

Attachment 1. Airport Hazards Worksheet

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Airport Hazards (CEST and EA)

General policy	Legislation	Regulation
It is HUD's policy to apply standards to prevent incompatible development around civil airports and military airfields.		24 CFR Part 51 Subpart D
References		
https://www.hudexchange.info/environmental-review/airport-hazards		

1. To ensure compatible land use development, you must determine your site's proximity to civil and military airports. Is your project within 15,000 feet of a military airport or 2,500 feet of a civilian airport?

No → *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide a map showing that the site is not within the applicable distances to a military or civilian airport.*

Yes → *Continue to Question 2.*

2. Is your project located within a Runway Potential Zone/Clear Zone (RPZ/CZ) or Accident Potential Zone (APZ)?

Yes, project is in an APZ → *Continue to Question 3.*

Yes, project is an RPZ/CZ → *Project cannot proceed at this location.*

No, project is not within an APZ or RPZ/CZ

→ *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide a map showing that the site is not within either zone.*

3. Is the project in conformance with DOD guidelines for APZ?

Yes, project is consistent with DOD guidelines without further action.

Explain how you determined that the project is consistent:

→ *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide any documentation supporting this determination.*

No, the project cannot be brought into conformance with DOD guidelines and has not been approved. → *Project cannot proceed at this location.*

Project is not consistent with DOD guidelines, but it has been approved by Certifying Officer or HUD Approving Official.

Explain approval process:

If mitigation measures have been or will be taken, explain in detail the proposed measures that must be implemented to mitigate for the impact or effect, including the timeline for implementation.

→ *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide any documentation supporting this determination.*

Worksheet Summary

Compliance Determination

Provide a clear description of your determination and a synopsis of the information that it was based on, such as:

- Map panel numbers and dates
- Names of all consulted parties and relevant consultation dates
- Names of plans or reports and relevant page numbers
- Any additional requirements specific to your region

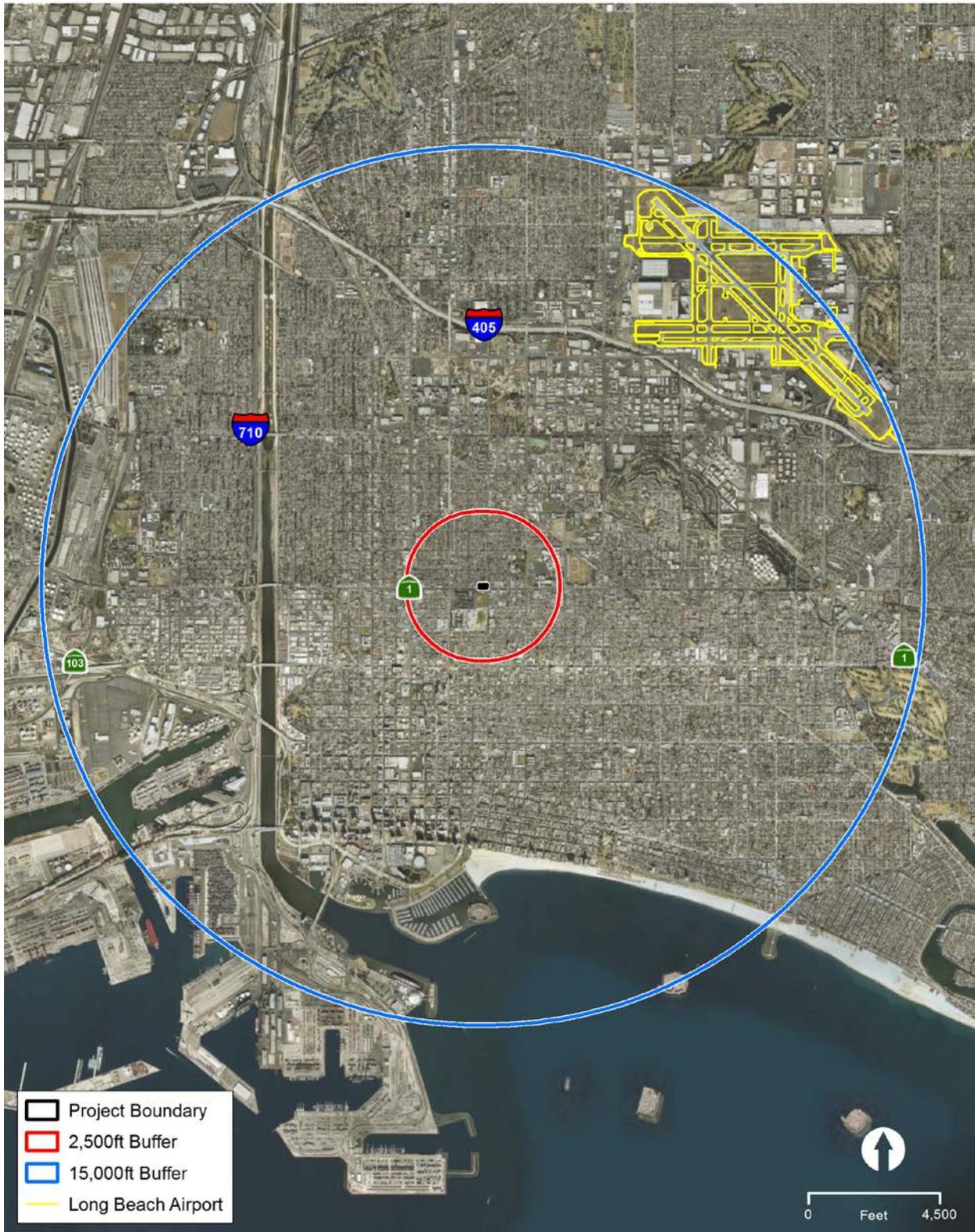
As shown in Figure 1 below, the project site is not within 2,500 feet of a civilian airport or 15,000 feet of a military airport. The Long Beach Airport is a public airport located more than 2 miles northeast of the project site.

Are formal compliance steps or mitigation required?

Yes

No

Figure 1. Airports within Project Vicinity



Attachment 2. Flood Insurance Worksheet

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Flood Insurance (CEST and EA)

General requirements	Legislation	Regulation
Certain types of federal financial assistance may not be used in floodplains unless the community participates in National Flood Insurance Program and flood insurance is both obtained and maintained.	Flood Disaster Protection Act of 1973 as amended (42 USC 4001-4128)	24 CFR 50.4(b)(1) and 24 CFR 58.6(a) and (b); 24 CFR 55.1(b).
Reference		
https://www.hudexchange.info/environmental-review/flood-insurance		

1. Does this project involve financial assistance for construction, rehabilitation, or acquisition of a mobile home, building, or insurable personal property?

No. This project does not require flood insurance or is excepted from flood insurance. → *Continue to the Worksheet Summary.*

Yes → *Continue to Question 2.*

2. Provide a FEMA/FIRM map showing the site.

The Federal Emergency Management Agency (FEMA) designates floodplains. The [FEMA Map Service Center](#) provides this information in the form of FEMA Flood Insurance Rate Maps (FIRMs). For projects in areas not mapped by FEMA, use the best available information to determine floodplain information. Include documentation, including a discussion of why this is the best available information for the site. Provide FEMA/FIRM floodplain zone designation, panel number, and date within your documentation.

Is the structure, part of the structure, or insurable property located in a FEMA-designated Special Flood Hazard Area?

No → *Continue to the Worksheet Summary.*

Yes → *Continue to Question 3.*

3. Is the community participating in the National Flood Insurance Program or has less than one year passed since FEMA notification of Special Flood Hazards?

Yes, the community is participating in the National Flood Insurance Program.

For loans, loan insurance or loan guarantees, flood insurance coverage must be continued for the term of the loan. For grants and other non-loan forms of financial assistance, flood insurance coverage must be continued for the life of the building irrespective of the transfer of ownership. The amount of coverage must equal the total project cost or the maximum coverage limit of the National Flood Insurance Program, whichever is less. Provide a copy of the flood insurance policy declaration or a paid receipt for the current annual flood insurance premium and a copy of the application for flood insurance.

→ *Continue to the Worksheet Summary.*

- Yes, less than one year has passed since FEMA notification of Special Flood Hazards.
If less than one year has passed since notification of Special Flood Hazards, no flood insurance is required.

→ *Continue to the Worksheet Summary.*

- No. The community is not participating, or its participation has been suspended.
Federal assistance may not be used at this location. Cancel the project at this location.

Worksheet Summary

Compliance Determination

Provide a clear description of your determination and a synopsis of the information that it was based on, such as:

- Map panel numbers and dates
- Names of all consulted parties and relevant consultation dates
- Names of plans or reports and relevant page numbers
- Any additional requirements specific to your region

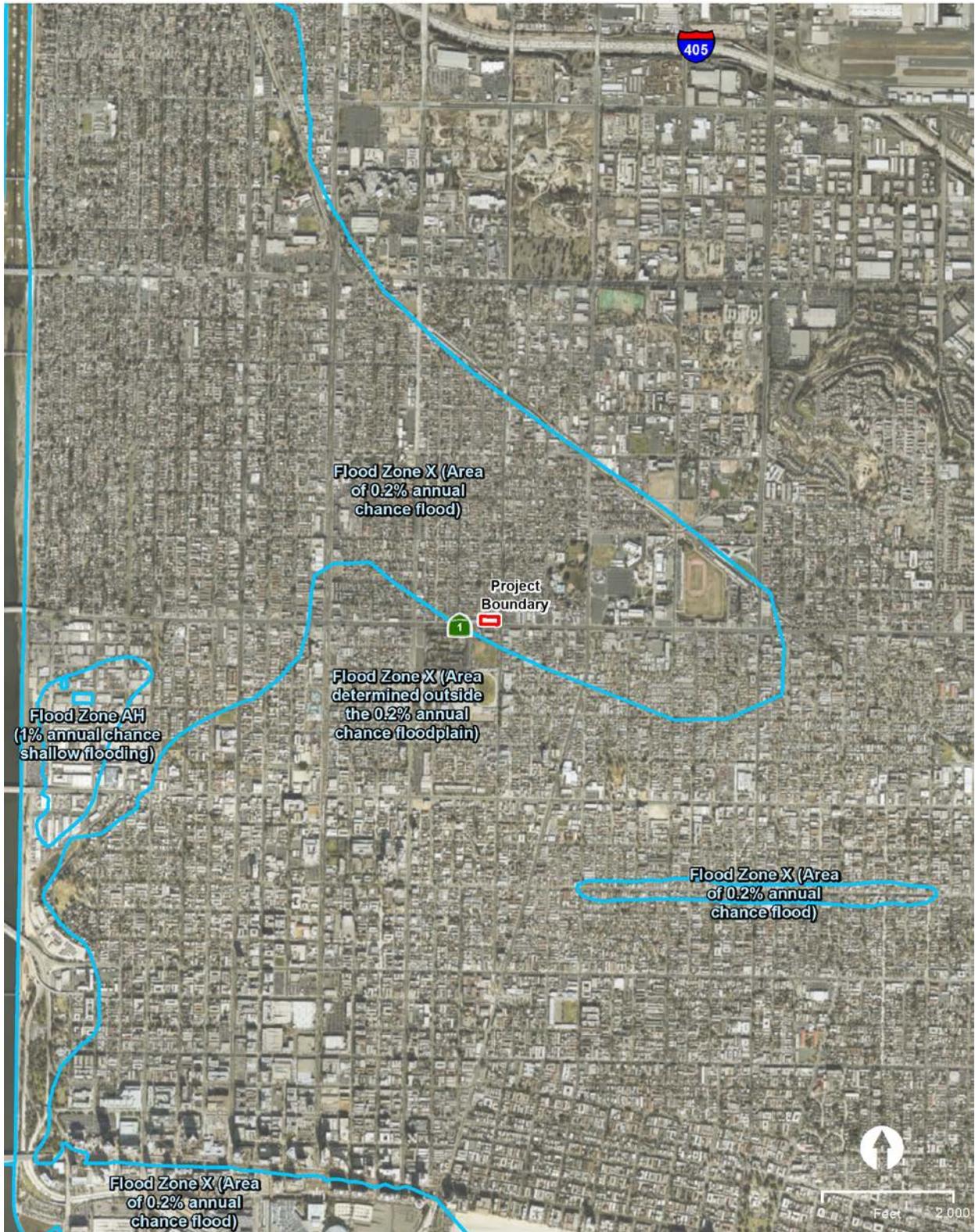
As shown in Figure 1 below, the project site is not located within a FEMA designated 100-year floodplain or 500-year floodplain identified in FEMA Flood Insurance Rate Map panel 06037C1970F.

Are formal compliance steps or mitigation required?

Yes

No

Figure 1. Flood Zone Map



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Attachment 3. Air Quality Worksheet

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Air Quality (CEST and EA)

General Requirements	Legislation	Regulation
The Clean Air Act is administered by the U.S. Environmental Protection Agency (EPA), which sets national standards on ambient pollutants. In addition, the Clean Air Act is administered by States, which must develop State Implementation Plans (SIPs) to regulate their state air quality. Projects funded by HUD must demonstrate that they conform to the appropriate SIP.	Clean Air Act (42 USC 7401 et seq.) as amended particularly Section 176(c) and (d) (42 USC 7506(c) and (d))	40 CFR Parts 6, 51 and 93
Reference		
https://www.hudexchange.info/environmental-review/air-quality		

Scope of Work

- 1. Does your project include new construction or conversion of land use facilitating the development of public, commercial, or industrial facilities OR five or more dwelling units?**

Yes

→ Continue to Question 2.

No

Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide any documents used to make your determination.

Air Quality Attainment Status of Project's County or Air Quality Management District

- 2. Is your project's air quality management district or county in non-attainment or maintenance status for any criteria pollutants?**

Follow the link below to determine compliance status of project county or air quality management district:

<http://www.epa.gov/oaqps001/greenbk/>

No, project's county or air quality management district is in attainment status for all criteria pollutants

→ Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide any documents used to make your determination.

Yes, project's management district or county is in non-attainment or maintenance status for one or more criteria pollutants.

Describe the findings:

The U.S. Environmental Protection Agency has classified the South Coast Air Basin as attainment/maintenance for CO, PM₁₀, and NO₂ and nonattainment for O₃ and PM_{2.5}. In addition, the Los Angeles County portion of the SCAB is in nonattainment for lead.

→ Continue to Question 3.

- 3. Determine the estimated emissions levels of your project for each of those criteria pollutants that are in non-attainment or maintenance status on your project area. Will your project exceed any of the *de minimis* or *threshold* emissions levels of non-attainment and maintenance level pollutants or exceed the screening levels established by the state or air quality management district?**

No, the project will not exceed *de minimis* or threshold emissions levels or screening levels

→ Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Explain how you determined that the project would not exceed *de minimis* or threshold emissions.

Yes, the project exceeds *de minimis* emissions levels or screening levels.

→ Continue to Question 4. Explain how you determined that the project would not exceed *de minimis* or threshold emissions in the Worksheet Summary.

- 4. For the project to be brought into compliance with this section, all adverse impacts must be mitigated. Explain in detail the exact measures that must be implemented to mitigate for the impact or effect, including the timeline for implementation.**

The project would not exceed *de minimis* or threshold emission levels or screening levels for federal General Conformity or the South Coast Air Quality Management District. Therefore, no adverse effects would occur that would require mitigation.

Worksheet Summary

Compliance Determination

Provide a clear description of your determination and a synopsis of the information that it was based on, such as:

- Map panel numbers and dates
- Names of all consulted parties and relevant consultation dates
- Names of plans or reports and relevant page numbers
- Any additional requirements specific to your region

Information contained in this worksheet is summarized from the Record of Non-Applicability for Clean Air Act Conformity prepared for this EA. The project is in compliance with the Federal Clean Air Act. Emissions criteria air pollutant were estimated using existing conditions information, project construction details, and project operations information, as well as a combination of emissions factors from the following sources:

- CalEEMod (Version 2016.3.2) emission model for estimating exhaust emissions from off-road construction equipment and on-road motor vehicles
- CalEEMod (Version 2016.3.2) emission model for calculating the long-term mobile, energy, and area source emissions

Construction and operations of the project would not result in exceedances.

Air pollutant emissions would occur over the short-term from construction activities and would be generated by fugitive dust from site preparation and grading and emissions from equipment exhaust. The short-term air emissions associated with construction activities are below the *de minimis* and South Coast Air Quality Management District's (SCAQMD) threshold of significance. Long-term regional emissions are associated with project-related vehicular trips and stationary source emissions; however, these emissions would not exceed the SCAQMD daily thresholds.

Sensitive populations are more susceptible to the effects of air pollution than the general population. Sensitive populations (sensitive receptors) that are in proximity to localized sources of toxics, particulate matter, and CO are of particular concern. The majority of the sensitive receptors adjacent to the project site are residences surrounding the project site. Sensitive receptors would not experience significant pollutant concentrations as a result of the project.

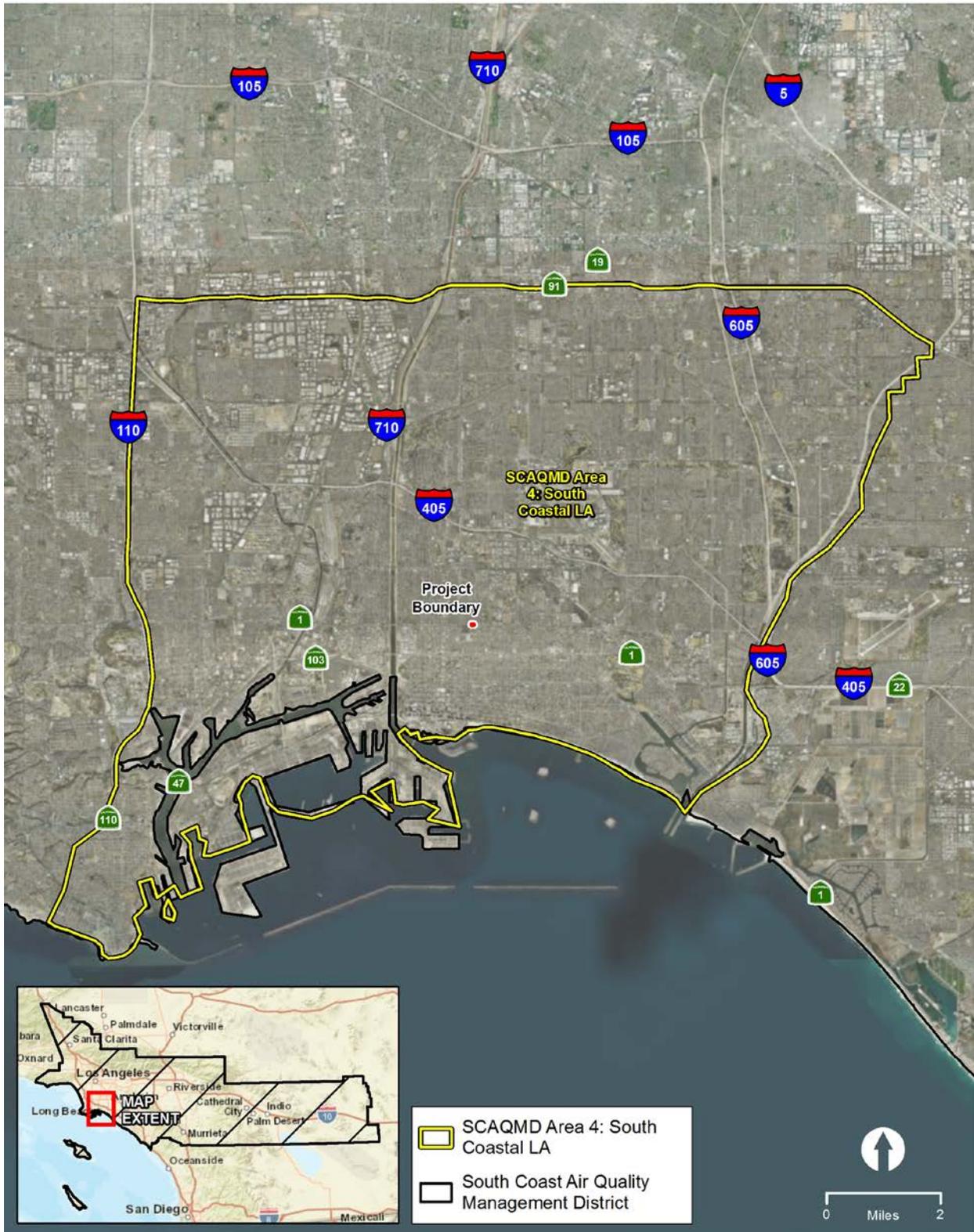
All project construction is located in Los Angeles County, which is among the counties listed as containing serpentine and ultramafic rock (Department of Conservation, Division of Mines and Geology 2000). However, the portion of the county in which the project lies is not known to contain serpentine or ultramafic rock. Therefore, the impact from naturally occurring asbestos during project construction would be minimal to none. The project site is free of existing structures; therefore, no impact from building materials containing asbestos would occur.

Are formal compliance steps or mitigation required?

