FE/SE/1B.1	Coastal bluff scrub (sandy), Coastal dunes, Coastal prairie (mesic); often vernally mesic areas/annual herb/Mar–May/0–165	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Atriplex coulteri	Coulter's saltbush	None/None/1B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub, Valley and foothill grassland; alkaline or clay/perennial herb/Mar–Oct/5–1510	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Atriplex pacifica	South Coast saltscale	None/None/1B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub, Playas/annual herb/Mar–Oct/0–460	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Atriplex parishii	Parish's brittlescale	None/None/1B.1	Chenopod scrub, Playas, Vernal pools; alkaline/annual herb/June–Oct/80–6235	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species.

Scientific Name	Common Name	Status[1] (Federal/State/CRPR/ City of LA[2])	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur[3]
Atriplex serenana var. *davidsonii*	Davidson's saltscale	None/None/1B.2	Coastal bluff scrub, Coastal scrub; alkaline/annual herb/Apr–Oct/30–655	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Berberis nevinii	Nevin's barberry	FE/SE/1B.1	Chaparral, Cismontane woodland, Coastal scrub, Riparian scrub; sandy or gravelly/perennial evergreen shrub/(Feb)Mar–June/225–2705	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. This conspicuous species was not observed during the site visit conducted in May 2019.
Calandrinia breweri	Brewer's calandrinia	None/None/4.2	Chaparral, Coastal scrub; sandy or loamy, disturbed sites and burns/annual herb/(Jan)Mar–June/30–4005	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Calochortus catalinae	Catalina mariposa lily	None/None/4.2	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland/perennial bulbiferous herb/(Feb)Mar–June/45–2295	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Calochortus clavatus var. *gracilis*	slender mariposa lily	None/None/1B.2	Chaparral, Coastal scrub, Valley and foothill grassland/perennial bulbiferous herb/Mar–June(Nov)/1045–3280	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Calochortus plummerae	Plummer's mariposa lily	None/None/4.2	Chaparral, Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland; granitic, rocky/perennial bulbiferous herb/May–July/325–5575	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.

Scientific Name	Common Name	Status[1] (Federal/State/CRPR/ City of LA[2])	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur[3]
Calystegia felix	lucky morning-glory	None/None/1B.1	Meadows and seeps (sometimes alkaline), Riparian scrub (alluvial); Historically associated with wetland and marshy places, but possibly in drier situations as well. Possibly silty loam and alkaline/annual rhizomatous herb/Mar–Sep/95–705	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Calystegia peirsonii	Peirson's morning-glory	None/None/4.2	Chaparral, Chenopod scrub, Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland/perennial rhizomatous herb/Apr–June/95–4920	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Camissoniopsis lewisii	Lewis' evening-primrose	None/None/3	Coastal bluff scrub, Cismontane woodland, Coastal dunes, Coastal scrub, Valley and foothill grassland; sandy or clay/annual herb/Mar–May(June)/0–985	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Canbya candida	white pygmy-poppy	None/None/4.2	Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland; gravelly, sandy, granitic/annual herb/Mar–June/1965–4790	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Centromadia parryi ssp. *australis*	southern tarplant	None/None/1B.1	Marshes and swamps (margins), Valley and foothill grassland (vernally mesic), Vernal pools/annual herb/May–Nov/0–1575	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Cercocarpus betuloides var. *blancheae*	island mountain-mahogany	None/None/4.3	Closed-cone coniferous forest, Chaparral/perennial evergreen shrub/Feb–May/95–1970	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. This conspicuous species was not observed during the site visit conducted in May 2019.

Scientific Name	Common Name	Status[1] (Federal/State/CRPR/ City of LA[2])	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur[3]
Chloropyron maritimum ssp. *maritimum*	salt marsh bird's-beak	FE/SE/1B.2	Coastal dunes, Marshes and swamps (coastal salt)/annual herb (hemiparasitic)/May–Oct(Nov)/0–100	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Chorizanthe parryi var. *fernandina*	San Fernando Valley spineflower	FC/SE/1B.1	Coastal scrub (sandy), Valley and foothill grassland/annual herb/Apr–July/490–4005	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Convolvulus simulans	small-flowered morning-glory	None/None/4.2	Chaparral (openings), Coastal scrub, Valley and foothill grassland; clay, serpentinite seeps/annual herb/Mar–July/95–2430	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Deinandra minthornii	Santa Susana tarplant	None/SR/1B.2	Chaparral, Coastal scrub; rocky/perennial deciduous shrub/July–Nov/915–2495	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species.
Dithyrea maritima	beach spectaclepod	None/ST/1B.1	Coastal dunes, Coastal scrub (sandy)/perennial rhizomatous herb/Mar–May/5–165	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Dodecahema leptoceras	slender-horned spineflower	FE/SE/1B.1	Chaparral, Cismontane woodland, Coastal scrub (alluvial fan); sandy/annual herb/Apr–June/655–2495	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Dudleya blochmaniae ssp. *blochmaniae*	Blochman's dudleya	None/None/1B.1	Coastal bluff scrub, Chaparral, Coastal scrub, Valley and foothill grassland; rocky, often clay or serpentinite/perennial herb/Apr–June/15–1475	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.

Scientific Name	Common Name	Status[1] (Federal/State/CRPR/ City of LA[2])	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur[3]
Dudleya cymosa ssp. *ovatifolia*	Santa Monica dudleya	FT/None/1B.1	Chaparral, Coastal scrub; volcanic or sedimentary, rocky/perennial herb/Mar–June/490–5495	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Dudleya multicaulis	many-stemmed dudleya	None/None/1B.2	Chaparral, Coastal scrub, Valley and foothill grassland; often clay/perennial herb/Apr–July/45–2590	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Harpagonella palmeri	Palmer's grapplinghook	None/None/4.2	Chaparral, Coastal scrub, Valley and foothill grassland; Clay; open grassy areas within shrubland/annual herb/Mar–May/65–3135	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Helianthus nuttallii ssp. *parishii*	Los Angeles sunflower	None/None/1A	Marshes and swamps (coastal salt and freshwater)/perennial rhizomatous herb/Aug–Oct/30–5005	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species.
Heuchera caespitosa	urn-flowered alumroot	None/None/4.3	Cismontane woodland, Lower montane coniferous forest, Riparian forest (montane), Upper montane coniferous forest; rocky/perennial rhizomatous herb/May–Aug/3785–8695	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Hordeum intercedens	vernal barley	None/None/3.2	Coastal dunes, Coastal scrub, Valley and foothill grassland (saline flats and depressions), Vernal pools/annual herb/Mar–June/15–3280	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Horkelia cuneata var. *puberula*	mesa horkelia	None/None/1B.1	Chaparral (maritime), Cismontane woodland, Coastal scrub; sandy or gravelly/perennial herb/Feb–July(Sep)/225–2655	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.

Scientific Name	Common Name	Status[1] (Federal/State/CRPR/ City of LA[2])	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur[3]
Hulsea vestita ssp. *gabrielensis*	San Gabriel Mountains sunflower	None/None/4.3	Lower montane coniferous forest, Upper montane coniferous forest; rocky/perennial herb/May–July/4920–8200	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Juglans californica	southern California black walnut	None/None/4.2	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland; alluvial/perennial deciduous tree/Mar–Aug/160–2955	Present. Forty-five (45) southern California black walnut were mapped during the tree inventory, all within the LADWP-owned property located at 3380 Coldwater Canyon Avenue where the flow control station vault is proposed.
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	None/None/1B.1	Marshes and swamps (coastal salt), Playas, Vernal pools/annual herb/Feb–June/0–4005	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Lepidium virginicum var. *robinsonii*	Robinson's pepper-grass	None/None/4.3	Chaparral, Coastal scrub/annual herb/Jan–July/0–2905	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species. Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Lilium humboldtii ssp. *ocellatum*	ocellated Humboldt lily	None/None/4.2	Chaparral, Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Riparian woodland; openings/perennial bulbiferous herb/Mar–July(Aug)/95–5905	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Linanthus concinnus	San Gabriel linanthus	None/None/1B.2	Chaparral, Lower montane coniferous forest, Upper montane coniferous forest; rocky, openings/annual herb/Apr–July/4985–9185	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.

Scientific Name	Common Name	Status[1] (Federal/State/CRPR/ City of LA[2])	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur[3]
Lupinus paynei	Payne's bush lupine	None/None/1B.1	Coastal scrub, Riparian scrub, Valley and foothill grassland; Sandy/perennial shrub/Mar–Apr(May–July)/720–1380	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Malacothamnus davidsonii	Davidson's bush-mallow	None/None/1B.2	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland/perennial deciduous shrub/June–Jan/605–3740	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. This conspicuous species was not observed during the site visit conducted in May 2019.
Monardella hypoleuca ssp. *hypoleuca*	white-veined monardella	None/None/1B.3	Chaparral, Cismontane woodland/perennial herb/(Apr)May–Aug(Sep–Dec)/160–5005	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Nama stenocarpa	mud nama	None/None/2B.2	Marshes and swamps (lake margins, riverbanks)/annual / perennial herb/Jan–July/15–1640	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Nasturtium gambelii	Gambel's water cress	FE/ST/1B.1	Marshes and swamps (freshwater or brackish)/perennial rhizomatous herb/Apr–Oct/15–1085	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Navarretia prostrata	prostrate vernal pool navarretia	None/None/1B.1	Coastal scrub, Meadows and seeps, Valley and foothill grassland (alkaline), Vernal pools; Mesic/annual herb/Apr–July/5–3970	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Orcuttia californica	California Orcutt grass	FE/SE/1B.1	Vernal pools/annual herb/Apr–Aug/45–2165	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.

Scientific Name	Common Name	Status[1] (Federal/State/CRPR/ City of LA[2])	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur[3]
Phacelia hubbyi	Hubby's phacelia	None/None/4.2	Chaparral, Coastal scrub, Valley and foothill grassland; gravelly, rocky, talus/annual herb/Apr–July/0–3280	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Pseudognaphalium leucocephalum	white rabbit-tobacco	None/None/2B.2	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland; sandy, gravelly/perennial herb/(July)Aug–Nov(Dec)/0–6890	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species.
Quercus dumosa	Nuttall's scrub oak	None/None/1B.1	Closed-cone coniferous forest, Chaparral, Coastal scrub; sandy, clay loam/perennial evergreen shrub/Feb–Apr(May–Aug)/45–1310	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. This conspicuous species was not observed during the site visit conducted in May 2019.
Sidalcea neomexicana	salt spring checkerbloom	None/None/2B.2	Chaparral, Coastal scrub, Lower montane coniferous forest, Mojavean desert scrub, Playas; alkaline, mesic/perennial herb/Mar–June/45–5020	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. Additionally, species was not observed during the site visit conducted in May 2019, during the blooming period for this species.
Spermolepis lateriflora	western bristly scaleseed	None/None/2A	Sonoran desert scrub; Rocky or sandy/annual herb/Mar–Apr/1195–2200	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species.
Symphyotrichum defoliatum	San Bernardino aster	None/None/1B.2	Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Meadows and seeps, Marshes and swamps, Valley and foothill grassland (vernally mesic); near ditches, streams, springs/perennial rhizomatous herb/July–Nov(Dec)/5–6695	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species.
Symphyotrichum greatae	Greata's aster	None/None/1B.3	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Riparian woodland; mesic/perennial rhizomatous herb/June–Oct/980–6595	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species.

Scientific Name	Common Name	Status[1] (Federal/State/CRPR/ City of LA[2])	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur[3]
Thelypteris puberula var. *sonorensis*	Sonoran maiden fern	None/None/2B.2	Meadows and seeps (seeps and streams)/perennial rhizomatous herb/Jan–Sep/160–2000	Not expected to occur. The project site is dominated by heavily urbanized commercial and residential development and lacks suitable habitat for this species. This conspicuous species was not observed during the site visit conducted in May 2019.

Notes:

1 Status abbreviations:
FE: Federally listed as endangered
FT: Federally listed as threatened
FC: Federal Candidate for listing
CE: State listed as endangered
CR: State Rare
CRPR List 1A: Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere
CRPR List 1B: Plants Rare, Threatened, or Endangered in California and Elsewhere
CRPR List 2A: Plants Presumed Extirpated in California, But More Common Elsewhere
CRPR List 2B: Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
CRPR List 3: Plants About Which More Information is Needed - A Review List
CRPR List 4: Plants of Limited Distribution - A Watch List
.1 Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
.3 Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

2 Sensitive Species within the City of Los Angeles (City of Los Angeles 2006)
a: Known to occur in Zone 5
b: Occurrence is known in other zones or is unknown

3 Vicinity refers to records within the Van Nuys USGS 7.5-minute quadrangle and eight surrounding USGS 7.5-minute quadrangles (i.e., Burbank, Canoga Park, Oat Mountain, San Fernando, Sunland, Topanga, Beverly Hills, and Hollywood).

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APPENDIX G

Special-Status Wildlife Species Potential to Occur

APPENDIX G
Special-Status Wildlife Species Potential to Occur

Scientific Name	Common Name	Status[1] (Federal/State/ City of LA[2])	Habitat	Potential to Occur[3]
Fish				
Catostomus santaanae	Santa Ana sucker	FT/None	Small, shallow, cool, clear streams less than 7 meters (23 feet) in width and a few centimeters to more than a meter (1.5 inches to more than 3 feet) in depth; substrates are generally coarse gravel, rubble, and boulder	Not expected to occur. The project site and surrounding area lacks suitable habitat. The Los Angeles River is a concrete channel where Coldwater Canyon Avenue crosses it.
Gila orcuttii	arroyo chub	None/SSC	Warm, fluctuating streams with slow-moving or backwater sections of warm to cool streams at depths >40 centimeters (16 inches); substrates of sand or mud	Not expected to occur. The project site and surrounding area lacks suitable habitat. The Los Angeles River is a concrete channel where Coldwater Canyon Avenue crosses it.
Oncorhynchus mykiss irideus pop. 10	southern steelhead - southern California DPS	FE/None	Clean, clear, cool, well-oxygenated streams; needs relatively deep pools in migration and gravelly substrate to spawn	Not expected to occur. The project site and surrounding area lacks suitable habitat. The Los Angeles River is a concrete channel where Coldwater Canyon Avenue crosses it.
Rhinichthys osculus ssp. 3	Santa Ana speckled dace	None/SSC	Headwaters of the Santa Ana and San Gabriel Rivers; may be extirpated from the Los Angeles River system	Not expected to occur. The project site and surrounding area lacks suitable habitat. The Los Angeles River is a concrete channel where Coldwater Canyon Avenue crosses it.
Amphibians				
Anaxyrus californicus	arroyo toad	FE/SSC	Semi-arid areas near washes, sandy riverbanks, riparian areas, palm oasis, Joshua tree, mixed chaparral and sagebrush; stream channels for breeding (typically third order); adjacent stream terraces and uplands for foraging and wintering	Not expected to occur. The project site and surrounding area lacks suitable habitat. The Los Angeles River is a concrete channel where Coldwater Canyon Avenue crosses it.

Scientific Name	Common Name	Status[1] (Federal/State/ City of LA[2])	Habitat	Potential to Occur[3]
Rana muscosa	mountain yellow-legged frog	FE/SE, WL	Lakes, ponds, meadow streams, isolated pools, and open riverbanks; rocky canyons in narrow canyons and in chaparral	Not expected to occur. The project site and surrounding area lacks suitable habitat. The Los Angeles River is a concrete channel where Coldwater Canyon Avenue crosses it.
Spea hammondii	western spadefoot	None/SSC	Primarily grassland and vernal pools, but also in ephemeral wetlands that persist at least 3 weeks in chaparral, coastal scrub, valley–foothill woodlands, pastures, and other agriculture	Not expected to occur. The project site and surrounding area lacks suitable habitat. The Los Angeles River is a concrete channel where Coldwater Canyon Avenue crosses it.
Taricha torosa	California newt	None/SSC	Wet forests, oak forests, chaparral, and rolling grassland	Not expected to occur. The project site and surrounding area lacks suitable habitat. The Los Angeles River is a concrete channel where Coldwater Canyon Avenue crosses it.
		Reptiles		
Actinemys marmorata	western pond turtle	None/SSC/S[b]	Slow-moving permanent or intermittent streams, ponds, small lakes, and reservoirs with emergent basking sites; adjacent uplands used for nesting and during winter	Not expected to occur. The project site and surrounding area lacks suitable habitat. The Los Angeles River is a concrete channel where Coldwater Canyon Avenue crosses it.
Anniella sp.	California legless lizard	None/SSC/S[b]	Coastal dunes, stabilized dunes, beaches, chaparral, pine-oak-riparian woodlands, desert scrub, sandy washes, and stream terraces; moist, warm, loose soils and leaf litter under trees and shrubs	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable to support this species.
Anniella stebbinsi	Southern California legless lizard	None/SSC/S[b]	Coastal dunes, stabilized dunes, beaches, chaparral, pine-oak-riparian woodlands, desert scrub, sandy washes, and stream terraces; moist, warm, loose soils and leaf litter under trees and shrubs	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable to support this species.

Scientific Name	Common Name	Status[1] (Federal/State/ City of LA[2])	Habitat	Potential to Occur[3]
Arizona elegans occidentalis	California glossy snake	None/SSC/None	Commonly occurs in desert regions throughout southern California. Prefers open sandy areas with scattered brush. Also found in rocky areas.	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable habitat to support this species.
Aspidoscelis tigris stejnegeri	San Diegan tiger whiptail	None/SSC/None	Hot and dry areas with sparse foliage, including chaparral, woodland, and riparian areas.	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable native to support this species.
Phrynosoma blainvillii	Blainville's horned lizard	None/SSC/S[b]	Open areas of sandy soil in valleys, foothills, and semi-arid mountains including coastal scrub, chaparral, valley–foothill hardwood, conifer, riparian, pine–cypress, juniper, and annual grassland habitats	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable native vegetation to support this species.
Thamnophis hammondii	two-striped gartersnake	None/SSC	Streams, creeks, pools, streams with rocky beds, ponds, lakes, vernal pools	Not expected to occur. The project site and surrounding area lacks suitable habitat. The Los Angeles River is a concrete channel where Coldwater Canyon Avenue crosses it.
Birds				
Agelaius tricolor (nesting colony)	tricolored blackbird	BCC/ST,SSC/None	Nests near freshwater, emergent wetland with cattails or tules, but also in Himalayan blackberrry; forages in grasslands, woodland, and agriculture	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable nesting or foraging habitat for this species.
Aimophila ruficeps canescens	Southern California rufous-crowned sparrow	None/WL/S[b]	Nests and forages in open coastal scrub and chaparral with low cover of scattered scrub interspersed with rocky and grassy patches	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable habitat to support this species.

Scientific Name	Common Name	Status[1] (Federal/State/ City of LA[2])	Habitat	Potential to Occur[3]
Aquila chrysaetos (nesting & wintering)	golden eagle	BCC/FP, WL	Nests and winters in hilly, open/semi-open areas, including shrublands, grasslands, pastures, riparian areas, mountainous canyon land, open desert rimrock terrain; nests in large trees and on cliffs in open areas and forages in open habitats	Not expected to occur. May occasionally pass overhead during migration. The project site is surrounded by residential and commercial development, lacking suitable nesting or foraging habitat for this species.
Athene cunicularia (burrow sites & some wintering sites)	burrowing owl	BCC/SSC/S[b]	Nests and forages in grassland, open scrub, and agriculture, particularly with ground squirrel burrows	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable habitat to support this species. Additionally, no burrows suitable for this species were observed within the project site during the May 2019 site visit.
Baeolophus inornatus (nesting)	oak titmouse	BCC/None	Nests and forages in oak woodlands; also open pine forest, pinyon woodland, and riparian and chaparral with oak	Moderate potential to occur. The LADWP-owned property located at 3380 Coldwater Canyon Avenue where the flow control station vault is proposed supports coast live oak that the species may use for nesting.
Buteo swainsoni (nesting)	Swainson's hawk	BCC/ST/None	Nests in open woodland and savanna, riparian, and in isolated large trees; forages in nearby grasslands and agriculturals areas such as wheat and alfalfa fields and pasture	Not expected to occur. May occasionally pass overhead during migration. The project site is surrounded by residential and commercial development, lacking suitable nesting or foraging habitat for this species.
Calypte costae (nesting)	Costa's hummingbird	BCC/None	Nests and forages in desert wash, edges of riparian and valley–foothill riparian, coastal scrub, desert scrub, desert succulent scrub, lower-elevation chaparral, and palm oasis	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable habitat to support this species.
Chamaea fasciata	wrentit	BCC/None	Most common in chaparral, thickets of poison oak, and coastal sage scrub; also lives in streamside thickets and in shrubby areas in suburbs and city parks.	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable habitat to support this species.

Scientific Name	Common Name	Status[1] (Federal/State/ City of LA[2])	Habitat	Potential to Occur[3]
Coccyzus americanus occidentalis (nesting)	western yellow-billed cuckoo	FT,BCC/SE/S[b]	Nests in dense, wide riparian woodlands and forest with well-developed understories	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable habitat to support this species.
Coturnicops noveboracensis	yellow rail	BCC/SSC/S[b]	Nesting requires wet marsh/sedge meadows or coastal marshes with wet soil and shallow, standing water	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable habitat to support this species.
Empidonax traillii extimus (nesting)	southwestern willow flycatcher	FE/SE/S[b]	Nests in dense riparian habitats along streams, reservoirs, or wetlands; uses variety of riparian and shrubland habitats during migration	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable habitat to support this species.
Geothlypis trichas	common yellowthroat	BCC/None	Swamps, marshes, wet thickets, edges. Breeds most abundantly in marshes and other very wet habitats with dense low growth. Also nests in briars, moist brushy places, tangles of rank weeds and shrubbery along streams, and overgrown fields, but is generally scarce in drier places.	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable habitat to support this species.
Gymnogyps californianus	California condor	FE/FP, SE	Nests in rock formations, deep caves, and occasionally in cavities in giant sequoia trees (*Sequoiadendron giganteus*); forages in relatively open habitats where large animal carcasses can be detected	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable habitat to support this species.
Melospiza melodia	song sparrow	BCC/None	Thickets, brush, marshes, roadsides, gardens. Habitat varies over its wide range. In most areas, found in brushy fields, streamsides, shrubby marsh edges, woodland edges, hedgerows, well-vegetated gardens. Some coastal populations live in salt marshes.	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable habitat to support this species.

Scientific Name	Common Name	Status[1] (Federal/State/ City of LA[2])	Habitat	Potential to Occur[3]
Picoides nuttallii	Nuttall's woodpecker	BCC/None	Wooded canyons and foothills, river woods. In much of range almost always around oaks, especially where oaks meet other trees along rivers, also in pine-oak woods in foothills. In southern California also in riverside cottonwoods, sycamores, willows, even if no oaks present.	Present. The species was observed during the site visit in May 2019 within the LADWP-owned property located at 3380 Coldwater Canyon Avenue where the flow control station vault is proposed. This area supports coast live oak that the species may use for nesting and foraging.
Pipilo maculatus clementae	San Clemente spotted towhee	BCC/None	Open woods, undergrowth, brushy edges. In the varied terrain of the West, this towhee often lives in chaparral, mountain manzanita thickets, scrub oaks, or pinyon-juniper woods with dense understory.	Not expected to occur. This sub-species is known from the channel islands.
Polioptila californica californica	coastal California gnatcatcher	FT/SSC/S[b]	Nests and forages in various sage scrub communities, often dominated by California sagebrush and buckwheat; generally avoids nesting in areas with a slope of greater than 40%; majority of nesting at less than 1,000 feet above mean sea level	Not expected to occur. The project site is surrounded by heavily urbanized residential and commercial development and lacks suitable habitat for this species.
Riparia riparia (nesting)	bank swallow	None/ST/S[b]	Nests in riparian, lacustrian, and coastal areas with vertical banks, bluffs, and cliffs with sandy soils; open country and water during migration	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable habitat to support this species.
Selasphorus rufus (nesting)	rufous hummingbird	BCC/None	Does not nest in California; migrates through a wide variety of habitats including coastal scrub, valley–foothill hardwood, and valley–foothill riparian habitats, and residential areas with feeders	Not expected to occur for nesting. May forage in the project site and surrounding area during migration.

Scientific Name	Common Name	Status[1] (Federal/State/ City of LA[2])	Habitat	Potential to Occur[3]
Selasphorus sasin (nesting)	Allen's hummingbird	None/None	Nests in coastal scrub, valley–foothill hardwood, and valley–foothill riparian habitats; migrates in woodland and scrub habitats	Not expected to occur for nesting. May forage in the project site and surrounding area.
Spinus lawrencei (nesting)	Lawrence's goldfinch	BCC/None	Nests and forages in open oak, arid woodlands, and chaparral near water	Not expected to occur for nesting due to the lack of nearby open water. May forage in the project site and surrounding area.
Toxostoma redivivum	California thrasher	BCC/None	Chaparral, foothills, valley thickets, parks, gardens. Within its range, found in practically any lowland habitat with dense low brush. Most common in chaparral, also occurs in streamside thickets and in suburban neighborhoods that have enough vegetation.	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable habitat to support this species.
Vireo bellii pusillus (nesting)	least Bell's vireo	FE/SE/S[b]	Nests and forages in low, dense riparian thickets along water or along dry parts of intermittent streams; forages in riparian and adjacent shrubland late in nesting season	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable habitat to support this species.
Mammals				
Antrozous pallidus	pallid bat	None/SSC/S[b]	Grasslands, shrublands, woodlands, forests; most common in open, dry habitats with rocky outcrops for roosting, but also roosts in man-made structures and trees	Low potential to roost, may occasionally forage. Marginally suitable roosting habitat occurs within the project action area. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development with minimal ornamental vegetation; however, this species may occasionally forage overhead
Corynorhinus townsendii	Townsend's big-eared bat	None/SSC	Mesic habitats characterized by coniferous and deciduous forests and riparian habitat, but also xeric areas; roosts in limestone caves and lava tubes, man-made structures, and tunnels	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable habitat to support this species.

Scientific Name	Common Name	Status[1] (Federal/State/ City of LA[2])	Habitat	Potential to Occur[3]
Eumops perotis californicus	western mastiff bat	None/SSC/S[b]	Chaparral, coastal and desert scrub, coniferous and deciduous forest and woodland; roosts in crevices in rocky canyons, high buildings, and cliffs where the canyon or cliff is vertical or nearly vertical, trees, and tunnels	Low potential to roost, may occasionally forage. Marginally suitable roosting habitat occurs within the project action area. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development with minimal ornamental vegetation; however, this species may occasionally forage overhead.
Lasionycteris noctivagans	silver-haired bat	None/None	Old-growth forest, maternity roosts in trees, large snags 50 feet aboveground; hibernates in hollow trees, rock crevices, buildings, mines, caves, and under sloughing bark; forages in or near coniferous or mixed deciduous forest, stream or river drainages	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable habitat to support this species.
Lasiurus xanthinus	western yellow bat	None/SSC/None	Valley–foothill riparian, desert riparian, desert wash, and palm oasis habitats; below 2,000 feet above mean sea level; roosts in riparian and palms	Not expected to roost or forage. No suitable roosting or foraging habitat. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development with minimal ornamental vegetation.
Lasiurus xanthinus	western yellow bat	None/SSC	Valley–foothill riparian, desert riparian, desert wash, and palm oasis habitats; below 2,000 feet above mean sea level; roosts in riparian and palms	Not expected to roost or forage. No suitable roosting or foraging habitat. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development with minimal ornamental vegetation.
Lepus californicus bennettii	San Diego black-tailed jackrabbit	None/SSC	Arid habitats with open ground; grasslands, coastal scrub, agriculture, disturbed areas, and rangelands	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable habitat to support this species.
Macrotus californicus	Californian leaf-nosed bat	None/SSC	Riparian woodlands, desert wash, desert scrub; roosts in mines and caves, occasionally buildings	Not expected to roost or forage. No suitable roosting or foraging habitat. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development with minimal ornamental vegetation.

Scientific Name	Common Name	Status[1] (Federal/State/ City of LA[2])	Habitat	Potential to Occur[3]
Microtus californicus stephensi	south coast marsh vole	None/SSC/S[b]	Tidal marshes	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable habitat to support this species.
Neotoma lepida intermedia	San Diego desert woodrat	None/SSC/S[b]	Coastal scrub, desert scrub, chaparral, cacti, rocky areas	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable habitat to support this species.
Nyctinomops femorosaccus	pocketed free-tailed bat	None/SSC/None	Pinyon–juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, and palm oases; roosts in high cliffs or rock outcrops with dropoffs, caverns, and buildings	Not expected to roost or forage. No suitable roosting or foraging habitat. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development with minimal ornamental vegetation.
Onychomys torridus ramona	southern grasshopper mouse	None/SSC	Grassland and sparse coastal scrub	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable habitat to support this species.
Perognathus longimembris brevinasus	Los Angeles pocket mouse	None/SSC/S[b]	Lower-elevation grassland, alluvial sage scrub, and coastal scrub	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable habitat to support this species.
Taxidea taxus	American badger	None/SSC/None	Dry, open, treeless areas; grasslands, coastal scrub, agriculture, and pastures, especially with friable soils	Not expected to occur. The project site and surrounding area is primarily composed of heavily urbanized commercial and residential development, lacking suitable habitat to support this species.

Notes:

[1] Status abbreviations:

- FE: Federally Endangered
- FT: Federally Threatened
- FDL: Federally Delisted
- BCC: U.S. Fish and Wildlife Service Bird of Conservation Concern
- SSC: California Species of Special Concern
- FP: California Fully Protected Species
- WL: California Watch List Species
- SE: State Endangered
- ST: State Threatened
- SDL: State Delisted

[2] Sensitive Species within the City of Los Angeles (City of Los Angeles 2006)
a: Potential to occur within Project site since known to occur in Zone 5
b: Occurrence is known in other zones or is unknown; however, the species has potential to occur within Project site

[3] Vicinity refers to records within the Van Nuys USGS 7.5-minute quadrangle and eight surrounding USGS 7.5-minute quadrangles (Burbank, Canoga Park, Oat Mountain, San Fernando, Sunland, Topanga, Beverly Hills, and Hollywood).

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APPENDIX H

Protected Tree Report

Protected Tree Report
for the
Los Angeles Department of Water and Power
City Trunk Line South Project
City of Los Angeles, California

Prepared for:

Los Angeles Department of Water and Power

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1 Introduction

This protected tree report provides an inventory and evaluation of the protected trees located on the Los Angeles Department of Water and Power (LADWP) City Trunk Line South Project (project) site. The project site is located on LADWP-owned land within Studio City, a neighborhood within the City of Los Angeles (City), Los Angeles County (County), California (Figure 1, Regional Map). As such, this protected tree report covers the regulations and requirements for the protection and removal of protected trees within City jurisdiction. Additionally, it contains the required information as specified in the City's Standard Tree Removal Application Checklist (City of Los Angeles 2018).

To ensure the protection of, and to further regulate the removal of, protected trees, a tree inventory and assessment of the project site was performed pursuant to City Ordinance No. 177404 (City of Los Angeles 2006). The Protected Tree Ordinance defines a protected tree as any of the following Southern California native species that measures 4 inches or more in cumulative diameter, 4.5 feet above the ground level at the base of the tree:

- Oak tree, including valley oak (*Quercus lobata*), coast live oak (*Quercus agrifolia*), or any other tree of the oak genus indigenous to California, but excluding scrub oak (*Quercus dumosa*)
- Southern California black walnut (*Juglans californica* var. *californica*)
- California sycamore (*Platanus racemosa*)
- California bay (*Umbellularia californica*)

Dudek was retained by LADWP to conduct a tree inventory and assessment for the proposed project. Dudek International Society of Arboriculture (ISA) Certified Arborists, working under the supervision of Dudek's Registered Consulting Arborist, performed various functions associated with surveying, inventorying, and evaluating tree conditions on the project site, as described in this report. Table 1 provides a summary of the findings of this report.

Table 1. Summary of Tree Information

Tree Species						
Scientific Name	***Common Name***	***Number of Trees***	***Number Protected***	***Number Impacted***	***Number Removed***	***Mitigation Trees Required***
Brachychiton populneum	Whiteflower kurrajong	1	0	0	0	0
Juglans californica	Southern California black walnut	45	45	13	5	20
Quercus agrifolia	Coast live oak	34	34	25	3	12
Quercus dumosa	Nuttall's scrub oak	1	0	0	0	0
Schinus molle	Peruvian peppertree	20	0	3	3	0
	Total	**101**	**79**	**41**	**11**	**32**

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2 Project Location and Description

The proposed project is located 2 miles south of the 101 Freeway and 15 miles northwest of downtown Los Angeles in central Los Angeles County (Figure 1). Specifically, the project site is located at 3380 Coldwater Canyon Avenue and continues north on Oeste Avenue to 3450 Oeste Avenue (Figure 2, Vicinity Map). The project site occurs within the jurisdictions of the City of Los Angeles.

2.1 Existing Conditions

The project site is characterized by a residential neighborhood starting on the north end of the project at Oeste Avenue and continuing on an incline to the LADWP-owned property at 3380 Coldwater Canyon Avenue. The LADWP property at 3380 Coldwater Canyon Avenue is characteristic of a Los Angeles hillside oak woodland. The site is bordered by private residences on the north and east ends, and Coldwater Canyon Avenue on the south and west. Representative photographs of the property and its trees are presented in Appendix A, Site Photograph Log.

2.2 Project Characteristics

The proposed project involves replacing an old and deteriorating trunk line to improve the reliability of LADWP's water system. Specifically the project proposes to do the following:

- Install 60 linear feet of 60-inch welded steel pipe by open trench for the tie-in connection to the southerly end of City Trunk Line South Unit 5 Phase 1.
- Install 200 linear feet of 60-inch welded steel pipe open trench within Oeste Avenue.
- Install a flow control station vault, approximately 35 feet by 29 feet by 16 feet, located within LADWP property at 3380 Coldwater Canyon Avenue.
- Structural relining with carbon-fiber-reinforced polymer of 675 linear feet of 60-inch welded steel pipe, 334 linear feet of 51-inch pipe, and 688 linear feet of 62-inch pipe.
- Removal of existing flow control station at 3450 Oeste Avenue and flow meter within Oeste Avenue.

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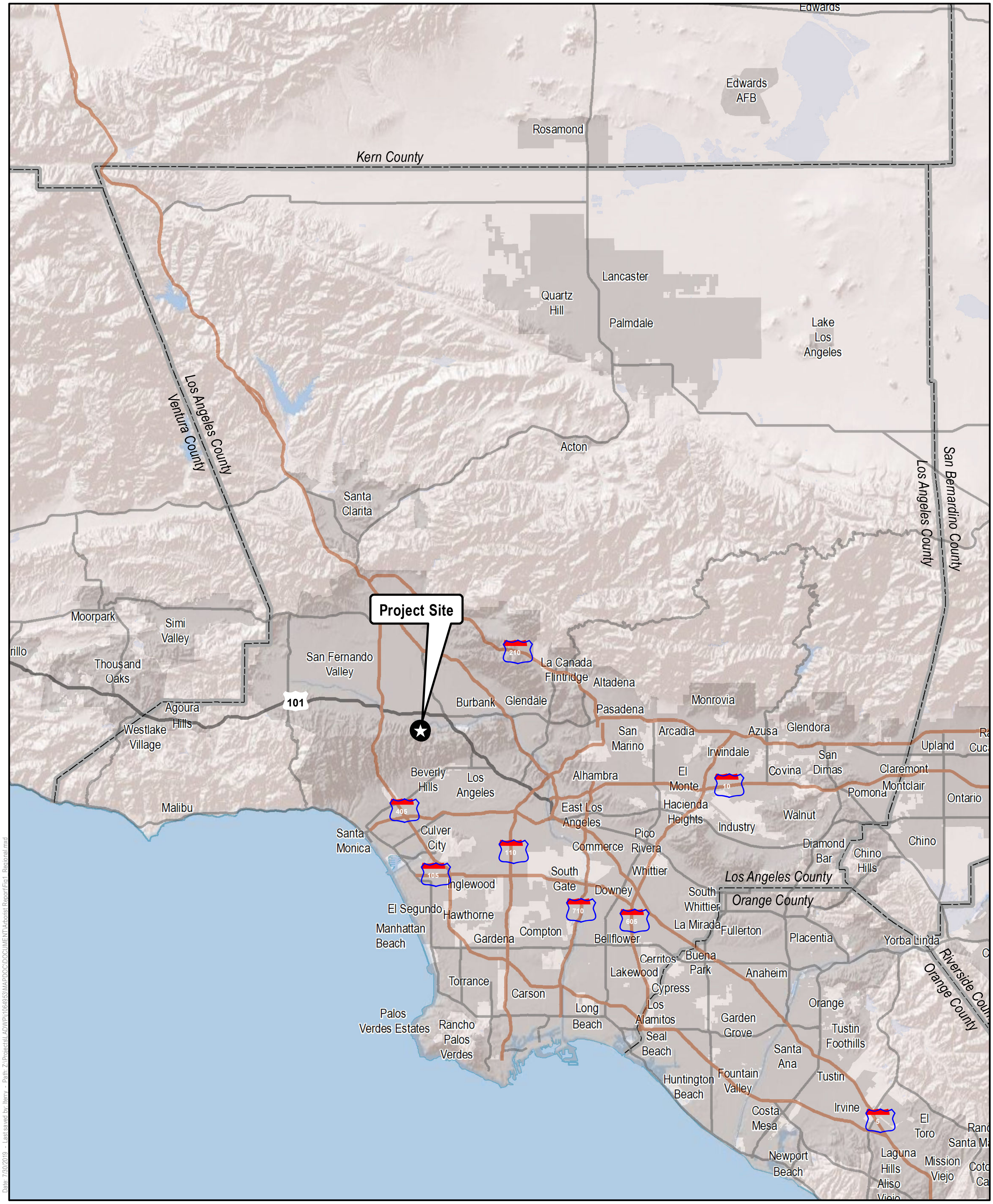

SOURCE: ESRI

DUDEK

0 500 1,000 Feet

FIGURE 1

Regional Map

Los Angeles Department of Water and Power City Trunk Line South Protected Tree Report

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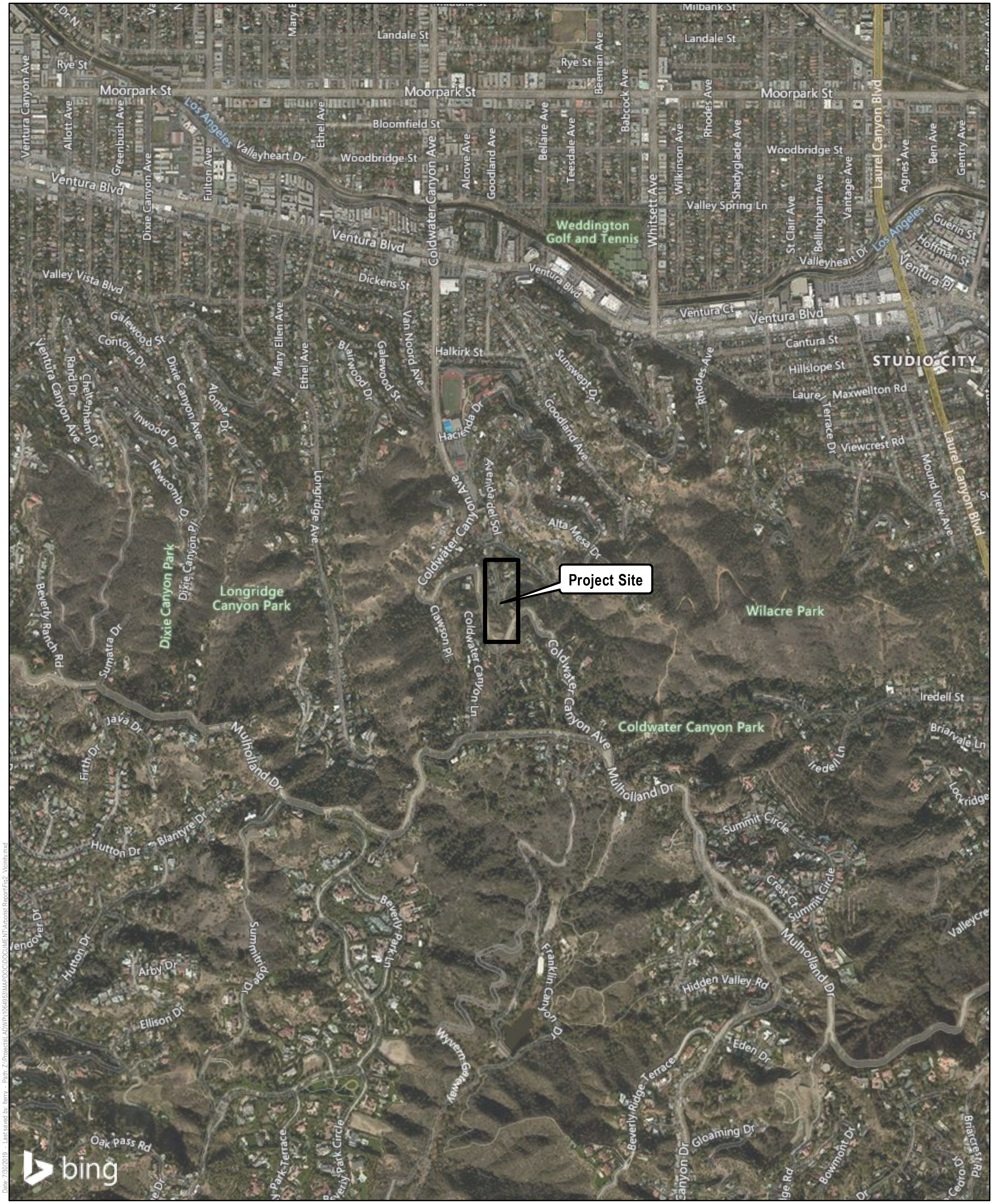

SOURCE: Bing Maps 2018

0 750 1,500 Feet

FIGURE 2

Vicinity Map

Los Angeles Department of Water and Power City Trunk Line South Protected Tree Report

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3 Methods

Dudek mapped tree locations using a Trimble Pathfinder Pro XH GPS receiver. The Pathfinder has a horizontal accuracy of 1-meter (1-sigma) using differential code positioning techniques. Since tree canopies can sometimes cause loss of satellite lock by blocking the line-of-sight to satellites, an electronic compass and reflectorless electronic distance measuring device was also used in mapping tree locations. The electronic distance measuring device/compass combination operates in concert with the Pathfinder GPS system to position offsets, and offset information is automatically attached to the GPS position data string. The electronic tree locations were then evaluated using ArcView 10.4 software to determine the position of the trees related to the project site.

The trees throughout the project site were given a unique identification number; these numbers correspond to the tree locations presented in the tree location exhibit in Appendix B and the tree information matrix in Appendix C. Tree diameter was measured using a diameter tape providing adjusted figures[1] for diameter measurements when wrapping the tape around an object's circumference. Diameter measurements were taken using protocol provided by the Council of Tree and Landscape Appraisers in the Guide for Plant Appraisal, published by the ISA (CTLA 2000). The diameter at breast height of each tree was taken at 4.5 feet above the ground along the trunk axis, with common exceptions. In cases where a tree's trunk was located on a slope, the 4.5-foot distance was approximated as the average of the shortest and longest sides of the trunk (i.e., the uphill side and downhill side of a tree's trunk, respectively) and the measurement was made at the circumference of the trunk at this point. Tree height was visually estimated. Tree canopy diameters were typically estimated by "pacing-off" the measurement based on the investigator's knowledge of his stride length or by visually estimating the canopy width. The diameter measurements were always made along an imaginary line intersecting the tree trunk that best approximated the average canopy diameter.

Pursuant to the Guide for Plant Appraisal, tree health and structure was evaluated with respect to five distinct tree components: (1) roots, (2) trunk, (3) scaffold branches, (4) small branches, and (5) foliage. Each component of the tree was assessed with regard to health factors such as insect, fungal, or pathogen damage; mechanical damage; presence of decay; presence of wilted or dead leaves; and wound closure. Components were graded as good, fair, poor, and dead, with 'good' representing no apparent problems, and 'dead' representing a dying and/or dead tree. Concurrent with tree health and structural evaluations, each tree was evaluated for its relocation potential. Trees for relocation were noted, if applicable, where tree and site conditions were favorable.

3.1 Scope of Work Limitations

No root crown excavations or investigations, internal probing, or aerial canopy inspections were performed during the tree assessments. Therefore, the presence or absence of internal decay or other hidden or inaccessible inferiorities in individual trees could not be confirmed. It is recommended that any large tree proposed for preservation or relocation in an urban setting be thoroughly inspected for internal or subterranean decay by a qualified arborist before finalizing preservation or relocation plans.

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[1] Inches divided by 3.14 (π) provide diameter measurement in inches.

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4 Results

4.1 Protected Native Tree Summary

There are 79 native trees located within the limits of the project site; 45 of the trees are Southern California black walnuts and 34 are coast live oak, which are both considered protected trees. Two additional Southern California black walnuts are included on the map and inventory that do not meet diameter at breast height requirements to be protected, but may reach the standard by the time the project begins. There are no additional native oak species, California sycamore, or California bay trees of jurisdictional size located on the project site.

Nineteen of the protected native trees are located on Oeste Avenue, with the remaining 60 protected trees distributed throughout the LADWP property located at 3380 Coldwater Canyon Avenue. The trees are single- and multi-stemmed and have diameters at breast height that range from 4 to 47 inches. Average tree heights and canopy widths range from 6 to 55 feet tall and extend 6 to 50 feet at their widest points.

Nine of the Southern California black walnuts had dieback on the top portion of the canopy with regrowth/sprouting from the base of the trunk. The health conditions of the trees were observed as 1 to be dead, 18 in poor health, 28 fair health, and 32 in good health. Structurally, the trees were assessed as 1 dead, 24 poor, 31 fair, and 23 good. Trees in good condition exhibit acceptable vigor, healthy foliage, adequate structure, and lack of any major maladies. Trees in fair condition are typical, with few maladies, but declining vigor. A full account of the physical characteristics and disposition of the 79 protected trees found on the project site is available in the tree information matrix (Appendix C).

4.2 Ornamental Tree Summary

There are 22 ornamental trees dispersed throughout the project site. The 22 ornamental trees are represented by 3 individual tree species. As depicted in Table 2, Peruvian pepper trees (*Schinus molle*) are the most dominant ornamental tree type on the project site, with 20 trees representing 91% of the site's ornamental trees. The remaining two ornamental trees are comprised of 1 *Brachychiton populneum* (Whiteflower kurrajong), and 1 *Quercus dumosa* (Nuttall's scrub oak). Table 2 provides further details on individual species totals.

Table 2. Summary of Ornamental Tree Species

Tree Species			
Scientific Name	*Common Name*	*Number of Trees*	*Percentage*
Brachychiton populneum	Whiteflower kurrajong	1	4.5%
Quercus dumosa	Nuttall's scrub oak	1	4.5%
Schinus molle	Peruvian pepper	20	91%
	Total	**22**	**100%**

The ornamental trees are single- and multi-stemmed and have trunk diameters that range from 4 to 16 inches. Of the 22 ornamental trees, 8 have stem diameters greater than 8 inches. Average tree heights and canopy widths range from 8 to 30 feet tall and extend 8 to 30 feet at their widest points. Appendix C provides tree height attribute information for each tree on the project site.

The ornamental trees share similar health and structural ratings, the majority of which are in fair health and fair structure. As presented in Appendix C, a total of 68% exhibit fair health. The remaining trees are classified as 32% in good condition. Structurally, 77% of the trees are considered in fair condition, 18% in good condition, and 5% are in poor condition. Trees in fair condition are typical, with few maladies, but declining vigor. Trees in poor condition exhibit declining vigor, unhealthy foliage, poor branch structure, or excessive lean.

4.3 Mapping

The location of each tree identified in the project site is depicted in Appendix B.

4.4 Tree Removal/Encroachment

The analysis of affected trees presented below is based on the proposed project footprint. For the purposes of this report, tree removal is conservatively considered necessary when the trunk is located inside or within 2 feet of the proposed limits of development. Encroachment is expected when soil and roots are disturbed within the tree-protected zone (canopy drip line plus 5 feet or 15 feet from trunk, whichever is greater). Typically, specific circumstances allow some protected trees that are being encroached upon to be preserved in place within or adjacent to the development area.

In total, 41 trees may be disturbed from construction-related impacts. It is estimated that 5 Southern California black walnut, 3 coast live oak, and 3 Peruvian pepper trees may need to be removed. Table 3 summarizes the total number of protected and ornamental trees (by species) that have potential to be subject to direct construction-related impacts.

Table 3. Protected and Ornamental Trees Subject to Direct Construction-Related Impacts

Scientific Name	Common Name	Number of Trees
Juglans californica	Southern California black walnut	13
Quercus agrifolia	Coast live oak	25
Schinus molle	Peruvian pepper	3
	Total	**41**

4.5 Candidates Suitable for Preservation and Relocation

In addition to the general site tree evaluations, Dudek evaluated all of the potentially disturbed protected trees for their potential for preservation in place or relocation. Trees identified as candidates for preservation in place and relocation typically exhibit good health (new growth and vigor) and structure (trunk/branching); have no uncorrectable, outwardly detectable defects; and show no signs or symptoms of serious pest infestation or species-specific pathogens. In order for the trees to avoid incidental damage during construction or relocation, preservation and protection measures must be provided before, during, and following the construction phase

None of the protected trees located on the project site are considered suitable candidates for relocation based on the health of each tree and presence of invasive shot hole borer. Individual tree dispositions and locations are provided in Appendix C and Appendix B, respectively.

4.6 Mapping

The location of each tree identified in the project site is depicted in Appendix B.

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5 Mitigation

The proposed project's mitigation effort will include tree planting mitigation for incurred tree impacts, which shall be consistent with the goals and intent of the Protected Tree Ordinance.

5.1 Mitigation Plan

Mitigation will be required for impacts associated with the proposed project affecting eight protected native trees (five Southern California black walnut and three coast live oak), and while not required by the City, additional mitigation efforts will be made for the non-native species. This tree report addresses tree mitigation plantings to address such impacts and satisfies the City's requirements. It is assumed that the mitigation outlined herein is applicable to the impacts presented by the currently proposed project, and where it is possible to reduce tree impacts through planning and other efforts identified at later stages of project development, mitigation measures will be reduced proportionally.

The ordinance regarding the preservation of protected trees in Section 46.02(c)1 of the City's Municipal Code (City of Los Angeles 2002) requires that a permittee replace an oak approved for removal or relocation "within the same property boundaries by at least two trees of a protected variety" (Appendix D). Section 46.02(c)1 continues as follows (Appendix D):

> Each replacement tree shall be at least a 15-gallon, or larger, specimen in size, measuring one inch or more in diameter one foot above the base, and be not less than seven feet in height measured from the base. The size and number of replacement trees shall approximate the value of the tree to be replaced.

However, as of the date of this protected tree report, the current Board of Public Works has increased the minimum requirements for protected tree replacement to 4:1 (City of Los Angeles 2018). Based on removal of 8 protected trees from the project site, a minimum of 32 15-gallon-size protected trees of like species are required according to City Ordinance No. 177404 (Appendix D).

The additional three non-native trees do not require mitigation per a City ordinance, but will face impacts associated with the proposed project. To offset impacts to the non-native trees, non-native species requiring removal will be replaced on at least a 1:1 ratio. Replacement species will be selected in accordance with the project site plans to ensure they are suitable for the site conditions and spacing restrictions.

Dudek recommends all tree plantings be subject to a 5-year monitoring effort by an independent third-party certified arborist. This monitoring effort would consider growth, health, and condition of the subject trees in order to evaluate the proposed project's success. The monitoring effort may result in a recommendation of remedial actions should any of the tree plantings exhibit poor or declining health. In an effort to maintain minimum mitigation tree quantities following the 5-year monitoring period, Dudek recommends over-planting required mitigation trees by 50%, resulting in a mitigation planting of 48, 15-gallon-size protected trees of like species. Table 4 summarizes the recommended mitigation for this project.

Table 4. Summary of Mitigation Measures

Tree Species					
Scientific Name	*Common Name*	*Number Impacted*	*Number Removed*	*Mitigation Trees Required*	*Dudek Recommended*
Brachychiton populneum	Whiteflower kurrajong	0	0	0	0
Juglans californica	Southern California black walnut	13	5	20	30
Quercus agrifolia	Coast live oak	25	3	12	18
Quercus dumosa	Nuttall's scrub oak	0	0	0	0
Schinus molle	Peruvian pepper	3	3	0	0
	Total	**41**	**11**	**32**	**48**

The specific location of individual mitigation tree plantings on site shall be addressed in the mitigation planting plan or landscape design plan prepared for the site. Dudek estimates that all of the required mitigation trees can be accommodated within the proposed project landscape areas. The mitigation requirement and the approved tree replacement mitigation ratio is at the discretion of the City and subject to final tree impact analysis. As such, the final tree numbers associated with tree replacement and other mitigation components may vary from that presented in this tree inventory and assessment.

6 Tree Protection

At the time of this report, 41 protected trees are proposed for encroachment, and Dudek recommends that any preserved trees be protected according to the Tree Protection Measures discussed in Appendix E.

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7 Conclusion

Dudek inventoried and evaluated 101 protected and ornamental trees on the proposed project site, of which 79 are considered protected trees under City regulations. Of the 79 protected trees, 8 are expected to require removal to accommodate project construction. As described in the preceding sections, the City's Tree Protection Ordinance and updates to mitigation ratios by the Board of Public Works require replacement of removed protected trees at a ratio of 4:1 with minimum 15-gallon-sized trees of a protected variety and measuring 1 inch or more in diameter 1 foot above the base and measuring not less than 7 feet in height measured from the base. As such, City standards would require planting 32, 15-gallon replacement trees to replace the 8 living protected trees that would be removed. In an effort to maintain minimum mitigation tree quantities following the 5-year monitoring period, Dudek recommends over-planting required mitigation trees by 50%, resulting in a mitigation planting of 48, 15-gallon-size protected trees of like species. The specific on-site location of individual replacement tree plantings will be determined by the City. If planting space limitations occur, it is recommended that LADWP work with the City to determine appropriate planting locations for those trees that cannot be located on-site.

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8 Arborist's Disclosure

This report provides conclusions and recommendations based only on a visual examination of the trees and surrounding site by an ISA Certified Arborist and reasonable reliance upon the completeness and accuracy of the information provided to the arborist. The examination did not include subterranean or internal examination of the trees.

Arborists are tree specialists who use their education, knowledge, training and experience to examine trees, recommend measures to enhance the beauty and health of trees, and attempt to reduce the risk of living near trees. Although trees provide many benefits to those who live near them, they also include inherent risks from breakage or failure that can be minimized, but not eliminated.

Arborists cannot detect every condition that could possibly lead to the failure of a tree. Trees are living organisms subject to attack by disease, insects, fungi, weather, and other forces of nature, and conditions that lead to failure are often hidden within trees and below ground. There are some inherent risks with trees that cannot be predicted with any degree of certainty, even by a skilled and experienced arborist. Arborists cannot predict acts of nature including, without limitation, storms of sufficient strength, which can cause even an apparently healthy tree to fail. Additionally, arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for any specific period of time. A tree's condition could change over a short or long period of time due to climatic, cultural or environmental conditions. Further, there is no guaranty or certainty that recommendations or efforts to correct unsafe conditions will prevent future breakage or failure of a tree.

To live or work near trees is to accept some degree of risk. Neither the author of this report nor Dudek have assumed any responsibility for, nor will either of them be liable for, any claims, losses or damages for damage to any tree, death or injury to any person, or any loss of or damage to any personal or real property.

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Appendix A

Site Photograph Log

Appendix A – Site Photograph Log

Photograph #1 Site Overview – 3380 Coldwater Canyon Ave

Photograph #2 Site Overview – Oeste Ave.

Photograph #3 – Impacted Trees

Photograph #4 – Impacted Trees

Photograph #5 – Impacted Trees

Photograph #6 – Impacted Trees

Photograph #7 – Impacted Trees

Photograph #8 – Impacted Trees

Photograph #9 – Impacted Trees

Appendix B

Protected Tree Location Exhibit

Document Path: Z:\Projects\LADWP\1064953\MAPDOC\DOCUMENT\Arborist Report\B_Appendix B Tree Location Exhibit.mxd

SOURCE: AERIAL-NAIP IMAGERY 2016

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APPENDIX B

Tree Location Exhibit

Los Angeles Department of Water and Power City Trunk Line South Protected Tree Report

Appendix C

Protected Tree Information Matrix

Tree #	Botanical Name	Common Name	Stems	Individual Stem Diameters (in.)						Height (ft.)	Canopy (ft.)	Health	Structure	Protected	Notes	Tree Disposition
				D1	D2	D3	D4	D5	D6							
1	*Juglans californica*	So. Cal. black walnut	7	5	5	5	3	3	3	15	20	Good	Fair	Yes	stem #7 - 3"	
2	*Quercus dumosa*	scrub oak	7	3	2	2	2	2	2	12	12	Good	Fair	No	stem #7 - 2"	
3	*Juglans californica*	So. Cal. black walnut	4	6	6	4	2	0	0	15	15	Fair	Fair	Yes		
4	*Quercus agrifolia*	coast live oak	2	9	9	0	0	0	0	20	20	Good	Fair	Yes		
5	*Juglans californica*	So. Cal. black walnut	3	12	8	4	0	0	0	20	20	Fair	Fair	Yes		
6	*Juglans californica*	So. Cal. black walnut	5	10	10	8	8	6	0	25	40	Fair	Fair	Yes		
7	*Quercus agrifolia*	coast live oak	3	17	16	14	0	0	0	30	40	Fair	Fair	Yes		
8	*Juglans californica*	So. Cal. black walnut	3	10	8	6	0	0	0	8	3	Poor	Poor	Yes	stump sprout of topped trunk	
9	*Juglans californica*	So. Cal. black walnut	2	6	4	0	0	0	0	6	3	Poor	Poor	Yes	stump sprout	
10	*Schinus molle*	California pepper	2	4	2	0	0	0	0	10	10	Fair	Fair	No		
11	*Schinus molle*	California pepper	4	5	3	3	3	0	0	15	10	Fair	Fair	No		
12	*Schinus molle*	California pepper	4	4	2	2	3	0	0	10	10	Fair	Fair	No		
13	*Schinus molle*	California pepper	4	2	2	2	1	0	0	10	10	Fair	Fair	No		
14	*Schinus molle*	California pepper	2	2	2	0	0	0	0	10	10	Fair	Fair	No		
15	*Schinus molle*	California pepper	4	2	2	1	1	0	0	10	10	Fair	Fair	No		
16	*Schinus molle*	California pepper	3	2	1	1	0	0	0	8	8	Fair	Fair	No		
17	*Schinus molle*	California pepper	2	3	2	0	0	0	0	10	10	Fair	Fair	No		
18	*Brachychiton populneus*	kurrajong	1	6	0	0	0	0	0	20	10	Good	Good	No		
19	*Schinus molle*	California pepper	1	14	0	0	0	0	0	25	20	Good	Good	No		
20	*Schinus molle*	California pepper	1	6	0	0	0	0	0	25	20	Good	Good	No		
21	*Schinus molle*	California pepper	2	3	3	0	0	0	0	12	12	Fair	Fair	No		
22	*Schinus molle*	California pepper	1	4	0	0	0	0	0	12	12	Fair	Fair	No		
23	*Schinus molle*	California pepper	2	8	7	0	0	0	0	25	30	Fair	Fair	No		
24	*Schinus molle*	California pepper	1	9	0	0	0	0	0	25	20	Fair	Fair	No		
25	*Schinus molle*	California pepper	2	10	6	0	0	0	0	25	20	Fair	Fair	No		
26	*Schinus molle*	California pepper	1	6	0	0	0	0	0	20	20	Fair	Fair	No		
27	*Schinus molle*	California pepper	1	5	0	0	0	0	0	20	20	Fair	Fair	No		
28	*Juglans californica*	So. Cal. black walnut	2	7	1	0	0	0	0	25	25	Good	Good	Yes		
29	*Quercus agrifolia*	coast live oak	2	17	6	0	0	0	0	40	50	Good	Fair	Yes		
30	*Juglans californica*	So. Cal. black walnut	2	3	3	0	0	0	0	13	12	Fair	Fair	Yes		
31	*Quercus agrifolia*	coast live oak	2	3	1	0	0	0	0	10	10	Poor	Fair	Yes		
32	*Juglans californica*	So. Cal. black walnut	1	6	0	0	0	0	0	25	20	Dead	Dead	Yes	small stump sprout	
33	*Juglans californica*	So. Cal. black walnut	3	8	5	7	0	0	0	30	40	Poor	Poor	Yes		
34	*Quercus agrifolia*	coast live oak	1	8	0	0	0	0	0	6	6	Fair	Poor	Yes		
35	*Ulmus parvifolia*	California pepper	1	10	0	0	0	0	0	30	25	Good	Good	No		
36	*Fraxinus uhdei*	California pepper	1	7	0	0	0	0	0	25	20	Good	Fair	No		
37	*Fraxinus uhdei*	California pepper	1	6	0	0	0	0	0	25	20	Good	Poor	No		

Tree #	Botanical Name	Common Name	Stems	Individual Stem Diameters (in.)						Height (ft.)	Canopy (ft.)	Health	Structure	Protected	Notes	Tree Disposition
				D1	D2	D3	D4	D5	D6							
38	*Quercus agrifolia*	coast live oak	1	10	0	0	0	0	0	30	20	Good	Good	Yes		
39	*Quercus agrifolia*	coast live oak	3	10	8	7	0	0	0	30	20	Good	Fair	Yes		
40	*Juglans californica*	So. Cal. black walnut	2	11	6	0	0	0	0	25	20	Poor	Poor	Yes		
41	*Juglans californica*	So. Cal. black walnut	2	7	7	0	0	0	0	15	15	Fair	Fair	Yes		
42	*Juglans californica*	So. Cal. black walnut	1	10	0	0	0	0	0	8	8	Poor	Poor	Yes	stump sprout	
43	*Quercus agrifolia*	coast live oak	1	15	0	0	0	0	0	15	10	Poor	Poor	Yes		
44	*Juglans californica*	So. Cal. black walnut	3	9	2	2	0	0	0	15	15	Fair	Poor	Yes		
45	*Juglans californica*	So. Cal. black walnut	4	1	1	1	1	0	0	6	8	Poor	Poor	Yes	stump sprout	
46	*Juglans californica*	So. Cal. black walnut	4	1	1	1	1	0	0	8	8	Fair	Fair	Yes		
47	*Juglans californica*	So. Cal. black walnut	4	3	1	1	1	0	0	10	8	Fair	Fair	Yes		
48	*Juglans californica*	So. Cal. black walnut	2	3	1	0	0	0	0	10	8	Fair	Poor	Yes	stump sprout	
49	*Juglans californica*	So. Cal. black walnut	3	3	3	2	0	0	0	15	10	Fair	Poor	Yes		
50	*Juglans californica*	So. Cal. black walnut	2	2	2	0	0	0	0	10	10	Fair	Poor	Yes	stump sprout	
51	*Juglans californica*	So. Cal. black walnut	3	7	3	2	0	0	0	15	10	Poor	Poor	Yes	stump sprout	
52	*Juglans californica*	So. Cal. black walnut	3	2	2	1	0	0	0	10	10	Fair	Fair	Yes		
53	*Juglans californica*	black walnut	2	1	1	0	0	0	0	5	6	Good	Good	No	Mapped, but DBH is <4" and not protected	
54	*Juglans californica*	black walnut	3	1	1	1	0	0	0	6	7	Fair	Fair	No	Mapped, but DBH is <4" and not protected	
55	*Juglans californica*	So. Cal. black walnut	6	7	5	3	1	1	1	15	15	Fair	Fair	Yes		
56	*Juglans californica*	So. Cal. black walnut	3	4	4	2	0	0	0	12	15	Good	Fair	Yes		
57	*Juglans californica*	So. Cal. black walnut	2	18	16	0	0	0	0	25	20	Good	Fair	Yes		
58	*Quercus agrifolia*	coast live oak	1	15	0	0	0	0	0	30	30	Good	Fair	Yes		
59	*Juglans californica*	So. Cal. black walnut	4	4	2	2	1	0	0	10	10	Fair	Fair	Yes		
60	*Juglans californica*	So. Cal. black walnut	2	15	13	0	0	0	0	30	40	Poor	Poor	Yes		
61	*Juglans californica*	So. Cal. black walnut	6	4	4	4	4	3	3	20	20	Fair	Fair	Yes		
62	*Juglans californica*	So. Cal. black walnut	6	4	4	4	3	3	3	20	20	Fair	Fair	Yes		
63	*Juglans californica*	So. Cal. black walnut	3	7	5	1	0	0	0	15	15	Poor	Poor	Yes		
64	*Juglans californica*	So. Cal. black walnut	2	8	7	0	0	0	0	20	20	Fair	Poor	Yes		
65	*Juglans californica*	So. Cal. black walnut	1	6	0	0	0	0	0	25	20	Poor	Fair	Yes		
66	*Juglans californica*	So. Cal. black walnut	1	6	0	0	0	0	0	12	12	Poor	Poor	Yes		
67	*Quercus agrifolia*	coast live oak	1	14	0	0	0	0	0	20	30	Fair	Poor	Yes		
68	*Juglans californica*	So. Cal. black walnut	3	3	2	1	0	0	0	15	10	Fair	Fair	Yes		
69	*Juglans californica*	So. Cal. black walnut	1	7	0	0	0	0	0	20	20	Fair	Fair	Yes		
70	*Juglans californica*	So. Cal. black walnut	1	9	0	0	0	0	0	20	15	Good	Good	Yes		
71	*Juglans californica*	So. Cal. black walnut	2	8	7	0	0	0	0	20	25	Fair	Good	Yes		
72	*Juglans californica*	So. Cal. black walnut	1	5	0	0	0	0	0	20	15	Fair	Fair	Yes		
73	*Juglans californica*	So. Cal. black walnut	1	8	0	0	0	0	0	20	20	Poor	Poor	Yes		
74	*Juglans californica*	So. Cal. black walnut	1	7	0	0	0	0	0	20	20	Fair	Fair	Yes		

Tree #	Botanical Name	Common Name	Stems	Individual Stem Diameters (in.)						Height (ft.)	Canopy (ft.)	Health	Structure	Protected	Notes	Tree Disposition
				D1	*D2*	*D3*	*D4*	*D5*	*D6*							
75	*Quercus agrifolia*	coast live oak	2	3	2	0	0	0	0	15	10	Fair	Fair	Yes		
76	*Juglans californica*	So. Cal. black walnut	1	7	0	0	0	0	0	15	15	Poor	Poor	Yes		
77	*Juglans californica*	So. Cal. black walnut	3	10	10	5	0	0	0	35	30	Poor	Poor	Yes		
78	*Juglans californica*	So. Cal. black walnut	3	9	7	7	0	0	0	25	25	Poor	Poor	Yes		
79	*Juglans californica*	So. Cal. black walnut	4	13	12	9	9	0	0	30	25	Poor	Poor	Yes		
80	*Juglans californica*	So. Cal. black walnut	1	7	0	0	0	0	0	15	15	Fair	Poor	Yes		
81	*Quercus agrifolia*	coast live oak	5	10	7	7	7	7	0	30	30	Good	Fair	Yes		
82	*Quercus agrifolia*	coast live oak	1	9	0	0	0	0	0	30	25	Good	Fair	Yes		
83	*Quercus agrifolia*	coast live oak	1	22	0	0	0	0	0	35	50	Good	Good	Yes		
84	*Quercus agrifolia*	coast live oak	1	9	0	0	0	0	0	25	20	Good	Good	Yes		
85	*Quercus agrifolia*	coast live oak	1	12	0	0	0	0	0	35	30	Good	Good	Yes		
86	*Quercus agrifolia*	coast live oak	1	12	0	0	0	0	0	45	35	Good	Good	Yes		
87	*Quercus agrifolia*	coast live oak	1	6	0	0	0	0	0	25	20	Good	Good	Yes		
88	*Quercus agrifolia*	coast live oak	1	13	0	0	0	0	0	50	30	Good	Good	Yes		
89	*Quercus agrifolia*	coast live oak	1	17	0	0	0	0	0	35	50	Good	Fair	Yes		
90	*Quercus agrifolia*	coast live oak	1	22	0	0	0	0	0	35	50	Good	Fair	Yes		
91	*Quercus agrifolia*	coast live oak	1	22	0	0	0	0	0	55	40	Good	Good	Yes		
92	*Quercus agrifolia*	coast live oak	1	9	0	0	0	0	0	40	15	Good	Good	Yes		
93	*Quercus agrifolia*	coast live oak	1	8	0	0	0	0	0	30	15	Good	Good	Yes		
94	*Quercus agrifolia*	coast live oak	1	9	0	0	0	0	0	30	20	Good	Good	Yes		
95	*Quercus agrifolia*	coast live oak	1	9	0	0	0	0	0	35	20	Good	Good	Yes		
96	*Quercus agrifolia*	coast live oak	1	9	0	0	0	0	0	35	20	Good	Good	Yes		
97	*Quercus agrifolia*	coast live oak	1	9	0	0	0	0	0	35	20	Good	Good	Yes		
98	*Quercus agrifolia*	coast live oak	1	10	0	0	0	0	0	35	20	Good	Good	Yes		
99	*Quercus agrifolia*	coast live oak	1	10	0	0	0	0	0	35	20	Good	Good	Yes		
100	*Quercus agrifolia*	coast live oak	1	13	0	0	0	0	0	35	20	Good	Good	Yes		
101	*Quercus agrifolia*	coast live oak	1	9	0	0	0	0	0	20	15	Good	Good	Yes		
102	*Quercus agrifolia*	coast live oak	1	12	0	0	0	0	0	35	20	Good	Good	Yes		
103	*Quercus agrifolia*	coast live oak	1	12	0	0	0	0	0	35	20	Fair	Good	Yes		

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Appendix D

City of Los Angeles
Protected Tree Ordinance

ORDINANCE NO. 177404

An ordinance amending various provisions of Articles 2 and 7 of Chapter I and Article 6 of Chapter IV and Section 96.303.5 of the Los Angeles Municipal Code to assure the protection of, and to further regulate the removal of, protected trees

THE PEOPLE OF THE CITY OF LOS ANGELES DO ORDAIN AS FOLLOWS:

Section 1. Subdivision 12 of Subsection A of Section 12.21 of the Los Angeles Municipal Code is amended to read:

12. Protected Tree Relocation and Replacement. All existing protected trees and relocation and replacement trees specified by the Advisory Agency in accordance with Sections 17.02, 17.05, 17.06, 17.51 and 17.52 of this Code shall be indicated on a plot plan attached to the building permit issued pursuant to this Code. In addition, the trees shall be identified and described by map and documentation as required by the Advisory Agency. A Certificate of Occupancy may be issued by the Department of Building and Safety, provided the owner of the property or authorized person representing the owner of the property (licensed contractor) obtains from the Advisory Agency in consultation with the City's Chief Forester, prior to the final inspection for the construction, a written or electronic document certifying that all the conditions set forth by the Advisory Agency relative to protected trees have been met.

Sec. 2. Section 17.02 of the Los Angeles Municipal Code is amended by deleting the paragraph defining "Oak Tree" in Section 17.02 and adding the following paragraph to read:

Protected Tree - Any of the following Southern California native tree species, which measures four inches or more in cumulative diameter, four and one-half feet above the ground level at the base of the tree:

(a) Oak tree including Valley Oak (Quercus lobata) and California Live Oak (Quercus agrifolia), or any other tree of the oak genus indigenous to California but excluding the Scrub Oak (Quercus dumosa).

(b) Southern California Black Walnut (Juglans californica var. californica)

(c) Western Sycamore (Platanus racemosa)

(d) California Bay (Umbellularia californica)

This definition shall not include any tree grown or held for sale by a licensed nursery, or trees planted or grown as a part of a tree planting program.

Sec. 3. The term "Tree Expert" set forth in Section 17.02 of the Los Angeles Municipal Code is amended to read:

Tree Expert - A person with at least four years of experience in the business of transplanting, moving, caring for and maintaining trees and who is (a) a certified arborist with the International Society of Arboriculture and who holds a valid California license as an agricultural pest control advisor or (b) a landscape architect or (c) a registered consulting arborist with the American Society of Consulting Arborists.

Sec. 4. Subdivision 7 of Subsection H of Section 17.05 of the Los Angeles Municipal Code is amended to read:

7. Where the Advisory Agency finds the project is consistent with the dwelling unit density permitted by the General Plan, and that the public health, safety or welfare and good subdivision design will be promoted by the preservation of protected trees, the Advisory Agency may permit the required area of one or more of the lots in a subdivision in an "RA," "RE," "RS" or "R1" Zone to be reduced by an amount sufficient to provide for protected tree preservation in accordance with Section 17.05 R of this Code. Provided, however, that in no event shall the reduction exceed 50 percent of the required lot area; no "RA" or "RE" lot shall be reduced below 50 feet in width; no "RS" or "R1" lot shall be reduced below 40 feet in width; and no lot in a designated "K" Horsekeeping District shall be reduced below 17,500 square feet.

Sec. 5. Subsection R of Section 17.05 of the Los Angeles Municipal Code is amended to read:

R. Protected Tree Regulations. No protected tree may be relocated or removed except as provided in this article or Article 6 of Chapter IV of this Code. The term "removed" or "removal" shall include any act that will cause a protected tree to die, including but not limited to acts that inflict damage upon the root system or other parts of the tree by fire, application of toxic substances, operation of equipment or machinery, or by changing the natural grade of land by excavation or filling the drip line area around the trunk.

1. Required Determinations. Subject to historical preservation requirements set forth in Subdivision 3 of this subsection, when a protected tree exists within a proposed subdivision, the tree may be relocated or removed if the Advisory Agency, in consultation with the City's Chief Forester, determines the existence of either (a) or (b) below:

(a) There has been prior applicable government action in which:

(i) The removal of the tree had been approved by the Advisory Agency; or

(ii) The property upon which the protected tree is located has been the subject of a determination by the City Planning Commission, the City Council, a Zoning Administrator, or an Area Planning Commission, the appeal period established by this Code with respect to the determination has expired, the determination is still in effect, and pursuant to the determination, the protected tree's removal would be permissible; or

(iii) A building permit has been issued for the property upon which the protected tree is located, the permit is still in effect, and the removal or relocation is not prohibited by the permit.

(b) The removal of the protected tree would not result in an undesirable, irreversible soil erosion through diversion or increased flow of surface waters that cannot be mitigated to the satisfaction of the City's Chief Forester, and the physical condition or location of the tree is such that:

(i) Its continued presence in its existing location prevents the reasonable development of the property; or

(ii) According to a report required pursuant to Section 17.06 C, acceptable to the Advisory Agency and prepared by a tree expert, there is a substantial decline from a condition of normal health and vigor of the tree, and its restoration through appropriate and economically reasonable preservation procedures and practices is not advisable; or

(iii) It is in danger of falling due to an existing and irreversible condition.

(iv) Its continued presence at its existing location interferes with proposed utility services or roadways within or without the subject property, and the only reasonable alternative to the interference is the removal of the tree; or

(v) It has no apparent aesthetic value, which will contribute to the appearance and design of the proposed subdivision; or it is not located with reference to other trees or monuments in such a way as to acquire a distinctive significance at the location.

2. Supplemental Authority. In the event the Advisory Agency, in consultation with the City's Chief Forester, determines pursuant to Subdivision 1(b) above, that a protected tree may be removed or relocated, the Advisory Agency may:

(a) Require relocation elsewhere on the same property where a protected tree has been approved for removal, and where the relocation is economically reasonable and favorable to the survival of the tree. Relocation to a site other than upon the same property may be permitted where there is no available or appropriate location on the property and the owner of the proposed off-site relocation site consents to the placement of a tree. In the event of relocation, the Advisory Agency may designate measures to be taken to mitigate adverse effects on the tree.

(b) Permit protected trees of a lesser size, or trees of a different species, to be planted as replacement trees for protected trees permitted by this Code to be removed or relocated, if replacement trees required pursuant to this Code are not available. In that event, the Advisory Agency may require a greater number of replacement trees.

3. Historical Monuments. The Advisory Agency, except as to Subdivision 1(b)(iii) above, shall require retention of a protected tree at its existing location, if the tree is officially designated as an Historical Monument or as part of an Historic Preservation Overlay Zone.

4. Requirements. In the event the Advisory Agency, in consultation with the City's Chief Forester, determines pursuant to Subdivision 1(b) above that a protected tree may be removed or relocated, the Advisory Agency shall require that:

(a) The protected tree be replaced within the property by at least two trees of a protected variety included within the definition set forth in Section 17.02 of this article, except where the protected tree is relocated pursuant to Subdivision 2(a) above. The size of each replacement tree shall be a 15-gallon, or larger, specimen, measuring one inch or more in diameter at a point one foot above the base, and not less than seven feet in height, measured from the base. The size and number of replacement trees shall approximate the value of the tree to be replaced.

(b) The subdivider record those covenants and agreements approved by the Advisory Agency necessary to assure compliance with conditions imposed by the Advisory Agency and to assure protected tree preservation.

(c) The subdivider provide protected tree maintenance information to purchasers of lots within the proposed subdivision.

(d) The subdivider post a bond or other assurance acceptable to the City Engineer to guarantee the survival of trees required to be replaced or permitted or required to be relocated, in a manner to assure the existence of continuously living trees at the approved replacement or relocation site for three years from the date that the trees are replaced or relocated. The City Engineer shall use the provisions of Section 17.08 G as its procedural guide in satisfaction of the bond requirements and processing. Any bond required shall be in a sum estimated by the City Engineer to be equal to the dollar value of the replacement tree or of the tree that is to be relocated. In determining value for these purposes, the City Engineer shall consult with the Advisory Agency, the City's Chief Forester, the evaluation of trees guidelines approved and adopted for professional plantsmen by the International Society of Arboriculture, the American Society of Consulting Arborists, the National Arborists Association and the American Association of Nurserymen, and other available, local information or guidelines.

5. Grading. The Advisory Agency is authorized to prohibit grading or other construction activity within the drip line of a protected tree.

Sec. 6. Subdivision 13 of Subsection B of Section 17.06 of the Los Angeles Municipal Code is amended to read:

13. The approximate location and general description of any large or historically significant trees and of any protected trees and an indication as to the proposed retention or destruction of the trees.

Sec. 7. Subsection C of Section 17.06 of the Los Angeles Municipal Code is amended to read:

C. Protected Tree Reports for Tentative Tract Maps. No application for a tentative tract map approval for a subdivision where a protected tree is located shall be considered complete unless it includes a report, in a form acceptable to the Advisory Agency and the City's Chief Forester, which pertains to preserving the tree and evaluates the subdivider's proposals for the preservation, removal, replacement or relocation of the tree. The report shall be prepared by a tree expert and shall include all protected trees identified pursuant to Section 17.06 B 13 of this Code.