Yes

No

Figure 1. Air Quality District Map



CalEEMod Results

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Mercy Housing Project - South Coast AQMD Air District, Annual

Mercy Housing Project
South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Mid Rise	68.00	Dwelling Unit	0.66	68,000.00	194
Strip Mall	4.00	1000sqft	0.09	4,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	9			Operational Year	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

- Project Characteristics -
- Land Use - The project site is approximately 0.75 acres
- Construction Phase - Architectural Coating will overlap with the building construction
- Demolition -
- Grading -
- Vehicle Trips - Trip rates from traffic study (LL&G, April 2020)
- Woodstoves - no fireplaces
- Construction Off-road Equipment Mitigation -

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Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	357.00
tblConstructionPhase	NumDays	5.00	110.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	57.80	0.00
tblFireplaces	NumberNoFireplace	6.80	68.00
tblFireplaces	NumberWood	3.40	0.00
tblGrading	MaterialExported	0.00	100.00
tblGrading	MaterialImported	0.00	100.00
tblLandUse	LotAcreage	1.79	0.66
tblVehicleTrips	ST_TR	42.04	37.75
tblVehicleTrips	WD_TR	6.65	7.84
tblVehicleTrips	WD_TR	44.32	37.75
tblWoodstoves	NumberCatalytic	3.40	0.00
tblWoodstoves	NumberNoncatalytic	3.40	0.00

2.0 Emissions Summary

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Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	7-5-2021	10-4-2021	0.3198	0.3198
2	10-5-2021	1-4-2022	0.3245	0.3245
3	1-5-2022	4-4-2022	0.2831	0.2831
4	4-5-2022	7-4-2022	0.2874	0.2874
5	7-5-2022	9-30-2022	0.4608	0.4608
		Highest	0.4608	0.4608

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3044	8.0900e-003	0.7015	4.0000e-005		3.8800e-003	3.8800e-003		3.8800e-003	3.8800e-003	0.0000	1.1456	1.1456	1.1000e-003	0.0000	1.1731
Energy	4.9500e-003	0.0423	0.0181	2.7000e-004		3.4200e-003	3.4200e-003		3.4200e-003	3.4200e-003	0.0000	153.8755	153.8755	5.2700e-003	1.7900e-003	154.5418
Mobile	0.1649	0.8007	2.1978	8.7000e-003	0.7510	6.1800e-003	0.7572	0.2012	5.7500e-003	0.2070	0.0000	804.7181	804.7181	0.0367	0.0000	805.6344
Waste						0.0000	0.0000		0.0000	0.0000	7.2021	0.0000	7.2021	0.4256	0.0000	17.8430
Water						0.0000	0.0000		0.0000	0.0000	1.4996	30.1404	31.6400	0.1553	3.8900e-003	36.6821
Total	0.4743	0.8511	2.9174	9.0100e-003	0.7510	0.0135	0.7645	0.2012	0.0131	0.2143	8.7017	989.8797	998.5814	0.6239	5.6800e-003	1,015.8744

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2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3044	8.0900e-003	0.7015	4.0000e-005		3.8800e-003	3.8800e-003		3.8800e-003	3.8800e-003	0.0000	1.1456	1.1456	1.1000e-003	0.0000	1.1731
Energy	4.9500e-003	0.0423	0.0181	2.7000e-004		3.4200e-003	3.4200e-003		3.4200e-003	3.4200e-003	0.0000	153.8755	153.8755	5.2700e-003	1.7900e-003	154.5418
Mobile	0.1649	0.8007	2.1978	8.7000e-003	0.7510	6.1800e-003	0.7572	0.2012	5.7500e-003	0.2070	0.0000	804.7181	804.7181	0.0367	0.0000	805.6344
Waste						0.0000	0.0000		0.0000	0.0000	7.2021	0.0000	7.2021	0.4256	0.0000	17.8430
Water						0.0000	0.0000		0.0000	0.0000	1.4996	30.1404	31.6400	0.1553	3.8900e-003	36.6821
Total	0.4743	0.8511	2.9174	9.0100e-003	0.7510	0.0135	0.7645	0.2012	0.0131	0.2143	8.7017	989.8797	998.5814	0.6239	5.6800e-003	1,015.8744

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

3.0 Construction Detail

Construction Phase

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Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	7/5/2021	7/16/2021	5	10	
2	Site Preparation	Site Preparation	7/17/2021	7/19/2021	5	1	
3	Grading	Grading	7/20/2021	7/21/2021	5	2	
4	Building Construction	Building Construction	7/22/2021	12/2/2022	5	357	
5	Architectural Coating	Architectural Coating	7/4/2022	12/2/2022	5	110	
6	Paving	Paving	12/5/2022	12/9/2022	5	5	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 137,700; Residential Outdoor: 45,900; Non-Residential Indoor: 6,000; Non-Residential Outdoor: 2,000; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

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Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	7.00	97	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
Demolition	4	10.00	0.00	25.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	25.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	50.00	8.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

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3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.7100e-003	0.0000	2.7100e-003	4.1000e-004	0.0000	4.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.9800e-003	0.0363	0.0379	6.0000e-005		2.0400e-003	2.0400e-003		1.9400e-003	1.9400e-003	0.0000	5.2047	5.2047	9.7000e-004	0.0000	5.2289
Total	3.9800e-003	0.0363	0.0379	6.0000e-005	2.7100e-003	2.0400e-003	4.7500e-003	4.1000e-004	1.9400e-003	2.3500e-003	0.0000	5.2047	5.2047	9.7000e-004	0.0000	5.2289

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3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.0000e-005	3.2600e-003	6.9000e-004	1.0000e-005	2.1000e-004	1.0000e-005	2.2000e-004	6.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.9334	0.9334	6.0000e-005	0.0000	0.9350
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	3.0000e-004	3.4100e-003	2.4300e-003	2.0000e-005	7.6000e-004	1.0000e-005	7.7000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	1.4112	1.4112	7.0000e-005	0.0000	1.4131

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					2.7100e-003	0.0000	2.7100e-003	4.1000e-004	0.0000	4.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.9800e-003	0.0363	0.0379	6.0000e-005		2.0400e-003	2.0400e-003		1.9400e-003	1.9400e-003	0.0000	5.2047	5.2047	9.7000e-004	0.0000	5.2289
Total	3.9800e-003	0.0363	0.0379	6.0000e-005	2.7100e-003	2.0400e-003	4.7500e-003	4.1000e-004	1.9400e-003	2.3500e-003	0.0000	5.2047	5.2047	9.7000e-004	0.0000	5.2289

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3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.0000e-005	3.2600e-003	6.9000e-004	1.0000e-005	2.1000e-004	1.0000e-005	2.2000e-004	6.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.9334	0.9334	6.0000e-005	0.0000	0.9350
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	3.0000e-004	3.4100e-003	2.4300e-003	2.0000e-005	7.6000e-004	1.0000e-005	7.7000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	1.4112	1.4112	7.0000e-005	0.0000	1.4131

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.2000e-004	3.9100e-003	2.0100e-003	0.0000		1.5000e-004	1.5000e-004		1.4000e-004	1.4000e-004	0.0000	0.4276	0.4276	1.4000e-004	0.0000	0.4310
Total	3.2000e-004	3.9100e-003	2.0100e-003	0.0000	2.7000e-004	1.5000e-004	4.2000e-004	3.0000e-005	1.4000e-004	1.7000e-004	0.0000	0.4276	0.4276	1.4000e-004	0.0000	0.4310

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3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	1.0000e-005	9.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0239	0.0239	0.0000	0.0000	0.0239
Total	1.0000e-005	1.0000e-005	9.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0239	0.0239	0.0000	0.0000	0.0239

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					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.2000e-004	3.9100e-003	2.0100e-003	0.0000		1.5000e-004	1.5000e-004		1.4000e-004	1.4000e-004	0.0000	0.4276	0.4276	1.4000e-004	0.0000	0.4310
Total	3.2000e-004	3.9100e-003	2.0100e-003	0.0000	2.7000e-004	1.5000e-004	4.2000e-004	3.0000e-005	1.4000e-004	1.7000e-004	0.0000	0.4276	0.4276	1.4000e-004	0.0000	0.4310

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3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	1.0000e-005	9.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0239	0.0239	0.0000	0.0000	0.0239
Total	1.0000e-005	1.0000e-005	9.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0239	0.0239	0.0000	0.0000	0.0239

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.6000e-004	0.0000	7.6000e-004	4.2000e-004	0.0000	4.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.0000e-004	7.2500e-003	7.5700e-003	1.0000e-005		4.1000e-004	4.1000e-004		3.9000e-004	3.9000e-004	0.0000	1.0409	1.0409	1.9000e-004	0.0000	1.0458
Total	8.0000e-004	7.2500e-003	7.5700e-003	1.0000e-005	7.6000e-004	4.1000e-004	1.1700e-003	4.2000e-004	3.9000e-004	8.1000e-004	0.0000	1.0409	1.0409	1.9000e-004	0.0000	1.0458

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3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.0000e-005	3.2600e-003	6.9000e-004	1.0000e-005	2.1000e-004	1.0000e-005	2.2000e-004	6.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.9334	0.9334	6.0000e-005	0.0000	0.9350
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	4.0000e-005	3.0000e-005	3.5000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0956	0.0956	0.0000	0.0000	0.0956
Total	1.3000e-004	3.2900e-003	1.0400e-003	1.0000e-005	3.2000e-004	1.0000e-005	3.3000e-004	9.0000e-005	1.0000e-005	1.0000e-004	0.0000	1.0289	1.0289	6.0000e-005	0.0000	1.0306

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					7.6000e-004	0.0000	7.6000e-004	4.2000e-004	0.0000	4.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.0000e-004	7.2500e-003	7.5700e-003	1.0000e-005		4.1000e-004	4.1000e-004		3.9000e-004	3.9000e-004	0.0000	1.0409	1.0409	1.9000e-004	0.0000	1.0458
Total	8.0000e-004	7.2500e-003	7.5700e-003	1.0000e-005	7.6000e-004	4.1000e-004	1.1700e-003	4.2000e-004	3.9000e-004	8.1000e-004	0.0000	1.0409	1.0409	1.9000e-004	0.0000	1.0458

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3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.0000e-005	3.2600e-003	6.9000e-004	1.0000e-005	2.1000e-004	1.0000e-005	2.2000e-004	6.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.9334	0.9334	6.0000e-005	0.0000	0.9350
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	4.0000e-005	3.0000e-005	3.5000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0956	0.0956	0.0000	0.0000	0.0956
Total	1.3000e-004	3.2900e-003	1.0400e-003	1.0000e-005	3.2000e-004	1.0000e-005	3.3000e-004	9.0000e-005	1.0000e-005	1.0000e-004	0.0000	1.0289	1.0289	6.0000e-005	0.0000	1.0306

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0453	0.4671	0.4249	6.7000e-004		0.0262	0.0262		0.0241	0.0241	0.0000	58.5480	58.5480	0.0189	0.0000	59.0214
Total	0.0453	0.4671	0.4249	6.7000e-004		0.0262	0.0262		0.0241	0.0241	0.0000	58.5480	58.5480	0.0189	0.0000	59.0214

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3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3300e-003	0.0453	0.0112	1.2000e-004	2.9500e-003	9.0000e-005	3.0400e-003	8.5000e-004	9.0000e-005	9.4000e-004	0.0000	11.4261	11.4261	7.2000e-004	0.0000	11.4441
Worker	0.0122	9.0100e-003	0.1019	3.1000e-004	0.0321	2.4000e-004	0.0323	8.5200e-003	2.2000e-004	8.7400e-003	0.0000	27.9531	27.9531	7.5000e-004	0.0000	27.9718
Total	0.0135	0.0543	0.1132	4.3000e-004	0.0350	3.3000e-004	0.0354	9.3700e-003	3.1000e-004	9.6800e-003	0.0000	39.3791	39.3791	1.4700e-003	0.0000	39.4159

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	0.0453	0.4671	0.4249	6.7000e-004		0.0262	0.0262		0.0241	0.0241	0.0000	58.5479	58.5479	0.0189	0.0000	59.0213
Total	0.0453	0.4671	0.4249	6.7000e-004		0.0262	0.0262		0.0241	0.0241	0.0000	58.5479	58.5479	0.0189	0.0000	59.0213

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3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3300e-003	0.0453	0.0112	1.2000e-004	2.9500e-003	9.0000e-005	3.0400e-003	8.5000e-004	9.0000e-005	9.4000e-004	0.0000	11.4261	11.4261	7.2000e-004	0.0000	11.4441
Worker	0.0122	9.0100e-003	0.1019	3.1000e-004	0.0321	2.4000e-004	0.0323	8.5200e-003	2.2000e-004	8.7400e-003	0.0000	27.9531	27.9531	7.5000e-004	0.0000	27.9718
Total	0.0135	0.0543	0.1132	4.3000e-004	0.0350	3.3000e-004	0.0354	9.3700e-003	3.1000e-004	9.6800e-003	0.0000	39.3791	39.3791	1.4700e-003	0.0000	39.4159

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0824	0.8431	0.8583	1.3700e-003		0.0446	0.0446		0.0411	0.0411	0.0000	120.1772	120.1772	0.0389	0.0000	121.1489
Total	0.0824	0.8431	0.8583	1.3700e-003		0.0446	0.0446		0.0411	0.0411	0.0000	120.1772	120.1772	0.0389	0.0000	121.1489

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3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.5600e-003	0.0881	0.0218	2.4000e-004	6.0500e-003	1.6000e-004	6.2100e-003	1.7500e-003	1.5000e-004	1.9000e-003	0.0000	23.2317	23.2317	1.4300e-003	0.0000	23.2674
Worker	0.0235	0.0167	0.1931	6.1000e-004	0.0658	4.8000e-004	0.0663	0.0175	4.4000e-004	0.0179	0.0000	55.2838	55.2838	1.3900e-003	0.0000	55.3185
Total	0.0261	0.1048	0.2148	8.5000e-004	0.0719	6.4000e-004	0.0725	0.0192	5.9000e-004	0.0198	0.0000	78.5155	78.5155	2.8200e-003	0.0000	78.5859

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	0.0824	0.8431	0.8583	1.3700e-003		0.0446	0.0446		0.0411	0.0411	0.0000	120.1771	120.1771	0.0389	0.0000	121.1488
Total	0.0824	0.8431	0.8583	1.3700e-003		0.0446	0.0446		0.0411	0.0411	0.0000	120.1771	120.1771	0.0389	0.0000	121.1488

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3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.5600e-003	0.0881	0.0218	2.4000e-004	6.0500e-003	1.6000e-004	6.2100e-003	1.7500e-003	1.5000e-004	1.9000e-003	0.0000	23.2317	23.2317	1.4300e-003	0.0000	23.2674
Worker	0.0235	0.0167	0.1931	6.1000e-004	0.0658	4.8000e-004	0.0663	0.0175	4.4000e-004	0.0179	0.0000	55.2838	55.2838	1.3900e-003	0.0000	55.3185
Total	0.0261	0.1048	0.2148	8.5000e-004	0.0719	6.4000e-004	0.0725	0.0192	5.9000e-004	0.0198	0.0000	78.5155	78.5155	2.8200e-003	0.0000	78.5859

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2313					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0113	0.0775	0.0998	1.6000e-004		4.4900e-003	4.4900e-003		4.4900e-003	4.4900e-003	0.0000	14.0429	14.0429	9.1000e-004	0.0000	14.0658
Total	0.2425	0.0775	0.0998	1.6000e-004		4.4900e-003	4.4900e-003		4.4900e-003	4.4900e-003	0.0000	14.0429	14.0429	9.1000e-004	0.0000	14.0658

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3.6 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1500e-003	1.5300e-003	0.0177	6.0000e-005	6.0300e-003	4.0000e-005	6.0800e-003	1.6000e-003	4.0000e-005	1.6400e-003	0.0000	5.0677	5.0677	1.3000e-004	0.0000	5.0709
Total	2.1500e-003	1.5300e-003	0.0177	6.0000e-005	6.0300e-003	4.0000e-005	6.0800e-003	1.6000e-003	4.0000e-005	1.6400e-003	0.0000	5.0677	5.0677	1.3000e-004	0.0000	5.0709

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2313					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0113	0.0775	0.0998	1.6000e-004		4.4900e-003	4.4900e-003		4.4900e-003	4.4900e-003	0.0000	14.0429	14.0429	9.1000e-004	0.0000	14.0657
Total	0.2425	0.0775	0.0998	1.6000e-004		4.4900e-003	4.4900e-003		4.4900e-003	4.4900e-003	0.0000	14.0429	14.0429	9.1000e-004	0.0000	14.0657

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3.6 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1500e-003	1.5300e-003	0.0177	6.0000e-005	6.0300e-003	4.0000e-005	6.0800e-003	1.6000e-003	4.0000e-005	1.6400e-003	0.0000	5.0677	5.0677	1.3000e-004	0.0000	5.0709
Total	2.1500e-003	1.5300e-003	0.0177	6.0000e-005	6.0300e-003	4.0000e-005	6.0800e-003	1.6000e-003	4.0000e-005	1.6400e-003	0.0000	5.0677	5.0677	1.3000e-004	0.0000	5.0709

3.7 Paving - 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	1.6200e-003	0.0148	0.0176	3.0000e-005		7.4000e-004	7.4000e-004		6.9000e-004	6.9000e-004	0.0000	2.3492	2.3492	6.8000e-004	0.0000	2.3663
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.6200e-003	0.0148	0.0176	3.0000e-005		7.4000e-004	7.4000e-004		6.9000e-004	6.9000e-004	0.0000	2.3492	2.3492	6.8000e-004	0.0000	2.3663

Mercy Housing Project - South Coast AQMD Air District, Annual

3.7 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	1.3000e-004	1.4500e-003	0.0000	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4146	0.4146	1.0000e-005	0.0000	0.4149
Total	1.8000e-004	1.3000e-004	1.4500e-003	0.0000	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4146	0.4146	1.0000e-005	0.0000	0.4149

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	1.6200e-003	0.0148	0.0176	3.0000e-005		7.4000e-004	7.4000e-004		6.9000e-004	6.9000e-004	0.0000	2.3492	2.3492	6.8000e-004	0.0000	2.3663
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.6200e-003	0.0148	0.0176	3.0000e-005		7.4000e-004	7.4000e-004		6.9000e-004	6.9000e-004	0.0000	2.3492	2.3492	6.8000e-004	0.0000	2.3663

Mercy Housing Project - South Coast AQMD Air District, Annual

3.7 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	1.3000e-004	1.4500e-003	0.0000	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4146	0.4146	1.0000e-005	0.0000	0.4149
Total	1.8000e-004	1.3000e-004	1.4500e-003	0.0000	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4146	0.4146	1.0000e-005	0.0000	0.4149

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Mercy Housing Project - South Coast AQMD Air District, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1649	0.8007	2.1978	8.7000e-003	0.7510	6.1800e-003	0.7572	0.2012	5.7500e-003	0.2070	0.0000	804.7181	804.7181	0.0367	0.0000	805.6344
Unmitigated	0.1649	0.8007	2.1978	8.7000e-003	0.7510	6.1800e-003	0.7572	0.2012	5.7500e-003	0.2070	0.0000	804.7181	804.7181	0.0367	0.0000	805.6344

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	533.12	434.52	398.48	1,707,893	1,707,893
Strip Mall	151.00	151.00	81.72	268,462	268,462
Total	684.12	585.52	480.20	1,976,354	1,976,354

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Strip Mall	16.60	8.40	6.90	16.60	64.40	19.00	45	40	15

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	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
Strip Mall	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

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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	104.9143	104.9143	4.3300e-003	9.0000e-004	105.2896
Electricity Unmitigated							0.0000	0.0000		0.0000	0.0000	104.9143	104.9143	4.3300e-003	9.0000e-004	105.2896
NaturalGas Mitigated	4.9500e-003	0.0423	0.0181	2.7000e-004		3.4200e-003	3.4200e-003		3.4200e-003	3.4200e-003	0.0000	48.9613	48.9613	9.4000e-004	9.0000e-004	49.2522
NaturalGas Unmitigated	4.9500e-003	0.0423	0.0181	2.7000e-004		3.4200e-003	3.4200e-003		3.4200e-003	3.4200e-003	0.0000	48.9613	48.9613	9.4000e-004	9.0000e-004	49.2522

Mercy Housing Project - South Coast AQMD Air District, Annual

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	910940	4.9100e-003	0.0420	0.0179	2.7000e-004		3.3900e-003	3.3900e-003		3.3900e-003	3.3900e-003	0.0000	48.6112	48.6112	9.3000e-004	8.9000e-004	48.9001
Strip Mall	6560	4.0000e-005	3.2000e-004	2.7000e-004	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.3501	0.3501	1.0000e-005	1.0000e-005	0.3522
Total		4.9500e-003	0.0423	0.0181	2.7000e-004		3.4100e-003	3.4100e-003		3.4100e-003	3.4100e-003	0.0000	48.9613	48.9613	9.4000e-004	9.0000e-004	49.2522

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	910940	4.9100e-003	0.0420	0.0179	2.7000e-004		3.3900e-003	3.3900e-003		3.3900e-003	3.3900e-003	0.0000	48.6112	48.6112	9.3000e-004	8.9000e-004	48.9001
Strip Mall	6560	4.0000e-005	3.2000e-004	2.7000e-004	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.3501	0.3501	1.0000e-005	1.0000e-005	0.3522
Total		4.9500e-003	0.0423	0.0181	2.7000e-004		3.4100e-003	3.4100e-003		3.4100e-003	3.4100e-003	0.0000	48.9613	48.9613	9.4000e-004	9.0000e-004	49.2522

Mercy Housing Project - South Coast AQMD Air District, Annual

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	275276	87.7087	3.6200e-003	7.5000e-004	88.0225
Strip Mall	54000	17.2056	7.1000e-004	1.5000e-004	17.2671
Total		104.9143	4.3300e-003	9.0000e-004	105.2896

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	275276	87.7087	3.6200e-003	7.5000e-004	88.0225
Strip Mall	54000	17.2056	7.1000e-004	1.5000e-004	17.2671
Total		104.9143	4.3300e-003	9.0000e-004	105.2896

6.0 Area Detail

6.1 Mitigation Measures Area

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 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	0.3044	8.0900e-003	0.7015	4.0000e-005		3.8800e-003	3.8800e-003		3.8800e-003	3.8800e-003	0.0000	1.1456	1.1456	1.1000e-003	0.0000	1.1731
Unmitigated	0.3044	8.0900e-003	0.7015	4.0000e-005		3.8800e-003	3.8800e-003		3.8800e-003	3.8800e-003	0.0000	1.1456	1.1456	1.1000e-003	0.0000	1.1731

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0231					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2602					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0211	8.0900e-003	0.7015	4.0000e-005		3.8800e-003	3.8800e-003		3.8800e-003	3.8800e-003	0.0000	1.1456	1.1456	1.1000e-003	0.0000	1.1731
Total	0.3044	8.0900e-003	0.7015	4.0000e-005		3.8800e-003	3.8800e-003		3.8800e-003	3.8800e-003	0.0000	1.1456	1.1456	1.1000e-003	0.0000	1.1731

Mercy Housing Project - South Coast AQMD Air District, Annual

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0231					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2602					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0211	8.0900e-003	0.7015	4.0000e-005		3.8800e-003	3.8800e-003		3.8800e-003	3.8800e-003	0.0000	1.1456	1.1456	1.1000e-003	0.0000	1.1731
Total	0.3044	8.0900e-003	0.7015	4.0000e-005		3.8800e-003	3.8800e-003		3.8800e-003	3.8800e-003	0.0000	1.1456	1.1456	1.1000e-003	0.0000	1.1731

7.0 Water Detail

7.1 Mitigation Measures Water

Mercy Housing Project - South Coast AQMD Air District, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	31.6400	0.1553	3.8900e-003	36.6821
Unmitigated	31.6400	0.1553	3.8900e-003	36.6821

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	4.43047 / 2.79312	29.6739	0.1455	3.6500e-003	34.4001
Strip Mall	0.29629 / 0.181597	1.9661	9.7300e-003	2.4000e-004	2.2821
Total		31.6400	0.1553	3.8900e-003	36.6821

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7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	4.43047 / 2.79312	29.6739	0.1455	3.6500e-003	34.4001
Strip Mall	0.29629 / 0.181597	1.9661	9.7300e-003	2.4000e-004	2.2821
Total		31.6400	0.1553	3.8900e-003	36.6821

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	7.2021	0.4256	0.0000	17.8430
Unmitigated	7.2021	0.4256	0.0000	17.8430

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8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	31.28	6.3496	0.3753	0.0000	15.7308
Strip Mall	4.2	0.8526	0.0504	0.0000	2.1122
Total		7.2021	0.4256	0.0000	17.8430

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	31.28	6.3496	0.3753	0.0000	15.7308
Strip Mall	4.2	0.8526	0.0504	0.0000	2.1122
Total		7.2021	0.4256	0.0000	17.8430

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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Mercy Housing Project - South Coast AQMD Air District, Annual

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

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

Equipment Type	Number
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11.0 Vegetation

Mercy Housing Project - South Coast AQMD Air District, Summer

Mercy Housing Project
South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Mid Rise	68.00	Dwelling Unit	0.66	68,000.00	194
Strip Mall	4.00	1000sqft	0.09	4,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	9			Operational Year	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - The project site is approximately 0.75 acres

Construction Phase - Architectural Coating will overlap with the building construction

Demolition -

Grading -

Vehicle Trips - Trip rates from traffic study (LL&G, April 2020)

Woodstoves - no fireplaces

Construction Off-road Equipment Mitigation -

Mercy Housing Project - South Coast AQMD Air District, Summer

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	357.00
tblConstructionPhase	NumDays	5.00	110.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	57.80	0.00
tblFireplaces	NumberNoFireplace	6.80	68.00
tblFireplaces	NumberWood	3.40	0.00
tblGrading	MaterialExported	0.00	100.00
tblGrading	MaterialImported	0.00	100.00
tblLandUse	LotAcreage	1.79	0.66
tblVehicleTrips	ST_TR	42.04	37.75
tblVehicleTrips	WD_TR	6.65	7.84
tblVehicleTrips	WD_TR	44.32	37.75
tblWoodstoves	NumberCatalytic	3.40	0.00
tblWoodstoves	NumberNoncatalytic	3.40	0.00