In the event the subdivider proposes any grading, land movement, or other activity within the drip line of a protected tree referred to in the report, or proposes to relocate or remove any protected tree, the report shall also evaluate any mitigation measures proposed by the subdivider and their anticipated effectiveness in preserving the tree.

Sec. 8. Subsection D of Section 17.51 of the Los Angeles Municipal Code is amended to read:

D. Protected Tree Reports for Parcel Maps. No application for a preliminary parcel map approval for a parcel where a protected tree is located shall be considered complete unless it includes a report pertaining to preserving the tree. The report shall be prepared by a tree expert and shall evaluate the subdivider's proposals for protected tree preservation, removal, replacement and/or relocation. In the event the subdivider proposes any grading, land movement, or other activity within the drip line of any protected tree referred to in the report, or proposes to relocate or remove any tree, the report shall also evaluate any mitigation measures proposed by the subdivider and the anticipated effectiveness in preserving the tree.

Sec. 9. Subsection I of Section 17.52 of the Los Angeles Municipal Code is amended to read:

I. When a protected tree exists on a proposed parcel, the preservation of the tree at its existing location, its relocation for preservation purposes, or the removal of the tree shall be regulated in the same manner as that provided under subdivision regulations set forth in this chapter.

Sec. 10. Article 6 of Chapter IV of the Los Angeles Municipal Code is amended by amending the title and Section 46.00 to read:

ARTICLE 6

PRESERVATION OF PROTECTED TREES

SEC. 46.00. PROTECTED TREE REGULATIONS.

No protected tree may be relocated or removed except as provided in Article 7 of Chapter 1 or this article. The term "removed" or "removal" shall include any act that will cause a protected tree to die, including but not limited to acts that inflict damage upon the root system or other part of the tree by fire, application of toxic substances, operation of equipment or machinery, or by changing the natural grade of land by excavation or filling the drip line area around the trunk.

Sec. 11. Section 46.01 of the Los Angeles Municipal Code is amended to read:

SEC. 46.01. DEFINITION.

"PROTECTED TREE" means any of the following Southern California native tree species which measures four inches or more in cumulative diameter, four and one-half feet above the ground level at the base of the tree:

(a) Oak tree including Valley Oak (Quercus lobata) and California Live Oak (Quercus agrifolia), or any other tree of the oak genus indigenous to California but excluding the Scrub Oak (Quercus dumosa).

(b) Southern California Black Walnut (Juglans californica var. californica)

(c) Western Sycamore (Platanus racemosa)

(d) California Bay (Umbellularia californica)

This definition shall not include any tree grown or held for sale by a licensed nursery, or trees planted or grown as a part of a tree planting program.

Sec. 12. Section 46.02 of the Los Angeles Municipal Code is amended to read:

SEC. 46.02. REQUIREMENTS FOR PUBLIC WORKS PERMITS TO RELOCATE OR REMOVE PROTECTED TREES.

No person shall relocate or remove any protected tree, as that term is defined in Section 46.01, where the protected tree is not regulated pursuant to Article 7 of Chapter I of this Code, without first having applied for and obtained a permit from the Board of

Public Works or its designated officer or employee, except as otherwise provided in this section.

An application for a permit shall indicate, in a manner acceptable to the Board of Public Works, by number on a plot plan, the location of each protected tree, and shall identify each protected tree proposed to be retained, relocated or removed. If any grading is proposed that may affect the protected tree, a copy of the grading permit plan in compliance with Division 70 of Article 1 of Chapter IX of this Code shall be submitted with the application.

(a) Exemptions. The Board of Public Works shall exempt from and not require issuance of a permit for the relocation or removal of a protected tree where the Board is satisfied that:

1. The proposed relocation or removal of the protected tree has been approved by the Advisory Agency pursuant to Article 7 of Chapter I of this Code; or

2. The land upon which the protected tree is located has been the subject of a determination by the City Planning Commission, the City Council, a Zoning Administrator or an Area Planning Commission, the appeal period established by this Code with respect to the determination has expired, the determination is still in effect, and pursuant to the determination the protected tree's removal would be permissible; or

3. A building permit has been issued for any property and is still in effect with respect to the property under consideration and its implementation would necessitate the removal or relocation.

(b) Board Authority. The Board of Public Works may grant a permit for the relocation or removal of a protected tree, unless otherwise provided in this section or unless the tree is officially designated as an Historical Monument or as part of an Historic Preservation Overlay Zone, if the Board determines that the removal of the protected tree will not result in an undesirable, irreversible soil erosion through diversion or increased flow of surface waters, which cannot be mitigated to the satisfaction of the City; and

1. It is necessary to remove the protected tree because its continued existence at the location prevents the reasonable development of the subject property; or

2. The protected tree shows a substantial decline from a condition of normal health and vigor, and restoration, through appropriate and economically reasonable preservation procedures and practices, is not advisable; or

3. Because of an existing and irreversible adverse condition of the protected tree, the tree is in danger of falling, notwithstanding the tree having been designated an Historical Monument or as part of an Historic Preservation Overlay Zone.

(c) Additional Authority. The Board of Public Works or its authorized officer or employee may:

1. Require as a condition of a grant of permit for the relocation or removal of a protected tree, that the permittee replace the tree within the same property boundaries by at least two trees of a protected variety included within the definition set forth in Section 46.01 of this Code, in a manner acceptable to the Board. In size, each replacement tree shall be at least a 15-gallon, or larger, specimen, measuring one inch or more in diameter one foot above the base, and be not less than seven feet in height measured from the base. The size and number of replacement trees shall approximate the value of the tree to be replaced.

2. Permit protected trees of a lesser size or trees of a different species to be planted as replacement trees, if replacement trees of the size and species otherwise required pursuant to this Code are not available. In that event, a greater number of replacement trees may be required.

3. Permit a protected tree to be moved to another location on the property, provided that the environmental conditions of the new location are favorable to the survival of the tree and there is a reasonable probability that the tree will survive.

Sec. 13. Section 46.04 of the Los Angeles Municipal Code is amended to read:

SEC. 46.04. FEES.

A fee shall be charged for issuance of any permit pursuant to this article, which permits the removal of one or more protected trees. The fee shall be determined and adopted in the same manner as provided in Section 12.37 I 1 of the Los Angeles Municipal Code for establishing fees.

Sec. 14. A new Section 46.06 is added to the Los Angeles Municipal Code to read:

SEC. 46.06. WITHHOLDING OR REVOCATION OF BUILDING PERMITS FOR ILLEGAL REMOVAL OR RELOCATION OF PROTECTED TREES.

(a) The Bureau of Street Services, after notice and hearing pursuant to Subsections (b) and (c) of this section, shall have the authority to request the Superintendent of Building to withhold issuance of building permits, except for permits that are necessary to comply with a Department of Building and Safety order, for a period of time up to a maximum of ten years as requested by the Bureau and to revoke any building permit issued for which construction has not commenced with respect to any property on which any protected tree has been removed or relocated in violation of Section 46.00 of this Code.

The request shall be made in writing by the Director of the Bureau of Street Services or his/her designee and shall specifically state the start date and end date of the period of time the Bureau, or the Board of Public Works on appeal, have deemed necessary pursuant to Subsection (c) of this section. The period shall commence on the date the Bureau first becomes aware of the removal of the tree. Provided, however, the authority of the Bureau to act shall not apply to a purchaser, or to his or her agent, who in good faith and for valuable consideration has acquired title to the property subsequent to the illegal removal or relocation of any protected trees and prior to the recordation of the notice of intent as provided for in Subsection (b) of this section.

(b) The Bureau shall notify the applicant or permittee in writing of its intent to act pursuant to this section. The notice shall state that the applicant or permittee may submit any evidence it deems relevant on this matter, the hearing to be held on a date specified in the notice. A copy of the notice shall also be mailed to the owner of the property, if different from the applicant or permittee, as shown on the last equalized assessment roll, and to any person holding a deed of trust, mortgage or other security interest in the property as revealed by a title search with respect to the property. A copy of the notice shall also be recorded by the Bureau with the County Recorder.

(c) The Bureau hearing shall be set on a date no earlier than 20 days after the date of the mailing of the notice provided for in Subsection (b) above. At the hearing, if the facts indicate, the Bureau shall make a finding that the applicant or permittee is not a purchaser in good faith and for valuable consideration who acquired title to the property subsequent to the illegal removal or relocation of the protected tree and prior to the recordation of the notice of intent as provided for in Subsection (b) above. In the event the Bureau finds that a protected tree was removed or relocated in violation of Section 46.00 of this Code, it shall specify to the Superintendent of Building the length of time the issuance of building permits shall be withheld and whether building permits for which construction has not commenced shall be revoked. In making its determination, the Bureau shall consider the following factors: the number of trees removed or relocated, the size and age of the trees removed or relocated, the knowledge and intent of the owners of the property with respect to the removal or relocation and prior violations of law with respect to removal or relocation of protected trees. The applicant or permittee shall be notified in writing of the Bureau's determination within 30 days of the hearing.

(d) The applicant or permittee may appeal to the Board of Public Works any determination by the Bureau to request the Superintendent of Building to revoke or withhold issuance of building permits, including the length of time imposed. The appeal must be filed with the Board of Public Works within 30 days of the date of mailing of the notice of determination as provided for in Subsection (c) above. Further, any action by the Department of Building and Safety resulting from any of the provisions of this section, including building permit revocation, shall not be appealable to the Board of

Building and Safety Commissioners.

(e) Any final determination of the Bureau or the Board of Public Works on appeal, to request the Superintendent of Building to withhold issuance of building permits or to revoke a building permit, shall be forwarded to the Superintendent within ten days of the Bureau or Board's determination and shall also be set forth in an affidavit, which shall be recorded by the Bureau with the County Recorder within ten days of the Bureau or Board's determination.

Sec. 15. Subsection 5. of Section 96.303 of the Los Angeles Municipal Code is amended to read:

5. The owner must also provide a declaration under penalty of perjury that he or she has inspected the property for the existence of protected trees and the number of protected trees, if any, located on the subject property. For the purposes of this section, the definition of "protected tree" set forth in Section 46.01 this Code shall apply. The declaration shall also authorize the Bureau of Street Services within the Department of Public Works to verify this information by entry upon the subject property. A fee may be collected for any inspection required to verify the declaration. The fee shall be determined and adopted in the same manner as provided in Section 12.37 I 1 of this Code for establishing fees.

Sec. 16. The City Clerk shall certify to the passage of this ordinance and have it published in accordance with Council policy, either in a daily newspaper circulated in the City of Los Angeles or by posting for ten days in three public places in the City of Los Angeles: one copy on the bulletin board located at the Main Street entrance to the Los Angeles City Hall; one copy on the bulletin board located at the Main Street entrance to the Los Angeles City Hall East; and one copy on the bulletin board located at the Temple Street entrance to the Los Angeles County Hall of Records.

I hereby certify that this ordinance was passed by the Council of the City of Los Angeles, at its meeting of FEB 2 8 2006.

FRANK T. MARTINEZ, City Clerk

By ____________________
Deputy

Approved MAR 13 2006

____
Mayor

Approved as to Form and Legality

ROCKARD J. DELGADILLO, City Attorney

By Keith W. Pritsker
KEITH W. PRITSKER
Deputy City Attorney

Date: Feb. 8, 2006

Pursuant to Charter Section 559, **I approve** this ordinance on behalf of the City Planning Commission and recommend it be adopted . . . . . .

FEB. 8, 2006

see attached report.

Mark Winogrond
Interim Director of Planning

File Nos. 03-1459 and 03-1459-S1

#116278

DECLARATION OF POSTING ORDINANCE

I, MARIA C. RICO, state as follows: I am, and was at all times hereinafter mentioned, a resident of the State of California, over the age of eighteen years, and a Deputy City Clerk of the City of Los Angeles, California.

Ordinance No. **177404** - **Amending various provisions of Articles 2 and 7 of Chapter 1 and Article 6 of Chapter IV and Section 96.303.5 of the Los Angeles Municipal Code to assure the protection of, and to further regulate the removal of, protected trees** - a copy of which is hereto attached, was finally adopted by the Los Angeles City Council on **February 28, 2006**, and under the direction of said City Council and the City Clerk, pursuant to Section 251 of the Charter of the City of Los Angeles and Ordinance No. 172959, on **March 14, 2006**, I posted a true copy of said ordinance at each of three public places located in the City of Los Angeles, California, as follows: 1) one copy on the bulletin board located at the Main Street entrance to the Los Angeles City Hall; 2) one copy on the bulletin board located at the Main Street entrance to the Los Angeles City Hall East; 3) one copy on the bulletin board located at the Temple Street entrance to the Hall of Records of the County of Los Angeles.

Copies of said ordinance were posted conspicuously beginning on **March 14, 2006** and will be continuously posted for ten or more days.

I declare under penalty of perjury that the foregoing is true and correct.

Signed this **14th** day of **March 2006** at Los Angeles, California.

Maria C. Rico

Maria C. Rico, Deputy City Clerk

Ordinance Effective Date: April 23, 2006 Council File No. 03-1459 & S1

Rev. (2/21/06)

Appendix E

Tree Protection Measures

Appendix D – Tree Protection Measures

The following sections are included as general guidelines for tree protection from construction impacts. The measures presented should be monitored by arborists and enforced by contractors and developers for maximum benefit to the trees.

Tree Protection Measures Prior to Construction

Fencing: All remaining trees that will not be relocated or removed should be preserved and protected in place. Trees within approximately 15 feet of proposed construction activity should be temporarily fenced with chain link or other material satisfactory to City planning staff throughout grading and construction activities. The fencing should be installed 3 feet outside of the dripline of each tree (or edge of canopy for cluster of trees), be 4 feet tall, and staked every 6 feet. The fenced area should be considered the tree protection zone (TPZ) unless proximate construction required temporary removal.

Pre-Construction Meeting: A pre-construction meeting should be held between all contractors (including grading, tree removal/pruning, builders, etc.) and the arborist. The arborist will instruct the contractors on tree protection practices and answer any questions. All equipment operators and spotters, assistants, or those directing operators from the ground, should provide written acknowledgement of their receiving tree protection training. This training should include information on the location and marking of protected trees, the necessity of preventing damage, and the discussion of work practices that will accomplish such.

Protection and Maintenance During Construction

Once construction activities have begun the following measures should be adhered to:

Equipment Operation and Storage: Avoid heavy equipment operation around the trees. Operating heavy machinery around the root zones of trees will increase soil compaction, which decreases soil aeration and subsequently reduces water penetration in the soil. All heavy equipment and vehicles should, at minimum, stay out of the fenced TPZ, unless where specifically approved in writing and under the supervision of a Certified Arborist or as provided by the approved landscape plan.

Storage and Disposal: Do not store or discard any supply or material, including paint, lumber, concrete overflow, etc. within the protection zone. Remove all foreign debris within the protection zone; it is important to leave the duff, mulch, chips, and leaves around the retained trees for water retention and nutrients. Avoid draining or leakage of equipment fluids near retained trees. Fluids such as gasoline, diesel, oils, hydraulics, brake and transmission fluids, paint, paint thinners, and glycol (anti-freeze) should be disposed of properly. Keep equipment parked at least 50 feet away from retained trees to avoid the possibility of leakage of equipment fluids into the soil. The effect of toxic equipment fluids on the retained trees could lead to decline and death.

Grade Changes: Grade changes, including adding fill, are not permitted within the TPZ without special written authorization and under the supervision of a Certified Arborist or as provided by the approved landscape plan. Lowering the grade within this area will necessitate cutting main support and feeder roots, jeopardizing the health and structural integrity of the tree(s). Adding soil, even temporarily, on top of the existing grade will compact the soil further, and decrease both water and air availability to the trees' roots.

Moving Construction Materials: Care will be taken when moving equipment or supplies near the trees, especially overhead. Avoid damaging the tree(s) when transporting or moving construction materials and working around the tree (even outside of the fenced tree protection zone). Above ground tree parts that could be damaged (e.g., low limbs, trunks) should be flagged with red ribbon. If contact with the tree crown is unavoidable, prune the conflicting branch(es) using International Society of Arboriculture (ISA) standards.

Root Pruning: Except where specifically approved in writing or as provided in Attachment 3, all trenching should be outside of the fenced protection zone. Roots primarily extend in a horizontal direction forming a support base to the tree similar to the base of a wineglass. Where trenching is necessary in areas that contain tree roots, prune the roots using a Dosko root pruner or equivalent. All cuts should be clean and sharp, to minimize ripping, tearing, and fracturing of the root system. The trench should be made no deeper than necessary.

Irrigation: Trees that have been substantially root pruned (30% or more of their root zone) will require irrigation for the first 12 months. The first irrigation should be within 48 hours of root pruning. They should be deep watered every 2 to 4 weeks during the summer and once a month during the winter (adjust accordingly with rainfall). One irrigation cycle should thoroughly soak the root zones of the trees to a depth of 3 feet. The soil should dry out between watering; avoid keeping a consistently wet soil. Designate one person to be responsible for irrigating (deep watering) the trees. Check soil moisture with a soil probe before irrigating. Irrigation is best accomplished by installing a temporary above ground micro-spray system that will distribute water slowly (to avoid runoff) and evenly throughout the fenced protection zone ***but never soaking the area located within 6 feet of the tree trunk, especially during warmer months***.

Pruning: Do not prune any of the trees until all construction is completed. This will help protect the tree canopies from damage. All pruning should be completed under the direction of an ISA Certified Arborist and using ISA guidelines. Only dead wood should be removed from tree canopies.

Washing: During construction in summer and autumn months, wash foliage of trees adjacent to the construction sites with a strong water stream every two weeks in early hours before 10:00 a.m. to control mite and insect populations.

Inspection: An ISA Certified Arborist should inspect the impacted preserved trees on a monthly basis during construction. A report comparing tree health and condition to the original, pre-construction baseline should be submitted following each inspection. Photographs of representative trees are to be included in the report on a minimum annual basis.

Maintenance After Construction

Once construction is complete the fencing may be removed and the following measures performed to sustain and enhance the vigor of the preserved trees.

Mulch: Provide a 4-inch mulch layer under the canopy of trees. Mulch should include clean, organic mulch that will provide long-term soil conditioning, soil moisture retention, and soil temperature control.

Pruning: The trees will not require regular pruning. Pruning should *only* be done to maintain clearance and remove broken, dead or diseased branches. Pruning should only take place following a recommendation by an ISA Certified Arborist and performed under the supervision of an ISA Certified Arborist. No more than 20% of the canopy should be removed at any one time. All pruning should conform to ISA standards.

Watering: The natural trees that are not disturbed should not require regular irrigation, other than the 12 months following substantial root pruning. However, soil probing will be necessary to accurately monitor moisture levels. Especially in years with low winter rainfall, supplemental irrigation for the trees that sustained root pruning and any newly planted trees may be necessary. The trees should be irrigated *only* during the winter and spring months.

Watering Adjacent Plant Material: All plants near the trees should be compatible with water requirements of said trees. The surrounding plants should be watered infrequently with deep soaks and allowed to dry out in-between, rather than frequent light irrigation. The soil should not be allowed to become saturated or stay continually wet. Irrigation spray should not hit the trunk of any tree. A 60-inch dry-zone should be maintained around all tree trunks. An aboveground micro-spray irrigation system is recommended over typical underground pop-up sprays.

Washing: Periodic washing of the foliage is recommended during construction but no more than once every 2 weeks. Washing should include the upper and lower leaf surfaces and the tree bark. This should continue beyond the construction period at a less frequent rate with a high-powered hose only in the early morning hours. Washing will help control dirt/dust buildup that can lead to mite and insect infestations.

Spraying: If the trees are maintained in a healthy state, regular spraying for insect or disease control should not be necessary. If a problem does develop, an ISA Certified Arborist should be consulted; the trees may require application of insecticides to prevent the intrusion of bark-boring beetles and other invading pests. All chemical spraying should be performed by a licensed applicator under the direction of a licensed pest control advisor.

Inspection: All trees that were impacted during construction within the TPZ should be monitored by an ISA Certified Arborist for the first 5 years after construction completion. The Arborist should submit an annual report, photograph each tree and compare tree health and condition to the original, pre-construction baseline.

APPENDIX C
Cultural Resources Report

HISTORIC PROPERTIES IDENTIFICATION REPORT FOR THE CITY TRUNK LINE SOUTH UNIT 5 PHASE II AND UNIT 6 PROJECT

City of Los Angeles, Los Angeles County, California

PREPARED FOR:

LOS ANGELES DEPARTMENT OF WATER AND POWER

Environmental Affairs Division
111 North Hope Street, Room 1044
Los Angeles, California 90012
Contact: Christopher Lopez

PREPARED BY:

Kate Kaiser, MSHP; Linda Kry, BA; Candise Vogel, MA; Adriane Dorrler, BA; Makayla Murillo, BA; Kara R. Dotter, MS, MSHP; and Samantha Murray, MA

DUDEK

38 North Marengo Avenue
Pasadena, California 91101

APRIL 2020

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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
APE	Area of Potential Effect
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CHRIS	California Historical Resources Information System
City	City of Los Angeles
CRHR	California Register of Historical Resources
DWSRF	Drinking Water State Revolving Fund
HCM	Historic-Cultural Monument
LADWP	Los Angeles Department of Water and Power
MND	Mitigated Negative Declaration
NAHC	Native American Heritage Commission
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
PRC	California Public Resources Code
Project	City Trunk Line South Unit 5 Phase II and Unit 6 Project
ROW	Public Right of Way
RSP	Riveted Steel Pipe
SCCIC	Southern California Coastal Information Center
SHPO	State Historic Preservation Officer
SWRCB	State Water Resources Control Board
TCP	Tribal Cultural Property
TCR	Tribal Cultural Resource
WSP	Welded Steel Pipe

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EXECUTIVE SUMMARY

Dudek was retained by the Los Angeles Department of Water and Power (LADWP) to complete a cultural resources study for the proposed City Trunk Line South Unit 5 Phase II and Unit 6 Project (Project). LADWP is proposing to replace segments of the City Trunk Line between the Los Angeles Reservoir and the Franklin Reservoir with new welded steel pipe (WDP) and reinforce sections of riveted steel pipes (RSP) with Carbon Fiber Reinforced Polymer(CFRP) lining. The proposed replacement would occur at two units: City Trunk Line South Unit 5, Phase II located between a tie-in north of the intersection with Moorpark Street to the intersection with Dickens Street; and City Trunk Line South Unit 6 between just south of the Hacienda Drive intersection and south-most extent the City Trunk Line South before entering the Franklin Tunnel. The original City Trunk Line, constructed in 1914, is deteriorating, and nearing the end of its service life. The implementation of the proposed Project would improve capacity, reliability, and flexibility in the water system, and would complete the LADWP's six-phase plan to replace the aging City Trunk Line South, which conveys water from the Los Angeles Reservoir to the Franklin Reservoir. LADWP, as a municipal utility, would implement and operate the proposed Project and will therefore act as the lead agency under the California Environmental Quality Act (CEQA).

LADWP will fund the proposed Project and may seek additional funding from available sources, which may include the State Water Resources Control Board's (SWRCB) Drinking Water State Revolving Fund (DWSRF). This cultural study was prepared in support of the proposed Project's Initial Study and Mitigated Negative Declaration (IS/MND) and in compliance with federal environmental laws in the event that federal funding through the DWSRF is requested. As such, project-related activities with the potential to affect historic properties are considered federal undertakings, subject to compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and its implementing regulations (36 CFR Part 800). Therefore, the purpose of this report is to identify all cultural resources within the proposed Project's Area of Potential Effect (APE) and to determine whether the proposed Project would result in a significant impact to an historical resource under CEQA or an adverse effect to an historic property under Section 106 NHPA.

Dudek requested a search of the Sacred Lands File (SLF) from the Native American Heritage Commission (NAHC) of the proposed Project APE. A SLF review completed for a previous study (LA-07777), which overlaps the current proposed Project APE, had determined that the proposed Project APE was negative for Native American cultural resources. Details of the Native American coordination efforts are presented in Section 5.3 and provided in Appendix C. The proposed Project is subject to compliance with Assembly Bill (AB) 52. Native American consultation pursuant to AB 52 was completed by LADWP.

Dudek completed a California Historical Resources Information System (CHRIS) records search at the South Central Coastal Information Center (SCCIC) at California State University, Fullerton of the proposed Project APE and a surrounding 0.5-mile search buffer (Confidential Appendix B). The search identified 14 previously conducted technical investigations within the proposed Project APE and search buffer, one of which overlaps the proposed Project APE. The search also identified three historic built-environment resources, none of which are eligible for Federal, State, or Local listing. No historic built-environment resources intersect the proposed Project APE. Additionally, no archaeological resources were identified within the 0.5-mile search buffer of the proposed Project APE.

The City Trunk Line South segment and associated infrastructure (1914) were identified within the proposed Project APE during the survey and were recorded and evaluated for historical significance, however these structures were found not eligible for inclusion in the National Register of Historic Placed (NRHP), the California Register of Historical Resources (CRHR), or City of Los Angeles Historic-Cultural Monument (HCM) list due to lack of historical associations, architectural merit, and compromised integrity. The City Trunk Line South segment and associated infrastructure, are therefore not considered historic properties for the purposes of Section 106 of the NHPA or historical resources for the purposes of CEQA. No previously recorded archaeological or historic built-environment resources were identified within the proposed Project APE as a result of the CHRIS records search, Native American coordination, or survey. Therefore, this study finds that the proposed Project would have a less-than-significant impact on historical resources under CEQA and would result in no historic properties affected under Section 106 of the NHPA.

1 INTRODUCTION

Dudek was retained by Los Angeles Department of Water and Power (LADWP) to prepare a cultural resources technical report in support of the Initial Study/Mitigated Negative Declaration (IS/MND) for the proposed City Trunk Line South Unit 5 Phase II and Unit 6 Project (Project). This report presents the results of a records search, a reconnaissance-level survey of the proposed Project's Area of Potential Effect (APE); a Sacred Lands File (SLF) search conducted by the Native American Heritage Commission (NAHC); preparation of an historic context statement for the Project site; an evaluation of water-related infrastructure for historical significance; and an assessment of potential impacts/adverse effects to historical resources under the California Environmental Quality Act (CEQA) historic properties under Section 106 of the National Historic Preservation Act (NHPA).

LADWP is proposing the City Trunk Line South Unit 5 Phase II and Unit 6 Project in the Studio City neighborhood of the City of Los Angeles (City). Implementation of the proposed project would improve capacity, reliability, and flexibility in the water system, and would complete the LADWP's six-phase plan to replace the existing City Trunk Line South pipeline, which connect the Los Angeles Aqueduct Filtration Plant to the Franklin Reservoir. The existing City Trunk Line South pipeline was completed in 1914. The proposed project would include the replacement of the existing large-diameter potable water trunk line using the pipe jacking, open trench excavation, and the carbon fiber reinforced polymer lining methods. The proposed project would also include the installation of a flow control station, the structural relining of portions of the existing pipeline, and interior improvements within the existing Coldwater Canyon Pump Station.

LADWP will fund the proposed Project, but may seek additional funding from the State Water Resources Control Board's (SQRCB) Drinking Water State Revolving Fund (DWSRF). Applications for DWSRF funding are subject to compliance with applicable federal environmental laws and regulations through a process termed "CEQA-Plus", which was established in the DWSRF Program Operating Agreement between the United States Environmental Protection Agency and the SWRCB.

Project-related activities with the potential to affect historic properties are considered federal undertakings, subject to compliance with Section 106 of the NHPA of 1966, as amended, and its implementing regulations (36 CFR Part 800). The purpose of this report is to identify all cultural resources within the proposed Project APE and to determine whether the Project, as proposed, would result in a significant impact to an historical resource under CEQA or an adverse effect to an historic property under Section 106 of the NHPA. Moreover, this report was prepared in compliance with the requirements of CEQA-Plus in the event federal funding is requested by LADWP for the proposed Project.

Dudek Architectural Historian Kate Kaiser, MSHP and Dudek Archaeologist Linda Kry, BA are the technical leads and primary authors of this report, both of whom meet the Secretary of the Interior's Professional Qualifications Standards for Architectural History and Archaeology. Dudek Archaeologist Candise Vogel, MA, completed the CHRIS records search. Dudek Archaeologist Adriane Dorrler, BA, conducted the pedestrian survey, the NAHC SLF request, and coordinated Native American outreach. Dudek Archaeologist Makayla Murillo, BA, contributed to the report. Dudek Senior Architectural Historian Kara R. Dotter, MSHP, contributed vibration analysis to the report. Dudek Senior Architectural Historian and Archaeologist Samantha Murray, MA, RPA, who meets the Secretary of the Interior's Professional Qualifications Standards for both Archaeology and Architectural History, provided senior review. Resumes for all key personnel are provided in Appendix A.

2 PROJECT DESCRIPTION/UNDERTAKING

2.1 Project Description

Project Overview

The original Los Angeles City Trunk Line was installed in 1914 to serve the City of Los Angeles with water delivered by the Los Angeles Aqueduct to the Lower San Fernando Reservoir (later renamed the Lower Van Norman Reservoir), located in what is now the Van Norman Complex. The trunk line traversed the eastern San Fernando Valley from the reservoir to the Santa Monica Mountains, providing direct supply to areas of the Western Valley as well as functioning as a primary transmission conduit for water for central areas of the City through connections to the Franklin Reservoir Tunnel and, later, the North Hollywood Pump Station. The northern portion of the Los Angeles City Trunk Line, from the Van Norman Complex in the Granada Hills community of Los Angeles to the Tujunga Spreading Grounds in the Sun Valley community of Los Angeles, will be replaced under a separate project called City Trunk Line North.

The southern portion of the Los Angeles City Trunk Line, known as City Trunk Line South, starts near the Tujunga Wash at the intersection of Canterbury Avenue and Nagel Avenue, and terminates at the Franklin Tunnel. It is in an advanced stage of deterioration, which has resulted in recurring leaks and breaks. As such, LADWP implemented the six-phase City Trunk Line South Project, whereby needed improvements to, and replacements of, the existing large-diameter pipeline have been implemented, as shown in Table 1. The proposed project evaluated under this IS/MND comprises Unit 5, Phase II and Unit 6 of the City Trunk Line South Project.

Table 1. City Trunk Line South Project Overview

City Trunk Line South Project Phase	Description	Construction/Implementation Date	Status
City Trunk Line South, Unit 1	Upgrading 10,330 linear feet of 66-inch diameter pipe within the Coldwater Canyon Avenue ROW from immediately north of Roscoe Boulevard to immediately south of Sherman Way.	September 2004 - November 2007	Completed. In service.
City Trunk Line South, Unit 2	Upgrading 9,979 linear feet of 54-, 60-, and 66-inch diameter pipe within the Coldwater Canyon Avenue ROW from immediately south of Sherman Street to Vanowen Street and within the Vanowen Street ROW from Coldwater Canyon Avenue to immediately west of Lankershim Boulevard.	January 2009 - May 2012	Completed. In service.
City Trunk Line South, Unit 3	Upgrading 10,251 linear feet of 60-inch diameter pipe in the Whitsett Avenue ROW from Vanowen Street to Magnolia Boulevard.	July 2016 – February 2022	Construction Phase

Table 1. City Trunk Line South Project Overview

City Trunk Line South Project Phase	Description	Construction/Implementation Date	Status
City Trunk Line South, Unit 4	Phase I: Upgrading 7,257 linear feet of pipe within the Magnolia Boulevard and Whitsett Avenue ROW from Magnolia Boulevard to Moorpark Street.	October 2008 – September 2016	Construction
	Phase II: Upgrading 1,500 linear feet of 54- and 60-inch pipe in the Magnolia Boulevard and Whitsett Avenue ROW.	July 2015 – April 2017	Completed
City Trunk Line South, Unit 5	Phase I: Upgrading 6,372 linear feet of 54- and 60-inch diameter pipe within the Moorpark Street and Coldwater Canyon Avenue ROW.	June 2011 – March 2016	Completed
	Phase II: Upgrading 865 linear feet of 60-inch diameter pipe within the Coldwater Canyon Avenue ROW between Moorpark Street and Dickens Street.	November 2021 – May 2023	Design/Environmental Review
City Trunk Line South, Unit 6	Upgrading approximately 1,800 linear feet of 60-inch diameter pipe within the Coldwater Canyon Avenue, Avenida Del Sol, and Oeste Street ROW.		Design/Environmental Review

Project Design

The proposed project would include the replacement of the existing large-diameter, WSP potable water trunk line, as follows:

City Trunk Line South: Unit 5, Phase II

- The installation of 20 feet of 64-inch WSP for the tie-in connection within the Coldwater Canyon ROW, north of Moorpark Street, using the open trench method.
- The installation of 620 linear feet of 60-inch WSP within Coldwater Canyon Avenue starting at Ventura Boulevard and ending at Valleyheart Drive South, using the pipe jacking method.
- The structural relining with CFRP of 175 linear feet of the existing 62-inch RSP where Coldwater Canyon Avenue crosses the Los Angeles River.
- The installation of 50 linear feet of 60-inch WSP for the tie-in connections within Coldwater Canyon Avenue at Dickens Street and just south of the bridge, using the open trench method.

City Trunk Line South: Unit 6

- The installation of 60 linear feet of 60-inch WSP for the tie-in connection to the southerly terminus of the City Trunk Line South, Unit 5, Phase I, in Coldwater Canyon Avenue, using the open trench method.

- The removal and replacement of the existing flow control station within Oeste Avenue with 200 linear feet of 60-inch WSP, using the open trench method.
- The structural relining with CFRP of 675 linear feet of 60-inch WSP; 334 linear feet of 51-inch WSP; and, 688 linear feet of 62-inch RSP.
- The installation of an approximately 43.5x34x23-foot, flow control station vault on the LADWP-owned property, located at 3380 Coldwater Canyon Avenue, Studio City.
- Interior improvements within the existing Coldwater Canyon Pump Station (located along Oeste Avenue), consisting of the removal of four existing pump units, installation of four new pump units, replacement of valves within the pump station, and replacement of piping to accommodate the new pumps.

The proposed project would connect the new, large-diameter water trunk line segments to the previously implemented City Trunk Line Unit 5, Phase 1 project, which was completed in March 2016. Implementation of the proposed project would improve capacity, reliability, and flexibility in the water system, and would complete the LADWP's six-phase plan to replace the aging City Trunk Line South, which conveys water from the Los Angeles Reservoir to the Franklin Reservoir.

Construction

Construction of the proposed project would occur within the public ROW of Coldwater Canyon Avenue, Avenida Del Sol and Oeste Avenue. The proposed project would tie into the existing 54- 60-, and 64-inch WSP previously installed under Unit 5, Phase I.

During construction, the total estimated amount of excavation would be approximately 7,600 cubic yards, all of which would be exported to Upper Stone Canyon (which is LADWP-owned property) or Sun Valley Landfill, located at 9436 Glenoaks Boulevard. A total of 9,227 square feet of street repaving would occur under the proposed project.

Daily vehicular trips that are expected to occur throughout construction are as follows: maximum of 28 round trips per day for transportation of construction equipment to and from the work areas when necessary; approximately 28 round trips per day for transportation of construction workers to and from the work areas.

Partial block closures would be necessary for installing the new pipeline and its appurtenances; however, no full street closures are anticipated.

The portions of the existing City Trunk Line that would not remain in service would be removed or bulkheaded, filled with grout, and abandoned in place.

Construction Staging

The staging area for equipment and materials would be located within the project's work areas within the public ROW and nearby LADWP properties.

Construction Methods

The proposed project would include several construction methods through which the trunk line replacements and improvements would be implemented, namely pipe jacking and open trenching. Additionally, segments of existing pipe that would not be replaced using the pipe jacking and open trenching methods would be reinforced with CFRP. These construction methods and the CFRP lining process are described in detail below.

Pipe Jacking

Pipe jacking is a form of tunneling that is utilized to reduce disruptions at busy intersections and to extend underneath surface features along the alignment that are not suitable for open trench construction. It would be would be used to install approximately 620 linear feet of 60-inch WSP within Coldwater Canyon Avenue starting at Ventura Boulevard and ending at Valleyheart Drive South. Pipe jacking activities would last approximately six months and would require 28 construction workers.

The installation of pipelines using pipe jacking avoids the continuous surface disruption that is required for open trench construction. However, some surface disruption would still occur, since “jacking” and “receiving” pits are used and would be excavated along the project alignment. Pipe jacking involves a horizontal auger boring machine that is advanced in a tunnel bore to remove material ahead of or inside the jacking pipe. Powerful hydraulic jacks are used to push a steel jacking pipe from a launch (bore) pit to a receiving pit. As the tunneling machine is driven forward, a jacking pipe is added into the pipe string. The primary phases for pipe jacking are site preparation, excavation, shoring, casing pipe installation, pipe installation, pressure testing, disinfection, and work site restoration.

Site Preparation. Prior to the start of pipe jacking activities, LADWP would coordinate with the Los Angeles Department of Transportation (LADOT) to prepare traffic control plans. The traffic control plans would delineate the traffic lanes around any proposed work areas, as well as address any impacts to turn lane pockets at major intersections that could be affected during project construction. In preparation of excavating the jacking and receiving pits, the existing pavement would be removed using a concrete/asphalt saw cutter or pavement breaker. The pavement would be removed from the project site and recycled, reused as backfill or pavement base material, or transported to an appropriate recycling or disposal facility.

Excavation and Shoring. A jacking pit and a receiving pit are used for each location that would require jacking, typically one at each end of the pipe segment. The distance between the jacking and receiving pit will be approximately 620 feet, but may be longer or shorter depending on the soil or site conditions.

The jacking pits would generally have interior dimensions of 42 feet long by 17 feet wide, and would be about 50 feet deep. Receiving Pits would have interior dimensions of approximately 25 feet by long by 27 feet wide, and would be about 30 feet deep. The pits would be excavated with backhoes and other excavation equipment. The excavated soil would be hauled to an off-site disposal facility (either to the LADWP-owned Upper Stone

Canyon or to Sun Valley Landfill). As excavation occurs, the pits would be shored using the most appropriate shoring system for the site (usually either secant piles or beam and plate shoring).

Pipe installation. Once the pits (17' x 42' and 25' x 27') have been excavated and shored, a horizontal hydraulic jack would be placed at the bottom of the jacking pit, and a 76- inch diameter steel casing would be lowered into the pit and placed on the jack using a crane. A cutting shield would be placed in front of the pipe segment to cut through the soil. As the jack pushes the steel casing and cutting shield into the soil, the soil is removed from within the leading casing with an auger or boring machine, either by hand or on a conveyor. Once a casing segment is pushed into the soil, a new segment is lowered, set in place, and fastened to the casing that has been pushed. Installation of the steel casing is expected to progress at approximately 40 feet per day. Once the 76 inch casing has been installed, a 54-inch diameter carrier pipe would be lowered and placed on the jacks, which push the pipe into the steel casing using casing insulators.

Work Site Restoration. Once the new pipe has been installed along the jacking locations, the shoring system would be dissembled and the pits would be backfilled, compacted, repaved, and restriped.

Construction Equipment

- 1 Water Truck
- 1 Dump Trailer
- 1 Dump Truck (2-Axle)
- 1 Dump Truck (3-Axle)
- 1 Weld Truck with Trailer
- 1 Excavator CAT 345
- 1 Forklift
- 4 Pick-up Trucks
- 1 Flat Bed Pipe Truck
- 1 Backhoe
- 1 Blower
- 1 Skid Steer
- 1 Wheel Loader
- 1 Low Bed Trailer
- 1 Carry Deck
- 1 Slurry Truck
- 1 Tunnel Boring Machine

- 1 Power Generator
- 1 Electrical System
- 1 Control System
- 1 High Pressure Water Pump

Open Trench Excavation

Open Trench Excavation is a construction method that is typically used to install pipelines and their appurtenant features. The process consists of site preparation, excavation and shoring, pipe installation and backfilling, and work site restoration. Construction typically occurs within roadways and encompasses an approximately 800- to 1,000-foot work area. Open trench excavation would require approximately 12 construction workers throughout the construction period. The following is a description of the phases of construction for open trench excavation:

Site Preparation. Prior to the start of open trench excavation, LADWP would coordinate with LADOT to prepare traffic control plans. The traffic control plans would delineate the traffic lanes around any proposed work areas, as well as address any impacts to turn lane pockets at major intersections that could be affected during project construction. Where practicable, two-way travel along the affected roadways would be maintained throughout construction. Construction would primarily occur along one side of the street and would progress along the alignment with the maximum length of open trench being approximately 500 feet in length at any one time. In preparation, the existing pavement along the proposed alignment would be removed using a concrete/asphalt saw cutter or pavement breaker. The pavement would be removed from the project site and recycled, reused as backfill or pavement base material, or transported to an appropriate recycling or disposal facility.

Excavation and Shoring. A trench would be excavated along the alignment using backhoes, excavators, or other types of excavation equipment. Portions of the trench adjacent to utilities may be manually excavated. The excavated soil would be hauled off site (either to the LADWP-owned Upper Stone Canyon or to Sun Valley Landfill). During this process, approximately 40 cubic yards of excavated soil would be removed per day.

The size of the trench required for this project would be approximately 8 feet wide to accommodate the new 60-inch diameter pipeline installation. The depth of the trench would range from 11 feet to 12 feet below ground surface level. As excavation occurs, the trenches would be shored using the most appropriate shoring system for the site, as determined by the project's contractor, (usually either secant piles or beam and plate shoring) to prevent caving or collapse, per the requirements of the California Department of Industrial Relations, Division of Occupational Safety and Health (OSHA)). Utilities not relocated prior to trenching would be supported as excavation and shoring occurs.

If construction occurs in areas with high groundwater, either a watertight shoring system would be implemented, or, the groundwater would be removed during the excavation of the trenches, usually by pumping it from the ground through dewatering wells that have been drilled along the alignment. The extracted groundwater would first be treated for any contaminants, if present, before being discharged to the storm drain system or to the sewer system under Regional Water Quality Control Board permit requirements.

Pipe Installation and Backfilling. Once the trench has been excavated and shored, pipe segments would be lowered into the trench and covered with bedding material (sand or cement slurry). These segments would be welded at the joints. Pipe installation typically ranges from 40 to 100 feet per day. Once appurtenant structures have been installed and the pipe has been laid, the trench would be backfilled with cement slurry backfill.

Work Site Restoration. Once the new pipe has been installed and the trench has been backfilled, the site would be, compacted, repaved, and restriped.

Construction Equipment.

- 1 Water Truck
- 1 Dump Trailer
- 1 Dump Truck (2-Axle)
- 1 Dump Truck (3-Axle)
- 1 Weld Truck with Trailer
- 1 Excavator CAT 345
- 1 Forklift
- 4 Pick-up Trucks
- 1 Flat Bed Pipe Truck
- 1 Backhoe
- 1 Blower
- 1 Skid Steer
- 1 Wheel Loader
- 1 Low Bed Trailer
- 1 Carry Deck
- 1 Gang Truck
- Multiple Slurry Truck, one at a time

Carbon Fiber Reinforced Polymer Lining

The proposed project would include reinforcing approximately 855 linear feet of the existing trunk line with Carbon Fiber Reinforced Polymer (CFRP).

CFRP is an extremely strong composite material made from fiber-reinforced plastic. CFRP is commonly used to reinforce degrading pipelines because: 1) it has less impact to the surrounding community; 2) it does not require open trenching; 3) it is generally resistant to corrosion; and, 4) it is more cost-effective and time efficient than other methods.

CFRP would be installed by first saturating sheets of glass fiber and carbon fiber with a two part epoxy and then taken inside the pipeline via manhole access where the installer will place the sheets on the pipe and use a squeegee-like tool to adhere them to the pipe and remove any air bubbles. The glass fiber and carbon fiber is left to cure overnight and maintained in a controlled environment (temperature and humidity).

Implementation of the CFRP lining would last approximately six months and would require 25 full-time construction workers.

Construction Equipment

- 1 Pneumatic Abrasive Blast Pot
- 1 Tool Trailer
- 1 FRP Saturator Machine
- 1 Material Storage Trailer
- 1 60 kW In-Line Heater
- 1 18k CFM Dust Collector
- 1 HC 5000 Desiccant Dehumidifier
- 1 375 CFM Air Compressor
- 1 Slurry Truck

Hydrostatic Testing and Pipeline Disinfection

Hydrostatic testing would be conducted periodically throughout construction.

The total amount of water required for hydrostatic testing and disinfection would be approximately 845,600 gallons (422,800 gallons for hydrostatic testing and 422,800 gallons for disinfection). Hydrostatic test water would be discharged to the storm drain system in accordance with Los Angeles Regional Water Quality Control Board (LARWQCB) dewatering permit requirements or to the sewer system per Sewer Capacity

Availability Request (SCAR) Permit requirements. Once hydrostatic testing is completed, the new pipelines would be disinfected.

2.2 Project Location

The proposed project would be located in the Studio City neighborhood of Los Angeles, in the southeastern portion of the San Fernando Valley, approximately 15 miles northwest of Downtown Los Angeles. As shown in Figure 1 (Project Location), the Unit 5, Phase II alignment of the proposed project would be located within the Coldwater Canyon Avenue right-of-way (ROW), and runs south for approximately 1,500 feet from immediately north of Ventura Boulevard, across the Los Angeles River, to terminate at the intersection of Coldwater Canyon Avenue and Dickens Street. Additionally, Unit 5 Phase II of the City Trunk Line South Project would include an additional 20-foot segment, located north of Moorpark Street where a new tie-in connection would connect the existing 64-inch City Trunk Line to the existing 54-inch trunk line.

The Unit 6 alignment would begin approximately 0.5-mile south of the Unit 5, Phase II alignment, and would run south within the ROW of Coldwater Canyon Avenue, Avenida Del Sol and Oeste Avenue before terminating at the LADWP-owned property, located at 3380 Coldwater Canyon Boulevard. Major freeways in the project vicinity include U.S. Highway 101 South (101-S), which runs in a southeasterly direction approximately 0.5-mile north of the project site and Interstate 405 (I-405), which runs in a north-south direction approximately three miles east of the project alignment.

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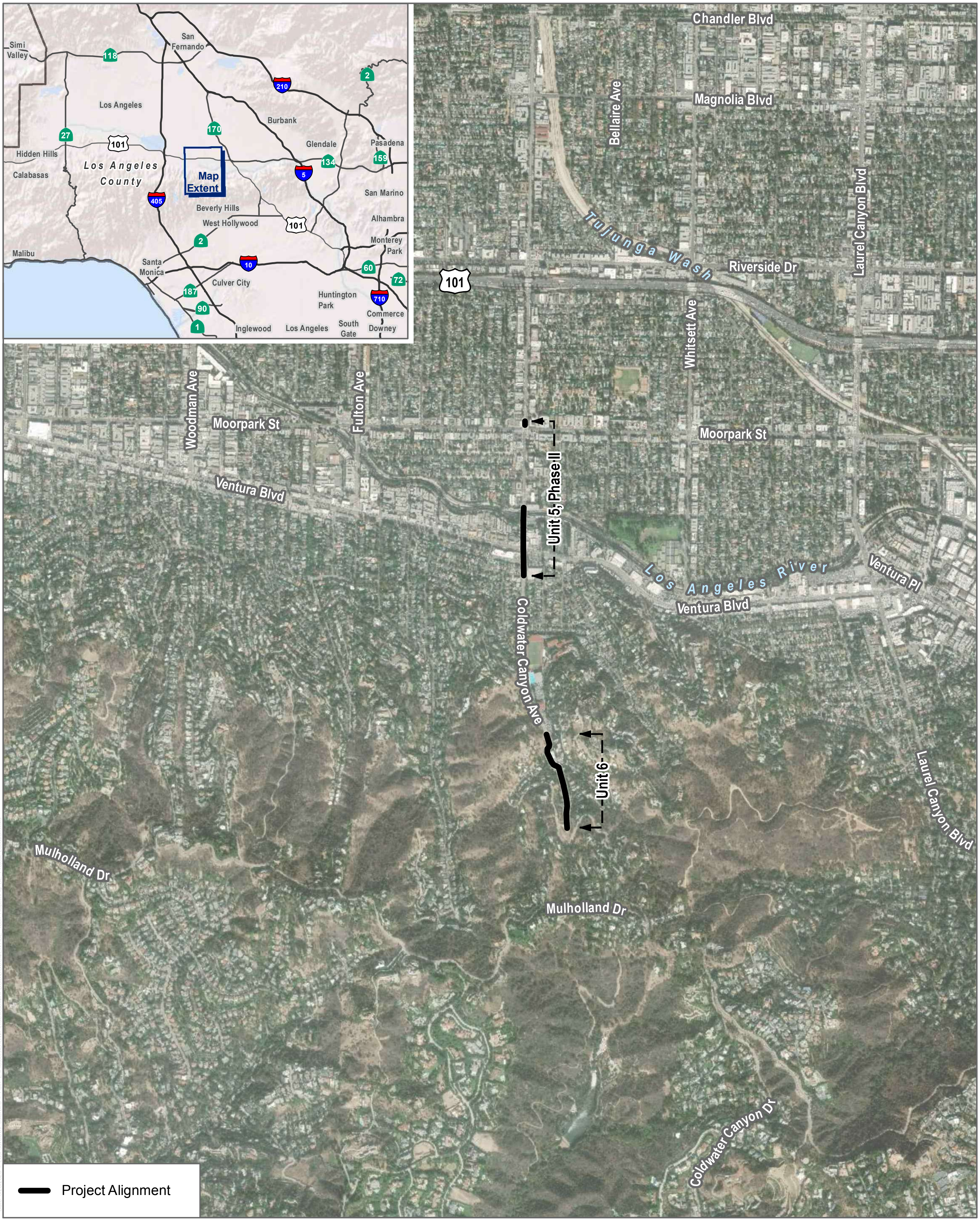

SOURCE: Bing Maps 2019, Open Street Map 2019

LA DWP Los Angeles Department of Water & Power

0 1,000 2,000 Feet

FIGURE 1

Project Location Map

City Trunk Line South Unit 5 Phase II and Unit 6 Project

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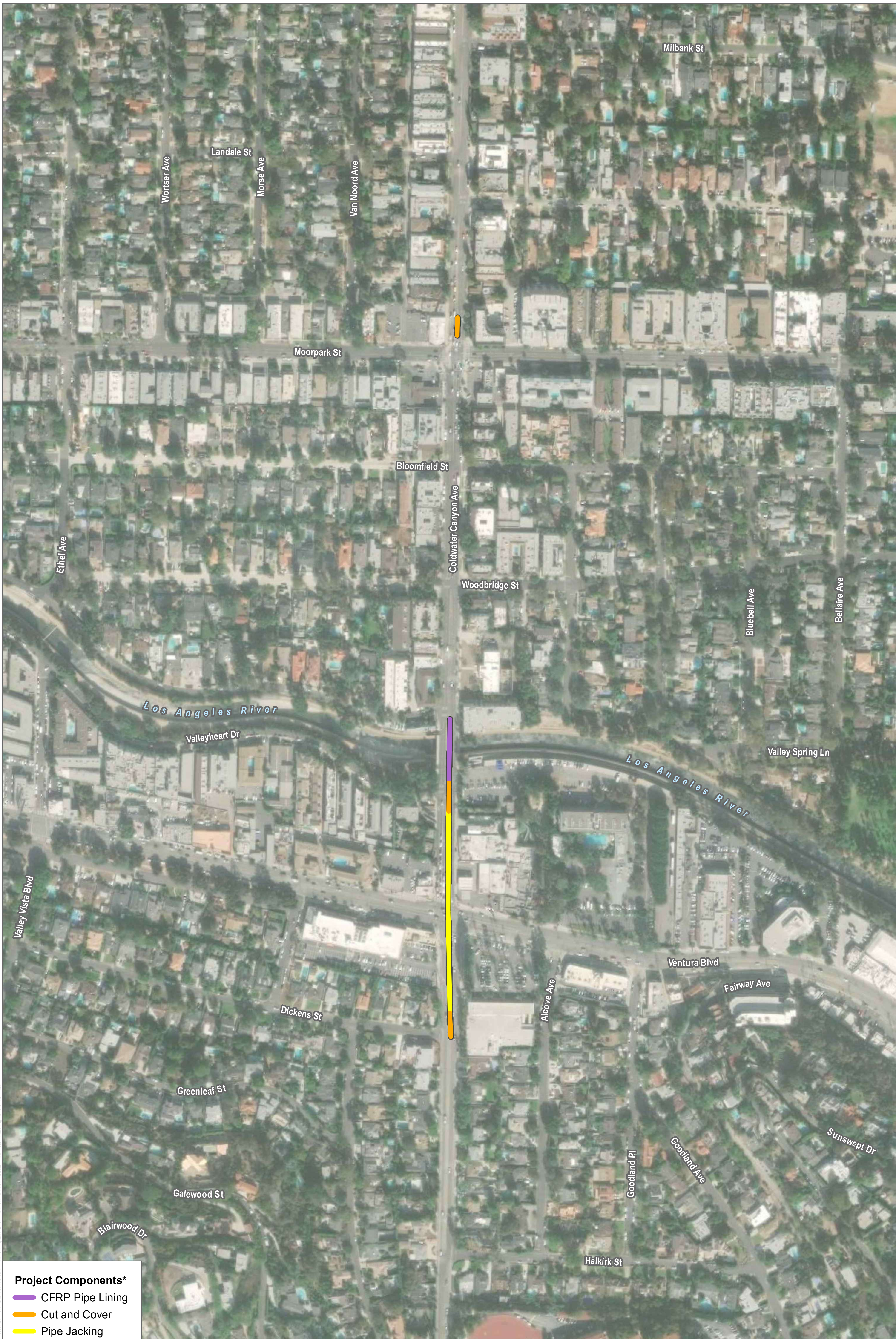
2.3 Area of Potential Effect

The APE is the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties. Determination of the APE is influenced by a project's setting, the scale and nature of the undertaking, and the different kinds of effects that may result from the undertaking (36 CFR 800.16(d)). The proposed Project APE (Figure 2a: Project APE Unit 5, phase II; Figure 2b: Project APE Unit 6) includes consideration of the direct and indirect effects of the project/undertaking.

The APE is where ground disturbance is expected to occur, representing the proposed Project footprint, and includes the following:

- **Unit 5, Phase II:** The proposed pipeline replacement for Unit 5, Phase II would occur within the public ROW of Coldwater Canyon Avenue.
  - **At Cut and Cover Excavation locations:** The size of the trench required for this project would be approximately 6 feet wide to accommodate the new 60-inch diameter pipeline installation. The depth of the trench would range from 8 feet to 9 feet below ground surface level.
  - **At Pipe Jacking locations:** The jacking pits would generally have interior dimensions of 42 feet long by 17 feet wide, and would be about 50 feet deep. Receiving Pits would have interior dimensions of approximately 25 feet by long by 27 feet wide, and would be about 30 feet deep.
  - **At CFRP Lining locations:** no excavation or trenching will occur. All activity will take place using existing access infrastructure and inside existing pipeline segments
- **Unit 6:** The majority of the proposed pipeline replacement for Unit 6 would occur within the public ROW of Coldwater Canyon Avenue, Avenida Del Sol and Oeste Avenue.
  - **At Cut and Cover Excavation locations:** The size of the trench required for this project would be approximately 6 feet wide to accommodate the new 60-inch diameter pipeline installation. The depth of the trench would range from 8 feet to 9 feet below ground surface level.
  - **At CFRP Lining locations:** no excavation or trenching will occur. All activity will take place using existing access infrastructure and inside existing pipeline segments
- **Unit 6:** Some segments of the proposed pipeline replacement for Unit 6, *marked on the map as CFRP lining only,* occur beneath the following parcels:
  - 2384-017-037: St. Michael and All Saints Church, 3650 N Coldwater Canyon Avenue
  - 2384-019-015: private residence, 3977 N. Oeste Avenue
  - 2384-019-016: private residence, 3971 N. Oeste Avenue
- Construction staging areas along streets where the construction is taking place.
- Areas where equipment and materials may be staged including parking lanes of roadways and along sidewalks where encroachment may occur.

The vertical extent of the APE for the proposed Project is defined as the depth of soils disturbed during Project construction that have the potential to contain intact cultural deposits. The amount of disturbed soils varies according to the topography and construction needs, but is anticipated to be roughly up to 10 feet below grade where trenching is anticipated and up to 50 feet below grade where jacking and receiving pits for pipe jacking are located.



SOURCE: Bing Maps 2019, Open Street Map 2019

LA DWP Los Angeles Department of Water & Power

0 150 300 Feet

FIGURE 2A

Project APE — Unit 5, Phase II

City Trunk Line South Unit 5 Phase II and Unit 6 Project

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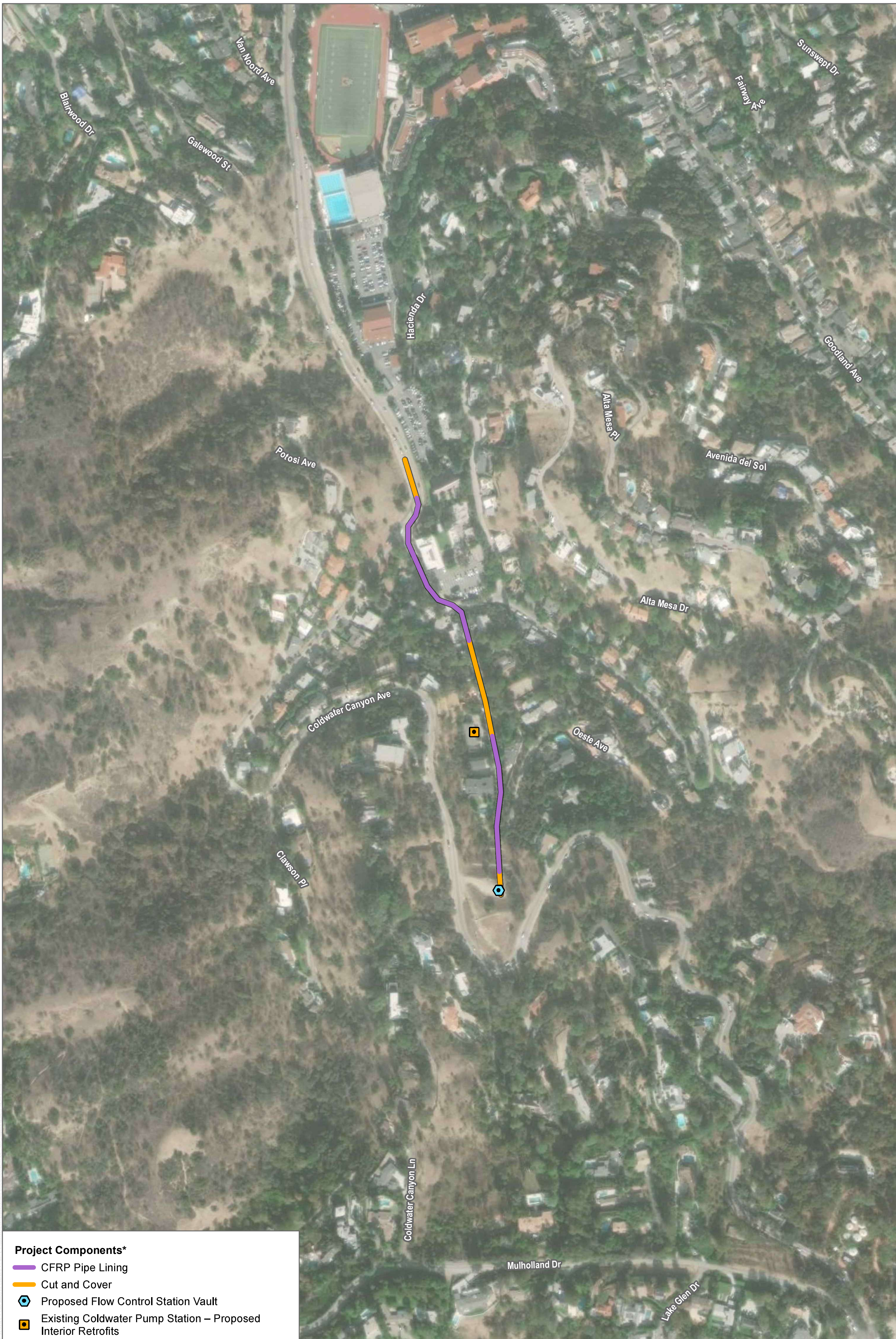

Project Components*

- CFRP Pipe Lining
- Cut and Cover
- Proposed Flow Control Station Vault
- Existing Coldwater Pump Station – Proposed Interior Retrofits

SOURCE: Bing Maps 2019, Open Street Map 2019

Los Angeles Department of Water & Power

0 150 300 Feet

FIGURE 2B

Project APE — Unit 6

City Trunk Line South Unit 5 Phase II and Unit 6 Project

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2.4 Regulatory Setting

The regulatory framework for the project is CEQA+. As such, project-related activities with the potential to affect historic properties are considered federal undertakings, subject to compliance with Section 106 of the NHPA of 1966, as amended, and its implementing regulations (36 CFR Part 800). Under Section 106, historic and archaeological districts, sites, buildings, structures, and objects are assigned significance based on their exceptional value or quality in illustrating or interpreting history, architecture, archaeology, engineering, and culture. A number of criteria are used in demonstrating resource importance; these are described below.

Federal

The National Historic Preservation Act

The NHPA established the National Register of Historic Places (NRHP) and the President's Advisory Council on Historic Preservation (ACHP), and provided that states may establish State Historic Preservation Officers (SHPOs) to carry out some of the functions of the NHPA. Most significantly for federal agencies responsible for managing cultural resources, Section 106 of the NHPA directs that

> [t]he head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in any State and the head of any Federal department or independent agency having authority to license any undertaking shall, prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, as the case may be, take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the NRHP.

Section 106 also affords the ACHP a reasonable opportunity to comment on the undertaking (16 U.S.C. 470f).

36 Code of Federal Regulations, Part 800 (36 CFR 800) implements Section 106 of the NHPA. It defines the steps necessary to identify historic properties (those cultural resources listed in or eligible for listing in the NRHP), including consultation with federally recognized Native American tribes to identify resources with important cultural values; to determine whether or not they may be adversely affected by a proposed undertaking; and the process for eliminating, reducing, or mitigating the adverse effects.

The content of 36 CFR 60.4 defines criteria for determining eligibility for listing in the NRHP. The significance of cultural resources identified during an inventory must be formally evaluated for historic significance in consultation with the ACHP and the California SHPO to determine if the resources are eligible for inclusion in the NRHP. Cultural resources may be considered eligible for listing if they possess integrity of location, design, setting, materials, workmanship, feeling, and association.

Regarding criteria A through D of Section 106, the quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, cultural resources, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that:

A. Are associated with events that have made a significant contribution to the broad patterns of our history; or
B. Are associated with the lives of persons significant in our past; or
C. 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. have yielded or may be likely to yield, information important in prehistory or history [36 CFR 60.4].

The 1992 amendments to the NHPA enhance the recognition of tribal governments' roles in the national historic preservation program, including adding a member of an Indian tribe or Native Hawaiian organization to the ACHP.

The NHPA amendments:

- Clarify that properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization may be determined eligible for inclusion in the National Register
- Reinforce the provisions of the Council's regulations that require the federal agency to consult on properties of religious and cultural importance.

The 1992 amendments also specify that the ACHP can enter into agreement with tribes that permit undertakings on tribal land and that are reviewed under tribal regulations governing Section 106. Regulations implementing the NHPA state that a federal agency must consult with any Indian tribe that attaches religious and cultural significance to historic properties that may be affected by an undertaking.

State

California Register of Historical Resources

In California, the term "historical resource" includes "any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California" (PRC Section 5020.1(j)). In 1992, the California legislature established the California Register of Historical Resources (CRHR) "to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change" (PRC Section 5024.1(a)). The criteria for listing resources in the

CRHR were expressly developed to be in accordance with previously established criteria developed for listing in the NRHP, enumerated below. According to PRC Section 5024.1(c)(1–4), a resource is considered historically significant if it (i) retains "substantial integrity," and (ii) meets at least one of the following criteria:

(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, or represents the work of an important creative individual, or possesses high artistic values.

(4) Has yielded, or may be likely to yield, information important in prehistory or history.

To understand the historic importance of a resource, sufficient time must have passed to obtain a scholarly perspective on the events or individuals associated with the resource. A resource younger than 50 years old may be considered for listing in the CRHR if it can be demonstrated that sufficient time has passed to understand its historical importance (see California Code of Regulations, Title 14, Section 4852(d)(2)).

The CRHR protects cultural resources by requiring evaluations of the significance of prehistoric and historic resources. The criteria for the CRHR are nearly identical to those for the NRHP, and properties listed or formally designated as eligible for listing in the NRHP are automatically listed in the CRHR, as are state landmarks and points of interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

California Environmental Quality Act

As described further below, the following CEQA statutes and guidelines are of relevance to the analysis of archaeological, historic, and tribal cultural resources:

- PRC Section 21083.2(g) defines "unique archaeological resource."
- PRC Section 21084.1 and CEQA Guidelines Section 15064.5(a) defines "historical resources." In addition, CEQA Guidelines Section 15064.5(b) defines the phrase "substantial adverse change in the significance of an historical resource"; it also defines the circumstances when a project would materially impair the significance of an historical resource.
- PRC Section 21074(a) defines "tribal cultural resources."
- PRC Section 5097.98 and CEQA Guidelines Section 15064.5(e) set forth standards and steps to be employed following the accidental discovery of human remains in any location other than a dedicated ceremony.
- PRC Sections 21083.2(b)-(c) and CEQA Guidelines Section 15126.4 provide information regarding the mitigation framework for archaeological and historic resources, including examples of preservation-in-place mitigation measures; preservation-in-place is the preferred manner of mitigating

impacts to significant archaeological sites because it maintains the relationship between artifacts and the archaeological context, and may also help avoid conflict with religious or cultural values of groups associated with the archaeological site(s).

Under CEQA, a project may have a significant effect on the environment if it may cause "a substantial adverse change in the significance of an historical resource" (PRC Section 21084.1; CEQA Guidelines Section 15064.5(b)). If a site is either listed or eligible for listing in the CRHR, or if it is included in a local register of historic resources, or identified as significant in a historical resources survey (meeting the requirements of PRC Section 5024.1(q)), it is a "historical resource" and is presumed to be historically or culturally significant for the purposes of CEQA (PRC Section 21084.1; CEQA Guidelines Section 15064.5(a)). The lead agency is not precluded from determining that a resource is a historical resource even if it does not fall within this presumption (PRC Section 21084.1; CEQA Guidelines Section 15064.5(a)).

A "substantial adverse change in the significance of an historical resource" reflecting a significant effect under CEQA means "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired" (CEQA Guidelines Section 15064.5(b)(1); PRC Section 5020.1(q)). In turn, the significance of a historical resource is materially impaired when a project does any of the following (CEQA Guidelines Section 15064.5(b)(2)):

1) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register; or
2) Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the PRC or its identification in an historical resources survey meeting the requirements of Section 5024.1(g) of the PRC, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
3) Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register as determined by a lead agency for purposes of CEQA.

Pursuant to these sections, the CEQA inquiry begins with evaluating whether a project site contains any historical resources, then evaluates whether that project would cause a substantial adverse change in the significance of a historical resource such that the resource's historical significance is materially impaired.

If it can be demonstrated that a project would cause damage to a unique archaeological resource, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that they cannot be left undisturbed, mitigation measures are required (Section 21083.2(a), (b), and (c)).

Section 21083.2(g) defines a unique archaeological resource as an archaeological artifact, object, or site about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

(1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

(2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.

(3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Impacts to non-unique archaeological resources are generally not considered a significant environmental impact (PRC Section 21083.2(a); CEQA Guidelines Section 15064.5(c)(4)). However, if a non-unique archaeological resource qualifies as tribal cultural resource (PRC Sections 21074(c) and 21083.2(h)), further consideration of significant impacts is required.

CEQA Guidelines Section 15064.5 assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. As described below, these procedures are detailed in PRC Section 5097.98.

California State Assembly Bill 52

AB 52 of 2014 amended PRC Section 5097.94 and added PRC Sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2, and 21084.3. AB 52 established that TCRs must be considered under CEQA and also provided for additional Native American consultation requirements for the lead agency. Section 21074 describes a TCR as a site, feature, place, cultural landscape, sacred place, or object that is considered of cultural value to a California Native American tribe. A TCR is either:

- On the CRHR or a local historic register; Eligible for the CRHR or a local historic register; or
- A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1.

AB 52 formalizes the lead agency–tribal consultation process, requiring the lead agency to initiate consultation with California Native American groups that are traditionally and culturally affiliated with the project, including tribes that may not be federally recognized. Lead agencies are required to begin consultation prior to the release of a negative declaration, mitigated negative declaration, or EIR.

Section 1 (a)(9) of AB 52 establishes that "a substantial adverse change to a TCR has a significant effect on the environment." Effects on TCRs should be considered under CEQA. Section 6 of AB 52 adds Section 21080.3.2 to the PRC, which states that parties may propose mitigation measures "capable of avoiding or substantially lessening potential significant impacts to a tribal cultural resource or alternatives that would avoid significant impacts to a tribal cultural resource." Further, if a California Native American tribe requests consultation regarding project alternatives, mitigation measures, or significant effects to TCRs, the consultation shall include those topics (PRC Section 21080.3.2(a)). The environmental document and the mitigation monitoring and reporting program (where applicable) shall include any mitigation measures that are adopted (PRC Section 21082.3(a)).

Native American Historic Cultural Sites (California Public Resources Code section 5097 et seq.)

The Native American Historic Resources Protection Act (Public Resources Code section 5097, et seq.) addresses the disposition of Native American burials in archaeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction; establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project; and establishes the NAHC to resolve disputes regarding the disposition of such remains. In addition, the Native American Historic Resource Protection Act makes it a misdemeanor punishable by up to 1 year in jail to deface or destroy an Indian historic or cultural site that is listed or may be eligible for listing in the CRHR.

California Native American Graves Protection and Repatriation Act

The California Native American Graves Protection and Repatriation Act (California Repatriation Act), enacted in 2001, requires all state agencies and museums that receive state funding and that have possession or control over collections of human remains or cultural items, as defined, to complete an inventory and summary of these remains and items on or before January 1, 2003, with certain exceptions. The California Repatriation Act also provides a process for the identification and repatriation of these items to the appropriate tribes.

California Health and Safety Code

California law protects Native American burials, skeletal remains, and associated grave goods, regardless of their antiquity, and provides for the sensitive treatment and disposition of those remains. Health and Safety Code Section 7050.5 requires that if human remains are discovered in any place other than a dedicated cemetery, no further disturbance or excavation of the site or nearby area reasonably suspected to contain human remains can occur until the County Coroner has examined the remains (Health and Safety Code Section 7050.5b). PRC Section 5097.98 outlines the process to be followed in the event that remains are discovered. If the coroner determines or has reason to believe the remains are those of a Native American, the coroner must contact the Native American Heritage Commission (NAHC) within 24 hours (Health and Safety Code Section 7050.5c). The NAHC would notify the most likely descendant (MLD). With the permission of the landowner, the MLD may inspect the site of discovery. The inspection must be completed within 48 hours of notification of the MLD by the NAHC. The MLD may recommend means of treating or disposing of, with appropriate dignity, the human remains and items associated with Native Americans.

Local

Los Angeles Historic-Cultural Monuments

Local landmarks in the City of Los Angeles are known as Historic-Cultural Monuments (HCMs) and are under the aegis of the Planning Department, Office of Historic Resources. They are defined in the Cultural Heritage Ordinance as follows (Los Angeles Municipal Code Section 22.171.7, added by Ordinance No. 178,402, effective April 2, 2007):

> Historic-Cultural Monument (Monument) is any site (including significant trees or other plant life located on the site), building or structure of particular historic or cultural significance to the City of Los Angeles, including historic structures or sites in which the broad cultural, economic or social history of the nation, State or community is reflected or exemplified; or which is identified with historic personages or with important events in the main currents of national, State or local history; or which embodies the distinguishing characteristics of an architectural type specimen, inherently valuable for a study of a period, style or method of construction; or a notable work of a master builder, designer, or architect whose individual genius influenced his or her age.

Sec. 22.171.7. Monument Designation Criteria.

For purposes of this article, a Historic-Cultural Monument (Monument) is any site (including significant trees or other plant life located on the site), building or structure of particular historic or cultural significance to the City of Los Angeles. A proposed Monument may be designated by the City Council upon the recommendation of the Commission if it meets at least one of the following criteria:

1. Is identified with important events of national, state, or local history, or exemplifies significant contributions to the broad cultural, economic or social history of the nation, state, city or community;
2. Is associated with the lives of historic personages important to national, state, city, or local history; or
3. Embodies the distinctive characteristics of a style, type, period, or method of construction; or represents a notable work of a master designer, builder, or architect whose individual genius influenced his or her age.

Historic Preservation Overlay Zones

As described by the City of Los Angeles Office of Historic Resources, the Historic Preservation Overlay Zone (HPOZ) Ordinance was adopted in 1979 and amended in 2004 to identify and protect neighborhoods with distinct architectural and cultural resources. HPOZs, commonly known as historic districts, provide for review of proposed exterior alterations and additions to historic properties within designated districts.

Regarding HPOZ eligibility, City of Los Angeles Ordinance Number 175891 states (Los Angeles Municipal Code, Section 12.20.3):

> Features designated as contributing shall meet one or more of the following criteria:
>
> 1. adds to the Historic architectural qualities or Historic associations for which a property is significant because it was present during the period of significance, and possesses Historic integrity reflecting its character at that time; or
> 2. owing to its unique location or singular physical characteristics, represents an established feature of the neighborhood, community or city; or
> 3. retaining the building, structure, Landscaping, or Natural Feature, would contribute to the preservation and protection of an Historic place or area of Historic interest in the City.

Regarding effects on federal and locally significant properties, Los Angeles Municipal Code states the following (Section 91.106.4.5, Permits for Historical and Cultural Buildings):

> The department shall not issue a permit to demolish, alter or remove a building or structure of historical, archaeological or architectural consequence if such building or structure has been officially designated, or has been determined by state or federal action to be eligible for designation, on the National Register of Historic Places, or has been included on the City of Los Angeles list of historic cultural monuments, without the department having first determined whether the demolition, alteration or removal may result in the loss of or serious damage to a significant historical or cultural asset. If the department determines that such loss or damage may occur, the applicant shall file an application and pay all fees for the California Environmental Quality Act Initial Study and Check List, as specified in Section 19.05 of the Los Angeles Municipal Code. If the Initial Study and Check List identifies the historical or cultural asset as significant, the permit shall not be issued without the department first finding that specific economic, social or other considerations make infeasible the preservation of the building or structure.

3 SETTING

3.1 Environmental Setting

The proposed Project APE is located in a highly urbanized area in the San Fernando Valley, in the Studio City neighborhood of the City of Los Angeles, which is characterized primarily by multifamily residential and commercial developments in the lower elevation and sparse single-family residential in the higher elevations. The proposed Project APE is in the Coldwater Canyon drainage on the north slope of the Santa Monica Mountains, 12.1 miles northwest of Downtown Los Angeles, and 9.9 miles northeast of the Pacific Ocean. The proposed Project APE is underlain primarily by Urban land-Palmview Tujunga complex, Cropley-Urban Land and Urban Land- Grommet-Ballona complex in the downhill area and primarily Topanga-Mipolomol-Sapwi association, in the uphill sections at 30 to 75% slopes. These soils are both made up primarily by Urban land, which is characterized by fan remnants on disturbed, developed land. Topanga-Mipolomol-Sapwi association soils are well-drained gravelly loams atop bedrock, created from colluvium and residuum-weathered sandstone and, shale and slate with the biomass content from *chamise* and *ceanothus* chaparrals. The remaining soil types are characterized by human transported material layered over mixed alluvium (USDA 2019). The proposed Project APE south of Moorpark Street and north of Halkirk Street along Coldwater Canyon Avenue is completely developed and all native subsurface soils with potential to support the presence of cultural deposits have been substantially disturbed. The proposed Project APE south of Halkirk Street is only partially developed, with sparse residential and civic developments placed in areas where slope allows.

3.2 Cultural Setting

Prehistoric Overview

Evidence for continuous human occupation in Southern California spans the last 10,000 years. Various attempts to parse out variability in archaeological assemblages over this broad period have led to the development of several cultural chronologies; some of these are based on geologic time, most are based on temporal trends in archaeological assemblages, and others are interpretive reconstructions. To be more inclusive, this research employs a common set of generalized terms used to describe chronological trends in assemblage composition: Paleoindian (pre-5500 BC), Archaic (8000 BC–AD 500), Late Prehistoric (AD 500–1769), and Ethnohistoric (post-AD 1769).

Paleoindian Period (pre-5500 BC)

Evidence for Paleoindian occupation in the region is tenuous. Our knowledge of associated cultural pattern(s) is informed by a relatively sparse body of data that has been collected from within an area extending from coastal San Diego, through the Mojave Desert, and beyond. One of the earliest dated archaeological assemblages in the region is located in coastal Southern California (though contemporaneous sites are present in the Channel Islands) derives from SDI-4669/W-12 in La Jolla. A human burial from SDI-4669 was radiocarbon dated to 9,590–9,920 years before present (95.4% probability) (Hector 1984). The burial is part of a larger site complex that contained more than 29 human burials associated with an assemblage that fits the Archaic profile (i.e., large amounts of ground stone, battered cobbles, and expedient flake tools). In contrast, typical Paleoindian assemblages include large stemmed projectile points, high proportions of formal lithic tools, bifacial lithic reduction strategies, and relatively small proportions of ground stone tools. Prime examples of this pattern are sites that were studied by Emma Lou Davis (1978) on Naval Air Weapons Station China Lake near Ridgecrest, California. These sites contained fluted and unfluted stemmed points and large numbers of formal flake tools (e.g., shaped scrapers, blades). Other typical Paleoindian sites include the Komodo site (MNO-679)—a multi-component fluted point site, and MNO-680—a single component Great Basined Stemmed point site (see Basgall et al. 2002). At MNO-679 and -680, ground stone tools were rare while finely made projectile points were common.