2.0 Emissions Summary

Mercy Housing Project - South Coast AQMD Air District, Summer

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	1.7214	0.0647	5.6118	3.0000e-004		0.0311	0.0311		0.0311	0.0311	0.0000	10.1024	10.1024	9.7200e-003	0.0000	10.3453
Energy	0.0271	0.2318	0.0994	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.7291	295.7291	5.6700e-003	5.4200e-003	297.4865
Mobile	1.0446	4.5366	13.5575	0.0531	4.4846	0.0362	4.5208	1.1999	0.0337	1.2335		5,410.9036	5,410.9036	0.2385		5,416.8672
Total	2.7932	4.8330	19.2686	0.0549	4.4846	0.0860	4.5706	1.1999	0.0835	1.2833	0.0000	5,716.7352	5,716.7352	0.2539	5.4200e-003	5,724.6991

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	1.7214	0.0647	5.6118	3.0000e-004		0.0311	0.0311		0.0311	0.0311	0.0000	10.1024	10.1024	9.7200e-003	0.0000	10.3453
Energy	0.0271	0.2318	0.0994	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.7291	295.7291	5.6700e-003	5.4200e-003	297.4865
Mobile	1.0446	4.5366	13.5575	0.0531	4.4846	0.0362	4.5208	1.1999	0.0337	1.2335		5,410.9036	5,410.9036	0.2385		5,416.8672
Total	2.7932	4.8330	19.2686	0.0549	4.4846	0.0860	4.5706	1.1999	0.0835	1.2833	0.0000	5,716.7352	5,716.7352	0.2539	5.4200e-003	5,724.6991

Mercy Housing Project - South Coast AQMD Air District, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	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	Demolition	Demolition	7/5/2021	7/16/2021	5	10	
2	Site Preparation	Site Preparation	7/17/2021	7/19/2021	5	1	
3	Grading	Grading	7/20/2021	7/21/2021	5	2	
4	Building Construction	Building Construction	7/22/2021	12/2/2022	5	357	
5	Architectural Coating	Architectural Coating	7/4/2022	12/2/2022	5	110	
6	Paving	Paving	12/5/2022	12/9/2022	5	5	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 137,700; Residential Outdoor: 45,900; Non-Residential Indoor: 6,000; Non-Residential Outdoor: 2,000; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Mercy Housing Project - South Coast AQMD Air District, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	7.00	97	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
Demolition	4	10.00	0.00	25.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	25.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	50.00	8.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Mercy Housing Project - South Coast AQMD Air District, Summer

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5414	0.0000	0.5414	0.0820	0.0000	0.0820			0.0000			0.0000
Off-Road	0.7965	7.2530	7.5691	0.0120		0.4073	0.4073		0.3886	0.3886		1,147.4338	1,147.4338	0.2138		1,152.7797
Total	0.7965	7.2530	7.5691	0.0120	0.5414	0.4073	0.9487	0.0820	0.3886	0.4706		1,147.4338	1,147.4338	0.2138		1,152.7797

Mercy Housing Project - South Coast AQMD Air District, Summer

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0181	0.6325	0.1339	1.9200e-003	0.0437	1.9600e-003	0.0457	0.0120	1.8800e-003	0.0139		207.3849	207.3849	0.0138		207.7308
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	0.0604	0.6599	0.5106	3.0300e-003	0.1555	2.7800e-003	0.1583	0.0416	2.6400e-003	0.0443		318.1252	318.1252	0.0168		318.5456

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5414	0.0000	0.5414	0.0820	0.0000	0.0820			0.0000			0.0000
Off-Road	0.7965	7.2530	7.5691	0.0120		0.4073	0.4073		0.3886	0.3886	0.0000	1,147.4338	1,147.4338	0.2138		1,152.7797
Total	0.7965	7.2530	7.5691	0.0120	0.5414	0.4073	0.9487	0.0820	0.3886	0.4706	0.0000	1,147.4338	1,147.4338	0.2138		1,152.7797

Mercy Housing Project - South Coast AQMD Air District, Summer

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0181	0.6325	0.1339	1.9200e-003	0.0437	1.9600e-003	0.0457	0.0120	1.8800e-003	0.0139		207.3849	207.3849	0.0138		207.7308
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	0.0604	0.6599	0.5106	3.0300e-003	0.1555	2.7800e-003	0.1583	0.0416	2.6400e-003	0.0443		318.1252	318.1252	0.0168		318.5456

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	0.6403	7.8204	4.0274	9.7300e-003		0.2995	0.2995		0.2755	0.2755		942.5842	942.5842	0.3049		950.2055
Total	0.6403	7.8204	4.0274	9.7300e-003	0.5303	0.2995	0.8297	0.0573	0.2755	0.3328		942.5842	942.5842	0.3049		950.2055

Mercy Housing Project - South Coast AQMD Air District, Summer

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0211	0.0137	0.1884	5.6000e-004	0.0559	4.1000e-004	0.0563	0.0148	3.8000e-004	0.0152		55.3702	55.3702	1.4900e-003		55.4074
Total	0.0211	0.0137	0.1884	5.6000e-004	0.0559	4.1000e-004	0.0563	0.0148	3.8000e-004	0.0152		55.3702	55.3702	1.4900e-003		55.4074

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	0.6403	7.8204	4.0274	9.7300e-003		0.2995	0.2995		0.2755	0.2755	0.0000	942.5842	942.5842	0.3049		950.2055
Total	0.6403	7.8204	4.0274	9.7300e-003	0.5303	0.2995	0.8297	0.0573	0.2755	0.3328	0.0000	942.5842	942.5842	0.3049		950.2055

Mercy Housing Project - South Coast AQMD Air District, Summer

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0211	0.0137	0.1884	5.6000e-004	0.0559	4.1000e-004	0.0563	0.0148	3.8000e-004	0.0152		55.3702	55.3702	1.4900e-003		55.4074
Total	0.0211	0.0137	0.1884	5.6000e-004	0.0559	4.1000e-004	0.0563	0.0148	3.8000e-004	0.0152		55.3702	55.3702	1.4900e-003		55.4074

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.7641	0.0000	0.7641	0.4155	0.0000	0.4155			0.0000			0.0000
Off-Road	0.7965	7.2530	7.5691	0.0120		0.4073	0.4073		0.3886	0.3886		1,147.4338	1,147.4338	0.2138		1,152.7797
Total	0.7965	7.2530	7.5691	0.0120	0.7641	0.4073	1.1714	0.4155	0.3886	0.8041		1,147.4338	1,147.4338	0.2138		1,152.7797

Mercy Housing Project - South Coast AQMD Air District, Summer

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0907	3.1624	0.6694	9.5800e-003	0.2184	9.8000e-003	0.2282	0.0599	9.3800e-003	0.0692		1,036.9245	1,036.9245	0.0692		1,038.6539
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	0.1329	3.1897	1.0461	0.0107	0.3302	0.0106	0.3408	0.0895	0.0101	0.0996		1,147.6648	1,147.6648	0.0722		1,149.4687

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.7641	0.0000	0.7641	0.4155	0.0000	0.4155			0.0000			0.0000
Off-Road	0.7965	7.2530	7.5691	0.0120		0.4073	0.4073		0.3886	0.3886	0.0000	1,147.4338	1,147.4338	0.2138		1,152.7797
Total	0.7965	7.2530	7.5691	0.0120	0.7641	0.4073	1.1714	0.4155	0.3886	0.8041	0.0000	1,147.4338	1,147.4338	0.2138		1,152.7797

Mercy Housing Project - South Coast AQMD Air District, Summer

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0907	3.1624	0.6694	9.5800e-003	0.2184	9.8000e-003	0.2282	0.0599	9.3800e-003	0.0692		1,036.9245	1,036.9245	0.0692		1,038.6539
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	0.1329	3.1897	1.0461	0.0107	0.3302	0.0106	0.3408	0.0895	0.0101	0.0996		1,147.6648	1,147.6648	0.0722		1,149.4687

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7750	7.9850	7.2637	0.0114		0.4475	0.4475		0.4117	0.4117		1,103.2158	1,103.2158	0.3568		1,112.1358
Total	0.7750	7.9850	7.2637	0.0114		0.4475	0.4475		0.4117	0.4117		1,103.2158	1,103.2158	0.3568		1,112.1358

Mercy Housing Project - South Coast AQMD Air District, Summer

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0223	0.7630	0.1811	2.0400e-003	0.0512	1.5400e-003	0.0527	0.0147	1.4700e-003	0.0162		217.9508	217.9508	0.0132		218.2804
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	0.2333	0.8999	2.0647	7.6000e-003	0.6101	5.6500e-003	0.6157	0.1630	5.2600e-003	0.1682		771.6524	771.6524	0.0281		772.3543

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	0.7750	7.9850	7.2637	0.0114		0.4475	0.4475		0.4117	0.4117	0.0000	1,103.2158	1,103.2158	0.3568		1,112.1358
Total	0.7750	7.9850	7.2637	0.0114		0.4475	0.4475		0.4117	0.4117	0.0000	1,103.2158	1,103.2158	0.3568		1,112.1358

Mercy Housing Project - South Coast AQMD Air District, Summer

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0223	0.7630	0.1811	2.0400e-003	0.0512	1.5400e-003	0.0527	0.0147	1.4700e-003	0.0162		217.9508	217.9508	0.0132		218.2804
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	0.2333	0.8999	2.0647	7.6000e-003	0.6101	5.6500e-003	0.6157	0.1630	5.2600e-003	0.1682		771.6524	771.6524	0.0281		772.3543

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6863	7.0258	7.1527	0.0114		0.3719	0.3719		0.3422	0.3422		1,103.9393	1,103.9393	0.3570		1,112.8652
Total	0.6863	7.0258	7.1527	0.0114		0.3719	0.3719		0.3422	0.3422		1,103.9393	1,103.9393	0.3570		1,112.8652

Mercy Housing Project - South Coast AQMD Air District, Summer

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0209	0.7243	0.1711	2.0200e-003	0.0512	1.3300e-003	0.0525	0.0147	1.2700e-003	0.0160		216.0473	216.0473	0.0127		216.3646
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	0.2189	0.8479	1.9129	7.3800e-003	0.6101	5.3300e-003	0.6154	0.1630	4.9500e-003	0.1679		749.9093	749.9093	0.0262		750.5630

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	0.6863	7.0258	7.1527	0.0114		0.3719	0.3719		0.3422	0.3422	0.0000	1,103.9393	1,103.9393	0.3570		1,112.8652
Total	0.6863	7.0258	7.1527	0.0114		0.3719	0.3719		0.3422	0.3422	0.0000	1,103.9393	1,103.9393	0.3570		1,112.8652

Mercy Housing Project - South Coast AQMD Air District, Summer

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0209	0.7243	0.1711	2.0200e-003	0.0512	1.3300e-003	0.0525	0.0147	1.2700e-003	0.0160		216.0473	216.0473	0.0127		216.3646
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	0.2189	0.8479	1.9129	7.3800e-003	0.6101	5.3300e-003	0.6154	0.1630	4.9500e-003	0.1679		749.9093	749.9093	0.0262		750.5630

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2052					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	4.4098	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062

Mercy Housing Project - South Coast AQMD Air District, Summer

3.6 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0396	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					
Archit. Coating	4.2052					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	4.4098	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062

Mercy Housing Project - South Coast AQMD Air District, Summer

3.6 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0396	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 Paving - 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	0.6469	5.9174	7.0348	0.0113		0.2961	0.2961		0.2758	0.2758		1,035.8246	1,035.8246	0.3017		1,043.3677
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.6469	5.9174	7.0348	0.0113		0.2961	0.2961		0.2758	0.2758		1,035.8246	1,035.8246	0.3017		1,043.3677

Mercy Housing Project - South Coast AQMD Air District, Summer

3.7 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0713	0.0445	0.6270	1.9300e-003	0.2012	1.4400e-003	0.2026	0.0534	1.3200e-003	0.0547		192.1903	192.1903	4.8400e-003		192.3114
Total	0.0713	0.0445	0.6270	1.9300e-003	0.2012	1.4400e-003	0.2026	0.0534	1.3200e-003	0.0547		192.1903	192.1903	4.8400e-003		192.3114

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	0.6469	5.9174	7.0348	0.0113		0.2961	0.2961		0.2758	0.2758	0.0000	1,035.8246	1,035.8246	0.3017		1,043.3677
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.6469	5.9174	7.0348	0.0113		0.2961	0.2961		0.2758	0.2758	0.0000	1,035.8246	1,035.8246	0.3017		1,043.3677

Mercy Housing Project - South Coast AQMD Air District, Summer

3.7 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0713	0.0445	0.6270	1.9300e-003	0.2012	1.4400e-003	0.2026	0.0534	1.3200e-003	0.0547		192.1903	192.1903	4.8400e-003		192.3114
Total	0.0713	0.0445	0.6270	1.9300e-003	0.2012	1.4400e-003	0.2026	0.0534	1.3200e-003	0.0547		192.1903	192.1903	4.8400e-003		192.3114

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Mercy Housing Project - South Coast AQMD Air District, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0446	4.5366	13.5575	0.0531	4.4846	0.0362	4.5208	1.1999	0.0337	1.2335		5,410.9036	5,410.9036	0.2385		5,416.8672
Unmitigated	1.0446	4.5366	13.5575	0.0531	4.4846	0.0362	4.5208	1.1999	0.0337	1.2335		5,410.9036	5,410.9036	0.2385		5,416.8672

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	533.12	434.52	398.48	1,707,893	1,707,893
Strip Mall	151.00	151.00	81.72	268,462	268,462
Total	684.12	585.52	480.20	1,976,354	1,976,354

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Strip Mall	16.60	8.40	6.90	16.60	64.40	19.00	45	40	15

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	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
Strip Mall	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

Mercy Housing Project - South Coast AQMD Air District, Summer

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	0.0271	0.2318	0.0994	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.7291	295.7291	5.6700e-003	5.4200e-003	297.4865
NaturalGas Unmitigated	0.0271	0.2318	0.0994	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.7291	295.7291	5.6700e-003	5.4200e-003	297.4865

Mercy Housing Project - South Coast AQMD Air District, Summer

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	2495.72	0.0269	0.2300	0.0979	1.4700e-003		0.0186	0.0186		0.0186	0.0186		293.6147	293.6147	5.6300e-003	5.3800e-003	295.3595
Strip Mall	17.9726	1.9000e-004	1.7600e-003	1.4800e-003	1.0000e-005		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004		2.1144	2.1144	4.0000e-005	4.0000e-005	2.1270
Total		0.0271	0.2318	0.0994	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.7291	295.7291	5.6700e-003	5.4200e-003	297.4865

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	2.49572	0.0269	0.2300	0.0979	1.4700e-003		0.0186	0.0186		0.0186	0.0186		293.6147	293.6147	5.6300e-003	5.3800e-003	295.3595
Strip Mall	0.0179726	1.9000e-004	1.7600e-003	1.4800e-003	1.0000e-005		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004		2.1144	2.1144	4.0000e-005	4.0000e-005	2.1270
Total		0.0271	0.2318	0.0994	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.7291	295.7291	5.6700e-003	5.4200e-003	297.4865

6.0 Area Detail

6.1 Mitigation Measures Area

Mercy Housing Project - South Coast AQMD Air District, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.7214	0.0647	5.6118	3.0000e-004		0.0311	0.0311		0.0311	0.0311	0.0000	10.1024	10.1024	9.7200e-003	0.0000	10.3453
Unmitigated	1.7214	0.0647	5.6118	3.0000e-004		0.0311	0.0311		0.0311	0.0311	0.0000	10.1024	10.1024	9.7200e-003	0.0000	10.3453

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1267					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.4256					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1691	0.0647	5.6118	3.0000e-004		0.0311	0.0311		0.0311	0.0311		10.1024	10.1024	9.7200e-003		10.3453
Total	1.7214	0.0647	5.6118	3.0000e-004		0.0311	0.0311		0.0311	0.0311	0.0000	10.1024	10.1024	9.7200e-003	0.0000	10.3453

Mercy Housing Project - South Coast AQMD Air District, Summer

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1267					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.4256					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1691	0.0647	5.6118	3.0000e-004		0.0311	0.0311		0.0311	0.0311		10.1024	10.1024	9.7200e-003		10.3453
Total	1.7214	0.0647	5.6118	3.0000e-004		0.0311	0.0311		0.0311	0.0311	0.0000	10.1024	10.1024	9.7200e-003	0.0000	10.3453

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
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10.0 Stationary Equipment

Mercy Housing Project - South Coast AQMD Air District, Summer

Fire Pumps and Emergency Generators

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

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

Equipment Type	Number
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11.0 Vegetation

Mercy Housing Project - South Coast AQMD Air District, Winter

Mercy Housing Project
South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Mid Rise	68.00	Dwelling Unit	0.66	68,000.00	194
Strip Mall	4.00	1000sqft	0.09	4,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	9			Operational Year	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

- Project Characteristics -
- Land Use - The project site is approximately 0.75 acres
- Construction Phase - Architectural Coating will overlap with the building construction
- Demolition -
- Grading -
- Vehicle Trips - Trip rates from traffic study (LL&G, April 2020)
- Woodstoves - no fireplaces
- Construction Off-road Equipment Mitigation -

Mercy Housing Project - South Coast AQMD Air District, Winter

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	357.00
tblConstructionPhase	NumDays	5.00	110.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	57.80	0.00
tblFireplaces	NumberNoFireplace	6.80	68.00
tblFireplaces	NumberWood	3.40	0.00
tblGrading	MaterialExported	0.00	100.00
tblGrading	MaterialImported	0.00	100.00
tblLandUse	LotAcreage	1.79	0.66
tblVehicleTrips	ST_TR	42.04	37.75
tblVehicleTrips	WD_TR	6.65	7.84
tblVehicleTrips	WD_TR	44.32	37.75
tblWoodstoves	NumberCatalytic	3.40	0.00
tblWoodstoves	NumberNoncatalytic	3.40	0.00

2.0 Emissions Summary

Mercy Housing Project - South Coast AQMD Air District, Winter

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	1.7214	0.0647	5.6118	3.0000e-004		0.0311	0.0311		0.0311	0.0311	0.0000	10.1024	10.1024	9.7200e-003	0.0000	10.3453
Energy	0.0271	0.2318	0.0994	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.7291	295.7291	5.6700e-003	5.4200e-003	297.4865
Mobile	0.9884	4.6182	12.6773	0.0503	4.4846	0.0364	4.5210	1.1999	0.0338	1.2337		5,125.0529	5,125.0529	0.2384		5,131.0124
Total	2.7370	4.9147	18.3884	0.0520	4.4846	0.0862	4.5708	1.1999	0.0836	1.2835	0.0000	5,430.8844	5,430.8844	0.2538	5.4200e-003	5,438.8443

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	1.7214	0.0647	5.6118	3.0000e-004		0.0311	0.0311		0.0311	0.0311	0.0000	10.1024	10.1024	9.7200e-003	0.0000	10.3453
Energy	0.0271	0.2318	0.0994	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.7291	295.7291	5.6700e-003	5.4200e-003	297.4865
Mobile	0.9884	4.6182	12.6773	0.0503	4.4846	0.0364	4.5210	1.1999	0.0338	1.2337		5,125.0529	5,125.0529	0.2384		5,131.0124
Total	2.7370	4.9147	18.3884	0.0520	4.4846	0.0862	4.5708	1.1999	0.0836	1.2835	0.0000	5,430.8844	5,430.8844	0.2538	5.4200e-003	5,438.8443

Mercy Housing Project - South Coast AQMD Air District, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	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	Demolition	Demolition	7/5/2021	7/16/2021	5	10	
2	Site Preparation	Site Preparation	7/17/2021	7/19/2021	5	1	
3	Grading	Grading	7/20/2021	7/21/2021	5	2	
4	Building Construction	Building Construction	7/22/2021	12/2/2022	5	357	
5	Architectural Coating	Architectural Coating	7/4/2022	12/2/2022	5	110	
6	Paving	Paving	12/5/2022	12/9/2022	5	5	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 137,700; Residential Outdoor: 45,900; Non-Residential Indoor: 6,000; Non-Residential Outdoor: 2,000; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Mercy Housing Project - South Coast AQMD Air District, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	7.00	97	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
Demolition	4	10.00	0.00	25.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	25.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	50.00	8.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Mercy Housing Project - South Coast AQMD Air District, Winter

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5414	0.0000	0.5414	0.0820	0.0000	0.0820			0.0000			0.0000
Off-Road	0.7965	7.2530	7.5691	0.0120		0.4073	0.4073		0.3886	0.3886		1,147.4338	1,147.4338	0.2138		1,152.7797
Total	0.7965	7.2530	7.5691	0.0120	0.5414	0.4073	0.9487	0.0820	0.3886	0.4706		1,147.4338	1,147.4338	0.2138		1,152.7797

Mercy Housing Project - South Coast AQMD Air District, Winter

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0187	0.6400	0.1437	1.8800e-003	0.0437	1.9900e-003	0.0457	0.0120	1.9000e-003	0.0139		203.5488	203.5488	0.0144		203.9093
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	0.0648	0.6700	0.4823	2.9200e-003	0.1555	2.8100e-003	0.1583	0.0416	2.6600e-003	0.0443		307.1156	307.1156	0.0172		307.5455

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5414	0.0000	0.5414	0.0820	0.0000	0.0820			0.0000			0.0000
Off-Road	0.7965	7.2530	7.5691	0.0120		0.4073	0.4073		0.3886	0.3886	0.0000	1,147.4338	1,147.4338	0.2138		1,152.7797
Total	0.7965	7.2530	7.5691	0.0120	0.5414	0.4073	0.9487	0.0820	0.3886	0.4706	0.0000	1,147.4338	1,147.4338	0.2138		1,152.7797

Mercy Housing Project - South Coast AQMD Air District, Winter

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0187	0.6400	0.1437	1.8800e-003	0.0437	1.9900e-003	0.0457	0.0120	1.9000e-003	0.0139		203.5488	203.5488	0.0144		203.9093
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	0.0648	0.6700	0.4823	2.9200e-003	0.1555	2.8100e-003	0.1583	0.0416	2.6600e-003	0.0443		307.1156	307.1156	0.0172		307.5455

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	0.6403	7.8204	4.0274	9.7300e-003		0.2995	0.2995		0.2755	0.2755		942.5842	942.5842	0.3049		950.2055
Total	0.6403	7.8204	4.0274	9.7300e-003	0.5303	0.2995	0.8297	0.0573	0.2755	0.3328		942.5842	942.5842	0.3049		950.2055

Mercy Housing Project - South Coast AQMD Air District, Winter

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0231	0.0150	0.1693	5.2000e-004	0.0559	4.1000e-004	0.0563	0.0148	3.8000e-004	0.0152		51.7834	51.7834	1.3900e-003		51.8181
Total	0.0231	0.0150	0.1693	5.2000e-004	0.0559	4.1000e-004	0.0563	0.0148	3.8000e-004	0.0152		51.7834	51.7834	1.3900e-003		51.8181

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	0.6403	7.8204	4.0274	9.7300e-003		0.2995	0.2995		0.2755	0.2755	0.0000	942.5842	942.5842	0.3049		950.2055
Total	0.6403	7.8204	4.0274	9.7300e-003	0.5303	0.2995	0.8297	0.0573	0.2755	0.3328	0.0000	942.5842	942.5842	0.3049		950.2055