Warren et al. (2004) claimed that a biface (prehistoric stone tool that has been flaked on both faces), manufacturing tradition present at the Harris site complex (SDI-149) is representative of typical Paleoindian occupation in the region that possibly dates between 10,365 and 8,200 BC (Warren et al. 2004). Termed San Dieguito (see also Rogers 1945), assemblages at the Harris site are qualitatively distinct from most others in region because the site has large numbers of finely made bifaces (including projectile points), formal flake tools, a biface reduction trajectory, and relatively small amounts of processing tools (see also Warren 1968). Despite the unique assemblage composition, the definition of San Dieguito as a separate cultural tradition is hotly debated. Gallegos (1987) suggested that the San Dieguito pattern is simply an inland manifestation of a broader economic pattern. Gallegos's interpretation of San Dieguito has been widely accepted in recent years, in part because of the difficulty in distinguishing San Dieguito components from other assemblage constituents. In other words, it is easier to ignore San Dieguito as a distinct socioeconomic pattern than it is to draw it out of mixed assemblages.

The large number of finished bifaces (i.e., projectile points and non-projectile blades), along with large numbers of formal flake tools at the Harris site complex, is very different than nearly all other assemblages throughout the region, regardless of age. Warren et al. (2004) made this point, tabulating basic assemblage constituents for key early Holocene sites. Producing finely made bifaces and formal flake tools implies that relatively large amounts of time were spent for tool manufacture. Such a strategy contrasts with the expedient flake-based tools and cobble-core reduction strategy that typifies non-San Dieguito Archaic sites. It can be inferred from the uniquely high degree of San Dieguito assemblage formality that the Harris site complex represents a distinct economic strategy from non-San Dieguito assemblages.

San Dieguito sites are rare in the inland valleys, with one possible candidate, RIV-2798/H, located on the shore of Lake Elsinore. Excavations at Locus B at RIV-2798/H produced a toolkit consisting predominately of flaked stone tools, including crescents, points, and bifaces, and lesser amounts of groundstone tools, among other items (Grenda 1997). A calibrated and reservoir-corrected radiocarbon date from a shell produced a date of 6630 BC. Grenda (1997) suggested this site represents seasonal exploitation of lacustrine resources and small game and resembles coastal San Dieguito assemblages and spatial patterning.

If San Dieguito truly represents a distinct socioeconomic strategy from the non-San Dieguito Archaic processing regime, its rarity implies that it was not only short-lived, but that it was not as economically successful as the Archaic strategy. Such a conclusion would fit with other trends in Southern California deserts, where hunting-related tools were replaced by processing tools during the early Holocene (see Basgall and Hall 1990).

Archaic Period (8000 BC – AD 500)

The more than 2,500-year overlap between the presumed age of Paleoindian occupations and the Archaic period highlights the difficulty in defining a cultural chronology in Southern California. If San Dieguito is the only recognized Paleoindian component in the coastal Southern California, then the dominance of hunting tools implies that it derives from Great Basin adaptive strategies and is not necessarily a local adaptation. Warren et al. (2004) admitted as much, citing strong desert connections with San Dieguito. Thus, the Archaic pattern is the earliest local socioeconomic adaptation in the region (see Hale 2001, 2009).

The Archaic pattern, which has also been termed the Millingstone Horizon (among others), is relatively easy to define with assemblages that consist primarily of processing tools, such as millingstones, handstones, battered cobbles, heavy crude scrapers, incipient flake-based tools, and cobble-core reduction. These assemblages occur in all environments across the region with little variability in tool composition. Low assemblage variability over time and space among Archaic sites has been equated with cultural conservatism (see Basgall and Hall 1990; Byrd and Reddy 2002; Warren 1968; Warren et al. 2004). Despite enormous amounts of archaeological work at Archaic sites, little change in assemblage composition occurred until the bow and arrow was adopted around AD 500, as well as ceramics at approximately the same time (Griset 1996; Hale 2009). Even then, assemblage formality remained low. After the bow was adopted, small arrow points appear in large quantities and already low amounts of formal flake tools are replaced by increasing amounts of expedient flake tools. Similarly, shaped millingstones and handstones decreased in proportion relative to expedient, unshaped ground stone tools (Hale 2009). Thus, the terminus of the Archaic period is equally as hard to define as its beginning because basic assemblage constituents and patterns of manufacturing investment remain stable, complemented only by the addition of the bow and ceramics.

Late Prehistoric Period (AD 500–1769)

The period of time following the Archaic and before Ethnohistoric times (AD 1769) is commonly referred to as the Late Prehistoric (Rogers 1945; Wallace 1955; Warren et al. 2004); however, several other subdivisions continue to be used to describe various shifts in assemblage composition. In general, this period is defined by the addition of arrow points and ceramics, as well as the widespread use of bedrock mortars. The fundamental Late Prehistoric assemblage is very similar to the Archaic pattern, but includes arrow points and large quantities of fine debitage from producing arrow points, ceramics, and cremations. The appearance of mortars and pestles is difficult to place in time because most mortars are on bedrock surfaces. Some argue that the Ethnohistoric intensive acorn economy extends as far back as AD 500 (Bean and Shipek 1978). However, there is no substantial evidence that reliance on acorns, and the accompanying use of mortars and pestles, occurred before AD 1400. Millingstones and handstones persisted in higher frequencies than mortars and pestles until the last 500 years (Basgall and Hall 1990); even then, weighing the economic significance of millingstone-handstone versus mortar-pestle technology is tenuous due to incomplete information on archaeological assemblages.

Ethnographic Overview

The history of the Native American communities prior to the mid-1700s has largely been reconstructed through later mission-period and early ethnographic accounts. The first records of the Native American inhabitants of the region come predominantly from European merchants, missionaries, military personnel, and explorers. These brief, and generally peripheral, accounts were prepared with the intent of furthering respective colonial and economic aims and were combined with observations of the landscape. They were not intended to be unbiased accounts regarding the cultural structures and community practices of the newly encountered cultural groups. The establishment of the missions in the region brought more extensive documentation of Native American communities, though these groups did not become the focus of formal and in-depth ethnographic study until the early twentieth century (Bean and Shipek 1978; Boscana 1846; Geiger and Meighan 1976; Harrington 1934; Laylander 2000; Sparkman 1908; White 1963). The principal intent of these researchers was to record the precontact, culturally specific practices, ideologies, and languages that had survived the destabilizing effects of missionization and colonialism. This research, often understood as "salvage ethnography," was driven by the understanding that traditional knowledge was being lost due to the impacts of modernization and cultural assimilation. Alfred Kroeber applied his "memory culture" approach (Lightfoot 2005: 32) by recording languages and oral histories within the region. Ethnographic research by Dubois, Kroeber, Harrington, Spier, and others during the early twentieth century seemed to indicate that traditional cultural practices and beliefs survived among local Native American communities.

It is important to note that even though there were many informants for these early ethnographies who were able to provide information from personal experiences about native life before the Europeans, a significantly large proportion of these informants were born after 1850 (Heizer and Nissen 1973); therefore, the documentation of pre-contact, aboriginal culture was being increasingly supplied by individuals born in California after considerable contact with Europeans. As Robert F. Heizer (1978) stated, this is an important issue to note when examining these ethnographies, since considerable culture change had undoubtedly occurred by 1850 among the Native American survivors of California. This is also a particularly important consideration for studies focused on TCRs; where concepts of "cultural resource" and the importance of traditional cultural places are intended to be interpreted based on the values expressed by present-day Native American representatives and may vary from archaeological values (Giacinto 2012).

Based on ethnographic information, it is believed that at least 88 different languages were spoken from Baja California Sur to the southern Oregon state border at the time of Spanish contact (Johnson and Lorenz 2006, p. 34). The distribution of recorded Native American languages has been dispersed as a geographic mosaic across California through six primary language families (Golla 2007).

Victor Golla has contended that one can interpret the amount of variability within specific language groups as being associated with the relative "time depth" of the speaking populations (Golla 2007: 80) A large amount of variation within the language of a group represents a greater time depth then a group's language with less internal diversity. One method that he has employed is by drawing comparisons with historically documented changes in Germanic and Romantic language groups. Golla (2007: 71) has observed that the "absolute chronology of the internal diversification within a language family" can be correlated with archaeological dates. This type of interpretation is modeled on concepts of genetic drift and gene flows that are associated with migration and population isolation in the biological sciences.

The tribes of this area have traditionally spoken Takic languages that may be assigned to the larger Uto–Aztecan family (Golla 2007: 74). These groups include the Gabrielino, Cahuilla, and Serrano. Golla has interpreted the amount of internal diversity within these language-speaking communities to reflect a time depth of approximately 2,000 years. Other researchers have contended that Takic may have diverged from Uto–Aztecan ca. 2600 BC–AD 1, which was later followed by the diversification within the Takic speaking tribes, occurring approximately 1500 BC–AD 1000 (Laylander 2010).

Gabrielino/Tongva

The archaeological record indicates that the Gabrielino arrived in the Los Angeles Basin around 500 B.C. Surrounding native groups included the Chumash and Tataviam to the northwest, the Serrano and Cahuilla to the northeast, and the Juaneño and Luiseño to the southeast.

The name "Gabrielino" denotes those people who were administered by the Spanish from the San Gabriel Mission, which included people from the Gabrielino area proper as well as other social groups (Bean and Smith 1978; Kroeber 1925). Therefore, in the post-Contact period, the name does not necessarily identify a specific ethnic or tribal group. The names by which Native Americans in southern California identified themselves have, for the most part, been lost. Many modern Gabrielino identify themselves as descendants of the indigenous people living across the plains of the Los Angeles Basin and refer to themselves as the Tongva (King 1994). This term is used in the remainder of this section to refer to the pre-Contact inhabitants of the Los Angeles Basin and their descendants.

Tongva lands encompassed the greater Los Angeles Basin and three Channel Islands, San Clemente, San Nicolas, and Santa Catalina. The Tongva established large, permanent villages in the fertile lowlands along rivers and streams, and in sheltered areas along the coast, stretching from the foothills of the San Gabriel Mountains to the Pacific Ocean. A total tribal population has been estimated of at least 5,000 (Bean and Smith 1978), but recent ethnohistoric work suggests a number approaching 10,000 (O'Neil 2002). Houses constructed by the Tongva were large, circular, domed structures made of willow poles thatched with tule that could hold up to 50 people (Bean and Smith 1978). Other structures served as sweathouses, menstrual huts, ceremonial enclosures, and probably communal granaries. Cleared fields for races and games, such as lacrosse and pole throwing, were created adjacent to Tongva villages (McCawley 1996). Archaeological sites composed of villages with various sized structures have been identified.

The largest, and best documented, ethnographic Tongva village in the vicinity was that of *Yanga* (also known as Yaangna, Janga, and Yabit), which was in the vicinity of the downtown Los Angeles (McCawley 1996:56-57; NEA and King 2004). This village was reportedly first encountered by the Portola expedition in 1769. In 1771, Mission San Gabriel was established. Yanga provided a large number of the recruitments to this mission; however, following the founding of the Pueblo of Los Angeles in 1781, opportunities for local paid work became increasingly common, which had the result of reducing the number of Native American neophytes from the immediately surrounding area (NEA and King 2004). Mission records indicate that 179 Gabrieleno inhabitants of Yanga were recruited to San Gabriel Mission (NEA and King 2004: 104). Based on this information, Yanga may have been the most populated village in the Western Gabrieleno territory. Second in size, and less thoroughly documented, the village of Cahuenga was located slightly closer, just north of the Cahuenga Pass.

The La Brea Tar Pits area (CA-LAN-159) was a known area of Native American use for hunting and the gathering of tar (Westec 1983: 4-38). Father Juan Crespi, a member of the Portola expedition, passed through the area near this area on August 3, 1769. The pertinent sections from his translated diary are provided here:

> The Captain told me that when they scouted here, in a ravine about half a league to the westward they came upon about forty springs of pitch, or tar, boiling in great surges up out of the ground, and saw very large swamps of this tar, enough to have caulked many ships [Brown 2002:341].

Crespi later returned north of the project site, moving southeast through the Cahuenga Pass on January 16, 1770. He identifies the two villages located on the 1938 Kirkman-Harriman historical Los Angeles map. Here he noted:

> The mountains make an opening on the southwest of the plain, and in a depression at the foot of it we saw a stream, or ponded up water, at which there were two villages belonging to the very good heathens of this place, who came unarmed as soon as they saw us in order to greet us, and were very happy to see us again. They brought us some gruel, and the chief of one village guided us through the aforesaid opening in the southwestern range; and we came into a small hollow, in which upon two sides we came across a good deal of water, with a good deal of small watering places of the small hollow of *Los Santos Martires San Cleto y San Marcelino*, the Holy Martyrs Saint Cletus and Saint Marcellinus. [Brown 2002:663]

The Tongva subsistence economy was centered on gathering and hunting. The surrounding environment was rich and varied, and the tribe exploited mountains, foothills, valleys, deserts, riparian, estuarine, and open and rocky coastal eco-niches. Like that of most native Californians, acorns were the staple food (an established industry by the time of the early Intermediate Period). Acorns were supplemented by the roots, leaves, seeds, and fruits of a wide variety of flora (e.g., islay, cactus, yucca, sages, and agave). Fresh water and saltwater fish, shellfish, birds, reptiles, and insects, as well as large and small mammals, were also consumed (Bean and Smith 1978:546; Kroeber 1925; McCawley 1996).

A wide variety of tools and implements were used by the Tongva to gather and collect food resources. These included the bow and arrow, traps, nets, blinds, throwing sticks and slings, spears, harpoons, and hooks. Groups residing near the ocean used oceangoing plank canoes and tule balsa canoes for fishing, travel, and trade between the mainland and the Channel Islands (McCawley 1996).

Tongva people processed food with a variety of tools, including hammerstones and anvils, mortars and pestles, manos and metates, strainers, leaching baskets and bowls, knives, bone saws, and wooden drying racks. Food was consumed from a variety of vessels. Catalina Island steatite was used to make ollas and cooking vessels (Blackburn 1963; Kroeber 1925; McCawley 1996).

At the time of Spanish contact, the basis of Tongva religious life was the Chinigchinich cult, centered on the last of a series of heroic mythological figures. Chinigchinich gave instruction on laws and institutions, and also taught the people how to dance, the primary religious act for this society. He later withdrew into heaven, where he rewarded the faithful and punished those who disobeyed his laws (Kroeber 1925). The Chinigchinich religion seems to have been relatively new when the Spanish arrived. It was spreading south into the Southern Takic groups even as Christian missions were being built and may represent a mixture of native and Christian belief and practices (McCawley 1996).

Deceased Tongva were either buried or cremated, with inhumation more common on the Channel Islands and the neighboring mainland coast and cremation predominating on the remainder of the coast and in the interior (Harrington 1942; McCawley 1996). Cremation ashes have been found in archaeological contexts buried within stone bowls and in shell dishes (Ashby and Winterbourne 1966), as well as scattered among broken ground stone implements (Cleland et al. 2007). Archaeological data such as these correspond with ethnographic descriptions of an elaborate mourning ceremony that included a wide variety of offerings, including seeds, stone grinding tools, otter skins, baskets, wood tools, shell beads, bone and shell ornaments, and projectile points and knives. Offerings varied with the sex and status of the deceased (Heizer 1968; Johnston 1962; McCawley 1996). At the behest of the Spanish missionaries, cremation essentially ceased during the post-Contact period (McCawley 1996).

Historic-Period Overview

Post-Contact history for the State of California is generally divided into three periods: the Spanish Period (1769–1821), Mexican Period (1821–1848), and American Period (1846–present). Although Spanish, Russian, and British explorers visited the area for brief periods between 1529 and 1769, the Spanish Period in California begins with the establishment in 1769 of a settlement at San Diego and the founding of Mission San Diego de Alcalá, the first of 21 missions constructed between 1769 and 1823. Independence from Spain in 1821 marks the beginning of the Mexican Period, and the signing of the Treaty of Guadalupe Hidalgo in 1848, ending the Mexican–American War, signals the beginning of the American Period when California became a territory of the United States.

Spanish Period (1769-1822)

Spanish explorers made sailing expeditions along the coast of southern California between the mid-1500s and mid-1700s. In search of the legendary Northwest Passage, Juan Rodríquez Cabríllo stopped in 1542 at present-day San Diego Bay. With his crew, Cabríllo explored the shorelines of present Catalina Island as well as San Pedro and Santa Monica Bays. Much of the present California and Oregon coastline was mapped and recorded in the next half-century by Spanish naval officer Sebastián Vizcaíno. Vizcaíno's crew also landed on Santa Catalina Island and at San Pedro and Santa Monica Bays, giving each location its long-standing name. The Spanish crown laid claim to California based on the surveys conducted by Cabríllo and Vizcaíno (Bancroft 1885; Cleland 2005; Gumprecht 2001).

More than 200 years passed before Spain began the colonization and inland exploration of Alta California. The 1769 overland expedition by Captain Gaspar de Portolá marks the beginning of California's Historic period, occurring just after the King of Spain installed the Franciscan Order to direct religious and colonization matters in assigned territories of the Americas. With a band of 64 soldiers, missionaries, Baja (lower) California Native Americans, and Mexican civilians, Portolá established the Presidio of San Diego, a fortified military outpost, as the first Spanish settlement in Alta California. In July of 1769, while Portolá was exploring southern California, Franciscan Fr. Junípero Serra founded Mission San Diego de Alcalá at Presidio Hill, the first of the 21 missions that would be established in Alta California by the Spanish and the Franciscan Order between 1769 and 1823, including Mission San Fernando Rey de España. (Cleland 2005; Gumprecht 2001; Jorgensen 1982; Kyle 2002; Roderick 2001)

The Portolá expedition first reached the present-day boundaries of Los Angeles in August 1769, thereby becoming the first Europeans to visit the area. Father Crespi named "the campsite by the river Nuestra Señora la Reina de los Angeles de la Porciúncula" or "Our Lady the Queen of the Angeles of the Porciúncula." Two years later, Friar Junípero Serra returned to the valley to establish a Catholic mission, the Mission San Gabriel Arcángel, on September 8, 1771 (Gumprecht 2001; Jorgensen 1982; Kyle 2002).

The expedition camped at a watering place at the base of the San Gabriel Mountains in 1769 and the location was noted in Crespi's diary. The Mission San Fernando Rey de España was founded in September 1797 by Father Fermín Lasuén and Fray Francisco Dumetz as the 17th of 21 missions. The mission consisted of a church, fountains, cloisters and extensive agricultural grounds outside the area. The Spanish missionaries impressed the native Tongva, Tatavium, and Chumash tribes into Christianity through baptism and service as neophytes. The land taken by the Spanish was not repatriated to these tribes (Cleland 2005; Roderick 2001)

Mexican Period (1822-1848)

A major emphasis during the Spanish Period in California was the construction of missions and associated ranchos and presidios to integrate the Native American population into Christianity and communal enterprise. Incentives were also provided to bring settlers to pueblos or towns, but just three pueblos were established during the Spanish Period, only two of which were successful and remain as California cities (San José and Los Angeles). Several factors kept growth within Alta California to a minimum, including the threat of foreign invasion, political dissatisfaction, and unrest among the indigenous population. After more than a decade of intermittent rebellion and warfare, New Spain (Mexico and the California territory) won independence from Spain in 1821. In 1822, the Mexican legislative body in California ended isolationist policies designed to protect the Spanish monopoly on trade, and decreed California ports open to foreign merchants (Cleland 2005; Dallas 1955).

Extensive land grants were established in the interior during the Mexican Period, in part to increase the population inland from the more settled coastal areas where the Spanish had first concentrated their colonization efforts. In 1846, Mission San Fernando lands were issued as a land grant by then governor Pío Pico to himself, and renamed simply Ex-Mission San Fernando. (Figure 3) The new rancho lands were bound by Rancho San Francisco to the north, to the east by Rancho Tujunga, to the west by Rancho Simí, and on the south by the Santa Monica Mountains (Cleland 2005; ECCA 2009).

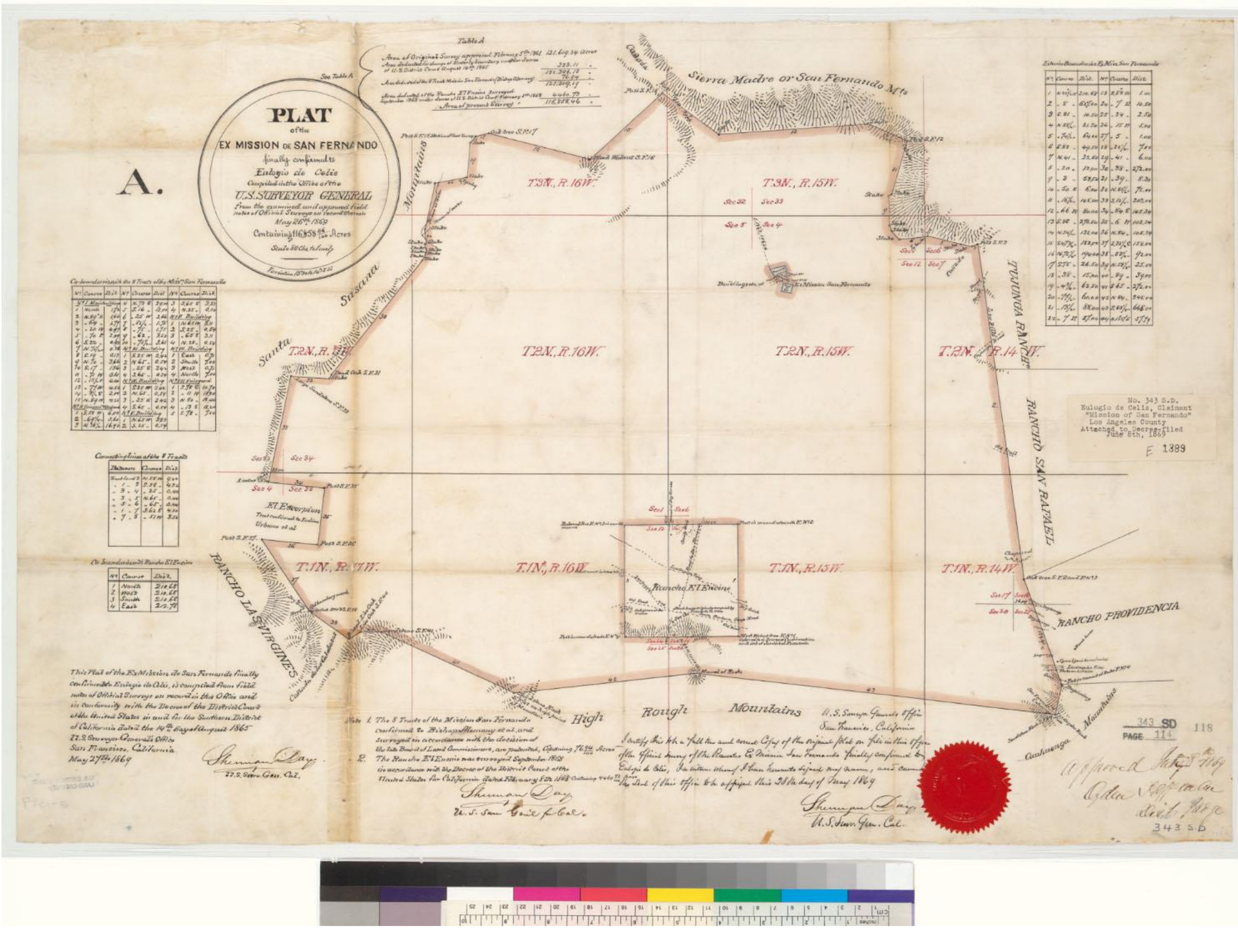

Figure 3. Plat of the Ex Mission de San Fernando [Calif.] : for Pío Pico, finally confirmed to Eulogio de Celis ; U.S. Surveyor General, May 26th, 1869 (UC Bancroft Library Land Case E-1389)

American Period (1848-Present)

War in 1846 between Mexico and the United States precipitated the Battle of Chino, a clash between resident Californios and Americans in the San Bernardino area. The Mexican-American War ended with the Treaty of Guadalupe Hidalgo in 1848, ushering California into its American Period. California officially became a state with the Compromise of 1850, which also designated Utah and New Mexico (with present-day Arizona) as U.S. Territories. Horticulture and livestock, based primarily on cattle as the currency and staple of the rancho system, continued to dominate the southern California economy through 1850s. The Gold Rush began in 1848, and with the influx of people seeking gold, cattle were no longer desired mainly for their hides but also as a source of meat and other goods. (Cleland 2005; Waugh 2003).

Pío Pico retained his rancho until 1869 when he decided to liquidate his land holdings in order to develop a property in the City of Los Angeles. The northern portion of the rancho was sold to Eulogio de Celis and retained until his death in 1874. After de Celis' death, his family sold the rancho to California State Senator Charles Maclay and business partners George K. and Benjamin F. Porter. Maclay's rancho portion extended from present day Sepulveda Boulevard east to the San Gabriel foothills. The Porters claimed the land west of present-day Sepulveda Boulevard. The southern portion of Pío Pico's holdings was sold to Isaac Newton Van Nuys and Isaac Lankershim. The two acquired the southern half of the valley south of Roscoe Boulevard, creating the San Fernando Farm Homestead Association in 1869 (Kyle 2002; Roderick 2001).

San Fernando Valley Area

The San Fernando Valley assumed its agricultural identity almost immediately. Lankershim and Van Nuys introduced dry wheat farming to the San Fernando Valley in 1876. Their technique used water captured in the winter season, rather than relying on water from Big Tujunga, Little Tujunga or Pacoima Canyons. Lack of access to the region's water rights and droughts made it so that dry farming became a viable type of farming available in the region. Dry farming techniques as a production method brought fruit, citrus, and grain farming to the region, but continuing drought and unpredictable weather made dry farming unreliable (Height 1953; Roderick 2001; Wanamaker 2011).

In an attempt to begin shipping good south to the markets of Los Angeles and Santa Monica's harbor, Lankershim built a wagon road through the Santa Monica Mountains, now the Sepulveda Pass, west of the proposed Project APE. Lankershim and Van Nuys attempted to attract the attention of the Southern Pacific Railroad, which was proposing to link the San Fernando Valley to Los Angeles by rail, but this did not occur and Southern Pacific instead made a line going north through Cahuenga Pass to Maclay's town of San Fernando. After being passed over for the railroad, Lankershim made his wagon road a toll road in 1877 (Masters 2017).

By 1880, the Lankershim and Van Nuys families had intermarried, with Van Nuys marrying Lankershim's daughter. In 1881, Isaac Lankershim died and left Lankershim Ranch to his son, Colonel James Boon Lankershim. This was during the beginning of the real estate boom of the 1880's where several new towns were formed in San Fernando Valley, such as Pacoima and Tujunga. In 1887, J.B. Lankershim formed the Lankershim Ranch Land & Water Company (Figure 4) and sold 12,000 acres of the Lankershim Ranch off to create a subdivision, extending from present-day Whitsett Avenue in western-Studio City east to the Burbank city line. J.B. Lankershim and his company partners platted the town of Lankershim (also called Toluca), surrounded by 2.5, 5, 10, 20 and 40-acre "ranchettes" and terrace-ready slopes of the north side of Santa Monica Mountains, attempting to attract orchard and vineyard growing operations by advertising (HRG 2013; Lankershim Rand Land and Water Co. 1889; Roderick 2001).

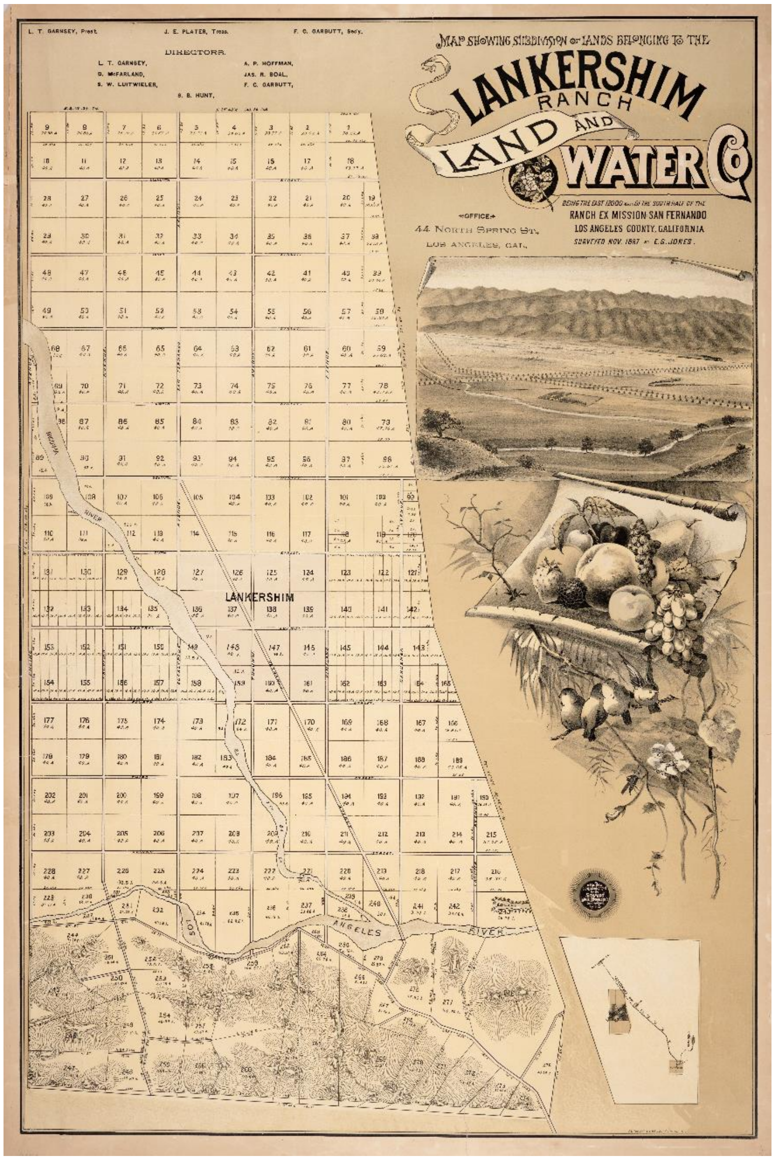

Figure 4. Map Showing the Subdivision of Lands Belonging to the Lankershim Land And Water Company. 1887 (Digital Collections, UCLA Library Special Collection)

Van Nuys continued dry farming wheat for several years, continuing to hold his interest in the Los Angeles Farming and Milling Company (formerly San Fernando Farm Homestead Association). When Los Angeles voters approved $22 million for the Los Angeles Aqueduct project in 1905 and construction on the aqueduct began in 1908. The aqueduct, which would bring water from Owens Valley to the City of Los Angeles, brought intensive land speculation and settlement to the San Fernando Valley. With the new source of water, Van Nuys was well situated to exchange dry farming for irrigation system farming for crops and orchards. The Los Angeles Suburban Homes Company, made up of Harry Chandler, Harrison Gray Otis, Otto Brent, "General" Moses Hazeltine Sherman, and H.J. Whitley, began to show interest in developing portions of Van Nuys' lands. In 1904, Harrison Gray Otis organized the Hollywood Country Club just south of Ventura Boulevard and Diaz Street (now Coldwater Canyon Avenue), in the proposed Project APE (Figure 5). In 1909, Van Nuys and Harry Chandler consummated the largest land transaction ever recorded in Los Angeles County, paying $2.5 million for the remaining 47,500 acres of Van Nuys' lands, which began selling property in a planned housing development across Van Nuys and the San Fernando Valley in 1910. The community of Van Nuys was officially founded in February 1911 (Height 1953; HRG 2013; Preston 1965; Roderick 2001, 2013).

Figure 5. Panoramic view of the San Fernando Valley at what would become the site of the Hollywood Country Club, ca.1890 (California Historical Society Collection, USC Digital Library)

Construction of the 233-mile Los Angeles Aqueduct began in 1908 and was completed in 1913. On November 5, 1913, the Los Angeles Aqueduct opening day was held, and water from Owens Valley poured over the Cascades north of Sylmar. From the Cascades, several water mains were proposed to carry aqueduct water to Los Angeles, via trunk lines that extended through the Santa Monica Mountains. One such proposed trunk line was the City Trunk Line, which brought water from Sylmar to Franklin Canyon Reservoir above Beverly Hills (Figure 6). Nearly all of the towns in San Fernando Valley agreed to consolidate into Los Angeles in order to take advantage of the municipal water source in 1915. The San Fernando Addition, some 108,732 acres, was made to the City of Los Angeles on May 22, 1915 and included the entire proposed Project area (CLA 1916; Hamlin 1916; Lee 2001; Water and Power Associates 2019).

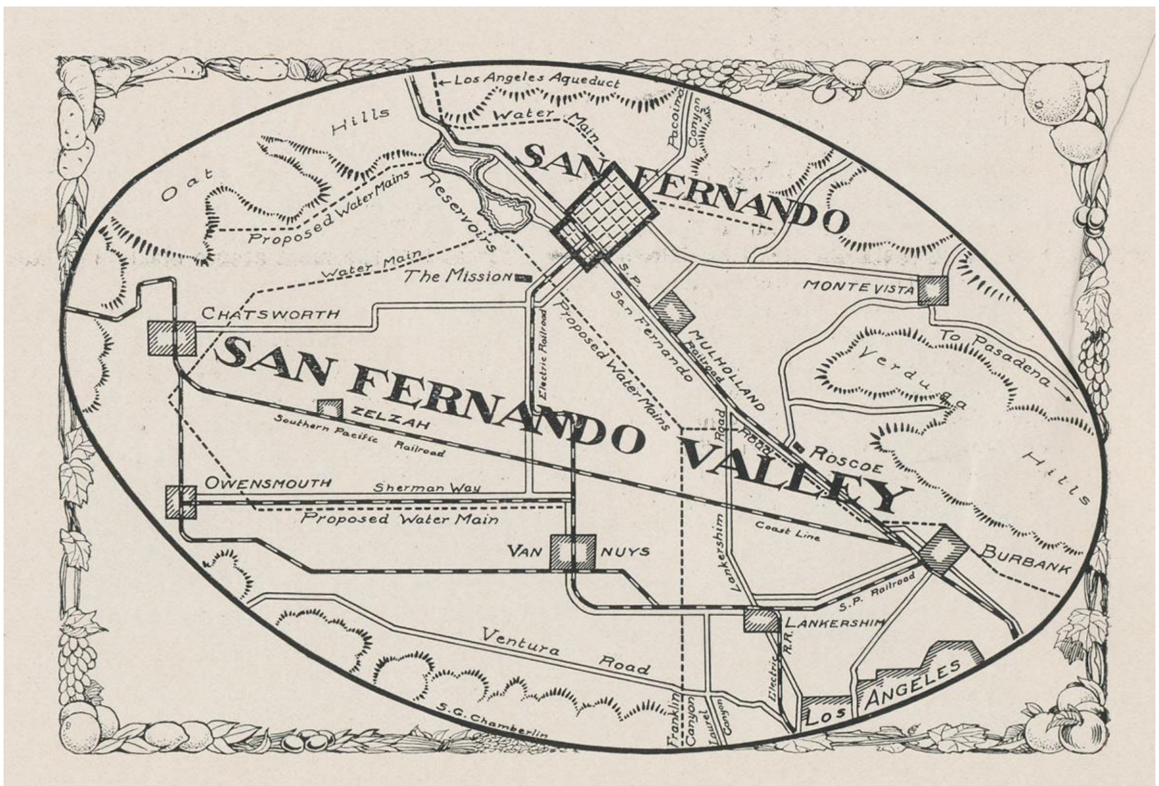

Figure 6. Page from "Official Program Aqueduct Opening, Nov. 5 '13" (Water and Power Associates 2019)

As most of San Fernando Valley was accessioned by Los Angeles, the Valley began to attract the newly established film industry. In 1912, Universal became the first film production studio in the San Fernando Valley, and based a filming ranch in Cahuenga Pass (Roderick 2001). The ranch was used for both filming and employee housing for studio workers, and became known as Universal City in 1915. When Michael "Mack" Sennett founded Mack Sennett Studios (later Revolution Studios) in Silverlake in 1912, he also sought a movie ranch-style setting in the Santa Monica Mountains. He settled on 503 acres in "North Hollywood" between that included a stretch of the Los Angeles River and the north side of the Santa Monica Mountains, just to the west of Universal City. Sennett's Studio City was also a combined studio and residential development, evolving from portions of the previously platted town of Lankershim in 1926.

In 1920, the San Fernando Valley population was estimated at 20,000 people. By 1930, the valley's population had doubled to just over 51,000. The agricultural economy of the valley remained stable through the Great Depression and settlement in the east and southeast portions of the valley developed into four major towns: San Fernando, Burbank, Van Nuys, and North Hollywood. These towns functioned as shipping, storage, and marketing centers for the surrounding agricultural areas. The San Fernando Valley became increasingly industrial and turned to manufacturing (e.g. Lockheed, General Motors) and motion picture production as major industries. By 1940, the San Fernando Valley population was 155,443. Despite the growing residential population, small-scale farms and orchards still dominated land use in the San Fernando Valley through World War II (Height 1953; Preston 1965; Roderick 2001; Wanamaker 2011).

World War II brought increased urbanization as military operations near Los Angeles brought in hundreds of thousands of soldiers and their families. After the war, both employment opportunities and affordable real estate kept families in the area. Suburban sprawl from Los Angeles reached the San Fernando Valley, and brought another 250,000 people to the valley, raising its 1950 population to just over 400,000. Dense housing developments and residential areas constricted formerly agricultural areas, all but pushing them into the surrounding foothills and margins of the Valley for the rest of the century (Preston 1965; Roderick 2001).

As automobiles and freeways permeated the culture of the country and the state of California, so too did they have impact in the San Fernando Valley. Between 1958 and 1965, Interstate 5 was completed in the eastern portion of the valley. Similarly, I-210, State routes CA-170, CA-118, US Route 101, and Interstate 405 transverse the Valley, and were developed from late 1950s through the early 1970s. These highways brought an emphasis on automobile travel and allowed San Fernando Valley residents ease of access for commuting around the greater Los Angeles area, but also destroyed farms, neighborhoods, and cut through early town grids in the construction effort (Roderick 2001).

Project Site Historic Context – City Trunk Line South, Coldwater Canyon Area

Prior to its development and annexation into the San Fernando Valley cities and later, Los Angeles, the Coldwater Canyon Area south of the Los Angeles River boasted large ranches and homes, primarily on large tracts used as crop land or orchard (Figure 7). At the turn of the twentieth century, Coldwater Canyon's settlement remained sparsely residential and agricultural, with larger homes built into the southern portion near Beverly Hills, and agricultural properties on the north portion nearer North Hollywood (Roderick 2001).

Figure 7. View to Coldwater Canyon, circa 1910, Photographer: Harold A Parker (Los Angeles Public Library)

In 1912, William Mulholland, Chief Engineer in the Bureau of Water Works and Supply, published the annual water report discussing how water from the Los Angeles Aqueduct might be distributed throughout the city, should all surrounding communities and districts buy into the Los Angeles water system. The City of Los Angeles, in preparation for aqueduct water, built its own pipelines as far north as Beverly Hills. In April 1913, a bond issue was on the ballot for $1,500,000 in funding for the City Trunk Line, to extend from San Fernando Reservoir to the north end of the City and connect to the City's water system there. Other bond issues included Los Angeles Harbor improvements, bonds for a city hall, and a bond measure to distribute hydroelectric power, and a bond measure to distribute surplus water via the Chatsworth High Line and the Pasadena-Glendora-San Dimas High Line. Only the power bonds and the City Trunk Line bonds were approved. Construction of the City Trunk Line began fall 1913 and was already underway when the Los Angeles Aqueduct opening ceremony was held in November 1913. The City Trunk Line, as constructed, was a riveted steel siphon, ranging between 65 inches and 72 inches in diameter, and capable of transporting over 2,000 miners' inches of water nearly 14 miles to the Upper Franklin Reservoir, where it would be transferred into the City's water mains. The City Trunk Line from San Fernando Reservoir to Franklin Canyon Reservoir was completed by summer 1914, with branch lines, lateral and several High Lines to reach the newly annexed San Fernando Valley communities (Figure 8) (LAT 1912, 1913a, 1913b, 1913c, 1913d, 1914; Roderick 2001).

Figure 8. Trunk line construction, no date/location (DWP Photo Collection, Los Angeles Public Library)

On the north side of Coldwater Canyon, where the Canyon road let out into San Fernando Valley, was a golf club. Despite multiple attempts at organization beginning in 1904, the construction of the Hollywood Country Club did not begin until 1919. The construction was set to be on the W.F. Holt ranch. "A new group, with Douglas Fairbanks and Sydney Chaplin serving on the board of directors, secured a $200,000 option on 140 acres in the area near North Hollywood, with half a mile of frontage on Ventura Boulevard and heading up to the top of the canyon, adjoining what is now Coldwater Canyon Boulevard (Mallory 2016)." Landscape architect F.A. Peebles designed the courses: 18 holes for men and a separate 9 holes for women golfers, as well as twelve tennis courts, a gymnasium, shooting boxes for a gun club, handball and basketball courts, and a plunge pool (Figure 9). By 1938, however the Country Club had closed and the owners began subdividing their land (LAT 1919; Mallory 2016; Van Nuys News 1919).

Figure 9. Hollywood Country Club, circa 1920 (Los Angeles Public Library)

In 1937, an Episcopalian-affiliated boarding school campus called the Harvard School (later Harvard-Westlake) opened just south of Halkirk Street along Coldwater Canyon Road. The boys' boarding school was established in 1900 and moved from 1601 South Western Avenue to a campus at 3700 Coldwater Canyon Road, reportedly having purchased the buildings and 22 acres of the Hollywood Country Club grounds. Though it did reuse some of the country club buildings, the school notably disassembled the original Saint Saviour's Chapel (Los Angeles HCM #32) on their Western Ave Campus and moved it to the Coldwater Canyon campus (LAT 1937; Van Nuys News 1937; Wels 2017)

Land developer Frank Ayres & Sons purchased the Country Club lands and began to redevelop it into a residential subdivision called the Hollywood Country Club Estates. Ayres residential subdivision offered pre-built and custom-built homes in the "Coldwater Canyon District" south of Ventura Boulevard, advertised as 100% pre-approved for FHA loans (Figure 10). These residences quickly accreted along Coldwater Canyon Road, Dickens Street, Greenleaf Street, Valley Vista Boulevard, Van Noord Avenue, Alcove Avenue, Goodland Avenue and Place, Halkirk Street, and Fairway Avenue, among others. By 1950, Coldwater Canyon Road and branching residential side streets, south of Ventura Boulevard and north of the Coldwater Canyon Road curves, were completely developed into the Hollywood Country Club Estates residential subdivision (LAT 1938a, 1938b; Mallory 2016).

Figure 10. Hollywood Country Club Estates advertisement, 1939 (Los Angeles Times)

In 1947, an Episcopal Church was approved for 3646 Coldwater Canyon Road at the site of the Valdez Stables, a local horse training and boarding farm. St. Michaels and All Angels Church re-used the stables building as their worship hall until 1952, when church members again started a funding drive for new buildings on the property. In 1953, a rectory building was added to the property. In 1957, church officials broke ground for a parish hall at the property to house Sunday school classes, kitchen, and a small performance hall. The parish hall architect was Flewelling & Moody of Glendale, and Encino Construction Company were the contractors. A new Mid-Century Modern church building replaced the refurbished stables in 1962, designed by architects A. Quincy Jones and Frederick Emmons (LAC 2019a; LAT 1947, 1952, 1957, 1958).

Meanwhile, a commercial district along Ventura Boulevard began to thrive in the 1940s. Originally, a segment of El Camino Real, Ventura Boulevard began to attract commercial development and modernist and Googie architectural designers, such as Rudolph M. Schindler, Randall Duell and Phillip A. Conklin, Howard R. Lane, and Arnet & Davis. Distinctly within the Project area is the late Mid-Century Modern, arched-concrete Hughes Market (Ralph's grocery store as of 2019), designed by R. Leon Edgars in 1972 (LAC 2019b, 2019c).

Other minor developments include the slow uphill march of residential development pushing further into up-canyon, south of the 1940s residential neighborhoods around Harvard School and St. Michaels. This residential area along Avenida De Sol, Oesta Avenue, and Alta Mesa Drive had sparse mixed agricultural and large-scale residential estates in the 1920s and 1930s leading to Mulholland Drive, increasing during the late 1950s and 1960s to the current level of development by the 1970s. LADWP added the Coldwater Canyon Pumping Plant on Oeste Avenue in 1958. There are few changes to the area after the 1970s (NETR 2019; UCSB 2019).

4 BACKGROUND RESEARCH

4.1 CHRIS Records Search

On September 13, 2019 Dudek completed a search of the CHRIS at the SCCIC, located on the campus of California State University, Fullerton of the proposed Project APE and a half (0.5) mile buffer. This search included mapped prehistoric and historic archaeological resources and historic built-environment resources; Department of Parks and Recreation site records; technical reports; archival resources; and ethnographic references. Additional consulted sources included historical maps of the proposed Project APE, the NRHP, the CRHR, the California Historic Property Data File, the lists of California State Historical Landmarks, California Points of Historical Interest, and the Archaeological Determinations of Eligibility. The confidential SCCIC records search results are also provided in Confidential Appendix B.

Previously Conducted Cultural Resource Studies

The SCCIC records indicate that 14 previous cultural resources technical investigations have been conducted within a 0.5-mile radius of the proposed Project APE between 1978 and 2012. Of these, one study (LA-07777) overlaps the proposed Project APE. Table 2, below, summarizes all 14 previous cultural resource studies followed by a brief summary of the study that overlaps the proposed Project APE.

Table 1. Previous Technical Studies Within a 0.5-Mile Radius of the Proposed Project APE

Report Number (LA-)	Author	Year	Report Title	Proximity to Proposed Project APE
00073	Bente, Vance G.	n.d.	Archaeological Impact Report	Outside
00422	Archaeological Assoc.	1978	Ultrasystems Project #4369: Archaeological Survey Report	Outside
00558	Padon, Beth	1979	Archaeological Reconnaissance of a 320 Acre Parcel in Higgins Canyon, Los Angeles County, Ca	Outside
00709	Singer, Clay A.	1980	Cultural Resource Survey and Impact Assessment for the Winnviewcrest Property in Studio City, City and County of Los Angeles, California	Outside
001165	Dillon, Brian D.	1982	An Archaeological Resource Survey and Impact Assessment of a 58.3 Acre Parcel at 3531 Coldwater Canyon Avenue in the Sherman Oaks Community, Los Angeles County	Outside
04587	Duke, Curt	1999	Cultural Resource Assessment for Pacific Bell Mobile Services Facility La 674-03, County of Los Angeles, California	Outside

Table 1. Previous Technical Studies Within a 0.5-Mile Radius of the Proposed Project APE

Report Number (LA-)	Author	Year	Report Title	Proximity to Proposed Project APE
04848	Duke, Curt	2001	Cultural Resource Assessment for At&t Fixed Wireless Services Facility Number La_443_a, County of Los Angeles, California	Outside
05725	Christy, Juliet L.	2002	Cultural Resource Evaluation for Fire Station 78 in Studio City Los Angeles, California	Outside
07777	Mason, Roger D. and Patricia A. Peterson	2002	Cultural Resources Records Search and Literature Review Report for the City Trunk Line South Project City of Los Angeles Department of Water and Power Los Angeles County, California	**Overlapping**
07840	Sylvia, Barbara	2001	Negative Archaeological Survey Report for the Beautification and Modernization Along Route 134 From the 134/170 Separation to Shoup Ave Uc, and Along Route 101 From the 101/170 Separation to Concord Street Uc	Outside
10208	Sylvia, Barbara	2001	Negative Archaeological Survey Report: Metal Beam Guardrail (MBGR) Along Sections of Route 101 From Route 134 to the Ventura County Line.	Outside
11689	Loftus, Shannon	2011	Cultural Resource Records Search and Site Survey, AT&T Site LAC443, Cold Water Overlay, 12840 Riverside Drive, Studio City, Los Angeles County, California 91607	Outside
11968	Wayne, Bonner	2012	Cultural Resources Records Search and Site Visit Results for T-Mobile West, LLC Candidate SV00127A (LA127 Riverside Drive), 12840 Riverside Drive, North Hollywood, Los Angeles County, California	Outside
12315	Bonner, Wayne, Williams, Sarah, and Crawford, Kathleen	2012	Cultural Resource Collocation Records Search and Site Visit Results for T-Mobile West, LLC Candidate SV00674A (LA674 Sportsman Lodge) 12825 Ventura Boulevard, Studio City, Los Angeles County, California	Outside

n.d. = no date

LA-07777

Cultural Resources Records Search and Literature Review Report for the City Trunk Line South Project City of Los Angeles Department of Water and Power Los Angeles County, California (Mason et al. 2002) reports the archaeological assessment for the proposed pipeline to transport drinking water. The 2002 study overlaps the current proposed Project APE. The investigation included an archaeological record search, literature review, and a search of the NAHC's SLF. No properties eligible for or listed on the NRHP or the CRHR were located in or within 1.0-mile of the project area. Additionally, the search of the SLF by the NAHC did not indicate any presence of Native American cultural resources in the project area. This suggests that there is a low probability that known cultural resources would be impacted by the current proposed Project.

Previously Recorded Cultural Resources

The SCCIC records indicate that three cultural resources have been previously recorded within a 0.5-mile of the proposed Project APE; none of which intersect or are adjacent to the proposed Project APE. Two of the resources are historic buildings and one is a historic structure. All three resources were previously evaluated for significance, and none were found eligible for the NRHP, CRHR or Local listing. The three resources are summarized in Table 3. No archaeological resources were identified within the 0.5-mile search buffer of the proposed Project APE.

Table 2. Previously Recorded Cultural Resources Within a 0.5-Mile Radius of the Proposed Project APE

Primary Number (P-19-)	Age and Type	Description	NRHP/CRHR Status	Recorded By/Year	Proximity to Proposed Project APE
189975	Historic Building	Commercial building: 12840 Riverside Drive (built circa 1965)	Recommended not eligible by evaluator	2011 (Shannon L. Loftus, ACE Environmental)	Outside
190329	Historic Building	Sportsmen's Lodge Hotel: 12825 Ventura Boulevard (built circa 1961)	Recommended not eligible by evaluator	2012 (K.A. Crawford, Michael Brandman Associates); 2018 (Ashley Brown, ESA)	Outside
192621	Historic Structure	Utility Pole constructed 1952	Recommended not eligible by evaluator	2015 (K. A. Crawford, Crawford Historic Services)	Outside

4.2 Native American Correspondence

NAHC Sacred Lands File Search

Dudek contacted the NAHC on September 19, 2019, and requested a review of the SLF. The NAHC replied via email on September 24, 2019, stating that the SLF search was completed with negative results. Because the SLF search does not include an exhaustive list of Native American cultural resources, the NAHC suggested contacting 17 Native American individuals and/or tribal organizations who may have direct knowledge of cultural resources in or near the proposed Project APE. LADWP handled all tribal consultation for the proposed Project. The NAHC SLF communication results are provided in Appendix C.

4.3 Aerial Photograph and Historic Map Review

Dudek consulted historic maps and aerial photographs to understand development of the proposed Project APE and vicinity. Historical aerial photographs were reviewed for the proposed Project APE for the following years: 1927, 1938, 1940, 1944, 1947, 1948, 1952, 1953, 1956, 1960, 1964, 1965, 1967, 1970, 1971, 1972, 1976, 1978, 1980, 1989, 1994, 2003, 2004, 2005, 2009, 2010, 2012, 2014, 2016 (NETR 2019a; UCSB 2019). Historical topographical maps were also reviewed for the proposed Project APE for the following years: 1894, 1896, 1898, 1900, 1902, 1904, 1906, 1908, 1910, 1913, 1915, 1921, 1924, 1926, 1932, 1955, 1960, 1968, 1975, 1980, 1987, 2012, and 2015 (NETR 2019b; USGS 2019).

The first topographic map showing the proposed Project APE dates to 1894 and shows the proposed Project APE as largely undeveloped land, southwest of Toluca and southeast of Kester, along the Southern Pacific Railroad Line. Only Ventura Boulevard is present to mark the area. This remains static until the 1921 topographical map, which shows a road extending south from Ventura Boulevard into Coldwater Canyon called Diaz Avenue. In the 1924 topographical map, "Hollywood Country Club" is visible at the southern extent of the Coldwater Canyon Road. This remains static until 1932, but the next available map in 1955, shows the Harvard school has replaced Hollywood Country Club and Coldwater Canyon Road extends south to meet the connecting road in Beverly Hills. Though more house symbols appear, there are no other major changes to the Project APE in subsequent maps (NETR 2019b; USGS 2019).

The first aerial photographs depicting the Project APE date to 1927 and show a few residential and small-scale agricultural properties along Ventura Boulevard, backing onto the Los Angeles River path, and south of Ventura Boulevard to the east and west side of Coldwater Canyon Avenue, a golf course. At the sharp U-bend in Avenida del Sol, at the southern extent of the Project APE, an oval dirt track and large barn or stable appear. Coldwater Canyon Road continues south as a faint dirt track meeting Mulholland Drive to the south. In the 1938 photograph, the Coldwater Canyon bridge across the Los Angeles River appears to have been washed out, likely due to the 1938 floods and the only remaining portion is the pipeline under the west lane. The golf course appears partially demolished by the 1938 photograph, and replaced the evenly spaced roads in preparation for a residential neighborhood. Further south the stable is still extent along Avenida del Sol, but Coldwater Canyon Road appears paved between Avenida del Sol and Mulholland Drive. Oesta Avenue appears for the first time in the 1938 photograph. Though no properties are visible, the road appears tree-lined. There is a large residential building with a terraced lawn east of Oeste Avenue, but outside of the Project APE (NETR 2019a; UCSB 2019).

The Los Angeles River bridge re-appears by 1940. Commercial properties first appear at the four corners of the Coldwater Canyon Avenue and Ventura Boulevard intersection in the 1940 photograph, and dense, single-family residential neighborhoods south of Ventura Boulevard begin to appear. The Harvard Westlake

School buildings begin to appear in 1940, but east of the Project APE. The Los Angeles River appears to have been channelized sometime between the 1947 and 1952 photographs. Commercial properties now dominate Ventura Boulevard, and begin to overtake the single-family residences along between the Los Angeles River channel and Ventura Boulevard. Though not visible in earlier photographs, some residential properties appear along Oeste Avenue for the first time in 1952, as well as a small building on the west side of Oeste Avenue in a tree-less lot. This building is gone by the 1956 photograph. A large, side gabled building appears on the empty lot by 1957, the current LADWP Coldwater Pump Station. Elsewhere in the Project APE, church buildings begin to appear at the corner of Avenida del Sol and Coldwater Canyon Avenue (NETR 2019a; UCSB 2019).

The Project APE remains mostly unchanged since 1960. The commercial businesses on the Ventura Boulevard/Coldwater Canyon Avenue corners have been switched out and replaced several times, but remain moderately scaled commercial properties. The 1940s-era single-family residence neighborhoods along Coldwater Canyon Avenue south of Ventura Boulevard remains unchanged, as does Harvard Westlake School and church buildings for St. Michael and All Saints church. A couple more residences appear along Avenida del Sol and Oeste Avenue in the late 1960s and early 1970s, but otherwise no other notable changes. More homes appear on Avenida del Sol and Oeste Avenue in the mid-2000s, replacing other buildings in-kind (NETR 2019a; UCSB 2019).

4.4 Building Development Research

Los Angeles Public Library

Dudek staff reviewed a number of online resources available through the Los Angeles Public Library. These tools include accessing online Sanborn Maps, online LADWP photo collections, online historical photograph collections, and online historical newspaper collections, which were all used in the preparation of the historic context (Section 3).

Zone Information and Map Access System (ZIMAS)

The ZIMAS website is operated by City of Los Angeles, Department of City Planning and was reviewed to get assessor data for buildings adjacent to the proposed Project APE. Information, including date of construction were all used in the preparation of the historic context (Section 3).

Historical Newspapers

Dudek staff relied on historic newspapers available from Newspapers.com, the Los Angeles Times Historical Archives provided by ProQuest and hosted through the Los Angeles Public Library, and the California Digital Newspaper Collection hosted by University of California Riverside. Newspaper data were used in the preparation of the historic context (Section 3).

Los Angeles Aqueduct Digital Platform

Dudek utilized the Los Angeles Aqueduct Digital Platform, and online collection of maps, photographs, letters, ephemera, and oral histories relating to the construction of the Los Angeles Aqueduct, hosted and physically held at the University of California Riverside. Information from this archive was used in the preparation of the historic context (Section 3).

5 CULTURAL RESOURCES SURVEY

The Project APE was subject to a windshield survey and a pedestrian reconnaissance-level survey conducted during the Project kickoff meeting on May 9, 2019. Because the Project APE falls mostly within the public right-of-way for Coldwater Canyon Avenue, Avenida del Sol, and Oeste Avenue an intensive pedestrian survey of the APE was not necessary. In addition, Dudek reviewed all available aerial and ground-level photographs to identify any potential historic properties/historical resources immediately adjacent to the APE. Four potential resources were identified at the southernmost portion of the Project APE: the City Trunk Line pipeline itself, two concrete vaults, and a concrete erosion control terrace. These structures will be demolished and replaced with modern resources with similar function.

City Trunk Line South (Coldwater Canyon segment) (1914)

The City Trunk Line South segment pipeline structure was not visible or accessible during the survey, except where the trunk line was visible beneath the Caltrans Bridge over the Los Angeles River (Figure 11). According to historical sources, the City Trunk Line was constructed as riveted steel pipe, ranging between 65 inches and 72 inches in diameter, and a small segment of tunnel just south of the proposed Project APE. The City Trunk Line, in 1914, was capable of transporting over 2,000 miners' inches of water nearly 14 miles to the Upper Franklin Reservoir. The City Trunk Line South segment from San Fernando Reservoir to Franklin Canyon Reservoir and had multiple branch lines, laterals, and several high line branches to reach the newly annexed San Fernando Valley communities. According to historical resources, the entirety of the trunk line was prone to regular leaks and failure leading to flooding of above ground structures and buildings. As a result, an indeterminate amount of the City Trunk Line South segment and City Trunk Line as a whole have been subject to repair, reinforcement, and replacement over the course of its 105 years of use.

Figure 11. View of visible portion of City Trunk Line South segment pipe, in background behind smaller diameter pipe. View to east (IMG_3683)

Vault: North Portal Franklin Tunnel Entrance (1912)

This structure was constructed in 1912 as the portal entrance to the Franklin Tunnel segment of the City Trunk Line. The tunnel entrance consists of a squared concrete vault that tapers toward the top, and measures approximately 4 foot by 4 foot at the base and 3 foot by 3 foot at the top, rising roughly 4-5 feet out of the steeply sloping hillside. The vault structure is constructed of board-formed concrete, and a metal ladder attached to the west elevation leads to the manhole entrance, which is a double-hinged, metal flap cover. This structure is south of the Maintenance Hole structure and the dirt parking area terrace (Figure 12).

Figure 12. View north to Manhole Sewer structure (IMG_3632)

Vault: Maintenance Hole (no date)

This structure consists of a rectangular concrete vault, measuring roughly 5 foot wide by 6 foot long and rising 2-3.5 feet above the steeply sloped ground surface. The maintenance hole is constructed of board-formed concrete and its only access is through with hinged metal doors on its top portion. The doors also incorporate four metal C-shaped bars for ease of entry into the hatch doors. A temporary, modern-construction wood staircase leads from a dirt-finished parking area terrace in the hillside above it (Figure 13).

Figure 13. View east to Vault structure (IMG_3635)

Erosion Control Terrace and Flow Control Station inlet header (circa 1980-1989)

The erosion control terrace structure consists of three concrete runnels evenly spaced in the steeply sloped hillside that flow towards a central channel. Each runnel has a slight rise and berm on the south (downhill) side. At the top-most runnel and berm there is a flow control station inlet header (Figure 14) with a metal grate over it, and below the bottom most runnel, there is an outlet header that lets out into a small, densely vegetated area. The concrete runnels appear poured in place, are 30-36 inches wide, and have a slight concavity/runnel in the center, which directs water flow (Figure 15). The structure is not visible in the 1980 aerial photograph, but is clearly visible in the 1989 aerial photograph, giving it an approximate, maximum age of 39, and therefore does not qualify for consideration as a historical resource at this time.

Figure 14. Flow Control Station Inlet Header and top runnel, looking southwest (IMG_3655)

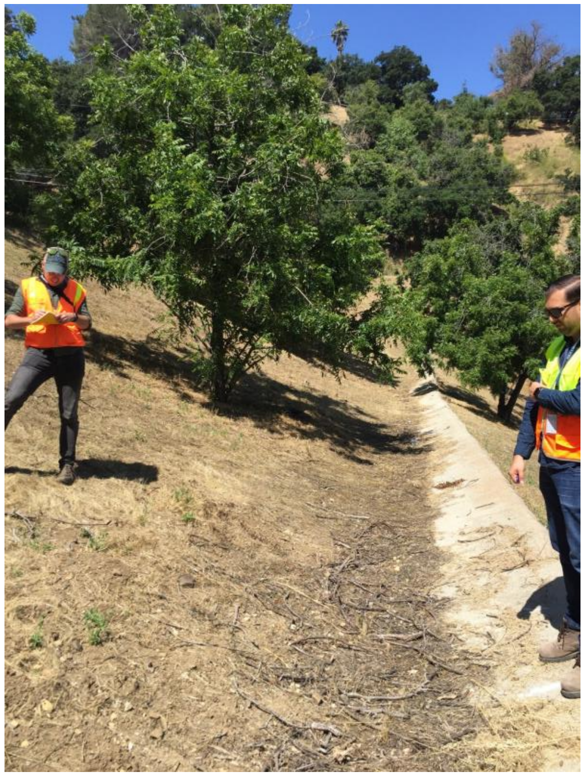

Figure 15. Middle runnel and berm, looking east (IMG_3643)

Caltrans Bridge No. 53C1138 (1951)

The project APE in passes below Caltrans Bridge No. 53C1138 (Figure 11), where Coldwater Canyon Avenue passes over the Los Angeles River. The bridge was constructed in 1951 and is listed as a Category 5 bridge (i.e., the bridge was determined to be ineligible for the NRHP by Caltrans Professionally Qualified Staff). Further, the project does not propose any direct impacts to the bridge, rather, the segment of the City Trunk Line South that runs below the bridge will be subject to CFRP pipe lining, which is considered minimally invasive. Given the existing finding of ineligibility, and the fact that the proposed project will not directly impact the bridge, an updated evaluation for historical significance is not required for this resource.

6 PROPERTY SIGNIFICANCE EVALUATION

6.1 City Trunk Line South (Coldwater Canyon Segment)

The City Trunk Line South segment between just north of the Coldwater Canyon Avenue and Moorpark Street intersection and the Franklin Tunnel north entrance, as well as its associated infrastructure at the southern end of the proposed Project APE, were evaluated for historical significance in consideration of NRHP, CRHR, and City of Los Angeles Historic-Cultural Monument criteria and integrity requirements. A complete set of State of California Department of Parks and Recreation 523 Forms (DPR Forms) is located in Appendix D. The Erosion Control Terrace was constructed in circa 1980-1989, does not appear to be directly associated with the City Trunk Line function, and does not yet meet the age criteria for evaluation.

NRHP/CRHR Designation Criteria

For a property to be listed in or determined eligible for listing in the NRHP/CRHR, it must be demonstrated to possess integrity and to meet at least one of four criteria. The CRHR was designed to reflect the same criteria and integrity as those identified for the NRHP. Therefore, the NRHP and CRHR significance evaluations are presented together.

Criterion A/1: That are associated with events that have made a significant contribution to the broad patterns of our history.

The City Trunk Line is one of many early water distribution resources associated with the completion of the Los Angeles Aqueduct, which was responsible for bringing Owens Valley water to Los Angeles for distribution throughout the city. The security of municipal water from the City of Los Angeles Water Department ensured adequate supply for those within city limits and emboldened several independent cities and surrounding communities to apply for annexation by the city. The route for the pipeline was chosen in 1912, and receiving pipelines were built on the south slopes of the Santa Monica Mountains by 1913 in anticipation of Owens Valley water. In 1914, the City Trunk Line was completed between San Fernando Reservoir and Franklin Canyon Reservoir. Although the Trunk Line is associated with an important period of development for the City of Los Angeles' Bureau of Water Works and Supply, the City Trunk Line operated in support of more important engineering structures that contributed to local history, and is less important as an individual resource. City Trunk Line has only a minor role in a larger system of water supply for City of Los Angeles. Therefore, the City Trunk Line South segment and associated infrastructure do not appear eligible under NRHP/CRHR Criteria A/1.

Criterion B/2: That are associated with the lives of persons significant in our past.

To be found eligible under B/2 the property has to be directly tied to an important person and the place where that individual conducted or produced the work for which he or she is known. Archival research indicates a distant connection to William Mulholland, who first identified the route of the City Trunk Line in a 1912 report to the City, which allowed for the funding bonds to build these resources. However, the City Trunk Line South segment and associated infrastructure at Coldwater Canyon were not the place where Mulholland produced the report or engineering designs for which he is known. Therefore, the City Trunk Line South segment and associated infrastructure do not appear eligible under NRHP/CRHR Criteria B/2.

Criterion C/3: 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.

Archival research indicates that the City Trunk Line South segment and associated infrastructure were completed in 1914 and at the time of their construction were typical, wide-diameter riveted steel pipe construction. However, due to repairs and material replacements of the line at many locations inside and outside the proposed Project APE, the City Trunk Line South segment no longer embodies the specific characteristics of early twentieth century riveted steel pipe construction. Archival research did not identify an architect or engineer associated with the design of the City Trunk Line South segment that rose to the level of "master." The City Trunk Line South segment and associated infrastructure do not possess high artistic value. It is possible that the City Trunk Line may be considered part of a water distribution system entity whose components lack individual distinction; however, the role of the City Trunk Line within this group of potential water engineering structures is minor. Finally, the City Trunk Line pipeline lacks the material and design integrity to be considered for this criterion. Therefore, the City Trunk Line South segment and associated infrastructure do not appear eligible under NRHP/CRHR Criteria C/3.

Criterion D/4: That have yielded, or may be likely to yield, information important in prehistory or history.

The City Trunk Line South segment and associated infrastructure is not a source, or likely source, of important historical information nor does it appear likely to yield important information about historic construction methods, materials or technologies. Therefore, the City Trunk Line South segment and associated infrastructure do not appear eligible under NRHP/CRHR Criteria D/4.

City of Los Angeles HCM Criteria

Because the City of Los Angeles HCM criteria closely follow that of the NRHP and CRHR, the national and state significance evaluation previously presented is also relevant here. The City Trunk Line South segment and associated infrastructure are not an example of outstanding craftsmanship, and did not influence the design of other architecture in the City of Los Angeles. However, the City Trunk Line does have a distinguishable role in the development or history of Los Angeles as it was a major component in linking the City of Los Angeles to the Owens Valley water supply from the Los Angeles Aqueduct. The supply of water and power is one of the most significant themes in the history and development of Los Angeles. Archival research did not discover an associated engineer or designer that rises to the level of "master" for the City Trunk Line, however much of the major decisions about where the trunk line was placed and how to connect it to the Los Angeles Aqueduct and a system of reservoirs were the product of William Mulholland. As engineer of the Los Angeles Aqueduct and first chief engineer of the City of Los Angeles Department of Water, Mullholland may be a person considered important to Los Angeles history, but for his other contributions to the City's history, namely the formation of the Water Department and the Los Angeles Aqueduct planning, design, and construction. Despite these associations, the City Trunk Line South segment and associated infrastructure are utilitarian components of a larger system and operates in support of other important infrastructure rather than being independently important for association with an important event or person. Therefore, the City Trunk Line South segment and associated infrastructure are recommended not eligible for listing as a City of Los Angeles HCM under any designation criteria.

Integrity

The City Trunk Line South segment and associated infrastructure maintains integrity of location, as it remains in its original location and has not been moved. City Trunk Line South segment and associated infrastructure retains integrity of setting, as the majority of the pipeline is still underground and the above ground components are still in undeveloped steep hillside, unusable as residential or commercial space. The City Trunk Line South segment and associated infrastructure does not maintain integrity of design, materials, and workmanship due to its subsequent alterations and pipeline replacements within the proposed Project APE between 1914 and present, usually made in response to catastrophic pipeline leaks and breaks. These alterations usually included replacing segments of pipe completely with modern materials, or applying modern materials permanently to historic materials to prevent further leaking or damage. Due to the introduction of modern materials, City Trunk Line South segment and associated infrastructure do not retain integrity of feeling, though this is obscured by the majority of the resource being located underground. Finally, the City Trunk Line South segment and associated infrastructure retains integrity of association as it is still owned and operated by its original owners LADWP for its original purpose.

Summary of Evaluation Findings

In consideration of NRHP, CRHR, and City of Los Angeles HCM evaluation criteria, the City Trunk Line South segment and associated infrastructure within the proposed Project APE appear not eligible for either national, state, or local listing due to lack of architectural/engineering merit, lack of historical associations and insufficient integrity. Therefore, the City Trunk Line South segment and associated infrastructure do not appear to be an historical resource for the purposes of CEQA or an historic property for the purposes of Section 106 of the NHPA.

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7 PROJECT EFFECTS/IMPACTS ASSESSMENT

7.1 Potential Direct Effects/Impacts

No historic properties under Section 106 of the NHPA, and no historical resources under CEQA were identified within the APE as a result of the records search, Native American coordination, background research, survey, or historic significance evaluation. Therefore, the project would have no adverse effects on historic properties, and would have a less than significant impact on historical resources.

7.2 Potential Indirect Effects/Impacts

Each element of the proposed project was also assessed for its potential to indirectly impact adjacent residential and commercial buildings, many of which are over 50 years old and are in close proximity to proposed project activities. Because all project work will be completed below ground, no permanent visual impacts were identified. However, it is necessary to consider potential indirect impacts resulting from groundborne vibrations due to construction equipment which will be operated in close proximity to historic-age buildings. Indirect impacts were assessed for the entire length of the APE and consider both Unit 5 Phase II and Unit 6 proposed project activities and the three proposed methods of pipeline construction: open trench excavation, CFRP pipe lining, and pipe jacking.

Caltrans has established thresholds, related to the Peak Particle Velocity (PPV), for groundborne construction vibration that take into account the type of building or structures near the vibration source. For the age and condition of the historic-era buildings on parcels adjacent to the proposed alignment, a damage threshold of 0.2 PPV inches per second (in/sec) for transient sources and 0.1 PPV (in/sec) for continuous or frequent intermittent sources is appropriate (Caltrans 2013).

Open Trench Excavation Segments

Traditional open trench excavation techniques will be used for six segments of pipeline totaling approximately 330 linear feet. Unit 5 open trenching would occur at 1) the Coldwater Canyon ROW, north of Moorpark Street; and 2) tie-in connections within Coldwater Canyon Avenue at Dickens Street and just south of the bridge; Unit 6 open trenching would occur at: 1) the tie-in connection to the southerly terminus of the City Trunk Line South, Unit 5 in Coldwater Canyon Avenue; 2) within Oeste Avenue where the removal and replacement of the existing Flow Control Station (FCS) will occur; and 3) installation of the FCS valve at 3380 Coldwater Canyon Avenue. While the various pieces of proposed equipment produce groundborne vibration to varying degrees, the use of large vibratory compactors or pile drivers can produce vibrations that exceed the damage threshold for historic-era buildings. The proposed construction equipment would not include such pieces of equipment. Additionally, the vibration that is produced during construction would be intermittent and transient. For these reasons, groundborne vibration from the open-trench segments of the proposed project poses no groundborne vibration risk to historic-era buildings.

CFRP Pipe Lining Segments

CFRP pipe lining would occur at three project segments comprising approximately 855 linear feet, including the following locations: where Coldwater Canyon Avenue crosses the Los Angeles River in Unit 5; and two large sections of Unit 6 where WSP will be structurally lined with CFRP. CFRP is an extremely strong composite material made from fiber-reinforced plastic, and is commonly used to reinforce degrading pipelines because 1) it does not require open trenching; 2) it is generally resistant to corrosion; and 3) it is more cost-effective and time efficient than other methods. CFRP would be installed by first saturating sheets of glass fiber and carbon fiber with a 2 part epoxy and then taken inside the pipeline via manhole access where the installer will place the sheets on the pipe and use a squeegee-like tool to adhere them to the pipe and remove any air bubbles. The glass fiber and carbon fiber is left to cure overnight in a controlled environment (temperature and humidity). As described, the process of pipe lining using the CFRP method involves minimal below- and above-ground disturbance. Therefore, there is no potential for indirect impacts to adjacent buildings and structures using this method.

Pipe Jacking Segment

Pipe jacking installation would be used for one of the project segments in Unit 5, Phase II, specifically approximately 620 linear feet of pipe installation under Coldwater Canyon Avenue from approximately Valleyheart Drive south to Dickens Street. Groundborne vibration from pipe jacking is dependent largely on the subsurface geology around the pipe, with dense rock (like granite or basalt) or faults generating the greatest amount of groundborne vibrations. The geologic map of the Van Nuys quadrangle indicates the pipe jacking will pass through Quaternary alluvium described as “gravel, sand, silt, and clay; unconsolidated and uncemented” (Yerkes 1996). There is also the possibility of encountering artificial fill from construction of roads and the highway. The shallow location of the proposed pipeline and the likelihood of tunneling through alluvium would not result in groundborne vibrations reaching the damage threshold. Should artificial fill be encountered, the possibility of hitting a denser material (like concrete remnants) may result in a temporary increase in PPV that could briefly exceed the damage threshold; however, given the proximity of historic-era buildings to highly-trafficked roads the possibility of damage from construction-related groundborne vibration is negligible and any potential impact would be less than significant/not adverse.

Additionally, an access pit would be dug at both ends of the pipe jacking segment and a flow control vault located at 3360 Coldwater Canyon Avenue. The soil walls of these three subsurface features would be shored up with metal sheet pile walls driven into place by an ABI vibratory hammer. Vibratory driven piles produce less groundborne vibration than impact driven piles (DFI 2015). As such, for the same reasons discussed above, groundborne vibration from the ABI vibratory hammer would not reach the damage threshold.

7.3 Summary of Potential Project Effects/Impacts

No historic properties under Section 106 of the NHPA, and no historical resources under CEQA were identified within the APE as a result of the records search, Native American coordination, background research, reconnaissance-level survey, or historical significance evaluation. Further, a groundborne vibration assessment of all proposed construction methods and associated equipment revealed that there is no risk to potential adjacent resources from proposed project activities. Nor are there any project components that would result in a visual intrusion to potential adjacent resources. Therefore, the proposed project would have no adverse effects on historic properties under Section 106 of the NHPA, and would have a less than significant impact on historical resources under CEQA.

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8 RESULTS AND RECOMMENDATIONS

8.1 Results Summary

No historic properties/historical resources were identified within the APE as a result of the CHRIS records search, SLF review, historic resource significance evaluation, and survey. Further, a review of potential indirect groundborne vibration impacts to adjacent historic-age buildings indicates that the proposed Project will not adversely affect any adjacent buildings or structures.

Section 106 of NHPA requires federal agencies to take into account the effects of their undertakings on historic properties, assess the effects, and seek ways to avoid, minimize, or mitigate any adverse effects on such properties (36 CFR 800.1[a]). No historic properties have been identified within the proposed Project APE. Therefore, no known historic properties would be adversely affected by the proposed undertaking. As a result, a finding of "No Historic Properties Affected" is recommended for the proposed undertaking.

CEQA requires a lead agency to determine whether a project may have a significant effect on historical resources (PRC section 21084.1; CEQA Guidelines section 15064.5(b)). No historical resources have been identified within the proposed Project site as a result of the CHRIS records search, survey, or historic resource significance evaluation. Therefore, no known historical resources will be impacted by the proposed Project.

While no surface evidence of historical or archaeological resources was identified as a result of this study, it is possible that subsurface resources could be encountered/impacted by ground disturbing activities associated with the Project. Recommendations to reduce effects/impacts to undiscovered, subsurface cultural resources are provided below.

8.2 Recommendations

In consideration of the cultural resources investigation, impacts to archaeological and historical resources would be less-than-significant. No new cultural resources were identified within the proposed Project APE as a result of the current study; therefore, no further management recommendations are necessary beyond standard protection measures to address unanticipated discoveries of cultural resources and human remains (listed below).

Unanticipated Discovery of Cultural Resources

In the event that archaeological resources (sites, features, or artifacts) are exposed during construction activities for the proposed Project, all construction work occurring within 100 feet of the find shall immediately stop until a qualified archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards, can evaluate the significance of the find and determine whether or not additional study is warranted. Depending upon the significance of the find, the archaeologist may simply record the find and allow work to continue. If the discovery proves significant under CEQA or Section 106 of the NHPA, additional work such as preparation of an archaeological treatment plan, testing, data recovery, and/or monitoring may be warranted.

Unanticipated Discovery of Human Remains

In accordance with Section 7050.5 of the California Health and Safety Code, if human remains are found, the County Coroner shall be notified within 24 hours of the discovery and a qualified archaeologist will be contacted. No further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains shall occur until the County Coroner has determined, within two working days of notification of the discovery, the appropriate treatment and disposition of the human remains. If the remains are determined to be Native American, the Coroner shall notify the NAHC in Sacramento within 24 hours. In accordance with California Public Resources Code, Section 5097.98, the NAHC must immediately notify those persons it believes to be the MLD from the deceased Native American. The MLD shall complete their inspection within 48 hours of being granted access to the site. The MLD would then determine, in consultation with the property owner, the disposition of the human remains. Upon discovery, a qualified archaeologist will be retained to ensure proper implementation of the treatment agreed upon by the MLD and property owner.

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APPENDIX A

Preparer's Qualifications

Kate Kaiser, MSHP

Architectural Historian

Kate Kaiser is an architectural historian with 7 years' professional experience as a cultural resource manager specializing in California Environmental Quality Act (CEQA) compliance, National Historic Preservation Act Section 106 compliance, reconnaissance and intensive level surveys, archival research, cultural landscapes, and GIS. Ms. Kaiser has worked as an archaeological technician for the National Park Service and USDA Forest Service.Ms. Kaiser meets the Secretary of the Interior's Professional Qualification Standards for both architectural history and archaeology.

Kate Kaiser

Education

University of Oregon

MS, Historic Preservation, 2017

Boston University

BA, Archaeology, 2009

Professional Affiliations

Association for Preservation Technology – Southwest

California Preservation Foundation

Vernacular Architecture Forum

Project Experience

Northside Specific Plan Draft EIR, City of Riverside, Riverside County, California (ongoing). Kaiser served as architectural historian and author of the Draft EIR Cultural Resources Chapter developed for City of Riverside's Northside Specific Plan. The cultural resource chapter documented record search results, developed a historic context for the Specific Plan Area, and developed impacts analysis and mitigation measures for the future development of the Northside Specific Plan Area.