Mercy Housing Project - South Coast AQMD Air District, Winter

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0231	0.0150	0.1693	5.2000e-004	0.0559	4.1000e-004	0.0563	0.0148	3.8000e-004	0.0152		51.7834	51.7834	1.3900e-003		51.8181
Total	0.0231	0.0150	0.1693	5.2000e-004	0.0559	4.1000e-004	0.0563	0.0148	3.8000e-004	0.0152		51.7834	51.7834	1.3900e-003		51.8181

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.7641	0.0000	0.7641	0.4155	0.0000	0.4155			0.0000			0.0000
Off-Road	0.7965	7.2530	7.5691	0.0120		0.4073	0.4073		0.3886	0.3886		1,147.4338	1,147.4338	0.2138		1,152.7797
Total	0.7965	7.2530	7.5691	0.0120	0.7641	0.4073	1.1714	0.4155	0.3886	0.8041		1,147.4338	1,147.4338	0.2138		1,152.7797

Mercy Housing Project - South Coast AQMD Air District, Winter

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0933	3.2000	0.7186	9.4000e-003	0.2184	9.9500e-003	0.2284	0.0599	9.5200e-003	0.0694		1,017.7442	1,017.7442	0.0721		1,019.5466
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	0.1394	3.2299	1.0572	0.0104	0.3302	0.0108	0.3410	0.0895	0.0103	0.0998		1,121.3109	1,121.3109	0.0749		1,123.1828

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.7641	0.0000	0.7641	0.4155	0.0000	0.4155			0.0000			0.0000
Off-Road	0.7965	7.2530	7.5691	0.0120		0.4073	0.4073		0.3886	0.3886	0.0000	1,147.4338	1,147.4338	0.2138		1,152.7797
Total	0.7965	7.2530	7.5691	0.0120	0.7641	0.4073	1.1714	0.4155	0.3886	0.8041	0.0000	1,147.4338	1,147.4338	0.2138		1,152.7797

Mercy Housing Project - South Coast AQMD Air District, Winter

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0933	3.2000	0.7186	9.4000e-003	0.2184	9.9500e-003	0.2284	0.0599	9.5200e-003	0.0694		1,017.7442	1,017.7442	0.0721		1,019.5466
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	0.1394	3.2299	1.0572	0.0104	0.3302	0.0108	0.3410	0.0895	0.0103	0.0998		1,121.3109	1,121.3109	0.0749		1,123.1828

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7750	7.9850	7.2637	0.0114		0.4475	0.4475		0.4117	0.4117		1,103.2158	1,103.2158	0.3568		1,112.1358
Total	0.7750	7.9850	7.2637	0.0114		0.4475	0.4475		0.4117	0.4117		1,103.2158	1,103.2158	0.3568		1,112.1358

Mercy Housing Project - South Coast AQMD Air District, Winter

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0234	0.7606	0.2026	1.9800e-003	0.0512	1.5900e-003	0.0528	0.0147	1.5200e-003	0.0163		211.6402	211.6402	0.0142		211.9942
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	0.2540	0.9104	1.8953	7.1800e-003	0.6101	5.7000e-003	0.6158	0.1630	5.3100e-003	0.1683		729.4741	729.4741	0.0280		730.1751

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	0.7750	7.9850	7.2637	0.0114		0.4475	0.4475		0.4117	0.4117	0.0000	1,103.2158	1,103.2158	0.3568		1,112.1358
Total	0.7750	7.9850	7.2637	0.0114		0.4475	0.4475		0.4117	0.4117	0.0000	1,103.2158	1,103.2158	0.3568		1,112.1358

Mercy Housing Project - South Coast AQMD Air District, Winter

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0234	0.7606	0.2026	1.9800e-003	0.0512	1.5900e-003	0.0528	0.0147	1.5200e-003	0.0163		211.6402	211.6402	0.0142		211.9942
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	0.2540	0.9104	1.8953	7.1800e-003	0.6101	5.7000e-003	0.6158	0.1630	5.3100e-003	0.1683		729.4741	729.4741	0.0280		730.1751

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6863	7.0258	7.1527	0.0114		0.3719	0.3719		0.3422	0.3422		1,103.9393	1,103.9393	0.3570		1,112.8652
Total	0.6863	7.0258	7.1527	0.0114		0.3719	0.3719		0.3422	0.3422		1,103.9393	1,103.9393	0.3570		1,112.8652

Mercy Housing Project - South Coast AQMD Air District, Winter

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0220	0.7214	0.1916	1.9600e-003	0.0512	1.3800e-003	0.0526	0.0147	1.3200e-003	0.0161		209.7554	209.7554	0.0136		210.0959
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	0.2388	0.8567	1.7540	6.9700e-003	0.6101	5.3800e-003	0.6155	0.1630	5.0000e-003	0.1680		709.0236	709.0236	0.0262		709.6775

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	0.6863	7.0258	7.1527	0.0114		0.3719	0.3719		0.3422	0.3422	0.0000	1,103.9393	1,103.9393	0.3570		1,112.8652
Total	0.6863	7.0258	7.1527	0.0114		0.3719	0.3719		0.3422	0.3422	0.0000	1,103.9393	1,103.9393	0.3570		1,112.8652

Mercy Housing Project - South Coast AQMD Air District, Winter

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0220	0.7214	0.1916	1.9600e-003	0.0512	1.3800e-003	0.0526	0.0147	1.3200e-003	0.0161		209.7554	209.7554	0.0136		210.0959
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	0.2388	0.8567	1.7540	6.9700e-003	0.6101	5.3800e-003	0.6155	0.1630	5.0000e-003	0.1680		709.0236	709.0236	0.0262		709.6775

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2052					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	4.4098	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062

Mercy Housing Project - South Coast AQMD Air District, Winter

3.6 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0434	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					
Archit. Coating	4.2052					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	4.4098	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062

Mercy Housing Project - South Coast AQMD Air District, Winter

3.6 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0434	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 Paving - 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	0.6469	5.9174	7.0348	0.0113		0.2961	0.2961		0.2758	0.2758		1,035.8246	1,035.8246	0.3017		1,043.3677
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.6469	5.9174	7.0348	0.0113		0.2961	0.2961		0.2758	0.2758		1,035.8246	1,035.8246	0.3017		1,043.3677

Mercy Housing Project - South Coast AQMD Air District, Winter

3.7 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0781	0.0487	0.5625	1.8000e-003	0.2012	1.4400e-003	0.2026	0.0534	1.3200e-003	0.0547		179.7366	179.7366	4.5100e-003		179.8494
Total	0.0781	0.0487	0.5625	1.8000e-003	0.2012	1.4400e-003	0.2026	0.0534	1.3200e-003	0.0547		179.7366	179.7366	4.5100e-003		179.8494

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	0.6469	5.9174	7.0348	0.0113		0.2961	0.2961		0.2758	0.2758	0.0000	1,035.8246	1,035.8246	0.3017		1,043.3677
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.6469	5.9174	7.0348	0.0113		0.2961	0.2961		0.2758	0.2758	0.0000	1,035.8246	1,035.8246	0.3017		1,043.3677

Mercy Housing Project - South Coast AQMD Air District, Winter

3.7 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0781	0.0487	0.5625	1.8000e-003	0.2012	1.4400e-003	0.2026	0.0534	1.3200e-003	0.0547		179.7366	179.7366	4.5100e-003		179.8494
Total	0.0781	0.0487	0.5625	1.8000e-003	0.2012	1.4400e-003	0.2026	0.0534	1.3200e-003	0.0547		179.7366	179.7366	4.5100e-003		179.8494

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Mercy Housing Project - South Coast AQMD Air District, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 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	0.9884	4.6182	12.6773	0.0503	4.4846	0.0364	4.5210	1.1999	0.0338	1.2337		5,125.0529	5,125.0529	0.2384		5,131.0124
Unmitigated	0.9884	4.6182	12.6773	0.0503	4.4846	0.0364	4.5210	1.1999	0.0338	1.2337		5,125.0529	5,125.0529	0.2384		5,131.0124

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	533.12	434.52	398.48	1,707,893	1,707,893
Strip Mall	151.00	151.00	81.72	268,462	268,462
Total	684.12	585.52	480.20	1,976,354	1,976,354

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Strip Mall	16.60	8.40	6.90	16.60	64.40	19.00	45	40	15

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	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
Strip Mall	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

Mercy Housing Project - South Coast AQMD Air District, Winter

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	0.0271	0.2318	0.0994	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.7291	295.7291	5.6700e-003	5.4200e-003	297.4865
NaturalGas Unmitigated	0.0271	0.2318	0.0994	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.7291	295.7291	5.6700e-003	5.4200e-003	297.4865

Mercy Housing Project - South Coast AQMD Air District, Winter

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	2495.72	0.0269	0.2300	0.0979	1.4700e-003		0.0186	0.0186		0.0186	0.0186		293.6147	293.6147	5.6300e-003	5.3800e-003	295.3595
Strip Mall	17.9726	1.9000e-004	1.7600e-003	1.4800e-003	1.0000e-005		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004		2.1144	2.1144	4.0000e-005	4.0000e-005	2.1270
Total		0.0271	0.2318	0.0994	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.7291	295.7291	5.6700e-003	5.4200e-003	297.4865

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	2.49572	0.0269	0.2300	0.0979	1.4700e-003		0.0186	0.0186		0.0186	0.0186		293.6147	293.6147	5.6300e-003	5.3800e-003	295.3595
Strip Mall	0.0179726	1.9000e-004	1.7600e-003	1.4800e-003	1.0000e-005		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004		2.1144	2.1144	4.0000e-005	4.0000e-005	2.1270
Total		0.0271	0.2318	0.0994	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.7291	295.7291	5.6700e-003	5.4200e-003	297.4865

6.0 Area Detail

6.1 Mitigation Measures Area

Mercy Housing Project - South Coast AQMD Air District, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.7214	0.0647	5.6118	3.0000e-004		0.0311	0.0311		0.0311	0.0311	0.0000	10.1024	10.1024	9.7200e-003	0.0000	10.3453
Unmitigated	1.7214	0.0647	5.6118	3.0000e-004		0.0311	0.0311		0.0311	0.0311	0.0000	10.1024	10.1024	9.7200e-003	0.0000	10.3453

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1267					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.4256					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1691	0.0647	5.6118	3.0000e-004		0.0311	0.0311		0.0311	0.0311		10.1024	10.1024	9.7200e-003		10.3453
Total	1.7214	0.0647	5.6118	3.0000e-004		0.0311	0.0311		0.0311	0.0311	0.0000	10.1024	10.1024	9.7200e-003	0.0000	10.3453

Mercy Housing Project - South Coast AQMD Air District, Winter

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1267					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.4256					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1691	0.0647	5.6118	3.0000e-004		0.0311	0.0311		0.0311	0.0311		10.1024	10.1024	9.7200e-003		10.3453
Total	1.7214	0.0647	5.6118	3.0000e-004		0.0311	0.0311		0.0311	0.0311	0.0000	10.1024	10.1024	9.7200e-003	0.0000	10.3453

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
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10.0 Stationary Equipment

Mercy Housing Project - South Coast AQMD Air District, Winter

Fire Pumps and Emergency Generators

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

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

Equipment Type	Number
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11.0 Vegetation

Record of Non-Applicability for Clean Air Act Conformity

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Record of Non-Applicability (RONA) for Clean Air Act Conformity

Los Angeles County, California

This Proposed Action falls under the Record of Non-Applicability (RONA) category and is documented with this RONA.

The U.S. Environmental Protection Agency (USEPA) published Determining Conformity of General Federal Actions to State or Federal Implementation Plans; Final Rule, in the 30 November 1993, Federal Register (40 CFR Parts 6, 51, and 93). The U.S. Navy published Clean Air Act Conformity Guidance in Appendix F, OPNAVINST 5090.1d, dated 30 July 2013. These publications provide implementing guidance to document Clean Air Act Conformity Determination requirements.

Federal regulations state that no department, agency, or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license to permit, or approve any activity that does not conform to an applicable implementation plan. It is the responsibility of the Federal agency to determine whether a Federal action conforms to the applicable implementation plan, before the action is taken (40 CFR Part 51.850[a]). Federal actions may be exempt from conformity determinations if they do not exceed designated *de minimis* levels for criteria pollutants (40 CFR Part 51.853[b]). *De minimis* levels (in tons/year) for the air basin potentially affected by the Proposed Action are listed in Table 1.

Table 1 General Conformity *de minimis* levels for the South Coast Air Basin

Pollutant	Area Type	<i>De minimis</i> Level (Tons/year)
Oxides of Nitrogen (NO _x)	Extreme Nonattainment (Ozone)	10
Volatile Organic Compounds (VOC)	Extreme Nonattainment (Ozone)	10
Coarse Particulate Matter (PM ₁₀)	Attainment/Maintenance	100
Fine Particulate Matter (PM _{2.5})	Nonattainment	100
Carbon Monoxide (CO)	Attainment/Maintenance	100

Proposed Action

Action Proponent: City of Long Beach

Title of Proposed Action: Mercy Housing Project

Project Location: The Project site is located north of Pacific Coast Highway, west of Martin Luther King Jr. Avenue, and east of Myrtle Avenue in the City of Long Beach, California

Lead Agency for the EA: U.S. Department of Housing and Urban Development (HUD)

Proposed Action and Emission Summary: The Project is proposing a 68-unit new construction development within three-stories over a parking garage and ground floor retail and associated amenities. The Project will be 100 percent low-income and all units will be for senior residents 62 and above. Of the 68 units, 33 units will be set aside for seniors who have experienced homelessness. In addition to the residential portion there will be 4,000 square feet (SF) of commercial space for a community-serving tenant such as a non-profit which is assumed to be medical office/medical-related

retail/commercial uses. As planned the project will have 38 parking spaces. The Project will look to break ground sometime in 2021 with an anticipated completion by 2023.

Air Emission Summary: Construction and operational emissions were calculated by using California Emissions Estimator Model (CalEEMod) version 2016.3.2. CalEEMod is a computer model developed by the South Coast Air Quality Management District (SCAQMD) with the input of several air quality management and pollution control districts to estimate anticipated emissions associated with land development projects in California. CalEEMod has separate databases for specific counties and air districts. The South Coast Air Basin database was used for the proposed Project.

The results of the modeling are shown in Tables 2 and 3 for the annual conditions for the construction and operation of the project site, respectively. The analysis assumes that construction would take approximately 18 months to complete.

Table 2 Annual Construction Emissions (tons/year)

<i>Year</i>	<i>NO_x</i>	<i>VOC</i>	<i>CO</i>	<i>SO₂</i>	<i>PM₁₀</i>	<i>PM_{2.5}</i>
2021	0.6	0.1	0.6	0.0	0.1	0.04
2022	1.0	0.4	1.2	0.0	0.1	0.1
<i>de minimis</i> Criteria	10	10	100	NA	100	100

Table 3 Annual Operational Emissions (tons/year)

<i>Year</i>	<i>NO_x</i>	<i>VOC</i>	<i>CO</i>	<i>SO₂</i>	<i>PM₁₀</i>	<i>PM_{2.5}</i>
2023	0.9	0.5	2.9	0.0	0.8	0.2
<i>de minimis</i> Criteria	10	10	100	NA	100	100

Tables 2 and 3 show that annual construction and operational emissions generated by the Proposed Action are well below the South Coast Air Basin general conformity *de minimis* levels. As a result, the Proposed Action would not produce significant adverse air quality impacts.

Date RONA Prepared: July 14, 2020

Emissions Evaluation and Conclusion

The Proposed Action would involve minor construction and operational emissions from the project site; all emissions are *de minimis*.

HUD concludes that *de minimis* thresholds for applicable criteria pollutants would not be exceeded as a result of implementation of the Proposed Action. Therefore, HUD concludes that further formal Conformity Determination procedures are not required, resulting in this Record of Non-Applicability.

Attachment 4. Coastal Zone Management Worksheet

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Coastal Zone Management Act (CEST and EA)

General requirements	Legislation	Regulation
Federal assistance to applicant agencies for activities affecting any coastal use or resource is granted only when such activities are consistent with federally approved State Coastal Zone Management Act Plans.	Coastal Zone Management Act (16 USC 1451-1464), particularly section 307(c) and (d) (16 USC 1456(c) and (d))	15 CFR Part 930
References		
https://www.onecpd.info/environmental-review/coastal-zone-management		

Projects located in the following states must complete this form.

Alabama	Florida	Louisiana	Mississippi	Ohio	Texas
Alaska	Georgia	Maine	New Hampshire	Oregon	Virgin Islands
American Samoa	Guam	Maryland	New Jersey	Pennsylvania	Virginia
California	Hawaii	Massachusetts	New York	Puerto Rico	Washington
Connecticut	Illinois	Michigan	North Carolina	Rhode Island	Wisconsin
Delaware	Indiana	Minnesota	Northern Mariana Islands	South Carolina	

1. Is the project located in, or does it affect, a Coastal Zone as defined in your state Coastal Management Plan?

Yes → *Continue to Question 2.*

No → *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide a map showing that the site is not within a Coastal Zone.*

2. Does this project include activities that are subject to state review?

Yes → *Continue to Question 3.*

No → *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide documentation used to make your determination.*

3. Has this project been determined to be consistent with the State Coastal Management Program?

Yes, with mitigation. → *Continue to Question 4.*

Yes, without mitigation. → *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide documentation used to make your determination.*

No, project must be canceled.

Project cannot proceed at this location.

4. Explain in detail the proposed measures that must be implemented to mitigate for the impact or effect, including the timeline for implementation.

→ *Continue to the Worksheet Summary below. Provide documentation of the consultation (including the State Coastal Management Program letter of consistency) and any other documentation used to make your determination.*

Worksheet Summary

Compliance Determination

Provide a clear description of your determination and a synopsis of the information that it was based on, such as:

- Map panel numbers and dates
- Names of all consulted parties and relevant consultation dates
- Names of plans or reports and relevant page numbers
- Any additional requirements specific to your region

According to the National Oceanic and Atmospheric Administration's Coastal Zone Management Program, the project site is not located within the coastal zone or under the California Coastal Commission jurisdiction.

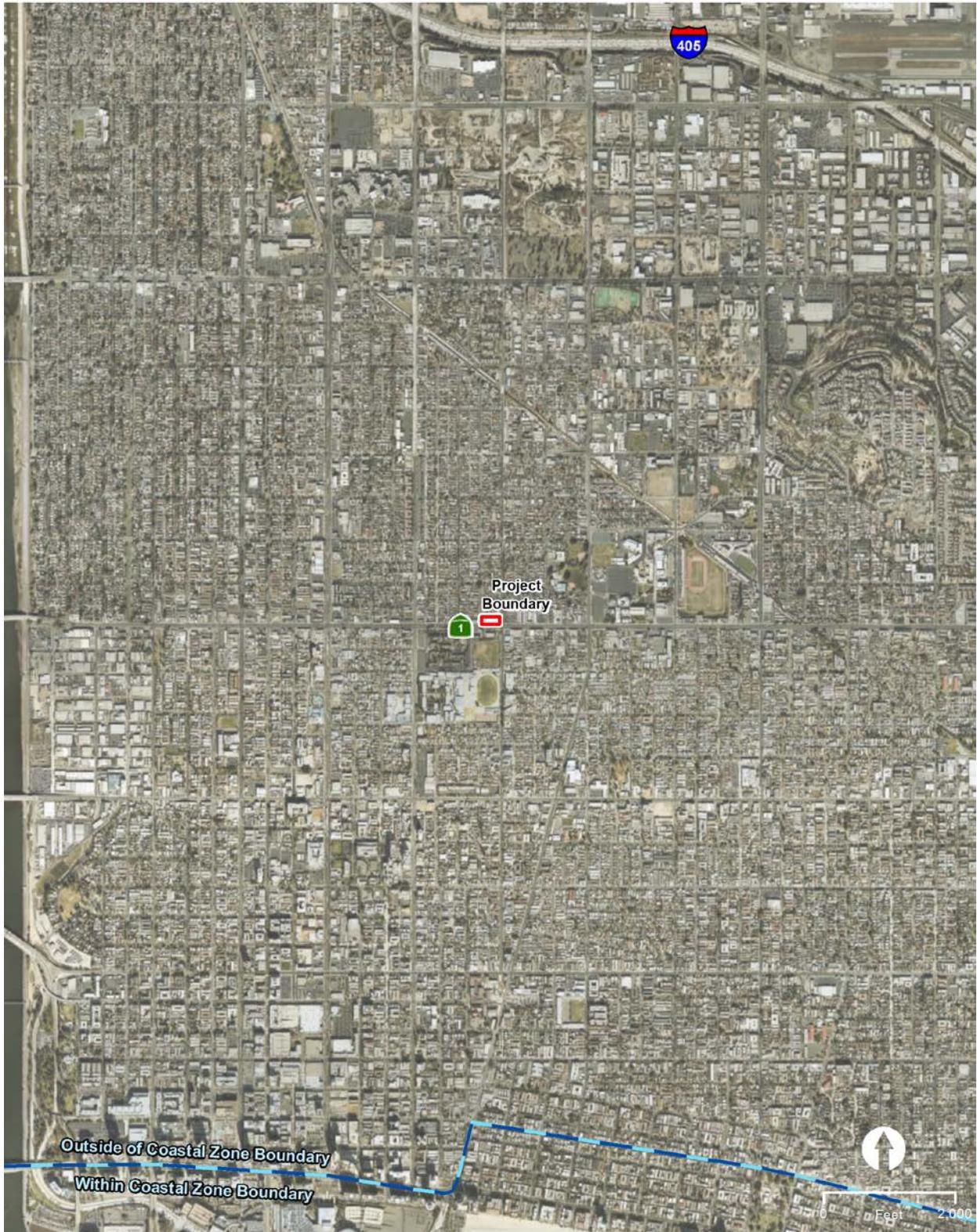
See Figure 1 below.

Are formal compliance steps or mitigation required?

Yes

No

Figure 1. Coastal Zone Map



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Attachment 5. Site Contamination Multi Family Worksheet

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Contamination and Toxic Substances (Multifamily and Non-Residential Properties)

General requirements	Legislation	Regulations
It is HUD policy that all properties that are being proposed for use in HUD programs be free of hazardous materials, contamination, toxic chemicals and gases, and radioactive substances, where a hazard could affect the health and safety of the occupants or conflict with the intended utilization of the property.		24 CFR 58.5(i)(2) 24 CFR 50.3(i)
Reference		
https://www.hudexchange.info/programs/environmental-review/site-contamination		

1. How was site contamination evaluated? ¹ Select all that apply.

- ASTM Phase I ESA
- ASTM Phase II ESA
- Remediation or clean-up plan
- ASTM Vapor Encroachment Screening
- None of the above

→ Provide documentation and reports and include an explanation of how site contamination was evaluated in the Worksheet Summary.

Continue to Question 2.

2. Were any on-site or nearby toxic, hazardous, or radioactive substances found that could affect the health and safety of project occupants or conflict with the intended use of the property? (Were any recognized environmental conditions or RECs identified in a Phase I ESA and confirmed in a Phase II ESA?)

- No

Explain:

The Phase I ESAs concluded no RECs on the project site. An HREC was identified, but has been closed by the regulatory authority. The Phase II confirmed the conclusion.

¹ HUD regulations at 24 CFR § 58.5(i)(2)(ii) require that the environmental review for multifamily housing with five or more dwelling units or non-residential property include the evaluation of previous uses of the site or other evidence of contamination on or near the site. For acquisition and new construction of multifamily and nonresidential properties HUD strongly advises the review include an ASTM Phase I Environmental Site Assessment (ESA) to meet real estate transaction standards of due diligence and to help ensure compliance with HUD's toxic policy at 24 CFR § 58.5(i) and 24 CFR § 50.3(i). Also note that some HUD programs require an ASTM Phase I ESA.