LADWP City Trunkline South Project, Los Angeles Department of Water and Power, California (ongoing). Served as architectural historian and author of the Cultural Resources Technical Report for the City Trunkline South Project. Preparation of the report involved site recordation, extensive archival research, historic context development, engineering feature development descriptions, historical significance evaluations, and State of California Department of Parks and Recreation Series 523 forms (DPR forms) for buildings and structures in the APE. The project proposed to replace sections of the pipeline in located in the Coldwater Canyon Road area of the San Fernando Valley. The report analyzed the vibration effects of pipeline replacement and pipe-jacking practices expected as part of the Trunkline project.

LADWP Western District Yards Project, Los Angeles Department of Water and Power, California (ongoing). Served as architectural historian and author of the Cultural Resources Technical Report for the Wester District Yards Rehabilitation Project. The report evaluated the historical significance for each building of the project. The project proposed to demolish 11 buildings and structures constructed between 1946 and 2007.

LADWP Valley Generating Station Project, Los Angeles Department of Water and Power, California. Served as architectural historian and author of the Cultural Resources Technical Report for the Valley Generating Station Project. The report evaluated the historical significance for each building and structure in the study area. The project proposed to remove the 1953 steam generating plant, as well as the four stacks, SPRR rail spur, and underground fuel tanks.

LACSD Gardena Pumping Station Project, Sanitation Districts of Los Angeles County, Gardena, California. Served as architectural historian and author of the Cultural Resources Technical Report for the Gardena Pumping Project. The report evaluated the historical significance for each building of the project. The project proposed to remove the 1929 and 1960 pumping plant above and below-ground structures, as well as two adjacent parcels containing commercial buildings (1954, 1957) and replace them with a larger capacity pumping plant facility.

Phillips 66 and Kinder Morgan Relocation Project, Berths 150-151, Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS), Port of Los Angeles, California. Served as architectural historian and co-author of the Updated Historical Resources Evaluation Report for the Phillips 66 and Kinder Morgan Relocation Project. Preparation of the report involved reviewing previous evaluations for Union Oil Terminal Berths 150-151 and writing an updated significance evaluation. The project proposed to remove and replace the original wharfs with new concrete loading platform, mooring and breasting dolphins, access ramps, catwalks, and an underwater bulkhead.

LADWP De Soto Tanks Project, Los Angeles Department of Water and Power, California. Served as architectural historian and author of the Historic Properties Identification Report for the De Soto Tanks EIR. The report evaluated the historical significance for each building and structure of the project. The project proposed to remove the 1941 reservoir and associated buildings, and replace them with two modern underground storage tanks, as well as connections to the LADWP Rinaldi Trunk Line and De Soto Trunk Line.

LADWP Tujunga Spreading Grounds Enhancement, Los Angeles Department of Water and Power, California. Served as architectural historian and author of the cultural resources report CEQA-Plus Project. The report evaluated the historical significance for each building of the project. The evaluation found the property ineligible under all NRHP, CRHR, and Los Angeles Historic-Cultural Monuments designation criteria. The project proposed to modify a U.S. Army Corps of Engineer-owned flood control channel to divert more flood water from the Tujunga Flood Control Channel into the Tujunga Spreading Grounds.

Historic Resources Technical Report for the Silent Ranch Hillside Subdivision Project, City of Glendora, Los Angeles County, California. Served as architectural historian and author of the Historic Resources Technical Report for the Silent Ranch Hillside Subdivision Project. The report evaluated the historical significance for Charles Silent's Rancho Los Alisos property, Girl Scout Camp Aventura, Forest Service flood control crib dams and channels, and a segment of the MWD Upper Feeder Pipeline. Dudek recommended that all buildings and structures were ineligible for listing in the NRHP or CRHR with the exception of the MWD Upper Feeder Pipeline, which was recommended eligible under Criterion A/1/1. The project proposed indirect impacts to the setting of the pipeline and provided for protection against damage or overloading as the pipeline is an MWD public utility.

Campus-wide Historic Context Statement for California State University Long Beach, City of Long Beach, Los Angeles County, California. Served as architectural historian and co-author of the historic context statement report analyzing the effect of master architect Edward Killingsworth on the development of the campus. Preparation of the historic context statement involved extensive archival research, historic context development, in-person interviews of architects who worked on-campus, review of CSU Long Beach building and landscape records, and coordination with local heritage group, Long Beach Heritage.

Kaiser Permanente Los Angeles Specialty Medical Center Project, Los Angeles, Los Angeles County, California. Served as architectural historian and author of the Historical Resource Assessment for the Kaiser Permanente Los Angeles Specialty Medical Center at 755-765 W. College Street in Los Angeles. The report evaluated the historical significance for the medical center buildings and structures that are proposed for demolition as part of the multiphase project.

Linda Kry

Archaeologist

Linda Kry is an archaeologist with 13 years' experience in cultural resource management specializing in various aspects of cultural resources investigations within Los Angeles County, Orange County, San Bernardino County, Kern County, Imperial County, Inyo County, Riverside County, and the Mojave Desert. Ms. Kry's experience includes archival research, reconnaissance surveys, artifact analysis, assisting CEQA lead agencies with AB-52 notification and consultation process, and authoring technical reports pursuant to CEQA and Section 106 of the NHPA. Ms. Kry's extensive experience includes the management of cultural resources specialists in support of various aspects of cultural resources compliance, including Phase I surveys, construction monitoring, Native American consultation, archaeological testing and treatment, and prehistoric and historical resource significance evaluations.

Education

University of California, Los Angeles
BA, Anthropology, 2006
Cerritos College
AA, Anthropology, 2004

Project Experience

De Soto Trunk Line Project, Los Angeles Department of Water and Power, Los Angeles, California. Archaeological lead for a cultural resources study pursuant to CEQA and Section 106. Los Angeles Department of Water and Power LADWP is proposing to replace the portions of the De Soto Trunk Line located in West San Fernando Valley. Approximately 13,700 feet of riveted steel pipe, will be replaced along portions of De Soto Street and Roscoe Boulevard. The proposed project would increase the safety, capacity and reliability of LADWP's water system in the western San Fernando Valley. (August 2019-present)

Haynes Generating Station Demolition Project, Los Angeles County Department of Public Works, Malibu, California. Archaeological lead and monitoring coordinator. The project included the demolition of Units 3, 4, 5, and 6 at the Haynes Generating Station (HnGS), which were originally constructed more than five decades ago, to minimize health and safety risks and reduce future maintenance. (August 2019-September 2019)

City Trunk Line South Project, Los Angeles Department of Water and Power, Los Angeles, California. Archaeological lead for a cultural resources study pursuant to CEQA and Section 106. Los Angeles Department of Water and Power LADWP is proposing proposing to replace an old and deteriorating trunk line that was built in 1914 and has a history of leaks and breaks. The proposed trunk link will improve capacity, reliability, and flexibility in the water system. (May 2019-Septembetr 2019)

February 2019 Storm Repair Project, Los Angeles County Department of Public Works, Malibu, California. Archaeological lead responsible for managing the cultural resources inventory and assessment of cultural resources within the project area in support of emergency guardrail replacement work in the Woolsey Fire burn area. Responsibilities also include coordinating Native American monitoring needs for the project. (September 2019-present)

FLOR 401 E 7th Street Construction Monitoring, Skid Row Housing Trust, Los Angeles, California. Project manager for construction monitoring for the development of 99 units of permanent supportive housing for homeless veterans and/or special needs populations, and affordable housing for low-income individuals in Downtown Los Angeles. (February 2019-present)

Woolsey Fire Guardrails Replacement Project, Los Angeles County Department of Public Works, Malibu, California. Archaeological lead responsible for managing the cultural resources inventory and assessment of cultural resources within the project area in support of emergency guardrail replacement work in the Woolsey Fire burn area. Responsibilities also include coordinating Native American monitoring needs for the project. (January 2019-present)

Coronado Trunk Line Project, Los Angeles Department of Water and Power, Los Angeles, California. Technical lead for a Phase I cultural resources study pursuant to CEQA and Section 106. Los Angeles Department of Water and Power is proposing to construct a new 30-inch diameter welded steel pipe, approximately 7,200 feet in length, along with a regulating and relief station vault and flow master vault. The proposed trunk line would add reliability and redundancy to the system. (September 2018-March 2019)

River Supply Conduit Unit 7 Project, Los Angeles Department of Water and Power, Los Angeles and Burbank, California. Technical lead and monitoring coordinator for the River Supply Conduit (RSC) Unit 7 Project. The existing River Supply Conduit (RSC) is a major transmission pipeline in the LADWP water distribution system. The Project is critical to meet safety of water supplies, reliability of water infrastructure, and sustainability of water supply. (August 2018-present)

Relevant Previous Experience

Los Angeles International Airport (LAX) Midfield Satellite Concourse, California. Served as field director for archaeological and paleontological monitoring project associated with the creation of a new aircraft passenger concourse and associated elements at LAX. Responsibilities included coordinating with company personnel and project contractors, scheduling, and recordation and collection of field data. (April 2017–December 2017)

Los Angeles Metropolitan Transportation Authority Compliance Monitoring, California. Served as archaeological and paleontological monitor for the multiyear and multisite project within the greater Los Angeles area, including the Crenshaw rail transit corridor and the 1.9-mile Regional Connector subway corridor, as well as their associated stations. In addition, served as monitoring coordinator for the Regional Connector Archaeological and Paleontological Monitoring Project. Responsibilities as Monitoring Coordinator included coordinating and scheduling various contractors and archaeologists; developing and providing cultural resources training for new contractors and archaeologists; monthly project updates to client; invoice and budget reviews; lab analysis of all resources collected and preparation of those resources for curation. (April 2013–January 2018)

Los Angeles Department of Water and Power Division Creek, Inyo County, California. Served as deputy project manager providing consultation and support in U.S. Forest Service and Bureau of Land Management consultation for the assessment of historical structures associated with the Division Creek Power Plant and Los Angeles Aqueduct. Responsibilities included assisting with work plans, project permitting, budgeting, and reporting. In addition, served as crew chief for archaeological surveys and testing. Conducted lab analysis of artifacts, prepared these resources for curation, and co-authored reports on the results of all findings. (July 2013–November 2017)

Candise Vogel, MA

Associate Archaeologist

Candise Vogel is an Archaeologist with experience as an archaeological and laboratory technician for San Fernando Valley and more widely the Pacific Southwest. Her expressed research focus is in Zooarchaeology, the identification and preservation of faunal remains.

Project Experience

Haynes Steam Plant Soil Compaction Project, Long Beach, CA: As an archaeological field technician, monitored excavations to ensure construction activities are in compliance; monitored removal of historic culvert system, grading and compaction of soils.

Department of Water and Power Waterline Replacement Project, Montecito CA: As an archaeological field technician, conducted intensive 20 meter Site Test Pits; responsible for documenting and photographing prehistoric/historic artifacts and feature inventories.

Heartland Solar Field Project, Firebaugh CA: As an archaeological field technician, conducted intensive 20 meter pedestrian survey; responsible for documenting and photographing prehistoric artifact and feature inventories. Performed testing in multiple prehistoric and historic sites, collecting, recording, and photographing artifacts.

Education

Johns Hopkins University

MS, Geospatial Intelligence, 2020

University of California, Los Angeles

(Magna Cum Laude)

MA, Near Eastern Archaeology, 2019

BA, Near Eastern Languages and Culture

BA, Anthropology

Professional Affiliations

SWAA, AAA, ASTOR

Strauss Wind Solar Development Project, Lompoc CA: As an archaeological field and laboratory technician, performed test excavations. Recorded and documented artifacts and environmental conditions. Laboratory work consisted of processing artifacts, historic analysis, lithic analysis, curation, identification, photography of artifacts, as well as developing site inventory tables and creating site summaries for the report.

River Conduit Supply Project 7, Burbank CA: As a cross-trained archaeological and paleontological field technician, monitored excavations to ensure construction activities are in compliance; monitored installation of overflow duct, grading and compaction of soils.

Robin Hill, Goleta CA: As an archaeological field and laboratory technician, performed test excavations. Recorded and documented artifacts and environmental conditions. Laboratory work consisted of processing artifacts, historic analysis, lithic analysis, curation, identification, photography of artifacts, as well as developing site inventory tables and creating site summaries for the report.

AVE, Agoura Hills CA: As an archaeological field and laboratory technician, performed test excavations. Recorded and documented artifacts and environmental conditions. Laboratory work consisted of processing artifacts, historic analysis, lithic analysis, curation, identification, photography of artifacts, as well as developing site inventory tables and creating site summaries for the report.

Awards/Commendations

UCLA Honors Summer Fellowship: This fellowship culminated into a primary source review of ancient Egyptian literatures describing burial ideologies now published in Aleph Undergraduate Research Journal, Oct 2018.

UCLA Dean's Award: For original research presented at the 2018 Undergraduate Research Week. Thesis title: "Satrapy, Sedition and Sacralization: A Historiographic Analysis of Egyptian Society Under Imperial Rule."

Induction, UCLA Mortar Board Society: Recognition of honors students with the highest distinction related to academic achievement.

College of the Canyons Student Scholar of the Year (2018): Awarded for literature review and original analysis of CDC data. Thesis title: "Failure to Progress: An Analysis of Human Rights Violations in Childbirth"

2017 Santa Clarita Warrior Foundation Scholarship

2016 Ricky Slocum Memorial Fund Scholarship

2016 College of the Canyons Leadership Scholarship

2011 Navy and Marine Corps Commendation Medal: Earned during support of combat operations in Afghanistan.

2009/2010 Navy and Marine Corps Achievement Medal: Twice awarded for actions performed in combat (Iraq and Afghanistan).

Adriane Gusick

Associate Archaeologist

Adriane Gusick is an associate archaeologist with more than 18 years of experience in cultural resource management specializing in cultural resource studies with private, state, and federal regulatory agencies including National Historic Preservation Act (NHPA) Sections 106 and 110 and California Environmental Quality Act (CEQA) compliance extending primarily throughout Southern California. She has worked directly with Bureau of Land Management, the California Public Utilities Commission, California State Parks, and various military installations including the Marine Corps Air Ground Combat Center at Twentynine Palms, Marine Corps Base (MCB) Camp Pendleton, Naval Base Coronado, and Navy Installation San Clemente Island. She has experience in all aspects of project development from initial research, planning, and development to interpreting and synthesizing data in technical reports. Ms. Gusick has acted as project manager and field director on complex data recovery programs, managed multiple archaeology laboratories, worked as liaison between Native American tribes and clients, and engaged in education and public outreach programs. In addition to Southern California, Ms. Gusick has worked as a consulting archaeologist in the southwestern United States, the Mid-Atlantic region, and New England.

Education

Catholic University of America, BA Anthropology, 2001

University of Oklahoma, BS Nursing, 2011

Certifications

City of San Diego Certified Archaeology and Paleontology Monitor

City of San Diego Certified Archaeology Crew Chief

Occupational Safety and Health Administration (OSHA) 10-Hour Construction Safety Training

OSHA 40-Hour Hazardous Waste Operations Worker (HAZWOPER) training

Registered Nurse

Wilderness First Responder

Relevant Project Experience

LADWP PP1&2 Transmission Line Conversion Project, Santa Clarita Valley, Los Angeles County, California. Dudek was retained by the Los Angeles Department of Water and Power (LADWP) to complete a cultural resources study for the Power Plant #1 and #2 to Olive #1 Transmission Line Conversion Project. LADWP is proposing to replace and convert an existing 120-mile length of 115 kilovolt (kV) double circuit transmission line between Haskell Canyon Switching Station and Olive Switching Station to a new 230 kV transmission line between Haskell Canyon Switching Station and Sylmar Switching Station. Ms. Gusick co-authored the report, in addition to performing archival research, conducting the pedestrian survey, providing Native American coordination, and recording newly identified cultural resources.

LADWP North Hollywood West Well Field Water Treatment Project, City of Los Angeles, Los Angeles County, California. Dudek was retained by LADWP to complete a cultural resources study for the North Hollywood West Well Field Water Treatment Project. LADWP proposes to implement a response action to address releases of 1,4-dioxane in groundwater that are migrating to the North Hollywood West Well Field by installing water treatment equipment at the well field capable of removing the 1,4-dioxane to below the identified cleanup levels. The regulatory framework is CEQA Plus, as such the project was also subject to compliance with Section 106 of the NHPA. Ms. Gusick co-authored the report, in addition to performing archival research, conducting the pedestrian survey, and providing Native American coordination.

LADWP Power Plant 1 Long Term Maintenance Program Project, Los Angeles County, California. Dudek was retained by LADWP to complete a cultural resources study for the Power Plant 1 Long Term Maintenance Program Project. LADWP proposes to develop a long-term operations and maintenance program for the Power Plant 1 hydroelectric facility, Power Plant 1, and its existing flood control infrastructure located in San Francisquito Canyon north of Santa Clarita. Ms. Gusick was lead author on the report, performed archival research, conducted the pedestrian survey, and recorded newly identified cultural resources.

LADWP Upper Stone Canyon Reservation Water Quality Improvement Project, City of Los Angeles, Los Angeles County, California. Dudek was retained by LADWP to complete a cultural resources study for the Upper Stone Canyon Reservation Water Quality Improvement Project. LADWP proposes to install an approximately 700,000-square-foot flexible membrane floating cover over the entire water surface of Upper Stone Canyon Reservoir and remove and replace the existing reservoir liner and appurtenant facilities. Ms. Gusick co-authored the report and conducted the intensive-level pedestrian survey.

LADWP Fish Creek Canyon Road Repair Project, Los Angeles County, California. Dudek was retained by LADWP to complete a cultural resources study for the Fish Creek Canyon Road Repair Project near Castaic, within the Angeles National Forest. LADWP proposes to repair a portion of Fish creek Canyon Road by removing the existing asphalt along the 84-feet length portion of the road and filling the area with compacted native materials. Ms. Gusick performed the archival research, provided Native American coordination, and conducted the intensive-level pedestrian survey.

Little Lake MDP Line B, Stage 1, Riverside County Flood Control and Water Conservation District, Riverside County, California. Ms. Gusick served as project archaeologist for the archaeological monitoring program during construction and maintenance of approximately 9,000 linear feet of storm drain facilities in San Jacinto and Hemet. Ms. Gusick was responsible for the evaluation and treatment of unanticipated discoveries and contributed to the Cultural Resources Monitoring Report.

Elsinore Valley Municipal Water District's Flagler Wells Conversion, Corona, California. Ms. Gusick served as cultural resources project director for the proposed construction of a potable water pipeline servicing the City of Corona, Riverside County. Ms. Gusick performed the CHRIS records search, Native American coordination, conducted the pedestrian survey, and authored the constraints report in accordance with CEQA guidelines.

Cultural Resource Study, Padre Dam Municipal Water District, San Diego County, California. Ms. Gusick served as associate archaeologist tasked with field excavation, GIS mapping, site recordation, strategy coordination with Native American groups, and laboratory analysis.

Cultural and Paleontological Resource Study for the City of San Diego Reclaimed Water Distribution System Project, San Diego, California. Ms. Gusick served as archaeological and paleontological monitor for the City of San Diego's continuing annual water and sewer main replacement program. Examples of projects include:

- Sewer and Water Group 683A
- Sewer and Water Group 676
- Sewer and Water Group 796
- Sewer and Water Group 741
- Sewer and Water Group 718
- Sewer Pump Station 19 Replacement

Makayla Murillo

Archaeologist

Makayla Murillo is an archaeologist with more than 4 years' experience as an archaeological field technician, laboratory technician, and Native American Representative. She has conducted numerous surveys, excavations, and data recoveries, primarily in Southern California. She has extensive experience in North County, with additional experience in Riverside County, San Diego County, Orange County, Kern County, San Bernardino County, and Imperial County. Her research interests include the role of experimentation in archaeology, protection and preservation of Native American sites, shell bead production and lithic production.

EDUCATION

University of California, Davis

Field School, 2018

California State University San Marcos

BA, Anthropology, 2017

MiraCosta College

AA, Anthropology, 2015

CERTIFICATIONS

San Diego City Certified Archaeologist, 2018

National Safety Council First Aid Certified, 2018

National Safety Council CPR Certified, 2018

Roadway Worker Protection Certified, 2017-2018

Worker Environmental Awareness Program, 2018

Project Experience

Development

Corona Tract Project, Van Daele, Riverside County, California. As an archaeological monitor, conducted 10 meter pedestrian surveys coordinated with two Native American monitors; monitored clearing of vegetation; monitored grading for housing pads and water retention basin. (June 2017 to April 2018)

Discovery South Project, City of San Marcos Planning Division, San Marcos, North County, California. As archaeological field technician, conducted shovel test pits, documented shovel test pit with forms and photography, and performed laboratory tasks. (April 2017) ~ 1 day

Hotel Del Coronado North Parking Gage Project, Coronado, San Diego County, California. As archaeological field technician, helped perform excavation of a historical feature on site during construction activities. Photographed and recorded the feature on site. (December 2018) ~ 1 day

Education

Palomar College Project, Palomar Community College District, Oceanside, North County, California. As a Native American monitor, monitored controlled grading near historic deposit; monitored mass grading and trenching excavations, coordinated with archaeologist during testing units; monitored transplanting of endangered species by biologists prior to construction grading of site. Recorded and sorted artifacts with archaeologist. (October 2017) ~ two weeks

Hillsdale Middle School Field Lighting Project, Cajon Valley Union School District, El Cajon, San Diego County, California. As a laboratory technician, developed Sacred Lands File Contact forms; created

Tribal request letters; requested records search, assembled location and project maps to request letters and report; developed the report tables for reports and resources. (April 2018 to February 2019)

Energy

Jacumba Valley Ranch Solar Project, BayWa Renewable Energy LLC, Jacumba, San Diego County, California. As an archaeological technician, conducted intensive pedestrian survey. Conducted Archaeological Pedestrian Survey. Recorded and photographed surface inventory of newly identified cultural resources. Identified previously recorded cultural resources and sites. Created site forms for each newly identified site. (July 2017 to March 2019)

Edwards Air Force Base Geotechnical Project, Terra-Gen Development Company LLC, Mojave, Kern County, California. As an archaeological technician, coordinated monitoring with a biologist and Native American Representative. Conducted archaeological pedestrian survey to and from ground disturbing locations and relocated artifacts out of access roads to avoid impact. Recorded and photographed the relocation of newly identified artifacts. (June 2019) ~ 1 week

Sanborn Archaeological Significance Evaluation Project, Terra-Gen Development Company LLC, Mojave, Kern County, California. As an archaeological technician, conducted significance evaluation in cultural sites. Recorded and photographed site evaluations. Laboratory analysis consisted of artifact processing and cataloging artifacts. (October 2018) ~ 1 week

Valley Center Pole Replacement, San Diego Gas & Electric, Valley Center, North County, California. As a Native American Representative, performed pedestrian survey with archaeologists, biologists, and construction managers for an electrical transmission line pole replacement; monitored previously recorded sites near pole replacements; monitored new pole locations to avoid site impacts. (September 2017 to January 2018)

Imperial Solar Energy Center West Project, CSolar IV West LLC, Imperial County, California. As an archaeological field technician, performed site visits, recorded artifact inventory, photographed artifacts, and environmental conditions as a part of the Long Term Archaeological Management Plan. Workers Environmental Awareness Protection Certified. (September 2017 to December 2018) ~ 2 days

Campo Wind Project, Terra-Gen Development Company, LLC, Jacumba, San Diego County, California. As an archaeological field technician, conducted archaeological pedestrian survey. Recorded and photographed surface inventory of newly identified and previously recorded cultural resources and sites. As a laboratory technician, responsible for creating California Department of Parks and Recreation archaeological forms and submitting to the South Coast Information Center. (July 2018 to May 2019)

Calcite Solar Project, Lendlease Energy Development LLC, Lucerne Valley, San Bernardino County, California. As an archaeological field and laboratory technician, performed test excavations. Recorded and documented artifacts and environmental conditions. Laboratory work consisted of processing artifacts, historic analysis, lithic analysis, curation, identification, photography of artifacts, as well as developing site inventory tables and creating site summaries for the report. (May 2018 to July 2018)

California Flats Project, First Solar, San Miguel, Monterey, California. As an archaeological laboratory technician, assembled California Department Parks and Recreation archaeological forms. (August 2018 to September 2018)

Torrey Wind Project, Terra-Gen Power LLC, Campo, San Diego County, California. As an archaeological field technician, conducted intensive 15 meter pedestrian survey; responsible for documenting and photographing prehistoric artifact and feature inventories. Performed testing in multiple prehistoric and historic sites, collecting, recording, and photographing artifacts and test pits. As a lab technician, completed processing of artifacts, cataloging artifacts, site descriptions, Department of Parks and Recreation forms, and photographing artifacts. (May 2018 to May 2019)

Transportation

Mid Coast Transit Conductors Project Monitor, SANDAG, La Jolla, San Diego County, California. As an archaeological field technician, monitored excavations to ensure construction activities are in compliance; monitored railway expansion, including installation of a second mainline track, and a new light rail trolley double track. Roadway Worker Production Certified. (January 2017 to April 2018)

San Elijo Lagoon Double Track Project, SANDAG, Cardiff, San Diego County, California. As an archaeological laboratory technician; developed the California Department of Parks and Recreation archaeological forms and involved with writing the Cultural Resources Monitoring Report for the project. (May 2019 to June 2019)

Water/Wastewater

City of San Diego – Transportation and Storm Water, La Jolla, San Diego County, California. As an archaeological field technician, monitored construction activities of undergrounding of utilities. Documented and photographed construction activities. (June 2018 to January 2019)

River Supply Conduit Unit Project, Los Angeles Department of Water and Power, Burbank, Los Angeles County, California. As an archaeological field technician, monitored excavations to ensure construction activities are in compliance; Recorded and photographed all construction activity on site. (June 2019) ~ 1 day

Awards/Commendations

2017 - Lilian Sherman Scholarship

Relevant Previous Experience

- 2014 – Present Associate Archaeologist, Dudek, Encinitas, California
- 2017 – 2018 Native American Representative, Saving Sacred Sites, Vista, California
- 2014 – Temporary Assistant, Habitat Restoration Sciences, Vista, California
- 2012 – Temporary Assistant, Larry Seeman Associates, Carlsbad California

Kara R. Dotter, MSHP

Senior Historic Preservation Specialist and Architectural Historian

Kara Dotter is a senior historic preservation specialist with more than 15 years of experience in historic preservation and architectural conservation. Her historic preservation experience spans all elements of cultural resources management, including project management, intensive- and reconnaissance-level field investigations, architectural history studies, and historical significance evaluations in consideration of the National Register of Historic Places (NRHP), California Register of Historical Places (CRHR), and local-level designation criteria, in addition to architectural conservation work.

Ms. Dotter meets the Secretary of the Interior's Professional Qualification Standards for Architectural History. She has experience preparing environmental compliance documentation in support of projects that fall under the California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA), and Sections 106 and 110 of the National Historic Preservation Act (NHPA). She also prepared numerous Historic Architectural Survey Reports (HASRs) and Findings of Effect (FOE) reports for the California High-Speed Rail Authority.

Education

Queen's University of Belfast
PhD Candidate (ABD)

University of Texas, Austin

MS, Geological Sciences, 2006
MS, Historic Preservation, 2004

University of Houston
BS, Geology, 1996

Certifications

CEQA Practice Certificate (in progress)

Professional Affiliations

Association for Preservation Technology

Construction History Society of America

American Institute of Conservation

Society of Architectural Historians

California Preservation Foundation

Relevant Project Experience

Undergrounding Utility Project, City of San Diego, San Diego, California (in progress). Dudek was retained by the City of San Diego to complete an analysis of potential impacts to historical resources for a project that will transition utilities services to underground. The project covers the majority of the City of San Diego, and consists of over 800 discrete project alignments. The project area contains over 1,300 individual historic properties and passes through 17 current or proposed historic districts. Work includes conducting a records search, assessing potential impacts, and providing mitigation recommendations.

Reliable Pipe Supply Phase II, LLJ Ventures LLC, San Diego, California (2017). Dudek was to complete an Historical Resources Technical Report for the property located at 1430 National Avenue, San Diego, California, which was assessed for the potential of mixed-use redevelopment. Ms. Dotter served a Cultural Resources project manager and was lead author on the HRTR, in addition to performing archival research, conducting an intensive site survey, and recording and evaluating historical resources in consideration of CRHR, and local designation criteria and integrity requirements.

Jacumba Valley Solar Project, San Diego County, California (2018). The project proposes a 100 megawatt solar farm that included photovoltaic solar panels, a 1,500-volt DC underground collection system, a 34.5 kilovolt overhead and underground collection system, and a 20 megawatt energy storage facility, among other features.

Served as architectural historian and lead author of the historical resources constraints analysis to comply with CEQA and in preparation of technical studies conducted for the Environmental Impact Report. The constraints analysis identified one potential historical resource, the remains of a substantial early 20th century dairy operation, and recommended a full Historical Resources Evaluation Report of the property in compliance with CEQA.

Environmental Preconstruction Services for Construction Package 2 and 3, California High-Speed Rail Authority, Fresno to Bakersfield Section, California (in progress). Ms. Dotter is the project lead for the Built Environment component of the environmental preconstruction services. The work involves conducting cultural resources assessments for a proposed 65-mile-long segment of the Fresno to Bakersfield high-speed rail alignment as directed by the California High-Speed Rail Authority and Federal Transit Administration (FTA) in order to comply with NEPA and CEQA regulations. Ms. Dotter's contributions include architectural history field surveys; documenting and updating the CRHR-designated 7,040-acre Washington Irrigated Colony Rural Historic Landscape; completion of over 150 California Department of Parks and Recreation (DPR) forms for the evaluation of built environment resources; conducting research for and producing HASRs and supplemental Findings of Effect (sFOEs); development of Protection and Stabilization Plans and Response Plans for Unanticipated Effects and Unintended Damage; and managing structural and vibration engineering consultants.

Historical Resources Evaluation of Public Utilities Department Reservoir Structures, City of San Diego, California (in progress). The project proposes upgrades to ten historic-era dams, an historic-era flume, and various attendant structures, within the San Diego water supply network. Serving as architectural historian and co-author of a multiple-property historical resources evaluation report. Project includes development of a network-wide historical context, as well as contexts for each individual contributor; multiple intensive field surveys; extensive archival research; recordation and evaluation of the properties in consideration of NRHP, CRHR, and local designation criteria and integrity requirements, and in consideration of potential impacts to historical resources under CEQA; proposal of appropriate mitigation measures; and review for conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties.

Municipal Waterways Maintenance Plan, City of San Diego, San Diego County, California. Dudek was retained by the City of San Diego and the Bureau of Reclamation to initiate the processing of a joint EIR and EIS. The proposed WMP is intended to establish an effective and streamlined program that allows for waterway facilities (channels, ditches, sumps) to be maintained, while minimizing impacts and potential adverse effects of maintenance. The proposed WMP will outline specific activities, maintenance methods, and procedures that will guide future maintenance and repair activities. Ms. Dotter is the lead author of the Historical Resources Inventory and Analysis Report, conducting archival research; identifying potential historical resources; and analyzing the proposed WMP maintenance activities to determine their potential to impact historical resources.

Crowther Sewer Pipeline Project, City of Placentia, Orange County, California. The City of Placentia proposes to upsize the existing sewer pipeline under Crowther Avenue, Placentia Avenue, and Orangethorpe Avenue by constructing a completely independent pipeline parallel to the existing pipeline, which would be capped and left in place once the new pipeline is completed. Ms. Dotter served as the Cultural Resources project manager, co-authored the HRCR, conducted archival research, and performed a reconnaissance survey of the proposed route.

Samantha Murray, MA

Historic Built Environment Lead / Senior Architectural Historian

Samantha Murray is a senior architectural historian with 13 years' professional experience in in all elements of cultural resources management, including project management, intensive-level field investigations, architectural history studies, and historical significance evaluations in consideration of the California Register of Historical Resources (CRHR), the National Register of Historic Places (NRHP), and local-level evaluation criteria. Ms. Murray meets the Secretary of the Interior's Professional Qualification Standards for both Architectural History and Archaeology. She is experienced managing multidisciplinary projects in the lines of transportation, transmission and generation, federal land management, land development, state and local government, and the private sector. She has experience preparing environmental compliance documentation in support of projects that fall under the California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA), and Sections 106 and 110 of the National Historic Preservation Act (NHPA).

Education

California State University, Los Angeles
MA, Anthropology, 2013

California State University, Northridge
BA, Anthropology, 2003

Professional Affiliations

California Preservation Foundation

Society of Architectural Historians

National Trust for Historic Preservation

Registered Professional Archaeologist

Relevant Project Experience

Kaiser Permanente Los Angeles Specialty Medical Center Project, Los Angeles, Los Angeles County, California (2019). Dudek prepared a Historical Resource Assessment for the Kaiser Permanente Los Angeles Specialty Medical Center at 755-765 W. College Street in Los Angeles. Preparation of the report involved extensive archival research, reconnaissance level fieldwork, historic context development, building development descriptions, historical significance evaluations for buildings greater than 45-years in age, and DPR forms for the medical center buildings and structures that are proposed for demolition as part of the multi-phase project. As a result of the evaluations, all buildings were found not eligible for designation under all applicable national, state, and local designation criteria and integrity requirements. Ms. Murray provided QA/QC of the report and guidance on approach.

Kaiser Permanente Los Angeles Medical Center Project, Los Angeles, Los Angeles County, California (2018). Dudek prepared a Cultural Resources Report that involved extensive archival research, reconnaissance level fieldwork, historic context development, building development descriptions, historical significance evaluations, and DPR forms for six buildings greater than 45-years in age that are proposed for demolition as part of the multi-phase project. As a result of the evaluations, all buildings proposed for demolition were found not eligible for designation under all applicable national, state, and local designation criteria and integrity requirements.

LACSD Gardena Pumping Station Project, Sanitation Districts of Los Angeles County, Gardena, California (2019). Dudek prepared a Cultural Resources Technical Report for the Gardena Pumping Project. Preparation of the report involved site recordation, extensive archival research, historic context development, engineering feature development descriptions, historical significance evaluations, and State of California Department of Parks and

Recreation Series 523 forms (DPR forms) for each building of the project. The project proposed to remove the 1929 and 1960 pumping plant above and below-ground structures, and two adjacent parcels containing commercial buildings (1954, 1957) and replace them with a larger capacity pumping plant facility. Ms. Murray provided oversight of all built environment components and provided QA/QC of all documents.

LADWP De Soto Trunk Line Project, City of Los Angeles, Los Angeles County, California (2018). Dudek was retained by Los Angeles Department of Water and Power (LADWP) to complete a cultural resources study for the De Soto Trunk Line Project. LADWP is proposing the replacement of portions of four existing water pipelines: De Soto, Roscoe, Canoga Topham, and Ventura Trunk Lines. LADWP is proposing to replace these segments with new pipeline. The regulatory framework is CEQA Plus, as such the project was also subject to compliance with Section 106 of the NHPA. Ms. Murray provided QA/QC of the cultural resources report.

The Santa Monica City Yards Master Plan Project, City of Santa Monica, Los Angeles County, California (2017). The City of Santa Monica retained Dudek to complete a cultural resources study for the proposed City Yards Master Plan project site located at 2500 Michigan Avenue in the City of Santa Monica. The study involved evaluation of the entire City Yards site, including two murals and a set of concrete carvings for historical significance and integrity. As a result, the City Yards and its associated public art work was found ineligible under all designation criteria.

LADWP West Los Angeles District Yard Project, City of Los Angeles, Los Angeles County, California (2017). Dudek was retained by Los Angeles Department of Water and Power (LADWP) to complete a cultural resources study for a project that proposes demolition of five LADWP-owned administrative buildings and warehouses at the West Los Angeles District Headquarters located at 12300 West Nebraska Avenue. Dudek evaluated the yard for historical significance in consideration of NRHP, CRHR, and City of Los Angeles HCM criteria and integrity requirements.

LADWP Haynes Generating Station Units 3 through 6 Demolition Project, City of Long Beach, Los Angeles County, California (2017). Dudek was retained by Los Angeles Department of Water and Power (LADWP) to complete a cultural resources study for a project that proposes demolition of Units 3-6 at the LADWP Haynes Generating Station. Ms. Murray evaluated the entire steam plant for historical significance in consideration of NRHP, CRHR, and City of Long Beach designation criteria and integrity requirements, and co-authored the cultural resources report.

LADWP Green Verdugo Reservoir Improvement Project, City of Los Angeles, Los Angeles County, California (2017). Dudek was retained by Los Angeles Department of Water and Power (LADWP) to complete a cultural resources study for a project that proposes facility updates at the reservoir site in order to ensure safe water quality. Ms. Murray evaluated the reservoir for historical significance in consideration of NRHP, CRHR, and City of Los Angeles HCM designation criteria and integrity requirements, and co-authored the cultural resources report.

LADWP Upper Stone Canyon Reservoir Water Quality Improvement Project, City of Los Angeles, Los Angeles County, California (2016). Dudek was retained by Los Angeles Department of Water and Power (LADWP) to complete a cultural resources study for a project that proposes to maintain and improve the quality, reliability, and stability of the Stone Canyon Reservoir Complex (SCRC) service area drinking water supply. Dudek prepared an updated evaluation of the reservoir in consideration of NRHP, CRHR, and City of Los Angeles HCM criteria and integrity requirements.

LADWP Power Plant 1 Long-Term Maintenance Program Project, City of Los Angeles, Los Angeles County, California (2016). Dudek was retained by Los Angeles Department of Water and Power (LADWP) to complete a cultural resources study for the proposed long-term maintenance of the flood control infrastructure in the vicinity of Power Plant 1. Ms. Murray prepared the cultural resources impacts assessment, co-authored the cultural resources report, and provided QA/QC of the cultural resources technical report.

APPENDIX B

CONFIDENTIAL

CHRIS Records Search Results

APPENDIX C

Native American Coordination

STATE OF CALIFORNIA GAVIN NEWSOM, Governor

NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone: (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov
Twitter: @CA_NAHC

September 24, 2019

Adriane Gusick
Dudek

VIA Email to: adorrler@dudek.com

RE: City Trunk Line South Project, Los Angeles County

Dear Ms. Gusick:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our lists contain current information. If you have any questions or need additional information, please contact me at my email address: steven.quinn@nahc.ca.gov.

Sincerely,

Steven Quinn

Steven Quinn
Associate Governmental Program Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Los Angeles County
9/24/2019

Barbareno/ Ventureno Band of Mission Indians
Raudel Banuelos,
331 Mira Flores
Camarillo, CA, 93012
Phone: (805) 427 - 0015
Chumash

Barbareno/Ventureno Band of Mission Indians
Julie Tumamait-Stenslie, Chairperson
365 North Poli Ave
Ojai, CA, 93023
Phone: (805) 646 - 6214
jtumamait@hotmail.com
Chumash

Barbareno/ Ventureno Band of Mission Indians
Patrick Tumamait,
992 El Camino Corto
Ojai, CA, 93023
Phone: (805) 216 - 1253
Chumash

Barbareno/ Ventureno Band of Mission Indians
Eleanor Arrellanes,
P. O. Box 5687
Ventura, CA, 93005
Phone: (805) 701 - 3246
Chumash

Chumash Council of Bakersfield
Julio Quair, Chairperson
729 Texas Street
Bakersfield, CA, 93307
Phone: (661) 322 - 0121
chumashtribe@sbcglobal.net
Chumash

Coastal Band of the Chumash Nation
Gino Altamirano, Chairperson
P. O. Box 4464
Santa Barbara, CA, 93140
cbcn.consultation@gmail.com
Chumash

Fernandeno Tataviam Band of Mission Indians
Jairo Avila, Tribal Historic and Cultural Preservation Officer
1019 Second Street, Suite 1
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This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed City Trunk Line South Project, Los Angeles County.