→ Based on the response, the review is in compliance with this section.
Continue to the Worksheet Summary below.

Yes.

→ Describe the findings, including any recognized environmental conditions (RECs), in Worksheet Summary below. Continue to Question 3.

3. Mitigation

Document the mitigation needed according to the requirements of the appropriate federal, state, tribal, or local oversight agency. If the adverse environmental effects cannot be mitigated, then HUD assistance may not be used for the project at this site.

Can adverse environmental impacts be mitigated?

Adverse environmental impacts cannot feasibly be mitigated

→ Project cannot proceed at this location.

Yes, adverse environmental impacts can be eliminated through mitigation.

→ Provide all mitigation requirements² and documents. Continue to Question 4.

4. Describe how compliance was achieved. Include any of the following that apply: State Voluntary Clean-up Program, a No Further Action letter, use of engineering controls³, or use of institutional controls⁴.

² Mitigation requirements include all clean-up actions required by applicable federal, state, tribal, or local law. Additionally, provide, as applicable, the long-term operations and maintenance plan, Remedial Action Work Plan, and other equivalent documents.

³ Engineering controls are any physical mechanism used to contain or stabilize contamination or ensure the effectiveness of a remedial action. Engineering controls may include, without limitation, caps, covers, dikes, trenches, leachate collection systems, signs, fences, physical access controls, ground water monitoring systems and ground water containment systems including, without limitation, slurry walls and ground water pumping systems.

⁴ Institutional controls are mechanisms used to limit human activities at or near a contaminated site, or to ensure the effectiveness of the remedial action over time, when contaminants remain at a site at levels above the applicable remediation standard which would allow for unrestricted use of the property. Institutional controls may include structure, land, and natural resource use restrictions, well restriction areas, classification exception areas, deed notices, and declarations of environmental restrictions.

If a remediation plan or clean-up program was necessary, which standard does it follow?

Complete removal

→ *Continue to the Worksheet Summary.*

Risk-based corrective action (RBCA)

→ *Continue to the Worksheet Summary.*

Worksheet Summary

Compliance Determination

Provide a clear description of your determination and a synopsis of the information that it was based on, such as:

- Map panel numbers and dates
- Names of all consulted parties and relevant consultation dates
- Names of plans or reports and relevant page numbers
- Any additional requirements specific to your region

Information contained in this worksheet is summarized from the Phase I and Phase II ESAs prepared for the Mercy Housing Affordable Housing Project.

Two Phase I ESAs were prepared for the project site. One for 901 East Pacific Coast Highway and one for 925-945 East Pacific Coast Highway. The Phase I ESAs concluded no evidence of recognized environmental conditions or controlled recognized environmental conditions in connection with the project site. However, a historical recognized environmental condition, which refers to a past release of any hazardous materials that has been addressed to the satisfaction of the applicable regulatory authority, was identified. The 6,000-gallon underground storage tank (UST) associated with the gas station that was on the property between the 1940s to the 1970s has been removed and has been closed by the regulatory authority.

The Phase II ESA concluded the detected concentrations of VOCs in soil gas do not appear to represent a concern for vapor intrusion for the proposed construction at this time. Based on the lack of detections in soil, groundwater, and soil gas above current regulatory guidelines, there does not appear to be a release above *de minimis* concentrations at this time.

Are formal compliance steps or mitigation required?

Yes

No

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Attachment 6. Endangered Species Worksheet

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Endangered Species Act (CEST and EA)

General requirements	ESA Legislation	Regulations
Section 7 of the Endangered Species Act (ESA) mandates that federal agencies ensure that actions that they authorize, fund, or carry out shall not jeopardize the continued existence of federally listed plants and animals or result in the adverse modification or destruction of designated critical habitat. Where their actions may affect resources protected by the ESA, agencies must consult with the Fish and Wildlife Service and/or the National Marine Fisheries Service (“FWS” and “NMFS” or “the Services”).	The Endangered Species Act of 1973 (16 U.S.C. 1531 <i>et seq.</i>); particularly section 7 (16 USC 1536).	50 CFR Part 402
References		
https://www.hudexchange.info/environmental-review/endangered-species		

1. Does the project involve any activities that have the potential to affect species or habitats?

No, the project will have No Effect due to the nature of the activities involved in the project.
 → *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide any documents used to make your determination.*

No, the project will have No Effect based on a letter of understanding, memorandum of agreement, programmatic agreement, or checklist provided by local HUD office.
 Explain your determination:

→ *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide any documents used to make your determination.*

Yes, the activities involved in the project have the potential to affect species and/or habitats. → *Continue to Question 2.*

2. Are federally listed species or designated critical habitats present in the action area?

Obtain a list of protected species from the Services. This information is available on the [FWS Website](#) or you may contact your [local FWS](#) and/or [NMFS](#) offices directly.

No, the project will have No Effect due to the absence of federally listed species and designated critical habitat.

→ *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide any documents used to make your determination. Documentation*

may include letters from the Services, species lists from the Services' websites, surveys or other documents and analysis showing that there are no species in the action area.

- Yes, there are federally listed species or designated critical habitats present in the action area. → *Continue to Question 3.*

3. What effects, if any, will your project have on federally listed species or designated critical habitat?

- No Effect: Based on the specifics of both the project and any federally listed species in the action area, you have determined that the project will have absolutely no effect on listed species or critical habitat.

→ *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide any documents used to make your determination. Documentation should include a species list and explanation of your conclusion, and may require maps, photographs, and surveys as appropriate.*

- May Affect, Not Likely to Adversely Affect: Any effects that the project may have on federally listed species or critical habitats would be beneficial, discountable, or insignificant.

→ *Continue to Question 4, Informal Consultation.*

- Likely to Adversely Affect: The project may have negative effects on one or more listed species or critical habitat.

→ *Continue to Question 5, Formal Consultation.*

4. Informal Consultation is required

Section 7 of ESA (16 USC. 1536) mandates consultation to resolve potential impacts to endangered and threatened species and critical habitats. If a HUD-assisted project may affect any federally listed endangered or threatened species or critical habitat, then compliance is required with Section 7. See 50 CFR Part 402 Subpart B Consultation Procedures.

Did the Service(s) concur with the finding that the project is Not Likely to Adversely Affect?

- Yes, the Service(s) concurred with the finding.

→ *Based on the response, the review is in compliance with this section. Continue to Question 6 and provide the following:*

- (1) A biological evaluation or equivalent document*
- (2) Concurrence(s) from FWS and/or NMFS*
- (3) Any other documentation of informal consultation*

Exception: If finding was made based on procedures provided by a letter of understanding, memorandum of agreement, programmatic agreement, or checklist provided by local HUD office, provide whatever documentation is mandated by that agreement.

No, the Service(s) did not concur with the finding. → *Continue to Question 5.*

5. Formal consultation is required

Section 7 of ESA (16 USC 1536) mandates consultation to resolve potential impacts to federally listed endangered and threatened species and critical habitats. If a HUD assisted project may affect any endangered or threatened species or critical habitat, then compliance is required with Section 7. See 50 CFR Part 402 Subpart B Consultation Procedures.

→ *Once consultation is complete, the review is in compliance with this section. Continue to Question 6 and provide the following:*

- (1) A biological assessment, evaluation, or equivalent document*
- (2) Biological opinion(s) issued by FWS and/or NMFS*
- (3) Any other documentation of formal consultation*

6. For the project to be brought into compliance with this section, all adverse impacts must be mitigated. Explain in detail the proposed measures that will be implemented to mitigate for the impact or effect, including the timeline for implementation.

Mitigation as follows will be implemented:

No mitigation is necessary.

Explain why mitigation will not be made here:

Worksheet Summary

Compliance Determination

Provide a clear description of your determination and a synopsis of the information that it was based on, such as:

- Map panel numbers and dates
- Names of all consulted parties and relevant consultation dates
- Names of plans or reports and relevant page numbers
- Any additional requirements specific to your region

The project site is disturbed and surrounded by urban development. Database searches of Information for Planning and Consultation and the Inventory of Rare and Endangered Plants of California indicate no species identified as candidate, sensitive, or special status have the potential to occur on the project site. Therefore, the project would not have a substantial adverse effect, either directly or indirectly, and impacts would be less than significant.

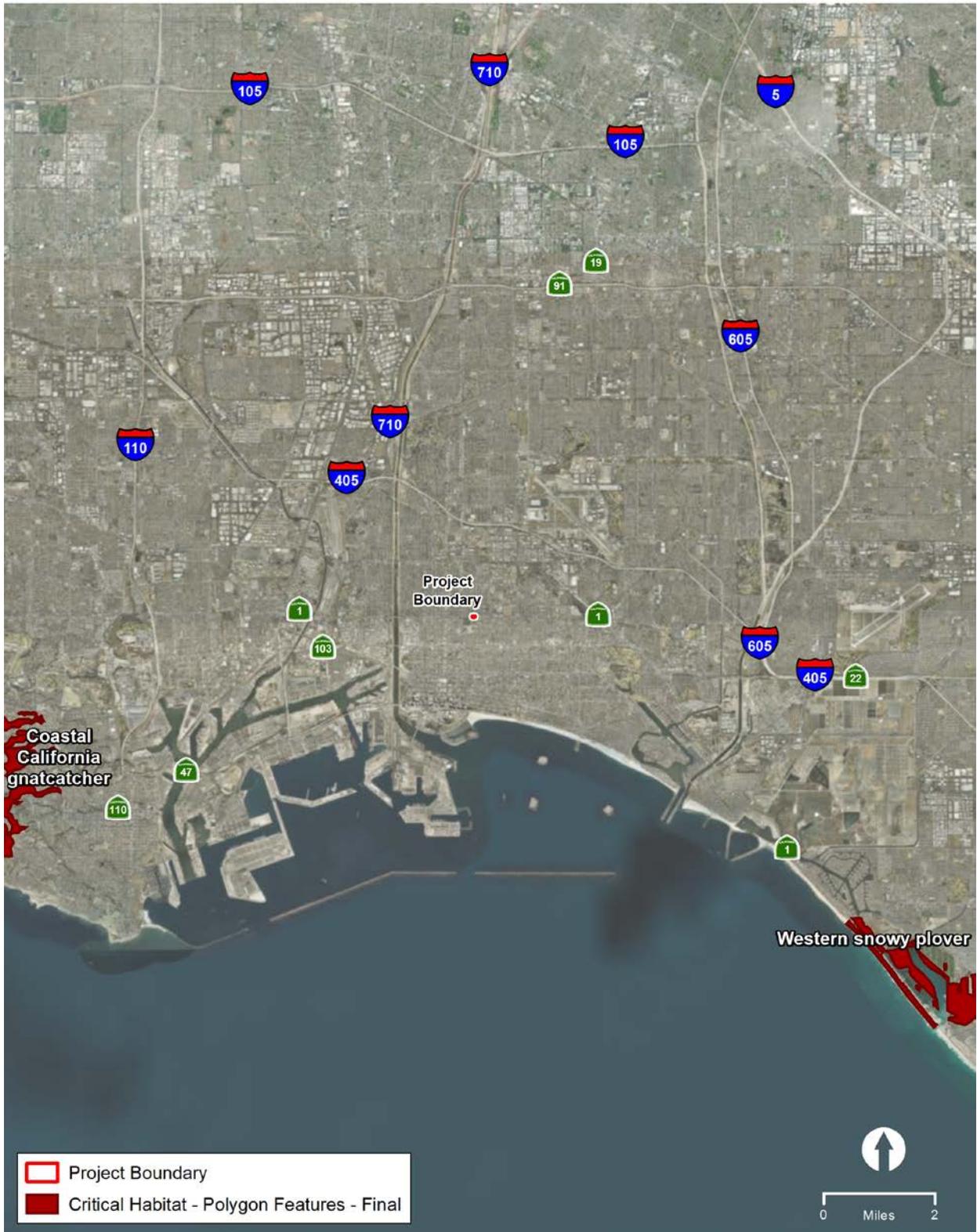
Figure 1 shows no critical habitat in the project area.

Are formal compliance steps or mitigation required?

Yes

No

Figure 1. Endangered Species Act Map



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Attachment 7. Explosive and Flammable Facilities Worksheet

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Explosive and Flammable Hazards (CEST and EA)

General requirements	Legislation	Regulation
HUD-assisted projects must meet Acceptable Separation Distance (ASD) requirements to protect them from explosive and flammable hazards.	N/A	24 CFR Part 51 Subpart C
Reference		
https://www.hudexchange.info/environmental-review/explosive-and-flammable-facilities		

1. Does the proposed HUD-assisted project include a hazardous facility (a facility that mainly stores, handles or processes flammable or combustible chemicals such as bulk fuel storage facilities and refineries)?

No

→ Continue to Question 2.

Yes

Explain:

→ Continue to Question 5.

2. Does this project include any of the following activities: development, construction, rehabilitation that will increase residential densities, or conversion?

No

→ Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below.

Yes

→ Continue to Question 3.

3. Within 1 mile of the project site, are there any current or planned stationary aboveground storage containers:

- Of more than 100 gallon capacity, containing common liquid industrial fuels OR
- Of any capacity, containing hazardous liquids or gases that are not common liquid industrial fuels?

No

→ Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide all documents used to make your determination.

Yes

→ Continue to Question 4.

4. Is the Separation Distance from the project acceptable based on standards in the Regulation?

Please visit HUD's website for information on calculating Acceptable Separation Distance.

Yes

→ Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide map(s) showing the location of the project site relative to any tanks and your separation distance calculations. If the map identifies more than one tank, please identify the tank you have chosen as the "assessed tank."

No

→ Provide map(s) showing the location of the project site relative to any tanks and your separation distance calculations. If the map identifies more than one tank, please identify the tank you have chosen as the "assessed tank." Continue to Question 6.

5. Is the hazardous facility located at an acceptable separation distance from residences and any other facility or area where people may congregate or be present?

Please visit HUD's website for information on calculating Acceptable Separation Distance.

Yes

→ Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide map(s) showing the location of the project site relative to residences and any other facility or area where people congregate or are present and your separation distance calculations.

No

→ Provide map(s) showing the location of the project site relative to residences and any other facility or area where people congregate or are present and your separation distance calculations. Continue to Question 6.

6. For the project to be brought into compliance with this section, all adverse impacts must be mitigated. Explain in detail the exact measures that must be implemented to make the Separation Distance acceptable, including the timeline for implementation. If negative effects cannot be mitigated, cancel the project at this location.

Note that only licensed professional engineers should design and implement blast barriers. If a barrier will be used or the project will be modified to compensate for an

unacceptable separation distance, provide approval from a licensed professional engineer.

Worksheet Summary

Compliance Determination

Provide a clear description of your determination and a synopsis of the information that it was based on, such as:

- Map panel numbers and dates
- Names of all consulted parties and relevant consultation dates
- Names of plans or reports and relevant page numbers
- Any additional requirements specific to your region

The Phase I ESAs prepared for the Mercy Housing Affordable Housing Project includes an EDR Radius Map Report with GeoCheck. The results of the report conclude there are no aboveground storage tanks within 1 mile of the project site. Additionally, during site reconnaissance no aboveground storage tanks were identified during the Phase I and Phase II site visits. The project would not involve explosive or flammable operations. Additionally, no known sites containing flammable, explosive, hazardous, or toxic materials were found to be of concern to future development of the site.

Are formal compliance steps or mitigation required?

- Yes
- No

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Attachment 8. Farmlands Protection Worksheet

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Farmlands Protection (CEST and EA)

General requirements	Legislation	Regulation
The Farmland Protection Policy Act (FPPA) discourages federal activities that would convert farmland to nonagricultural purposes.	Farmland Protection Policy Act of 1981 (7 U.S.C. 4201 et seq.)	7 CFR Part 658
Reference		
https://www.hudexchange.info/environmental-review/farmlands-protection		

1. Does your project include any activities, including new construction, acquisition of undeveloped land or conversion, that could convert agricultural land to a non-agricultural use?

Yes → *Continue to Question 2.*

No

Explain how you determined that agricultural land would not be converted:

The project exists in a highly urbanized environment and historic land uses included residential uses, a gas station, and automotive repair shop. The Farmland Mapping and Monitoring Program was consulted to confirm no agriculture or farmland is zoned in the area.

→ *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide any documentation supporting your determination.*

2. Does “important farmland,” including prime farmland, unique farmland, or farmland of statewide or local importance regulated under the Farmland Protection Policy Act, occur on the project site?

You may use the links below to determine important farmland occurs on the project site:

- Utilize USDA Natural Resources Conservation Service’s (NRCS) Web Soil Survey <http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>
- Check with your city or county’s planning department and ask them to document if the project is on land regulated by the FPPA (zoning important farmland as non-agricultural does not exempt it from FPPA requirements)
- Contact NRCS at the local USDA service center <http://offices.sc.egov.usda.gov/locator/app?agency=nrcs> or your NRCS state soil scientist http://soils.usda.gov/contact/state_offices/ for assistance

No → *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide any documents used to make your determination.*

Yes → *Continue to Question 3.*

3. Consider alternatives to completing the project on important farmland and means of avoiding impacts to important farmland.

- Complete form **AD-1006**, "Farmland Conversion Impact Rating" http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1045394.pdf and contact the state soil scientist before sending it to the local NRCS District Conservationist.

(NOTE: for corridor type projects, use instead form **NRCS-CPA-106**, "Farmland Conversion Impact Rating for Corridor Type Projects: http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1045395.pdf.)

- Work with NRCS to minimize the impact of the project on the protected farmland. When you have finished with your analysis, return a copy of form AD-1006 (or form NRCS-CPA-106 if applicable) to the USDA-NRCS State Soil Scientist or his/her designee informing them of your determination.

Document your conclusion:

- Project will proceed with mitigation.

Explain in detail the proposed measures that must be implemented to mitigate for the impact or effect, including the timeline for implementation.

→ *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide form AD-1006 and all other documents used to make your determination.*

- Project will proceed without mitigation.

Explain why mitigation will not be made here:

→ *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide form AD-1006 and all other documents used to make your determination.*

Worksheet Summary

Compliance Determination

Provide a clear description of your determination and a synopsis of the information that it was based on, such as:

- Map panel numbers and dates
- Names of all consulted parties and relevant consultation dates
- Names of plans or reports and relevant page numbers
- Any additional requirements specific to your region

The project site is not utilized for agriculture production. No farmland is present that would be converted. The project site is not zoned for agriculture and is not under a Williamson Act contract.

Are formal compliance steps or mitigation required?

Yes

No

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Attachment 9. Floodplain Management Worksheet

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Floodplain Management (CEST and EA)

General Requirements	Legislation	Regulation
Executive Order 11988, Floodplain Management, requires Federal activities to avoid impacts to floodplains and to avoid direct and indirect support of floodplain development to the extent practicable.	Executive Order 11988	24 CFR 55
Reference		
https://www.hudexchange.info/environmental-review/floodplain-management		

1. Does [24 CFR 55.12\(c\)](#) exempt this project from compliance with HUD's floodplain management regulations in Part 55?

Yes

Provide the applicable citation at 24 CFR 55.12(c) here. If project is exempt under 55.12(c)(7) or (8), provide supporting documentation.

→ *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below.*

No → *Continue to Question 2.*

2. **Provide a FEMA/FIRM or ABFE map showing the site.**

The Federal Emergency Management Agency (FEMA) designates floodplains. The FEMA Map Service Center provides this information in the form of FEMA Flood Insurance Rate Maps (FIRMs) or Advisory Base Flood Elevations (ABFEs). For projects in areas not mapped by FEMA, use the best available information to determine floodplain information. Include documentation, including a discussion of why this is the best available information for the site.

Does your project occur in a floodplain?

No → *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below.*

Yes

Select the applicable floodplain using the FEMA map or the best available information:

Floodway → *Continue to Question 3, Floodways*

- Coastal High Hazard Area (V Zone) → *Continue to Question 4, Coastal High Hazard Areas*
- 500-year floodplain (B Zone or shaded X Zone) → *Continue to Question 5, 500-year Floodplains*
- 100-year floodplain (A Zone) → *The 8-Step Process is required. Continue to Question 6, 8-Step Process*

3. **Floodways**

Is this a functionally dependent use?

- Yes

The 8-Step Process is required. Work with your HUD FEO to determine a way to satisfactorily continue with this project. Provide a completed 8-Step Process, including the early public notice and the final notice.

→ *Continue to Question 6, 8-Step Process*

- No

Federal assistance may not be used at this location unless a 55.12(c) exception applies. You must either choose an alternate site or cancel the project at this location.

4. **Coastal High Hazard Area**

Is this a critical action?

- Yes

Critical actions are prohibited in coastal high hazard areas. Federal assistance may not be used at this location. Unless the action is excepted at 24 CFR 55.12(c), you must either choose an alternate site or cancel the project.

- No

Does this action include construction that is not a functionally dependent use, existing construction (including improvements), or reconstruction following destruction caused by a disaster?

- Yes, there is new construction.

New construction is prohibited in V Zones ((24 CFR 55.1(c)(3)).

- No, this action concerns only a functionally dependent use, existing construction(including improvements), or reconstruction following destruction caused by a disaster.

This construction must have met FEMA elevation and construction standards for a coastal high hazard area or other standards applicable at the time of construction.

→ Continue to Question 6, 8-Step Process

5. 500-year Floodplain

Is this a critical action?

No → Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below.

Yes → Continue to Question 6, 8-Step Process

6. 8-Step Process.

Does the 8-Step Process apply? Select one of the following options:

8-Step Process applies.

Provide a completed 8-Step Process, including the early public notice and the final notice.

→ Continue to Question 7, Mitigation

5-Step Process is applicable per 55.12(a)(1-3).

Provide documentation of 5-Step Process.

Select the applicable citation:

55.12(a)(1) HUD actions involving the disposition of HUD-acquired multifamily housing projects or “bulk sales” of HUD-acquired one- to four-family properties in communities that are in the Regular Program of the National Flood Insurance Program (NFIP) and in good standing (i.e., not suspended from program eligibility or placed on probation under 44 CFR 59.24).

55.12(a)(2) HUD's actions under the National Housing Act (12 U.S.C. 1701) for the purchase or refinancing of existing multifamily housing projects, hospitals, nursing homes, assisted living facilities, board and care facilities, and intermediate care facilities, in communities that are in good standing under the NFIP.

55.12(a)(3) HUD's or the recipient's actions under any HUD program involving the repair, rehabilitation, modernization, weatherization, or improvement of existing multifamily housing projects, hospitals, nursing homes, assisted living facilities, board and care facilities, intermediate care facilities, and one- to four-family properties, in communities that are in the Regular Program of the National Flood Insurance Program (NFIP) and are in good standing, provided that the number of units is not increased more than 20 percent, the action does not involve a conversion from nonresidential to residential land use, the action does not meet the thresholds for “substantial improvement” under § 55.2(b)(10), and the footprint of the structure and paved areas is not significantly increased.

55.12(a)(4) HUD's (or the recipient's) actions under any HUD program involving the repair, rehabilitation, modernization, weatherization, or improvement of existing nonresidential buildings and structures, in communities that are in the

Regular Program of the NFIP and are in good standing, provided that the action does not meet the thresholds for “substantial improvement” under § 55.2(b)(10) and that the footprint of the structure and paved areas is not significantly increased.

→ *Continue to Question 7, Mitigation*

- 8-Step Process is inapplicable per 55.12(b)(1-4).

Select the applicable citation:

- 55.12(b)(1) HUD's mortgage insurance actions and other financial assistance for the purchasing, mortgaging or refinancing of existing one- to four-family properties in communities that are in the Regular Program of the National Flood Insurance Program (NFIP) and in good standing (i.e., not suspended from program eligibility or placed on probation under 44 CFR 59.24), where the action is not a critical action and the property is not located in a floodway or coastal high hazard area.
- 55.12(b)(2) Financial assistance for minor repairs or improvements on one- to four-family properties that do not meet the thresholds for “substantial improvement” under § 55.2(b)(10)
- 55.12(b)(3) HUD actions involving the disposition of individual HUD-acquired, one- to four-family properties.
- 55.12(b)(4) HUD guarantees under the Loan Guarantee Recovery Fund Program (24 CFR part 573) of loans that refinance existing loans and mortgages, where any new construction or rehabilitation financed by the existing loan or mortgage has been completed prior to the filing of an application under the program, and the refinancing will not allow further construction or rehabilitation, nor result in any physical impacts or changes except for routine maintenance.
- 55.12(b)(5) The approval of financial assistance to lease an existing structure located within the floodplain, but only if—
 - (i) The structure is located outside the floodway or Coastal High Hazard Area, and is in a community that is in the Regular Program of the NFIP and in good standing (i.e., not suspended from program eligibility or placed on probation under 44 CFR 59.24);
 - (ii) The project is not a critical action; and
 - (iii) The entire structure is or will be fully insured or insured to the maximum under the NFIP for at least the term of the lease.

→ *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below.*

7. Mitigation

For the project to be brought into compliance with this section, all adverse impacts must be mitigated. Explain in detail the exact measures that must be implemented to mitigate for the impact or effect, including the timeline for implementation.

Which of the following mitigation/minimization measures have been identified for this project in the 8-Step or 5-Step Process? Select all that apply.

- Permeable surfaces
- Natural landscape enhancements that maintain or restore natural hydrology
- Planting or restoring native plant species
- Bioswales
- Evapotranspiration
- Stormwater capture and reuse
- Green or vegetative roofs with drainage provisions
- Natural Resources Conservation Service conservation easements or similar easements
- Floodproofing of structures
- Elevating structures including freeboarding above the required base flood elevations
- Other

→ *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below.*

Worksheet Summary

Compliance Determination

Provide a clear description of your determination and a synopsis of the information that it was based on, such as:

- Map panel numbers and dates
- Names of all consulted parties and relevant consultation dates
- Names of plans or reports and relevant page numbers
- Any additional requirements specific to your region

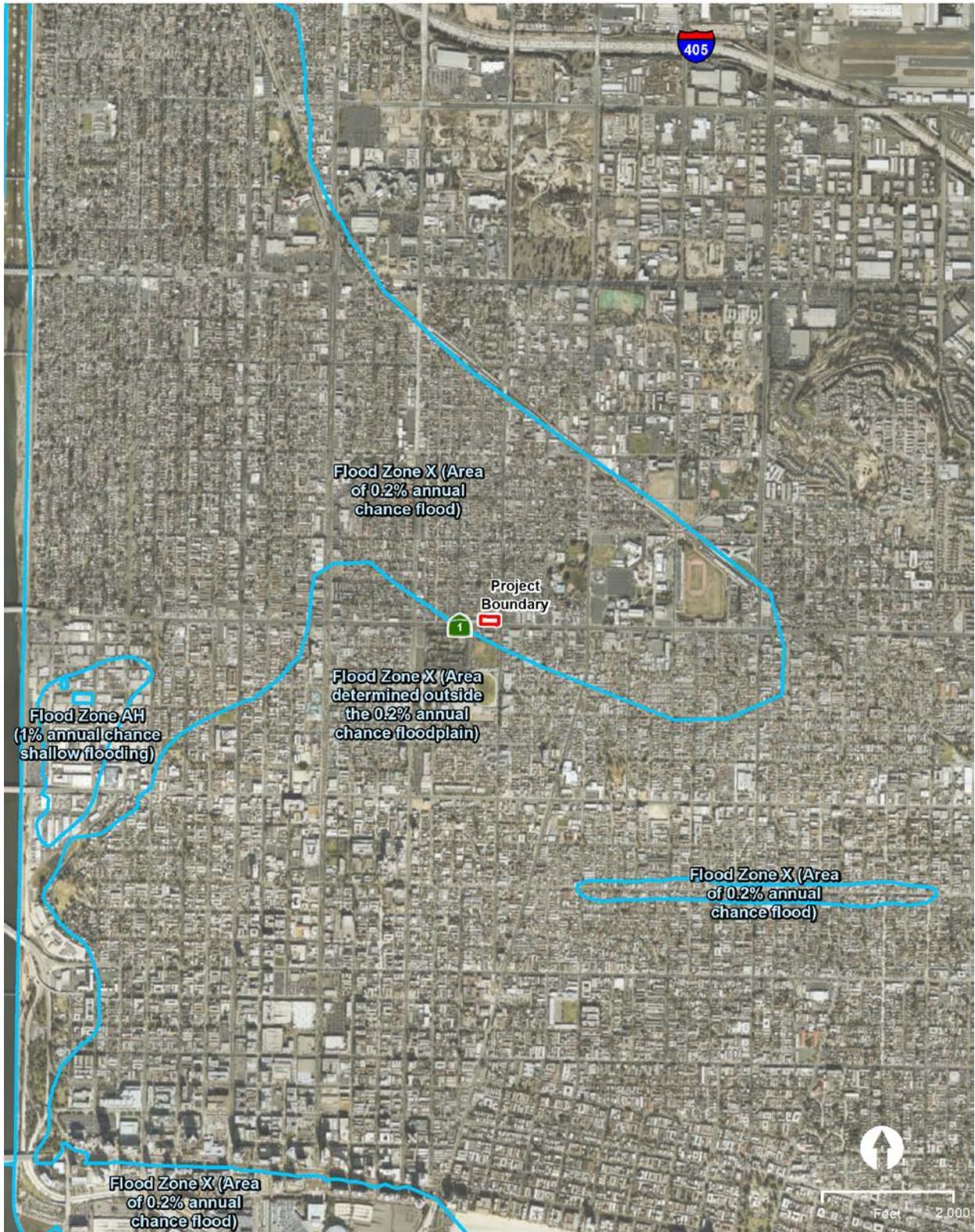
The project site is not located in an existing floodplain. According to the Federal Emergency Management Agency (FEMA), the project site is in an area with reduced risk due to levee. Therefore, no impacts related to floodplain hazards or management would occur. See Figure 1 below FEMA Flood Insurance Rate Map panel 06037C1970F.

Are formal compliance steps or mitigation required?

Yes

No

Figure 1. Flood Zone Map



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Attachment 10. Historic Resources Worksheet

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Historic Preservation (CEST and EA)

General requirements	Legislation	Regulation
Regulations under Section 106 of the National Historic Preservation Act (NHPA) require a consultative process to identify historic properties, assess project impacts on them, and avoid, minimize, or mitigate adverse effects	Section 106 of the National Historic Preservation Act (16 U.S.C. 470f)	36 CFR 800 "Protection of Historic Properties"
References		
https://www.hudexchange.info/environmental-review/historic-preservation		

Threshold

Is Section 106 review required for your project?

- No, because the project consists solely of activities listed as exempt in a Programmatic Agreement (PA). (See the [PA Database](#) to find applicable PAs.)

Either provide the PA itself or a link to it here. Mark the applicable exemptions or include the text here:

→ *Continue to the Worksheet Summary.*

- No, because the project consists solely of activities included in a No Potential to Cause Effects memo or other determination [36 CFR 800.3(a)(1)].

Either provide the memo itself or a link to it here. Explain and justify the other determination here:

According to the records available from the South Coast Central Information Center, there are no resource within the project area, including build environment resources or archaeological resources.

→ *Continue to the Worksheet Summary.*

- Yes, because the project includes activities with potential to cause effects (direct or indirect). → *Continue to Step 1.*

The Section 106 Process

After determining the need to do a Section 106 review, initiate consultation with regulatory and other interested parties, identify and evaluate historic properties, assess effects of the project on properties listed on or eligible for the National Register of Historic Places, and resolve any adverse effects through project design modifications or mitigation.

Note that consultation continues through all phases of the review.

Step 1: Initiate consultation

Step 2: Identify and evaluate historic properties

Step 3: Assess effects of the project on historic properties

Step 4: Resolve any adverse effects

Step 1 - Initiate Consultation

The following parties are entitled to participate in Section 106 reviews: Advisory Council on Historic Preservation; State Historic Preservation Officers (SHPOs); federally recognized Indian tribes/Tribal Historic Preservation Officers (THPOs); Native Hawaiian Organizations (NHOs); local governments; and project grantees. The general public and individuals and organizations with a demonstrated interest in a project may participate as consulting parties at the discretion of the RE or HUD official. Participation varies with the nature and scope of a project. Refer to HUD's website for guidance on consultation, including the required timeframes for response. Consultation should begin early to enable full consideration of preservation options.

Use the [When To Consult With Tribes checklist](#) within [Notice CPD-12-006: Process for Tribal Consultation](#) to determine if you should invite tribes to consult on a particular project. Use the [Tribal Directory Assessment Tool \(TDAT\)](#) to identify tribes that may have an interest in the area where the project is located. Note that consultants may not initiate consultation with Tribes.

Select all consulting parties below (check all that apply):

- State Historic Preservation Officer (SHPO)
- Advisory Council on Historic Preservation
- Indian Tribes, including Tribal Historic Preservation Officers (THPOs) or Native
- Hawaiian Organizations (NHOs)

List all tribes that were consulted here and their status of consultation:

- Other Consulting Parties

List all consulting parties that were consulted here and their status of consultation:

Describe the process of selecting consulting parties and initiating consultation here:

Provide all correspondence, notices, and notes (including comments and objections received) and continue to Step 2.

Step 2 - Identify and Evaluate Historic Properties

Define the Area of Potential Effect (APE), either by entering the address(es) or providing a map depicting the APE. Attach an additional page if necessary.

Gather information about known historic properties in the APE. Historic buildings, districts and archeological sites may have been identified in local, state, and national surveys and registers, local historic districts, municipal plans, town and county histories, and local history websites. If not already listed on the National Register of Historic Places, identified properties are then evaluated to see if they are eligible for the National Register.

Refer to HUD's website for guidance on identifying and evaluating historic properties.

In the space below, list historic properties identified and evaluated in the APE.

Every historic property that may be affected by the project should be listed. For each historic property or district, include the National Register status, whether the SHPO has concurred with the finding, and whether information on the site is sensitive. Attach an additional page if necessary.

Provide the documentation (survey forms, Register nominations, concurrence(s) and/or objection(s), notes, and photos) that justify your National Register Status determination.

Was a survey of historic buildings and/or archeological sites done as part of the project?

If the APE contains previously unsurveyed buildings or structures over 50 years old, or there is a likely presence of previously unsurveyed archeological sites, a survey may be necessary. For Archeological surveys, refer to HP Fact Sheet #6, [Guidance on Archeological Investigations in HUD Projects](#).

- Yes → *Provide survey(s) and report(s) and continue to Step 3.*

Additional notes:

- No → *Continue to Step 3.*

Step 3 - Assess Effects of the Project on Historic Properties

Only properties that are listed on or eligible for the National Register of Historic Places receive further consideration under Section 106. Assess the effect(s) of the project by applying the Criteria of Adverse Effect. ([36 CFR 800.5](#)) Consider direct and indirect effects as applicable as per HUD guidance.

Choose one of the findings below - No Historic Properties Affected, No Adverse Effect, or Adverse Effect; and seek concurrence from consulting parties.

- No Historic Properties Affected

Document reason for finding:

- No historic properties present. → *Provide concurrence(s) or objection(s) and continue to the Worksheet Summary.*
- Historic properties present, but project will have no effect upon them. → *Provide concurrence(s) or objection(s) and continue to the Worksheet Summary.*

If consulting parties concur or fail to respond to user's request for concurrence, project is in compliance with this section. No further review is required. If consulting parties object, refer to ([36 CFR 800.4\(d\)\(1\)](#)) and consult further to try to resolve objection(s).

No Adverse Effect

Document reason for finding:

Does the No Adverse Effect finding contain conditions?

Yes

Check all that apply: (check all that apply)

- Avoidance
- Modification of project
- Other

Describe conditions here:

→ *Monitor satisfactory implementation of conditions. Provide concurrence(s) or objection(s) and continue to the Worksheet Summary.*

No → *Provide concurrence(s) or objection(s) and continue to the Worksheet Summary.*

If consulting parties concur or fail to respond to user's request for concurrence, project is in compliance with this section. No further review is required. If consulting parties object, refer to ([36 CFR 800.5\(c\)\(2\)](#)) and consult further to try to resolve objection(s).

Adverse Effect

Document reason for finding:

Copy and paste applicable Criteria into text box with summary and justification.

Criteria of Adverse Effect: [36 CFR 800.5](#)]

Notify the Advisory Council on Historic Preservation of the Adverse Effect and provide the documentation outlined in [36 CFR 800.11\(e\)](#). The Council has 15 days to decide whether to enter the consultation (Not required for projects covered by a Programmatic Agreement).

→ *Continue to Step 4.*

Step 4 - Resolve Adverse Effects

Work with consulting parties to try to avoid, minimize or mitigate adverse effects. Refer to HUD guidance and [36 CFR 800.6 and 800.7](#).

Were the Adverse Effects resolved?

Yes

Describe the resolution of Adverse Effects, including consultation efforts and participation by the Advisory Council on Historic Preservation:

For the project to be brought into compliance with this section, all adverse impacts must be mitigated. Explain in detail the exact measures that must be implemented to mitigate for the impact or effect, including the timeline for implementation.

→ *Provide signed Memorandum of Agreement (MOA) or Standard Mitigation Measures Agreement (SMMA). Continue to the Worksheet Summary.*

No

The project must be cancelled unless the “Head of Agency” approves it. Either provide approval from the “Head of Agency” or cancel the project at this location.

Describe the failure to resolve Adverse Effects, including consultation efforts and participation by the Advisory Council on Historic Preservation and “Head of the Agency”:

Explain in detail the exact conditions or measures that must be implemented to mitigate for the impact or effect, including the timeline for implementation.

→ *Provide correspondence, comments, documentation of decision, and “Head of Agency” approval. Continue to the Worksheet Summary.*

Worksheet Summary

Compliance Determination

Provide a clear description of your determination and a synopsis of the information that it was based on, such as:

- Map panel numbers and dates
- Names of all consulted parties and relevant consultation dates
- Names of plans or reports and relevant page numbers
- Any additional requirements specific to your region

On March 27, 2020, the South Central Coastal Information Center was contacted to perform a record search of all previously recorded cultural resources (including archaeological sites) within ½ mile of the Direct Area of Potential Effect (APE). No cultural resources, built environment resources, or archeological resources have been identified within the Indirect APE, as shown in Figure 1.

A review of the records available from the South Central Coastal Information Center identified 17 previously recorded built environment resources recorded within a 0.5 mile search radius of the project area. These include 15 historic residential properties and 2 historic commercial buildings. None of the resources are within the project area. The closest recorded resource is P-19-187307, located approximately 330 feet to the northeast. No archaeological sites have been recorded within the search area.

The project site is situated in an area (central Long Beach) that has been heavily developed and built-up for both commercial and residential purposes for the last 70+ years based on historic aerial imagery. Additionally, various portions of the project site itself have been developed since the 1920s with commercial businesses and residences. This has resulted in considerable past ground disturbance in the Direct APE, which would have resulted in the destruction or loss of integrity of any potential buried cultural resource. Therefore, there is low to no potential for encountering intact buried cultural resources.

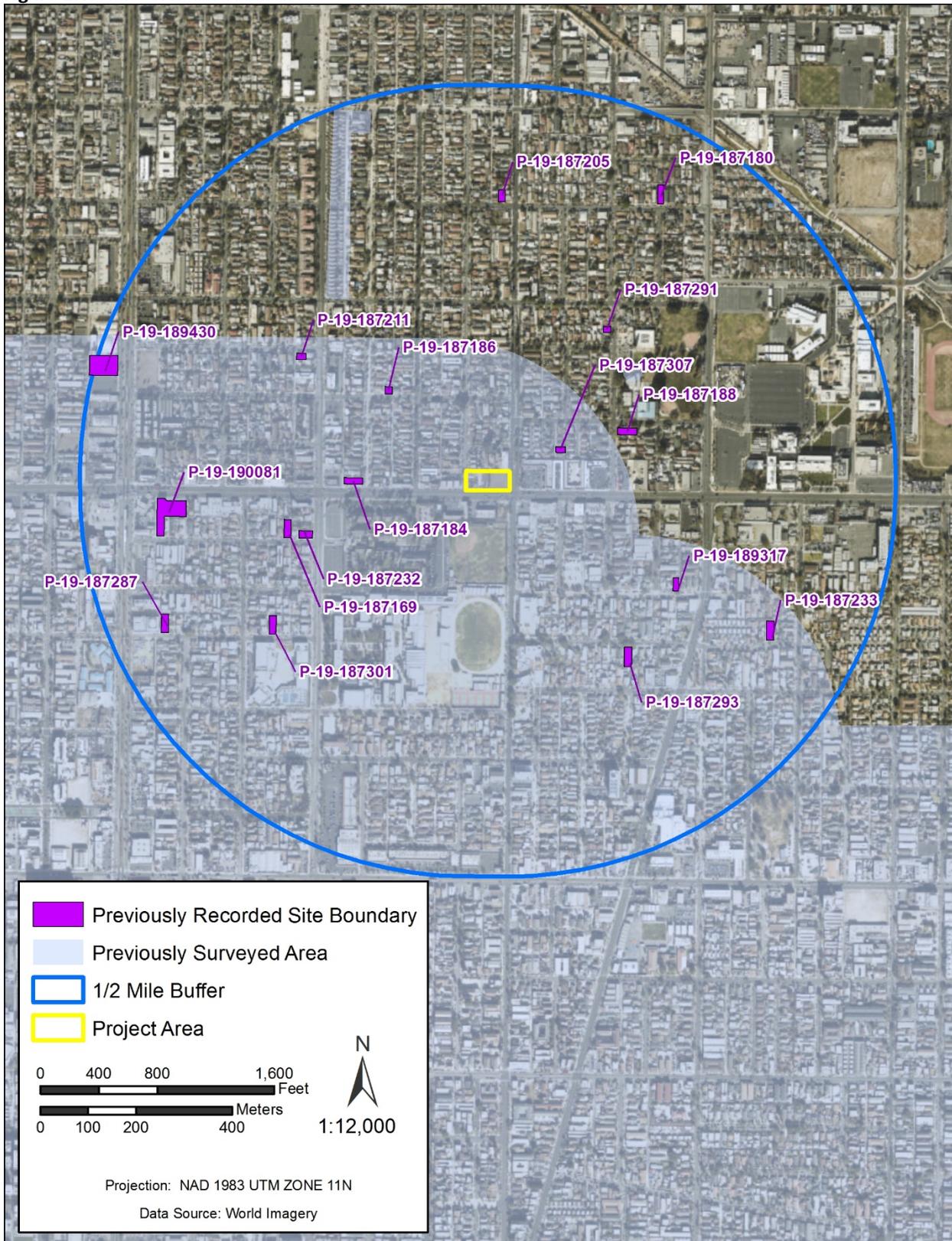
Due to the lack of identified historic properties within the APE, as well as past land use activities and ground disturbance within the Direct APE, the proposed project is expected to have no effect on historic properties. Therefore, the City recommends a finding of No Historic Properties Affected.

Are formal compliance steps or mitigation required?

Yes

No

Figure 1. Results of Record Search



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Attachment 11. Noise Abatement and Control Worksheet

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Noise (EA Level Reviews)

General requirements	Legislation	Regulation
HUD's noise regulations protect residential properties from excessive noise exposure. HUD encourages mitigation as appropriate.	Noise Control Act of 1972 General Services Administration Federal Management Circular 75-2: "Compatible Land Uses at Federal Airfields"	Title 24 CFR 51 Subpart B
References		
https://www.hudexchange.info/programs/environmental-review/noise-abatement-and-control		

1. What activities does your project involve? Check all that apply:

- New construction for residential use

NOTE: HUD assistance to new construction projects is generally prohibited if they are located in an Unacceptable zone, and HUD discourages assistance for new construction projects in Normally Unacceptable zones. See 24 CFR 51.101(a)(3) for further details.

→ Continue to Question 2.

- Rehabilitation of an existing residential property

NOTE: For major or substantial rehabilitation in Normally Unacceptable zones, HUD encourages mitigation to reduce levels to acceptable compliance standards. For major rehabilitation in Unacceptable zones, HUD strongly encourages mitigation to reduce levels to acceptable compliance standards. See 24 CFR 51 Subpart B for further details.

→ Continue to Question 2.

- A research demonstration project which does not result in new construction or reconstruction, interstate, land sales registration, or any timely emergency assistance under disaster assistance provisions or appropriations which are provided to save lives, protect property, protect public health and safety, remove debris and wreckage, or assistance that has the effect of restoring facilities substantially as they existed prior to the disaster

→ Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below.

- None of the above

→ Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below.

2. Complete the Preliminary Screening to identify potential noise generators in the vicinity (1000' from a major road, 3000' from a railroad, or 15 miles from an airport).

Indicate the findings of the Preliminary Screening below:

There are no noise generators found within the threshold distances above.
→ *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide a map showing the location of the project relative to any noise generators.*

Noise generators were found within the threshold distances.
→ *Continue to Question 3.*

3. Complete the Noise Assessment Guidelines to quantify the noise exposure. Indicate the findings of the Noise Assessment below:

Acceptable: (65 decibels or less; the ceiling may be shifted to 70 decibels in circumstances described in §24 CFR 51.105(a))

Indicate noise level here:

→ *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide noise analysis, including noise level and data used to complete the analysis.*

Normally Unacceptable: (Above 65 decibels but not exceeding 75 decibels; the floor may be shifted to 70 decibels in circumstances described in 24 CFR 51.105(a))

Indicate noise level here:

73

If project is rehabilitation:

→ *Continue to Question 4. Provide noise analysis, including noise level and data used to complete the analysis.*

If project is new construction:

Is the project in a largely undeveloped area¹?

No

→ *Continue to Question 4. Provide noise analysis, including noise level and data used to complete the analysis, and any other relevant information.*

¹ A largely undeveloped area means the area within 2 miles of the project site is less than 50 percent developed with urban uses and does not have water and sewer capacity to serve the project.

Yes

→ Your project requires completion of an Environmental Impact Statement (EIS) pursuant to 51.104(b)(1)(i). Elevate this review to an EIS-level review.

Unacceptable: (Above 75 decibels)

Indicate noise level here:

If project is rehabilitation:

HUD strongly encourages conversion of noise-exposed sites to land uses compatible with high noise levels. Consider converting this property to a non-residential use compatible with high noise levels.

→ Continue to Question 4. Provide noise analysis, including noise level and data used to complete the analysis, and any other relevant information.

If project is new construction:

Your project requires completion of an Environmental Impact Statement (EIS) pursuant to 51.104(b)(1)(i). You may either complete an EIS or provide a waiver signed by the appropriate authority. Indicate your choice:

Convert to an EIS

→ Provide noise analysis, including noise level and data used to complete the analysis.

Continue to Question 4.

Provide waiver

→ Provide an Environmental Impact Statement waiver from the Certifying Officer or the Assistant Secretary for Community Planning and Development per 24 CFR 51.104(b)(2) and noise analysis, including noise level and data used to complete the analysis.

Continue to Question 4.