Native American Heritage Commission
Native American Contact List
Los Angeles County
9/24/2019

Northern Chumash Tribal Council Fred Collins, Spokesperson P.O. Box 6533 Los Osos, CA, 93412 Phone: (805) 801 - 0347 fcollins@northernchumash.org	Chumash
San Fernando Band of Mission Indians Donna Yocum, Chairperson P.O. Box 221838 Newhall, CA, 91322 Phone: (503) 539 - 0933 Fax: (503) 574-3308 ddyocum@comcast.net	Kitanemuk Vanyume Tataviam
San Luis Obispo County Chumash Council Mark Vigil, Chief 1030 Ritchie Road Grover Beach, CA, 93433 Phone: (805) 481 - 2461 Fax: (805) 474-4729	Chumash
Santa Ynez Band of Chumash Indians Kenneth Kahn, Chairperson P.O. Box 517 Santa Ynez, CA, 93460 Phone: (805) 688 - 7997 Fax: (805) 686-9578 kkahn@santaynezchumash.org	Chumash
yak tityu tityu yak tiłhini – Northern Chumash Tribe Mona Tucker, Chairperson 660 Camino Del Rey Arroyo Grande, CA, 93420 Phone: (805) 748 - 2121 olivas.mona@gmail.com	Chumash

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed City Trunk Line South Project, Los Angeles County.

APPENDIX D

DPR Forms: City Trunk Line South (Coldwater Canyon Segment)

State of California ♁ The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code 6Z

Other Listings
Review Code   Reviewer   Date

 ***Resource Name or #:** (Assigned by recorder) City Trunk Line – South Segment

P1. Other Identifier: City Trunk Line (Moorpark to Franklin Tunnel segment)

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted**

***a. County** Los Angeles **and** (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** Van Nuys, Calif. **Date** 1972 **T** 01N ; **R** 15W ; NW ¼ **of** NW ¼ **of Sec** 36 ; SW ¼ **of** SW ¼ **of Sec** 24 ; NW ¼ **of Sec** 25 ; SW ¼ **of Sec** 25 ; San Bernardino **B.M.**

c. Address Coldwater Canyon, Avenida Del Sol and Oeste Avenue right-of-way
City Studio City (Los Angeles) Zip

d. UTM: (Give more than one for large and/or linear resources)
Segment Start Zone 11S , 369667.15 mE/ 3779785.62 mN;
Segment End Zone 11S , 369893.96 mE/ 3777807.73 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, decimal degrees, etc., as appropriate)
The resource is located in the Studio City neighborhood of Los Angeles, in the southeastern portion of the San Fernando Valley, approximately 15 miles northwest of Downtown Los Angeles. The resource segment extends from 20 feet north of Moorpark Avenue in the Coldwater Canyon Avenue right-of-way (ROW), south within the ROW of Coldwater Canyon Avenue, Avenida Del Sol and Oeste Avenue before terminating (See Continuation Sheet)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
The City Trunk Line South segment pipeline structure was not visible or accessible during the survey, except where the trunk line was visible beneath the Caltrans Bridge over the Los Angeles River (Figure 11). According to historical sources, the City Trunk Line was constructed as riveted steel pipe, ranging between 65 inches (See Continuation Sheet)

***P3b. Resource Attributes:** AH6 – Water Conveyance Feature; HP9. Public Utility Building

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

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects.)

P5b. Description of Photo: (view, date, accession #) Visible portion of City Trunk Line South segment pipe, in background behind smaller diameter pipe. View to east (IMG 3683)

***P6. Date Constructed/Age and Source:** ☒ Historic ☐ Prehistoric ☐ Both
1914 (CLA 1916)

***P7. Owner and Address:**
LOS ANGELES DEPARTMENT OF WATER AND POWER (LADWP)
111 North Hope Street
Los Angeles, CA 90012

***P8. Recorded by:** (Name, affiliation, and address) Kate Kaiser, MSHP, Dudek
38 N Marengo Ave.
Pasadena, CA 91101

***P9. Date Recorded:** 9/24/2019

***P10. Survey Type:** pedestrian

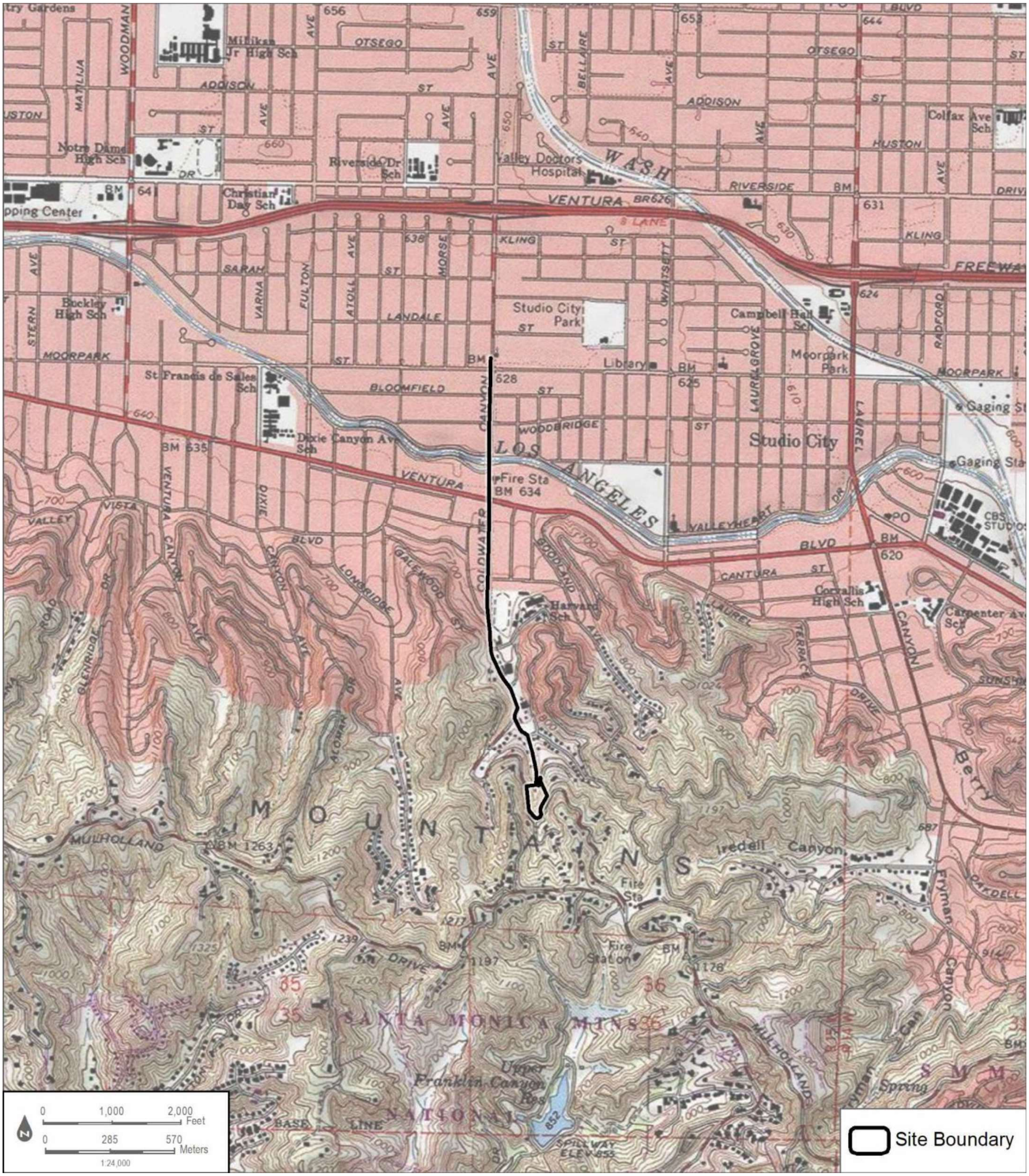
***P11. Report Citation**: (Cite survey report and other sources, or enter "none.") Kaiser et. al. 2019. *Historic Properties Identification Report for the City Trunk Line South Project, City of Los Angeles, Los Angeles County, California.* Prepared by Dudek for Los Angeles Department of Water and Power.

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

State of California ♁ Natural Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary #
HRI#
Trinomial

Page 2 **of** 12 ***Resource Name or #** (Assigned by recorder) City Trunk Line - South Segment
***Map Name:** Van Nuys, Calif. ***Scale:** 1:24,000 ***Date of map:** 1972



BUILDING, STRUCTURE, AND OBJECT RECORD

***Resource Name or #** (Assigned by recorder) City Trunk Line - South Segment ***NRHP Status Code** 6Z

B1. Historic Name: City Trunk Line
B2. Common Name: City Trunk Line
B3. Original Use: Water Conveyance System and infrastructure
B4. Present Use: Water Conveyance System and infrastructure
***B5. Architectural Style:** Utilitarian
***B6. Construction History:** (Construction date, alterations, and date of alterations)

1912 City Trunk Line construction starts
North Portal Franklin Tunnel structure completed
(likely) maintenance hole completed
1914 City Trunk Line (South segment) Completed
1951 Caltrans Bridge No. 53C1138 completed
Circa 1980-1989 erosion control terrace structures completed
(See Continuation Sheet)

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**
***B8. Related Features:**
Franklin Tunnel (1912)
Franklin Reservoir (1914)
Caltrans Bridge No. 53C1138 (1951)

B9a. Architect: unknown b. Builder: unknown
***B10. Significance: Theme** n/a **Area** n/a
Period of Significance n/a **Property Type** n/a **Applicable Criteria** n/a
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)
(See Continuation Sheet)

B11. Additional Resource Attributes: (List attributes and codes)

B12. References:

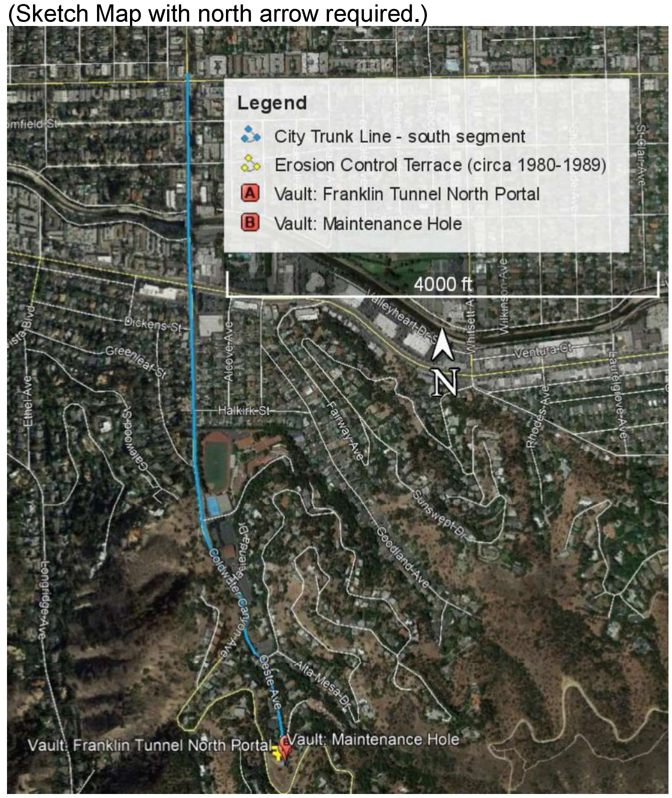
(See Continuation Sheet)

B13. Remarks:

***B14. Evaluator:** Kate Kaiser, MSHP (Dudek)
***Date of Evaluation:** 9/24/2019

(This space reserved for official comments.)

(Sketch Map with north arrow required.)



P2b. Location (Continued): at the LADWP-owned property, located at 3380 Coldwater Canyon Boulevard (APN 2384-024-902). Decimal Degrees: 34.150385, -118.413796 (north), 34.133358, -118.411247 (south); Segment remains in public ROW except at parcel APN: 2384-024-902

P3a. Description (Continued): and 72 inches in diameter. The City Trunk Line, in 1914, was capable of transporting over 2,000 miners' inches of water nearly 14 miles to the Upper Franklin Reservoir. The City Trunk Line South segment from San Fernando Reservoir to Franklin Canyon Reservoir and had multiple branch lines, laterals, and several high line branches to reach the newly annexed San Fernando Valley communities. According to historical resources, the entirety of the trunk line was prone to regular leaks and failure leading to flooding of above ground structures and buildings. As a result, an indeterminate amount of the City Trunk Line South segment and City Trunk Line as a whole have been subject to repair, reinforcement, and replacement over the course of its 105 years of use.).

Vault: North Portal Franklin Tunnel Entrance (1912)
This structure was constructed in 1912 as the portal entrance to the Franklin Tunnel segment of the City Trunk Line. The tunnel entrance consists of a squared concrete vault that tapers toward the top, and measures approximately 4 foot by 4 foot at the base and 3 foot by 3 foot at the top, rising roughly 4-5 feet out of the steeply sloping hillside. The vault structure is constructed of board-formed concrete, and a metal ladder attached to the west elevation leads to the manhole entrance, which is a double-hinged, metal flap cover. This structure is south of the Maintenance Hole structure and the dirt parking area terrace (Figure 1).

Figure 1. View north to Manhole Sewer structure (IMG_3632)

Vault: Maintenance Hole (no date)

This structure consists of a rectangular concrete vault, measuring roughly 5 foot wide by 6 foot long and rising 2-3.5 feet above the steeply sloped ground surface. The maintenance hole is constructed of board-formed concrete and its only access is through with hinged metal doors on its top portion. The doors also incorporate four metal C-shaped bars for ease of entry into the hatch doors. A temporary, modern-construction wood staircase leads from a dirt-finished parking area terrace in the hillside above it (Figure 2).

Figure 2. View east to Vault structure (IMG_3635)

Erosion Control Terrace and Flow Control Station inlet header (circa 1980-1989)

The erosion control terrace structure consists of three concrete runnels evenly spaced in the steeply sloped hillside that flow towards a central channel. Each runnel has a slight rise and berm on the south (downhill) side. At the top-most runnel and berm there is a flow control station inlet header (Figure 3) with a metal grate over it, and below the bottom most runnel, there is an outlet header that lets out into a small, densely vegetated area. The concrete runnels appear poured in place, are 30-36 inches wide, and have a slight concavity/runnel in the center, which directs water flow (Figure 4). The structure is not visible in the 1980 aerial photograph, but is clearly visible in the 1989 aerial photograph, giving it an approximate, maximum age of 39, and therefore does not qualify for consideration as a historical resource at this time.

Figure 3. Flow Control Station Inlet Header and top runnel, looking southwest (IMG_3655)

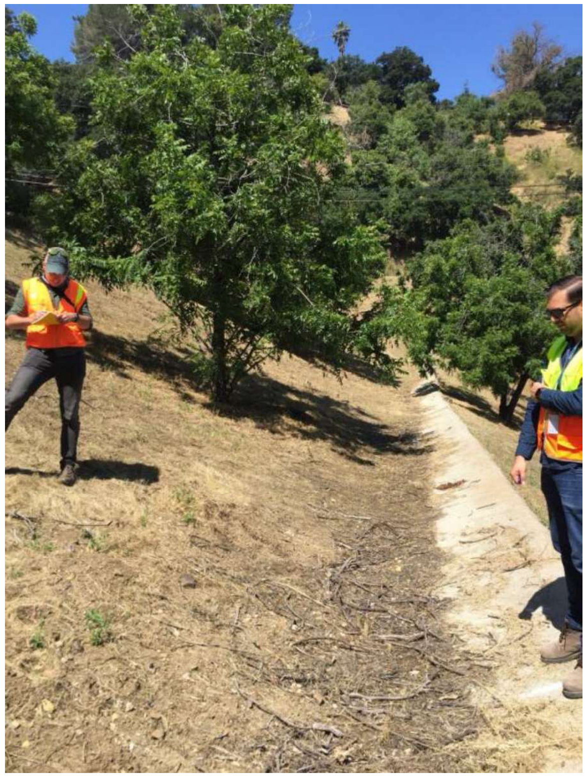


Figure 4. Middle runnel and berm, looking east (IMG_3643)

Caltrans Bridge No. 53C1138 (1951)
The project APE in passes below Caltrans Bridge No. 53C1138, where Coldwater Canyon Avenue passes over the Los Angeles River. The bridge was constructed in 1951 and is listed as a Category 5 bridge (i.e., the bridge was determined to be ineligible for the NRHP by Caltrans Professionally Qualified Staff). Further, the project does not propose any direct impacts to the bridge, rather, the segment of the City Trunk Line South that runs below the bridge will be subject to CFRP pipe lining, which is considered minimally invasive. Given the existing finding of ineligibility, and the fact that the proposed project will not directly impact the bridge, an updated evaluation for historical significance is not required for this resource.

B6. Construction History (Continued): Construction of the 233-mile Los Angeles Aqueduct began in 1908 and was completed in 1913. On November 5, 1913, the Los Angeles Aqueduct opening day was held, and water from Owens Valley poured over the Cascades north of Sylmar. From the Cascades, several water mains were proposed to carry aqueduct water to Los Angeles, via trunk lines that extended through the Santa Monica Mountains. One such proposed trunk line was the City Trunk Line, which brought water from Sylmar to Franklin Canyon Reservoir above Beverly Hills (Figure 6). Nearly all of the towns in San Fernando Valley agreed to consolidate into Los Angeles in order to take advantage of the municipal water source in 1915. The San Fernando Addition, some 108,732 acres, was made to the City of Los Angeles on May 22, 1915 and included the entire proposed Project area (CLA 1916; Hamlin 1916; Lee 2001; Water and Power Associates 2019).

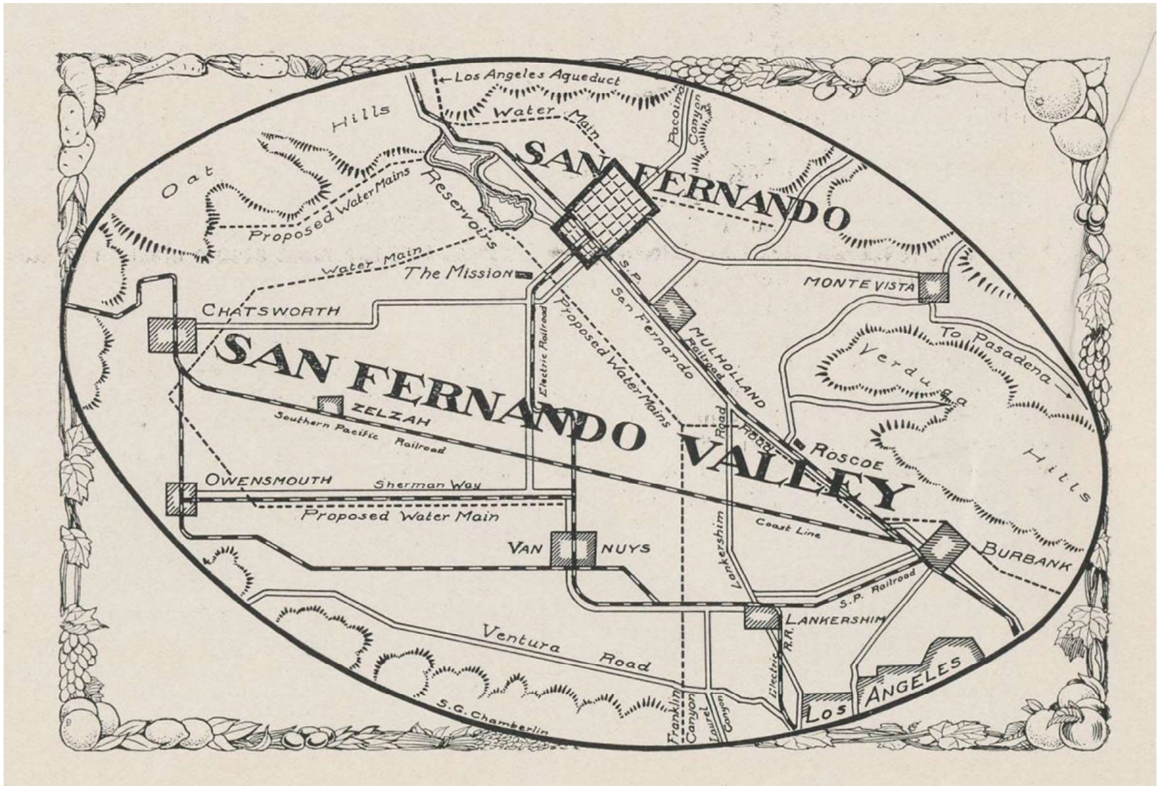


Figure 5. Page from "Official Program Aqueduct Opening, Nov. 5 '13" (Water and Power Associates 2019)

Prior to its development and annexation into the San Fernando Valley cities and later, Los Angeles, the Coldwater Canyon Area south of the Los Angeles River boasted large ranches and homes, primarily on large tracts used as crop land or orchard. At the turn of the twentieth century, Coldwater Canyon's settlement remained sparsely residential and agricultural, with larger homes built into the southern portion near Beverly Hills, and agricultural properties on the north portion nearer North Hollywood (Roderick 2001).

In 1912, William Mulholland, Chief Engineer in the Bureau of Water Works and Supply, published the annual water report discussing how water from the Los Angeles Aqueduct might be distributed throughout the city, should all surrounding communities and districts buy into the Los Angeles water system. The City of Los Angeles, in preparation for aqueduct water, built its own pipelines as far north as Beverly Hills. In April 1913, a bond issue was on the ballot for $1,500,000 in funding for the City Trunk Line, to extend from San Fernando Reservoir to the north end of the City and connect to the City's water system there. Other bond issues included Los Angeles Harbor improvements, bonds for a city hall, and a bond measure to distribute hydroelectric power, and a bond measure to distribute surplus water via the Chatsworth High Line and the Pasadena-Glendora-San Dimas High Line. Only the power bonds and the City Trunk Line bonds were approved. Construction of the City Trunk Line began fall 1913 and was already underway when the Los Angeles Aqueduct opening ceremony was held in November 1913. The City Trunk Line, as constructed, was a riveted steel siphon, ranging between 65 inches and 72 inches in diameter, and capable of transporting over 2,000 miners' inches of water nearly 14 miles to the Upper Franklin Reservoir, where it would be transferred into the City's water mains. The City Trunk Line from San Fernando Reservoir to Franklin Canyon Reservoir was completed by summer 1914, with branch lines, lateral and several High Lines to reach the newly annexed San Fernando

Valley communities (Figure 6) (CLA 1916; LAT 1912, 1913a, 1913b, 1913c, 1913d, 1914; Roderick 2001).

Figure 6. Trunk line construction, no date/location (DWP Photo Collection, Los Angeles Public Library)

B10. Significance (Continued):

The City Trunk Line South segment between just north of the Coldwater Canyon Avenue and Moorpark Street intersection and the Franklin Tunnel north entrance, as well as its associated infrastructure at the southern end of the proposed Project APE, were evaluated for historical significance in consideration of NRHP, CRHR, and City of Los Angeles Historic-Cultural Monument criteria and integrity requirements. A complete set of State of California Department of Parks and Recreation 523 Forms (DPR Forms) is located in Appendix D. The Erosion Control Terrace was constructed in circa 1980-1989, does not appear to be directly associated with the City Trunk Line function, and does not yet meet the age criteria for evaluation.

NRHP/CRHR Designation Criteria

For a property to be listed in or determined eligible for listing in the NRHP/CRHR, it must be demonstrated to possess integrity and to meet at least one of four criteria. The CRHR was designed to reflect the same criteria and integrity as those identified for the NRHP. Therefore, the NRHP and CRHR significance evaluations are presented together.

> *Criterion A/1: That are associated with events that have made a significant contribution to the broad patterns of our history.*

The City Trunk Line is one of many early water distribution resources associated with the completion of the Los Angeles Aqueduct, which was responsible for bringing Owens Valley water to Los Angeles for distribution throughout the city. The security of municipal water from the City of Los Angeles Water Department ensured adequate supply for those within city limits and emboldened several independent cities and surrounding communities to apply for annexation by the city. The route for the pipeline was chosen in 1912, and receiving pipelines were built on the south slopes of the Santa Monica Mountains by 1913 in anticipation of Owens Valley water. In 1914, the City Trunk Line was completed between San Fernando Reservoir and Franklin Canyon Reservoir. Although the Trunk Line is associated with an important period of development for the City of Los Angeles' Bureau of Water Works and Supply, the City Trunk Line operated in support of more important engineering structures that contributed to local history, and is less important as an individual resource. City Trunk Line has only a minor role in a larger system of water supply for City of Los Angeles. Therefore, the City Trunk Line South segment and associated infrastructure do not appear eligible under NRHP/CRHR Criteria A/1.

Criterion B/2: That are associated with the lives of persons significant in our past.

To be found eligible under B/2 the property has to be directly tied to an important person and the place where that individual conducted or produced the work for which he or she is known. Archival research indicates a distant connection to William Mulholland, who first identified the route of the City Trunk Line in a 1912 report to the City, which allowed for the funding bonds to build these resources. However, the City Trunk Line South segment and associated infrastructure at Coldwater Canyon were not the place where Mulholland produced the report or engineering designs for which he is known. Therefore, the City Trunk Line South segment and associated infrastructure do not appear eligible under NRHP/CRHR Criteria B/2.

Criterion C/3: 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.

Archival research indicates that the City Trunk Line South segment and associated infrastructure were completed in 1914 and at the time of their construction were typical, wide-diameter riveted steel pipe construction. However, due to repairs and material replacements of the line at many locations inside and outside the proposed Project APE, the City Trunk Line South segment no longer embodies the specific characteristics of early twentieth century riveted steel pipe construction. Archival research did not identify an architect or engineer associated with the design of the City Trunk Line South segment that rose to the level of "master." The City Trunk Line South segment and associated infrastructure do not possess high artistic value. It is possible that the City Trunk Line may be considered part of a water distribution system entity whose components lack individual distinction; however, the role of the City Trunk Line within this group of potential water engineering structures is minor. Finally, the City Trunk Line pipeline lacks the material and design integrity to be considered for this criterion. Therefore, the City Trunk Line South segment and associated infrastructure do not appear eligible under NRHP/CRHR Criteria C/3.

Criterion D/4: That have yielded, or may be likely to yield, information important in prehistory or history.

The City Trunk Line South segment and associated infrastructure is not a source, or likely source, of important historical information nor does it appear likely to yield important information about historic construction methods, materials or technologies. Therefore, the City Trunk Line South segment and associated infrastructure do not appear eligible under NRHP/CRHR Criteria D/4.

City of Los Angeles HCM Criteria

Because the City of Los Angeles HCM criteria closely follow that of the NRHP and CRHR, the national and state significance evaluation previously presented is also relevant here. The City Trunk Line South segment and associated infrastructure are not an example of outstanding craftsmanship, and did not influence the design of other architecture in the City of Los Angeles. However, the City Trunk Line does have a distinguishable role in the development or history of Los Angeles as it was a major component in linking the City of Los Angeles to the Owens Valley water supply from the Los Angeles Aqueduct. The supply of water and power is one of the most significant themes in the history and development of Los Angeles. Archival research did not discover an associated engineer or designer that rises to the level of "master" for the City Trunk Line, however much of the major decisions about where the trunk line was placed and how to connect it to the Los Angeles Aqueduct and a system of reservoirs were the product of William Mulholland. As engineer of the Los Angeles Aqueduct and first chief engineer of the City of Los Angeles Department of Water, Mullholland may be a person considered important to Los Angeles history, but for his other contributions to the City's history, namely the formation of the Water Department and the Los Angeles Aqueduct planning, design, and construction. Despite these associations, the City Trunk Line South segment and associated infrastructure are utilitarian components of a larger system and operates in support of other important infrastructure rather than being independently important for association with an important event or person. Therefore, the City Trunk Line South segment and associated infrastructure are recommended not eligible for listing as a City of Los Angeles HCM under any designation criteria.

Integrity

The City Trunk Line South segment and associated infrastructure maintains integrity of location, as it remains in its original location and has not been moved. City Trunk Line South segment and associated infrastructure retains integrity of setting, as the majority of the pipeline is still underground and the above ground components are still in undeveloped steep hillside, unusable as residential or commercial space. The City Trunk Line South segment and associated infrastructure does not maintain integrity of design, materials, and workmanship due to its subsequent alterations and pipeline replacements within the proposed Project APE between 1914 and present, usually made in response to catastrophic pipeline leaks and breaks. These alterations usually included replacing segments of pipe completely with modern materials, or applying modern materials permanently to historic materials to prevent further leaking or damage. Due to the introduction of modern materials, City Trunk Line South segment and associated infrastructure do not retain integrity of feeling, though this is obscured by the majority of the resource being located underground. Finally, the City Trunk Line South segment and associated infrastructure retains integrity of association as it is still owned and operated by its original owners LADWP for its original purpose.

Summary of Evaluation Findings

In consideration of NRHP, CRHR, and City of Los Angeles HCM evaluation criteria, the City Trunk Line South segment and associated infrastructure within the proposed Project APE appear not eligible for either national, state, or local listing due to lack of architectural/engineering merit, lack of historical associations and insufficient integrity. Therefore, the City Trunk Line South segment and associated infrastructure do not appear to be an historical resource for the purposes of CEQA or an historic property for the purposes of Section 106 of the NHPA.

B12. References (Continued):

CLA (City of Los Angeles). 1916. *Complete Report on Construction of the Los Angeles Aqueduct*. Los Angeles: Department of Public Service.

Hamlin, Homer. 1916. "Map showing territory annexed to the city of Los Angeles, California." Washington D.C.: Library of Congress Geography and Map Division. Accessed July 15, 2019. https://www.loc.gov/resource/g4364l.ct001800/

LAT (Los Angeles Times). 1912. "Outside Districts Stirring For Surplus Aqueduct Water." Newspapers.com: The Los Angeles Times. March 25, 1912, pg. 14.

LAT. 1913a. "Official Count of Bond Votes." Newspapers.com: The Los Angeles Times. April 17, 1913, pg. 30.

LAT. 1913b. "Mulholland's Report Explicit, Instructive." Newspapers.com: The Los Angeles Times. August 2, 1913, pg. 11

LAT. 1913c. "Declines to Restrain." Newspapers.com: The Los Angeles Times. October 2, 1913, pg. 14.

LAT. 1913d. "Glorious Mountain River Now Flows to Los Angeles' Gates." Newspapers.com: The Los Angeles Times. November 6, 1913, pgs. 13, 16.

LAT 1914. "May Avoid Bond Issues Declares Mulholland. Newspapers.com: *The Los Angeles Times*. May 28, 1914, pg. 13.

Lee, Portia. 2001. "Historic American Engineering Record: Los Angeles Aqueduct." HAER No. CA-298. Sheet set, historical photographs and written historical and descriptive data. August 2001. Accessed July 15, 2019. https://www.loc.gov/item/ca3095/

Prosser, D. 2017. "LOS ANGELES CITYWIDE HISTORIC CONTEXT STATEMENT Context: Public and Private Institutional Development, 1850-1980 Sub-Context: Municipal Infrastructure and Services, 1900-1980 Theme: Municipal Water and Power, 1902-1980." *Survey LA: Los Angeles Historic Resource Survey*. Los Angeles, CA: Department of City Planning, Office of Historic Resources.

Roderick, Kevin. 2001. *San Fernando Valley: America's Suburb*. Los Angeles: Los Angeles Times Book.

Roderick, Kevin. 2013. "Water. Part 1: LA and its Owens Valley Water." *LAObserved.com*. November 4, 2013. Accessed July 15, 2019. http://www.laobserved.com/archive/2013/11/sfv.php

Water and Power Associates. 2019. "Official Program: L.A. Aqueduct Opening Ceremonies, November 5, 1913." Accessed July 15, 2019. https://waterandpower.org/museum/Official_Program_LA_Aqueduct.html

APPENDIX D
Construction Noise Analysis Data

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/5/2019
Case Description: LADWP City Trunk Line South - Site Prep - Cut and Cover

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Residential - nearest	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	30	0
Crane	No	16		80.6	40	0
Excavator	No	40		80.7	50	0
Man Lift	No	20		74.7	35	0
All Other Equipment > 5 HP	No	50	85		100	0
Front End Loader	No	40		79.1	75	0
Tractor	No	40	84		50	0

Results

Equipment		Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq
Man Lift		79.1	72.1	N/A	N/A	N/A	N/A
Crane		82.5	74.5	N/A	N/A	N/A	N/A
Excavator		80.7	76.7	N/A	N/A	N/A	N/A
Man Lift		77.8	70.8	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		79	76	N/A	N/A	N/A	N/A
Front End Loader		75.6	71.6	N/A	N/A	N/A	N/A
Tractor		84	80	N/A	N/A	N/A	N/A
	Total	84	84.1	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Residential - typical	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	150	0
Crane	No	16		80.6	150	0
Excavator	No	40		80.7	150	0
Man Lift	No	20		74.7	150	0
All Other Equipment > 5 HP	No	50	85		150	0
Front End Loader	No	40		79.1	150	0
Tractor	No	40	84		150	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq
Man Lift	65.2	58.2	N/A	N/A	N/A	N/A
Crane	71	63	N/A	N/A	N/A	N/A

Excavator		71.2	67.2	N/A	N/A	N/A	N/A
Man Lift		65.2	58.2	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		75.5	72.4	N/A	N/A	N/A	N/A
Front End Loader		69.6	65.6	N/A	N/A	N/A	N/A
Tractor		74.5	70.5	N/A	N/A	N/A	N/A
	Total	75.5	76.1	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/5/2019
Case Description: LADWP City Trunk Line South - CFRP Installation

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Residential - nearest	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	30	0
Compressor (air)	No	40		77.7	40	0
Generator (<25KVA, VMS signs)	No	50		72.8	50	0
All Other Equipment > 5 HP	No	50	85		50	0

Results

		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		82.1	78.1	N/A	N/A	N/A	N/A
Compressor (air)		79.6	75.6	N/A	N/A	N/A	N/A
Generator (<25KVA, VMS signs)		80.6	77.6	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		85	82	N/A	N/A	N/A	N/A
	Total	85	85	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Residential - typical	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	150	0
Compressor (air)	No	40		77.7	150	0
Generator (<25KVA, VMS signs)	No	50		72.8	150	0
All Other Equipment > 5 HP	No	50	85		150	0

Results

		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		68.1	64.1	N/A	N/A	N/A	N/A
Compressor (air)		68.1	64.1	N/A	N/A	N/A	N/A
Generator (<25KVA, VMS signs)		63.3	60.3	N/A	N/A	N/A	N/A

All Other Equipment > 5 HP		75.5	72.4	N/A	N/A	N/A	N/A
	Total	75.5	73.8	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/28/2020
Case Description: LADWP City Trunk Line South - Pit Shoring for Pipe Jacking

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Residential - nearest	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	30	0
Generator	No	50		80.6	40	0
All Other Equipment > 5 HP	No	50	85		50	0
Impact Pile Driver	Yes	20		101.3	50	0
Generator	No	50		80.6	100	0

Results

		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane		85	77	N/A	N/A	N/A	N/A
Generator		82.6	79.6	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		85	82	N/A	N/A	N/A	N/A
Impact Pile Driver		101.3	94.3	N/A	N/A	N/A	N/A
Generator		74.6	71.6	N/A	N/A	N/A	N/A
	Total	101.3	94.8	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Residential - typical	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	150	0
Generator	No	50		80.6	150	0
All Other Equipment > 5 HP	No	50	85		150	0
Impact Pile Driver	Yes	20		101.3	150	0
Generator	No	50		80.6	150	0

Results

		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane		71	63	N/A	N/A	N/A	N/A
Generator		71.2	67.2	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		65.2	58.2	N/A	N/A	N/A	N/A
Impact Pile Driver		71.1	68.1	N/A	N/A	N/A	N/A
Generator		71.1	68.1	N/A	N/A	N/A	N/A

	Total	91.7	85.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/28/2020
Case Description: LADWP City Trunk Line South - Pipe Jacking

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Residential - nearest	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	30	0
Excavator	No	40		80.7	40	0
Front End Loader	No	40		79.1	50	0
Pumps	No	50		80.9	50	0
Compressor (air)	No	40		77.7	75	0

Results

		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Man Lift		79.1	72.1	N/A	N/A	N/A	N/A
Excavator		82.6	78.7	N/A	N/A	N/A	N/A
Front End Loader		79.1	75.1	N/A	N/A	N/A	N/A
Pumps		80.9	77.9	N/A	N/A	N/A	N/A
Compressor (air)		74.1	70.2	N/A	N/A	N/A	N/A
	Total	82.6	82.9	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Residential - typical	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	150	0
Excavator	No	40		80.7	150	0
Front End Loader	No	40		79.1	150	0
Pumps	No	50		80.9	150	0
Compressor (air)	No	40		77.7	150	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Man Lift	65.2	58.2	N/A	N/A	N/A	N/A
Excavator	71.2	67.2	N/A	N/A	N/A	N/A
Front End Loader	69.6	65.6	N/A	N/A	N/A	N/A
Pumps	71.4	68.4	N/A	N/A	N/A	N/A
Compressor (air)	68.1	64.1	N/A	N/A	N/A	N/A

	Total	71.4	72.8	N/A	N/A	N/A	N/A
		*Calculated Lmax is the Loudest value.					

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/28/2020
Case Description: LADWP City Trunk Line South - FCS Vault Installation

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Residential - nearest	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	175	0
Excavator	No	40		80.7	180	0
Man Lift	No	20		74.7	185	0
Man Lift	No	20		74.7	200	0
All Other Equipment > 5 HP	No	50	85		180	0
Front End Loader	No	40	80		200	0
Impact Pile Driver	Yes	20		101.3	180	0

Results

		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane		69.7	61.7	N/A	N/A	N/A	N/A
Excavator		69.6	65.6	N/A	N/A	N/A	N/A
Man Lift		63.3	56.3	N/A	N/A	N/A	N/A
Man Lift		62.7	55.7	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		73.9	70.9	N/A	N/A	N/A	N/A
Front End Loader		68	64	N/A	N/A	N/A	N/A
Impact Pile Driver		90.1	83.2	N/A	N/A	N/A	N/A
	Total	73.9	83.6	N/A	N/A	N/A	N/A
		*Calculated Lmax is the Loudest value.					

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Residential - typical	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	200	0
Excavator	No	40		80.7	200	0
Man Lift	No	20		74.7	200	0
Man Lift	No	20		74.7	200	0
All Other Equipment > 5 HP	No	50	85		200	0
Front End Loader	No	40	80		200	0
Impact Pile Driver	Yes	20		101.3	200	0

Results

		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	

Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane		68.5	60.6	N/A	N/A	N/A	N/A
Excavator		68.7	64.7	N/A	N/A	N/A	N/A
Man Lift		62.7	55.7	N/A	N/A	N/A	N/A
Man Lift		62.7	55.7	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		73	69.9	N/A	N/A	N/A	N/A
Front End Loader		68	64	N/A	N/A	N/A	N/A
Impact Pile Driver		89.2	82.2	N/A	N/A	N/A	N/A
	Total	89.2	82.7	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/5/2019

Case Description: LADWP City Trunk Line South - FCS Vault - Arch Coating

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Residential - nearest	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	175	0

Results

		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		66.8	62.8	N/A	N/A	N/A	N/A
	Total	66.8	62.8	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Residential - typical	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	200	0

Results

		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		65.6	61.6	N/A	N/A	N/A	N/A
	Total	65.6	61.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.