- 4. HUD strongly encourages mitigation be used to eliminate adverse noise impacts. Explain in detail the exact measures that must be implemented to mitigate for the impact or effect, including the timeline for implementation. This information will be automatically included in the Mitigation summary for the environmental review.**

Mitigation as follows will be implemented:

Mitigation Measure NOI-1: Noise Reduction

Windows and doors with a Sound Transmission Class (STC) of 32 or higher shall be installed in the residential uses facing Pacific Coast Highway.

→ Provide drawings, specifications, and other materials as needed to describe the project's noise mitigation measures. Continue to the Worksheet Summary.

No mitigation is necessary.

Explain why mitigation will not be made here:

→ Continue to the Worksheet Summary.

Worksheet Summary

Compliance Determination

Provide a clear description of your determination and a synopsis of the information that it was based on, such as:

- Map panel numbers and dates
- Names of all consulted parties and relevant consultation dates
- Names of plans or reports and relevant page numbers
- Any additional requirements specific to your region

Based on the preliminary site plan, the proposed residential units will be constructed within 50 feet of the centerline of Pacific Coast Highway. At this distance the proposed residential units would be exposed to noise levels of up to 73 dBA Ldn. Standard building construction in warm climates provides 24 dBA of exterior to interior noise attenuation when windows are closed and 12 dBA of exterior to interior noise attenuation when windows are open (Protective Noise Levels, Environmental Protection Agency [EPA] 550/9 79 100, November 1978). All new construction residential units require some form of mechanical ventilation to ensure that proper indoor air quality is maintained even with all windows and doors closed. Therefore, with windows closed, the new residential units would be exposed to interior noise levels exceeding the 45 dBA Ldn standard ($73 - 24 = 49$). Therefore, the following condition is recommended to reduce impacts:

- Windows and doors with a Sound Transmission Class (STC) of 32 or higher shall be installed in the residential uses located within 125 feet of Pacific Coast Highway.

Are formal compliance steps or mitigation required?

Yes

No

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HUD DNL Calculator

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DNL Calculator

The Day/Night Noise Level Calculator is an electronic assessment tool that calculates the Day/Night Noise Level (DNL) from roadway and railway traffic. For more information on using the DNL calculator, view the [Day/Night Noise Level Calculator Electronic Assessment Tool Overview \(/programs/environmental-review/daynight-noise-level-electronic-assessment-tool/\)](/programs/environmental-review/daynight-noise-level-electronic-assessment-tool/).

Guidelines

- To display the Road and/or Rail DNL calculator(s), click on the "Add Road Source" and/or "Add Rail Source" button(s) below.
- All Road and Rail input values must be positive non-decimal numbers.
- All Road and/or Rail DNL value(s) must be calculated separately before calculating the Site DNL.
- All checkboxes that apply must be checked for vehicles and trains in the tables' headers.
- **Note #1:** Tooltips, containing field specific information, have been added in this tool and may be accessed by hovering over all the respective data fields (site identification, roadway and railway assessment, DNL calculation results, roadway and railway input variables) with the mouse.
- **Note #2:** DNL Calculator assumes roadway data is always entered.

DNL Calculator

Site ID	MERCY HOUSING
Record Date	07/13/2020
User's Name	Keith Lay, HDR

Road # 1 Name:	Pacific Coast Highway
----------------	------------------------------

Road #1

Vehicle Type	Cars <input checked="" type="checkbox"/>	Medium Trucks <input checked="" type="checkbox"/>	Heavy Trucks <input checked="" type="checkbox"/>
Effective Distance	50	50	50
Distance to Stop Sign			
Average Speed	35	35	35
Average Daily Trips (ADT)	33928	665	456
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	69	62	69
Calculate Road #1 DNL	73	Reset	

Road # 2 Name:

Road #2

Vehicle Type	Cars <input checked="" type="checkbox"/>	Medium Trucks <input checked="" type="checkbox"/>	Heavy Trucks <input checked="" type="checkbox"/>
Effective Distance	45	45	45
Distance to Stop Sign			
Average Speed	30	30	30
Average Daily Trips (ADT)	5324	105	72
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	60	53	62
Calculate Road #2 DNL	65	Reset	

Add Road SourceAdd Rail Source

Airport Noise Level

Loud Impulse Sounds? Yes No

Combined DNL for all Road and Rail sources

Combined DNL including Airport

Site DNL with Loud Impulse Sound

CalculateReset

Mitigation Options

If your site DNL is in Excess of 65 decibels, your options are:

- **No Action Alternative:** Cancel the project at this location
- **Other Reasonable Alternatives:** Choose an alternate site
- **Mitigation**
 - Contact your Field or Regional Environmental Officer (</programs/environmental-review/hud-environmental-staff-contacts/>)
 - Increase mitigation in the building walls (only effective if no outdoor, noise sensitive areas)
 - Reconfigure the site plan to increase the distance between the noise source and noise-sensitive uses
 - Incorporate natural or man-made barriers. See *The Noise Guidebook* (</resource/313/hud-noise-guidebook/>)
 - Construct noise barrier. See the **Barrier Performance Module** (</programs/environmental-review/bpm-calculator/>)

Tools and Guidance

Day/Night Noise Level Assessment Tool User Guide (</resource/3822/day-night-noise-level-assessment-tool-user-guide/>)

Day/Night Noise Level Assessment Tool Flowcharts (</resource/3823/day-night-noise-level-assessment-tool-flowcharts/>)

Attachment 12. Sole Source Aquifers Worksheet

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Sole Source Aquifers (CEST and EA)

General requirements	Legislation	Regulation
The Safe Drinking Water Act of 1974 protects drinking water systems which are the sole or principal drinking water source for an area and which, if contaminated, would create a significant hazard to public health.	Safe Drinking Water Act of 1974 (42 U.S.C. 201, 300f et seq., and 21 U.S.C. 349)	40 CFR Part 149
Reference		
https://www.hudexchange.info/environmental-review/sole-source-aquifers		

1. Does your project consist solely of acquisition, leasing, or rehabilitation of an existing building(s)?

- Yes → *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below.*
- No → *Continue to Question 2.*

2. Is the project located on a sole source aquifer (SSA)¹?

- No → *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide documentation used to make your determination, such as a map of your project (or jurisdiction, if appropriate) in relation to the nearest SSA and its source area.*
- Yes → *Continue to Question 3.*

3. Does your region have a memorandum of understanding (MOU) or other working agreement with EPA for HUD projects impacting a sole source aquifer?

Contact your Field or Regional Environmental Officer or visit the HUD webpage at the link above to determine if an MOU or agreement exists in your area.

- Yes → *Provide the MOU or agreement as part of your supporting documentation. Continue to Question 4.*
- No → *Continue to Question 5.*

4. Does your MOU or working agreement exclude your project from further review?

- Yes → *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide documentation used to make your determination and document where your project fits within the MOU or agreement.*

¹ A sole source aquifer is defined as an aquifer that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. This includes streamflow source areas, which are upstream areas of losing streams that flow into the recharge area.

No → *Continue to Question 5.*

5. Will the proposed project contaminate the aquifer and create a significant hazard to public health?

Consult with your Regional EPA Office. Your consultation request should include detailed information about your proposed project and its relationship to the aquifer and associated streamflow source area. EPA will also want to know about water, storm water and waste water at the proposed project. Follow your MOU or working agreement or contact your Regional EPA office for specific information you may need to provide. EPA may request additional information if impacts to the aquifer are questionable after this information is submitted for review.

No → *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide your correspondence with the EPA and all documents used to make your determination.*

Yes → *Work with EPA to develop mitigation measures. If mitigation measures are approved, attach correspondence with EPA and include the mitigation measures in your environmental review documents and project contracts. If EPA determines that the project continues to pose a significant risk to the aquifer, federal financial assistance must be denied. Continue to Question 6.*

6. In order to continue with the project, any threat must be mitigated, and all mitigation must be approved by the EPA. Explain in detail the proposed measures that can be implemented to mitigate for the impact or effect, including the timeline for implementation.

→ *Continue to the Worksheet Summary below. Provide documentation of the consultation (including the Managing Agency's concurrence) and any other documentation used to make your determination.*

Worksheet Summary

Compliance Determination

Provide a clear description of your determination and a synopsis of the information that it was based on, such as:

- Map panel numbers and dates
- Names of all consulted parties and relevant consultation dates
- Names of plans or reports and relevant page numbers
- Any additional requirements specific to your region

The project is not located on a sole source aquifer and is served by the Long Beach Water department. The nearest sole source aquifer is over 100 miles south near the Mexico border, east of San Diego, California.

Are formal compliance steps or mitigation required?

Yes

No

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Attachment 13. Wetlands Protection Worksheet

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Wetlands (CEST and EA)

General requirements	Legislation	Regulation
Executive Order 11990 discourages that direct or indirect support of new construction impacting wetlands wherever there is a practicable alternative. The Fish and Wildlife Service's National Wetlands Inventory can be used as a primary screening tool, but observed or known wetlands not indicated on NWI maps must also be processed. Off-site impacts that result in draining, impounding, or destroying wetlands must also be processed.	Executive Order 11990	24 CFR 55.20 can be used for general guidance regarding the 8 Step Process.
References		
https://www.hudexchange.info/environmental-review/wetlands-protection		

1. Does this project involve new construction as defined in Executive Order 11990, expansion of a building's footprint, or ground disturbance?

The term "new construction" shall include draining, dredging, channelizing, filling, diking, impounding, and related activities and any structures or facilities begun or authorized after the effective date of the Order.

No → *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below.*

Yes → *Continue to Question 2.*

2. Will the new construction or other ground disturbance impact an on- or off-site wetland?

The term "wetlands" means those areas that are inundated by surface or ground water with a frequency sufficient to support, and under normal circumstances does or would support, a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds. Wetlands under E.O. 11990 include isolated and non-jurisdictional wetlands.

No, a wetland will not be impacted in terms of E.O. 11990's definition of new construction.

→ *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide a map or any other relevant documentation to explain your determination.*

Yes, there is a wetland that be impacted in terms of E.O. 11990's definition of new construction.

→ You must determine that there are no practicable alternatives to wetlands development by completing the 8-Step Process.

Provide a completed 8-Step Process as well as all documents used to make your determination, including a map. Be sure to include the early public notice and the final notice with your documentation.

Continue to Question 3.

- 3. For the project to be brought into compliance with this section, all adverse impacts must be mitigated. Explain in detail the exact measures that must be implemented to mitigate for the impact or effect, including the timeline for implementation.**

Which of the following mitigation actions have been or will be taken? Select all that apply:

- Permeable surfaces
- Natural landscape enhancements that maintain or restore natural hydrology through infiltration
- Native plant species
- Bioswales
- Evapotranspiration
- Stormwater capture and reuse
- Green or vegetative roofs with drainage provisions
- Natural Resources Conservation Service conservation easements
- Compensatory mitigation

Worksheet Summary

Compliance Determination

Provide a clear description of your determination and a synopsis of the information that it was based on, such as:

- Map panel numbers and dates
- Names of all consulted parties and relevant consultation dates
- Names of plans or reports and relevant page numbers
- Any additional requirements specific to your region

The project exists in a highly urbanized area and does not propose any of the following: draining, dredging, channelizing, filling, diking, impounding, and related activities. According to the National Wetlands Inventory, there are no wetlands near the project site. See Figure 1 below.

Are formal compliance steps or mitigation required?

Yes

No

Figure 1. Wetlands Inventory Map



Attachment 14. Wild and Scenic River Worksheet

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Wild and Scenic Rivers (CEST and EA)

General requirements	Legislation	Regulation
The Wild and Scenic Rivers Act provides federal protection for certain free-flowing, wild, scenic and recreational rivers designated as components or potential components of the National Wild and Scenic Rivers System (NWSRS) from the effects of construction or development.	The Wild and Scenic Rivers Act (16 U.S.C. 1271-1287), particularly section 7(b) and (c) (16 U.S.C. 1278(b) and (c))	36 CFR Part 297
References		
https://www.hudexchange.info/environmental-review/wild-and-scenic-rivers		

1. Is your project within proximity of a NWSRS river as defined below?

Wild & Scenic Rivers: These rivers or river segments have been designated by Congress or by states (with the concurrence of the Secretary of the Interior) as wild, scenic, or recreational

Study Rivers: These rivers or river segments are being studied as a potential component of the Wild & Scenic River system.

Nationwide Rivers Inventory (NRI): The National Park Service has compiled and maintains the NRI, a register of river segments that potentially qualify as national wild, scenic, or recreational river areas

No

→ Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide documentation used to make your determination, such as a map identifying the project site and its surrounding area or a list of rivers in your region in the Screen Summary at the conclusion of this screen.

Yes, the project is in proximity of a Nationwide Rivers Inventory (NRI) River.

→ Continue to Question 2.

2. Could the project do *any* of the following?

- Have a direct and adverse effect within Wild and Scenic River Boundaries,
- Invade the area or unreasonably diminish the river outside Wild and Scenic River Boundaries, or
- Have an adverse effect on the natural, cultural, and/or recreational values of a NRI segment.

Consultation with the appropriate federal/state/local/tribal Managing Agency(s) is required, pursuant to Section 7 of the Act, to determine if the proposed project may have an adverse effect on a Wild & Scenic River or a Study River and, if so, to determine the appropriate avoidance or mitigation measures.

Note: Concurrence may be assumed if the Managing Agency does not respond within 30 days; however, you are still obligated to avoid or mitigate adverse effects on the rivers identified in the NWSRS

No, the Managing Agency has concurred that the proposed project will not alter, directly, or indirectly, any of the characteristics that qualifies or potentially qualifies the river for inclusion in the NWSRS.

→ *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide documentation of the consultation (including the Managing Agency's concurrence) and any other documentation used to make your determination.*

Yes, the Managing Agency was consulted and the proposed project may alter, directly, or indirectly, any of the characteristics that qualifies or potentially qualifies the river for inclusion in the NWSRS.

→ *Continue to Question 3.*

3. For the project to be brought into compliance with this section, all adverse impacts must be mitigated. Explain in detail the proposed measures that must be implemented to mitigate for the impact or effect, including the timeline for implementation.

→ *Continue to the Worksheet Summary below. Provide documentation of the consultation (including the Managing Agency's concurrence) and any other documentation used to make your determination.*

Worksheet Summary

Compliance Determination

Provide a clear description of your determination and a synopsis of the information that it was based on, such as:

- Map panel numbers and dates
- Names of all consulted parties and relevant consultation dates
- Names of plans or reports and relevant page numbers
- Any additional requirements specific to your region

The scenic rivers in California include:

- Amargosa River
- American River (Lower)
- American River (North Fork)
- Bautista Creek
- Big Sur River
- Black Butte River
- Cottonwood Creek
- Deep Creek
- Eel River
- Feather River
- Fuller Mill Creek
- Kern River
- Kings River
- Klamath River
- Merced River
- Owens River Headwaters
- Palm Canyon Creek
- Piru Creek
- San Jacinto River (North Fork)
- Sespe Creek
- Sisquoc River
- Surprise Canyon Creek
- Smith River
- Trinity River
- Tuolumne River
- Whitewater River

The project is not located on or near any of the above rivers.

Are formal compliance steps or mitigation required?

Yes

No

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Attachment 15. Environmental Justice Worksheet

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Environmental Justice (CEST and EA)

General requirements	Legislation	Regulation
Determine if the project creates adverse environmental impacts upon a low-income or minority community. If it does, engage the community in meaningful participation about mitigating the impacts or move the project.	Executive Order 12898	
References		
https://www.hudexchange.info/environmental-review/environmental-justice		

HUD strongly encourages starting the Environmental Justice analysis only after all other laws and authorities, including Environmental Assessment factors if necessary, have been completed.

1. Were any adverse environmental impacts identified in any other compliance review portion of this project's total environmental review?

Yes → *Continue to Question 2.*

No → *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below.*

2. Were these adverse environmental impacts disproportionately high for low-income and/or minority communities?

Yes

Explain:

→ *Continue to Question 3. Provide any supporting documentation.*

No

Explain:

No. All adverse environmental effects identified were mitigable.

→ *Continue to the Worksheet Summary and provide any supporting documentation.*

3. All adverse impacts should be mitigated. Explain in detail the proposed measures that must be implemented to mitigate for the impact or effect, including the timeline for implementation.

Mitigation as follows will be implemented:

Operational Noise: HUD DNL Calculator estimates that exterior noise levels at the project site would be within HUD's "normally acceptable" range, thus indicating low-income residents would be exposed to excess noise. **Mitigation Measure NOI-1** requires windows and door with a Sound Transmission Class of 32 or higher be installed.

→ Continue to Question 4.

No mitigation is necessary.

Explain why mitigation will not be made here:

→ Continue to Question 4.

4. Describe how the affected low-income or minority community was engaged or meaningfully involved in the decision on what mitigation actions, if any, will be taken.

In October 2019, the project developer hosted a community meeting at St. Mary Tower, a senior affordable housing complex approximately 0.8 mile from the project site. The project developer sent out over 1,000 mailers to every occupant and property owner within 1,000 feet of the project site, as well as local stakeholders and community groups. The mailer included invitations to the meetings and project fact sheets in Spanish and English. In addition to the community meeting, the project developer met with nearly a dozen local community groups and institutions including the local high school, Long Beach City College, Long Beach's homeless service agency, Pacific Gateway Employment Center, Long Beach Senior Center, two neighborhood groups, Dignity Health, and the local council member's office.

In light of the COVID-19 Stay at Home Order, the project developer set up a website for the project to keep residents and stakeholders informed on the project's progress. Additional in-person meetings and outreach will be planned as the Stay at Home Order is lifted.

→ Continue to the Worksheet Summary and provide any supporting documentation.

Worksheet Summary

Compliance Determination

Provide a clear description of your determination and a synopsis of the information that it was based on, such as:

- Map panel numbers and dates
- Names of all consulted parties and relevant consultation dates
- Names of plans or reports and relevant page numbers
- Any additional requirements specific to your region

Overall, the project is not anticipated to result in significant impacts which would create permanent adverse effects in the project area existing populations, or to an introduced environmental justice population. The project provides affordable housing to an area with a document shortage of such apartment homes.

All adverse environmental effects identified were mitigable and found to be less than significant.

Are formal compliance steps or mitigation required?

Yes

No

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Attachment 16. Geotechnical Investigation Report

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GEOTECHNICAL INVESTIGATION

PROPOSED AFFORDABLE HOUSING DEVELOPMENT 901-941 EAST PACIFIC COAST HIGHWAY LONG BEACH, CALIFORNIA APN'S : 7210-013-026 ,-023, -900 & -901



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GEOTECHNICAL
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MATERIALS

PREPARED FOR

**MERCY HOUSING CALIFORNIA
LOS ANGELES, CALIFORNIA**

PROJECT NO. W1071-06-01

NOVEMBER 11, 2019



Project No. W1071-06-01
November 11, 2019

Erika Villablanca
1500 South Grand Ave., Suite 100
Los Angeles, CA 90015

Subject: GEOTECHNICAL INVESTIGATION
PROPOSED AFFORDABLE HOUSING DEVELOPMENT
901-941 EAST PACIFIC COAST HIGHWAY, CALIFORNIA
APN's : 7210-013-026, -023, -900, and -901

Dear Ms. Villablanca:

In accordance with your authorization of our proposal dated September 12, 2019, we have performed a geotechnical investigation for the proposed residential development located at 901-941 East Pacific Coast Highway in the City of Long Beach, California. The accompanying report presents the findings of our study and our conclusions and recommendations pertaining to the geotechnical aspects of proposed design and construction. Based on the results of our investigation, it is our opinion that the site can be developed as proposed, provided the recommendations of this report are followed and implemented during design and construction.

If you have any questions regarding this report, or if we may be of further service, please contact the undersigned.

Very truly yours,

GEOCON WEST, INC.

Joshua Kulas
Staff Engineer

(EMAIL) Addressee



Harry Derkalousdian
PE 79694



Susan F. Kirkgard
CEG 1754

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FIELD INVESTIGATION

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GEOTECHNICAL INVESTIGATION

1. PURPOSE AND SCOPE

This report presents the results of a geotechnical investigation for the proposed residential development located at 901-941 East Pacific Coast Highway in the City of Long Beach, California (see Vicinity Map, Figure 1). The purpose of the investigation was to evaluate subsurface soil and geologic conditions underlying the site and, based on conditions encountered, to provide conclusions and recommendations pertaining to the geotechnical aspects of design and construction.

The scope of this investigation included a site reconnaissance, field exploration, laboratory testing, engineering analysis, and the preparation of this report. The site was explored on October 9, 2019, by excavating four 8-inch diameter borings to a maximum depth of 30½ feet below the existing ground surface using a truck-mounted hollow-stem auger drilling machine. The approximate locations of the exploratory borings are depicted on the Site Plan (see Figure 2). A detailed discussion of the field investigation, including the boring logs, is presented in Appendix A.

Laboratory tests were performed on selected soil samples obtained during the investigation to determine pertinent physical and chemical soil properties. Appendix B presents a summary of the laboratory test results.

The recommendations presented herein are based on analysis of the data obtained during the investigation and our experience with similar soil and geologic conditions. References reviewed to prepare this report are provided in the *List of References* section.

If project details vary significantly from those described herein, Geocon should be contacted to determine the necessity for review and possible revision of this report.

2. SITE AND PROJECT DESCRIPTION

The subject site is located at 901-941 East Pacific Coast Highway in the City of Long Beach, California. The site is a rectangular parcel. The western half of the parcel is occupied by a several commercial properties that specialize in automobile repair. The eastern half of the site is an unpaved vacant lot. The subject site is bounded by single-family residential structures to the north, by Myrtle Avenue to the west, by Martin Luther King Jr. Avenue to the east, and by East Pacific Coast Highway to the south. The site is relatively level, with no pronounced highs or lows. Surface water drainage at the site appears to follow no discernable pattern. Vegetation onsite is mostly non-existent, with some small overgrowth on the vacant lot on the eastern side due to the undeveloped nature of the site.

Based on the information provided by the Client, it is our understanding that the proposed development will consist of a four-story, affordable housing structure to be constructed at or near present grade.

Based on the preliminary nature of the design at this time, wall and column loads were not available. It is anticipated that column loads for the proposed structures will be up to 450 kips, and wall loads will be up to 4.5 kip per linear foot.

Once the design phase and foundation loading configuration proceeds to a more finalized plan, the recommendations within this report should be reviewed and revised, if necessary. Any changes in the design, location or elevation of any structure, as outlined in this report, should be reviewed by this office. Geocon should be contacted to determine the necessity for review and possible revision of this report.

3. GEOLOGIC SETTING

The site is located in the southern edge of the Los Angeles Basin, a coastal plain between the Santa Monica Mountains to the north, the Elysian and Repetto Hills to the northeast, the Puente Hills and Whittier Fault to the east, the Palos Verdes Peninsula and Pacific Ocean to the west and south, and the Santa Ana Mountains and San Joaquin Hills to the southeast. The Los Angeles Basin is a deep structural depression which has been filled by both marine and continental sedimentary deposits over a basement complex of igneous and metamorphic composition (Yerkes et al., 1965). Regionally, the site is in the Peninsular Ranges geomorphic province characterized by northwest-trending mountains, hills, alluviated valleys, and geologic structures such as the Newport-Inglewood Fault Zone located approximately 0.9 mile to the northeast (CGS, 2019a California Division of Mines and Geology, 1986).

4. SOIL AND GEOLOGIC CONDITIONS

Based on our field investigation and published geologic maps of the area, the site is underlain by artificial fill and older Pleistocene age alluvium consisting of interbedded sand and silt with lesser amounts of clay. Detailed stratigraphic profiles of the materials encountered at the site are provided on the boring logs in Appendix A.

4.1 Artificial Fill

Artificial fill was encountered in our borings to a maximum depth of 3 feet below existing ground surface. The artificial fill generally consists of brown to reddish brown silt with varying amounts of sand. The artificial fill is characterized as dry to slightly moist and stiff to hard. The fill is likely the result of past grading or construction activities at the site. Deeper fill may exist between excavations and in other portions of the site that were not directly explored.

4.2 Alluvial Fan Deposit

The fill soils are underlain by older Pleistocene age alluvium consisting of reddish brown to brown or olive brown to olive gray interbedded silt, sandy silt, clayey silt, silty sand, sand with silt and poorly-graded sand. These soils are characterized as primarily fine-grained, dry to moist, and loose to very dense or stiff to hard.

5. GROUNDWATER

A review of the Seismic Hazard Zone Report for the Long Beach Quadrangle (California Division of Mines and Geology [CDMG], 1998) indicates historic high groundwater data is not available for the site or the immediately surrounding area. However, the City of Long Beach (Public Safety Element of the General Plan, 2004; Woodward-Clyde, 1988) indicates that the historically highest groundwater level in the area approximately 40 feet beneath the ground surface. Based on current groundwater basin management practices, it is unlikely that groundwater levels will ever exceed the historic high levels.

Minor groundwater seepage was encountered in borings B-1 and B-3 at depths of 23½ and 26 feet below existing ground surface, respectively. Groundwater seepage was not encountered in borings B-2 and B-4 and the observed seepage is considered a localized condition.

Based on the reported historic high groundwater levels in the site vicinity (CDMG, 1998), the lack of significant groundwater in our borings, and the depth of proposed construction, groundwater is neither expected to be encountered during construction, nor have a detrimental effect on the project. However, it is not uncommon for groundwater levels to vary seasonally or for groundwater seepage conditions to develop where none previously existed, especially in impermeable fine-grained soils which are heavily irrigated or after seasonal rainfall. In addition, recent requirements for stormwater infiltration could result in shallower seepage conditions in the immediate site vicinity. Proper surface drainage of irrigation and precipitation will be critical for future performance of the project. Recommendations for drainage are provided in the *Surface Drainage* section of this report (see Section 7.18).

6. GEOLOGIC HAZARDS

6.1 Surface Fault Rupture

The numerous faults in Southern California include active, potentially active, and inactive faults. The criteria for these major groups are based on criteria developed by the California Geological Survey (CGS, formerly known as CDMG) for the Alquist-Priolo Earthquake Fault Zone Program (CGS, 2018). By definition, an active fault is one that has had surface displacement within Holocene time (about the last 11,700 years). A potentially active fault has demonstrated surface displacement during Quaternary time (approximately the last 1.6 million years), but has had no known Holocene movement. Faults that have not moved in the last 1.6 million years are considered inactive.

The site is not within a state-designated Alquist-Priolo Earthquake Fault Zone (CGS, 2019a; CGS, 2019b; CDMG, 1986) for surface fault rupture hazards. No active or potentially active faults with the potential for surface fault rupture are known to pass directly beneath the site. Therefore, the potential for surface rupture due to faulting occurring beneath the site during the design life of the proposed development is considered low. However, the site is located in the seismically active Southern California region, and could be subjected to moderate to strong ground shaking in the event of an earthquake on one of the many active Southern California faults. The faults in the vicinity of the site are shown in Figure 3, Regional Fault Map.

The closest surface trace of an active fault to the site is the Newport Inglewood Fault Zone, located approximately 0.9 mile to the northeast (CGS, 2019b; CDMG, 1986). Other nearby active faults include the Palos Verdes Fault Zone, the Cabrillo Fault, and the Redondo Canyon Fault located approximately 5.8 miles to the southwest, 8.2 miles southwest, and 12.7 miles west of the site, respectively. The active San Andreas Fault Zone is located approximately 51 miles northeast of the site (Ziony and Jones, 1989).

Several buried thrust faults, commonly referred to as blind thrusts, underlie the Los Angeles Basin at depth. These faults are not exposed at the ground surface and are typically identified at depths greater than 3.0 kilometers. The October 1, 1987, M_w 5.9 Whittier Narrows earthquake and the January 17, 1994, M_w 6.7 Northridge earthquake were a result of movement on the Puente Hills Blind Thrust and the Northridge Thrust, respectively. These thrust faults and others in the greater Los Angeles area are not exposed at the surface and do not present a potential surface fault rupture hazard at the site; however, these deep thrust faults are considered active features capable of generating future earthquakes that could result in moderate to significant ground shaking at the site.

6.2 Seismicity

As with all of Southern California, the site has experienced historic earthquakes from various regional faults. The seismicity of the region surrounding the site was formulated based on research of an electronic database of earthquake data. The epicenters of recorded earthquakes with magnitudes equal to or greater than 5.0 in the site vicinity are depicted on Figure 4, Regional Seismicity Map. A partial list of moderate to major magnitude earthquakes that have occurred in the Southern California area within the last 100 years is included in the following table.

LIST OF HISTORIC EARTHQUAKES

Earthquake (Oldest to Youngest)	Date of Earthquake	Magnitude	Distance to Epicenter (Miles)	Direction to Epicenter
Near Redlands	July 23, 1923	6.3	55	ENE
Long Beach	March 10, 1933	6.4	17	SE
Tehachapi	July 21, 1952	7.5	96	NW
San Fernando	February 9, 1971	6.6	45	NNW
Whittier Narrows	October 1, 1987	5.9	20	NNE
Sierra Madre	June 28, 1991	5.8	34	NNE
Landers	June 28, 1992	7.3	104	ENE
Big Bear	June 28, 1992	6.4	83	ENE
Northridge	January 17, 1994	6.7	36	NW
Hector Mine	October 16, 1999	7.1	123	ENE
Ridgecrest	July 5, 2019	7.1	140	NNE

The site could be subjected to strong ground shaking in the event of an earthquake. However, this hazard is common in Southern California and the effects of ground shaking can be mitigated if the proposed structures are designed and constructed in conformance with current building codes and engineering practices.

6.3 Seismic Design Criteria

The following table summarizes site-specific design criteria obtained from the 2016 California Building Code (CBC; Based on the 2015 International Building Code [IBC] and ASCE 7-10), Chapter 16 Structural Design, Section 1613 Earthquake Loads. The data was calculated using the computer program *U.S. Seismic Design Maps*, provided by the USGS. The short spectral response uses a period of 0.2 second. We evaluated the Site Class based on the discussion in Section 1613.3.2 of the 2016 CBC and Table 20.3-1 of ASCE 7-10. The values presented below are for the risk-targeted maximum considered earthquake (MCE_R).

2016 CBC SEISMIC DESIGN PARAMETERS

Parameter	Value	2016 CBC Reference
Site Class	D	Table 1613.3.2
MCE_R Ground Motion Spectral Response Acceleration – Class B (short), S_S	1.627g	Figure 1613.3.1(1)
MCE_R Ground Motion Spectral Response Acceleration – Class B (1 sec), S_1	0.61g	Figure 1613.3.1(2)
Site Coefficient, F_A	1.0	Table 1613.3.3(1)
Site Coefficient, F_V	1.5	Table 1613.3.3(2)
Site Class Modified MCE_R Spectral Response Acceleration (short), S_{MS}	1.627g	Section 1613.3.3 (Eqn 16-37)
Site Class Modified MCE_R Spectral Response Acceleration – (1 sec), S_{M1}	0.915g	Section 1613.3.3 (Eqn 16-38)
5% Damped Design Spectral Response Acceleration (short), S_{DS}	1.085g	Section 1613.3.4 (Eqn 16-39)
5% Damped Design Spectral Response Acceleration (1 sec), S_{D1}	0.61g	Section 1613.3.4 (Eqn 16-40)

The table below presents the mapped maximum considered geometric mean (MCE_G) seismic design parameters for projects located in Seismic Design Categories of D through F in accordance with ASCE 7-10.

ASCE 7-10 PEAK GROUND ACCELERATION

Parameter	Value	ASCE 7-10 Reference
Mapped MCE_G Peak Ground Acceleration, PGA	0.63g	Figure 22-7
Site Coefficient, F_{PGA}	1.0	Table 11.8-1
Site Class Modified MCE_G Peak Ground Acceleration, PGA_M	0.63g	Section 11.8.3 (Eqn 11.8-1)

The Maximum Considered Earthquake Ground Motion (MCE) is the level of ground motion that has a 2 percent chance of exceedance in 50 years, with a statistical return period of 2,475 years. According to the 2016 California Building Code and ASCE 7-10, the MCE is to be utilized for the evaluation of liquefaction, lateral spreading, seismic settlements, and it is our understanding that the intent of the Building code is to maintain “Life Safety” during a MCE event. The Design Earthquake Ground Motion (DE) is the level of ground motion that has a 10 percent chance of exceedance in 50 years, with a statistical return period of 475 years.

Deaggregation of the MCE peak ground acceleration was performed using the USGS online Unified Hazard Tool, 2008 Conterminous U.S. Dynamic edition. The result of the deaggregation analysis indicates that the predominant earthquake contributing to the MCE peak ground acceleration is characterized as a 6.84 magnitude event occurring at a hypocentral distance of 7.97 kilometers from the site.

Deaggregation was also performed for the Design Earthquake (DE) peak ground acceleration, and the result of the analysis indicates that the predominant earthquake contributing to the DE peak ground acceleration is characterized as a 6.71 magnitude occurring at a hypocentral distance of 16.49 kilometers from the site.

Conformance to the criteria in the above tables for seismic design does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not occur if a large earthquake occurs. The primary goal of seismic design is to protect life, not to avoid all damage, since such design may be economically prohibitive.

6.4 Liquefaction Potential

Liquefaction is a phenomenon in which loose, saturated, relatively cohesionless soil deposits lose shear strength during strong ground motions. Primary factors controlling liquefaction include intensity and duration of ground motion, gradation characteristics of the subsurface soils, in-situ stress conditions, and the depth to groundwater. Liquefaction is typified by a loss of shear strength in the liquefied layers due to rapid increases in pore water pressure generated by earthquake accelerations.

The current standard of practice, as outlined in the “Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction in California” and “Special Publication 117A, Guidelines for Evaluating and Mitigating Seismic Hazards in California” requires liquefaction analysis to a depth of 50 feet below the lowest portion of the proposed structure. Liquefaction typically occurs in areas where the soils below the water table are composed of poorly consolidated, fine to medium-grained, primarily sandy soil. In addition to the requisite soil conditions, the ground acceleration and duration of the earthquake must also be of a sufficient level to induce liquefaction.

A review of the State of California Seismic Hazard Zone Map for the Long Beach Quadrangle (CDMG, 1999) indicates that the site is not located in an area designated as having a potential for liquefaction. In addition, the City of Long Beach Public Safety Element (2004) indicates the site is not located within an area identified as having a potential for liquefaction (City of Long Beach, 2004; Woodward-Clyde Consultants, 1988). The site is underlain by Pleistocene age alluvium that is not prone to liquefaction. Based on these considerations, it is our opinion that the potential for liquefaction and associated ground deformations beneath the site is very low.

6.5 Slope Stability

The topography at the site is relatively level. The County of Los Angeles Safety Element (Leighton, 1990) and the City of Long Beach (Woodward-Clyde Consultants, 1988) indicate the site is not within an area identified as a “Hillside Area” or an area having a potential for slope instability. Additionally, the site is not within an area identified as having a potential for seismic slope instability (CDMG, 1999). There are no known landslides near the site, nor is the site in the path of any known or potential landslides. Therefore, the potential for slope stability hazards to adversely affect the proposed development is considered low.

6.6 Earthquake-Induced Flooding

Earthquake-induced flooding is inundation caused by failure of dams or other water-retaining structures due to earthquakes. Based on a review of the Los Angeles County Safety Element (Leighton, 1990) and the City of Long Beach Public Safety Element (2004), the site is not located within a potential inundation area for an earthquake-induced dam failure. Therefore, the probability of earthquake-induced flooding is considered very low.

6.7 Tsunamis, Seiches, and Flooding

The site is not located within a potential tsunami inundation area (CGS, 2009; Woodward-Clyde Consultants, 1988). Therefore, tsunamis are not considered a significant hazard at the site.

Seiches are large waves generated in enclosed bodies of water in response to ground shaking. No major water-retaining structures are located immediately up gradient from the project site. Therefore, flooding resulting from a seismically induced seiche is considered unlikely.

The site is within a Zone X as defined by the Federal Emergency Management Agency (LACDPW, 2019; FEMA, 2019). Sites within a Zone X have a minimal potential for flooding (FEMA, 2019). The City of Long Beach Seismic Safety Element (Woodward-Clyde Consultants, 1988) indicates the site is within a 100-year flood zone.

6.8 Oil Fields & Methane Potential

Based on a review of the California Division of Oil, Gas and Geothermal Resources (DOGGR) Well Finder Website, the site is not located within the limits of an oilfield and there are no active or inactive oil or gas wells within the immediate vicinity of the site (DOGGR, 2019). However, due to the voluntary nature of record reporting by the oil well drilling companies, wells may be improperly located or not shown on the location map and undocumented wells could be encountered during construction. Any wells encountered will need to be properly abandoned in accordance with the current requirements of the DOGGR.

Since the site is not located within the boundaries of a known oil field, the potential for the presence of methane or other volatile gases to occur at the site is considered low. However, should it be determined that a methane study is required for the proposed development it is recommended that a qualified methane consultant be retained to perform the study and provide mitigation measures as necessary.

6.9 Subsidence

Subsidence occurs when a large portion of land is displaced vertically, usually due to the withdrawal of groundwater, oil, or natural gas. Soils that are particularly subject to subsidence include those with high silt or clay content. The site is not located within an area of known ground subsidence. No large-scale extraction of groundwater, gas, oil, or geothermal energy is occurring or planned at the site or in the general site vicinity. There appears to be little or no potential for ground subsidence due to withdrawal of fluids or gases at the site.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1 General

- 7.1.1 It is our opinion that neither soil nor geologic conditions were encountered during the investigation that would preclude the construction of the proposed development provided the recommendations presented herein are followed and implemented during design and construction.
- 7.1.2 Up to 3 feet of existing artificial fill was encountered during the site investigation. The existing fill encountered is believed to be the result of past grading and construction activities at the site. Deeper fill may exist in other areas of the site that were not directly explored. Future demolition of the existing structures and improvements which occupy the site will likely disturb the upper few feet of existing site soils. It is our opinion that the existing fill, in its present condition, is not suitable for direct support of proposed foundations or slabs. The existing fill and site soils are suitable for re-use as engineered fill provided the recommendations in the Grading section of this report are followed (see Section 7.4).
- 7.1.3 Based on these considerations, it is recommended that the upper 3 feet of existing earth materials in the building footprint areas be excavated and properly compacted for foundation and slab support. Deeper excavations should be conducted as needed to remove any encountered fill or soft soils as necessary at the direction of the Geotechnical Engineer (a representative of Geocon). The excavation should extend laterally a minimum distance of 3 feet beyond the building footprint areas, including building appurtenances, or a distance equal to the depth of fill below the foundation, whichever is greater. The limits of existing fill and/or soft soil removal will be verified by the Geocon representative during site grading activities. Recommendations for earthwork are provided in the *Grading* section of this report (see Section 7.4).
- 7.1.4 Subsequent to the recommended grading, the proposed structures may be supported on conventional shallow spread foundations deriving support in newly placed engineered fill and/or dense undisturbed older alluvium found at or below a depth of three feet below the existing ground surface. It is the intent of the Geotechnical Engineer to allow foundations for the structure to derive support in newly placed engineered fill and/or dense undisturbed older alluvium, if conditions warrant such an occurrence. Recommendations for the design of a conventional foundation system are provided in Section 7.6.
- 7.1.5 All excavations must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon).

- 7.1.6 It is anticipated that stable excavations for the recommended grading associated with the proposed structure can be achieved with sloping measures. However, if excavations in close proximity to an adjacent property line and/or structure are required, special excavation measures may be necessary in order to maintain lateral support of offsite improvements. Excavation recommendations are provided in the *Temporary Excavations* section of this report (Section 7.16).
- 7.1.7 Foundations for small outlying structures, such as block walls up to 6 feet in height, planter walls or trash enclosures, which will not be tied to the proposed structure, may be supported on conventional foundations deriving support on a minimum of 12 inches of newly placed engineered fill which extends laterally at least 12 inches beyond the foundation area. Where excavation and compaction cannot be performed or is undesirable, foundations may derive support directly in the competent undisturbed older alluvial soils at or below a depth of 24 inches, and should be deepened as necessary to maintain a minimum 12-inch embedment into the recommended bearing materials. If the soils exposed in the excavation bottom are soft or loose, compaction of the soils will be required prior to placing steel or concrete. Compaction of the foundation excavation bottom is typically accomplished with a compaction wheel or mechanical whacker and must be observed and approved by a Geocon representative.
- 7.1.8 Where new paving is to be placed in nonbuilding areas, it is recommended that all existing fill and soft alluvial soils be excavated and properly compacted for paving support. The client should be aware that excavation and compaction of all existing fill and soft alluvial soils in the area of new paving is not required; however, paving constructed over existing uncertified fill or unsuitable alluvial soil may experience increased settlement and/or cracking, and may therefore have a shorter design life and increased maintenance costs. As a minimum, the upper 12 inches of subgrade soil should be scarified and properly compacted for paving support. Paving recommendations are provided in *Preliminary Paving Design* section of this report (see Section 7.11).
- 7.1.9 Based on the results of percolation testing performed at the site, a stormwater infiltration system is not considered feasible for this project (see Figure 5). It is suggested that stormwater be retained, filtered and discharged in accordance with the requirements of the local governing agency.
- 7.1.10 Once the design and foundation loading configuration for the proposed structure proceeds to a more finalized plan, the recommendations within this report should be reviewed and revised, if necessary. Based on the final foundation loading configurations, the potential for settlement should be reevaluated by this office.

- 7.1.11 Any changes in the design, location or elevation, as outlined in this report, should be reviewed by this office. Geocon should be contacted to determine the necessity for review and possible revision of this report.
- 7.1.12 The most recent ASTM standards apply to this project and must be utilized, even if older ASTM standards are indicated in this report.

7.2 Soil and Excavation Characteristics

- 7.2.1 The in-situ soils can be excavated with moderate effort using conventional excavation equipment. Some caving should be anticipated in unshored excavations, especially where granular soils are encountered.
- 7.2.2 It is the responsibility of the contractor to ensure that all excavations and trenches are properly shored and maintained in accordance with applicable OSHA rules and regulations to maintain safety and maintain the stability of adjacent existing improvements.
- 7.2.3 All onsite excavations must be conducted in such a manner that potential surcharges from existing structures, construction equipment, and vehicle loads are resisted. The surcharge area may be defined by a 1:1 projection down and away from the bottom of an existing foundation or vehicle load. Penetrations below this 1:1 projection will require special excavation measures such as sloping and shoring. Excavation recommendations are provided in the *Temporary Excavations* section of this report (see Section 7.16).
- 7.2.4 The upper 5 feet of existing site soils encountered during the investigation are considered to have a “very low” expansive potential (EI = 14) and are classified as “non-expansive” in accordance with the 2016 California Building Code (CBC) Section 1803.5.3. The recommendations presented herein assume that the building foundations and slabs will derive support in these materials.

7.3 Minimum Resistivity, pH, and Water-Soluble Sulfate

- 7.3.1 Potential of Hydrogen (pH) and resistivity testing as well as chloride content testing were performed on representative samples of soil to generally evaluate the corrosion potential to surface utilities. The tests were performed in accordance with California Test Method Nos. 643 and 422 and indicate that the soils are considered “moderately corrosive” with respect to corrosion of buried ferrous metals on site. The results are presented in Appendix B (Figure B18) and should be considered for design of underground structures.

- 7.3.2 Laboratory tests were performed on representative samples of the site materials to measure the percentage of water-soluble sulfate content. Results from the laboratory water-soluble sulfate tests are presented in Appendix B (Figure B18) and indicate that the on-site materials possess a sulfate exposure class of “S0” to concrete structures as defined by 2016 CBC Section 1904 and ACI 318-14 Table 19.3.1.1.
- 7.3.3 Geocon West, Inc. does not practice in the field of corrosion engineering and mitigation. If corrosion sensitive improvements are planned, it is recommended that a corrosion engineer be retained to evaluate corrosion test results and incorporate the necessary precautions to avoid premature corrosion of buried metal pipes and concrete structures in direct contact with the soils.

7.4 Grading

- 7.4.1 Earthwork should be observed, and compacted fill tested by representatives of Geocon West, Inc. The existing fill and alluvial soils encountered during exploration is suitable for re-use as an engineered fill, provided any encountered oversize material (greater than 6 inches) and any encountered deleterious debris is removed.
- 7.4.2 A preconstruction conference should be held at the site prior to the beginning of grading operations with the owner, contractor, civil engineer, geotechnical engineer, and building official in attendance. Special soil handling requirements can be discussed at that time.
- 7.4.3 Grading should commence with the removal of existing vegetation and existing improvements from the area to be graded. Deleterious debris such as wood and root structures should be exported from the site and should not be mixed with the fill soils. Asphalt and concrete should not be mixed with the fill soils unless approved by the Geotechnical Engineer. Existing underground improvements planned for removal should be completely excavated and the resulting depressions properly backfilled in accordance with the procedures described herein. Once a clean excavation bottom has been established it must be approved in writing by the Geotechnical Engineer (a representative of Geocon West, Inc.).
- 7.4.4 As a minimum, it is recommended that the upper 3 feet of existing earth materials within the proposed building footprint areas be excavated and properly compacted for foundation and slab support. Deeper excavations should be conducted as necessary to remove deeper artificial fill or soft alluvial soil at the direction of the Geotechnical Engineer (a representative of Geocon). The excavation should extend laterally a minimum distance of 3 feet beyond the building footprint area, including building appurtenances, or a distance equal to the depth of fill below the foundation, whichever is greater. The limits of existing fill and/or soft alluvial soils removal will be verified by the Geocon representative during site grading activities.

- 7.4.5 All excavations must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon).
- 7.4.6 Subsequent to the recommended grading, the proposed structures may be supported on conventional shallow spread foundations deriving support in newly placed engineered fill and/or dense undisturbed older alluvium found at or below a depth of three feet below the existing ground surface. It is the intent of the Geotechnical Engineer to allow foundations for the structure to derive support in newly placed engineered fill and/or dense undisturbed older alluvium, if conditions warrant such an occurrence.
- 7.4.7 All fill and backfill soils should be placed in horizontal loose layers approximately 6 to 8 inches thick, moisture conditioned to optimum moisture content, and properly compacted to a minimum 90 percent of the maximum dry density in accordance with ASTM D 1557 (latest edition).
- 7.4.8. Where new paving is to be placed, it is recommended that all existing fill and soft alluvium be excavated and properly compacted for paving support. As a minimum, the upper 12 inches of soil should be scarified, moisture conditioned to optimum moisture content, and compacted to at least 95 percent relative compaction, as determined by ASTM Test Method D 1557 (latest edition). Paving recommendations are provided in *Preliminary Paving Design* section of this report (see Section 7.11).
- 7.4.9 It is anticipated that stable excavations for the recommended grading can be achieved with sloping measures. However, if excavations in close proximity to an adjacent property line and/or structure are required, special excavation measures may be necessary in order to maintain lateral support of the existing offsite improvements. Excavation recommendations are provided in the *Temporary Excavations* section of this report (Section 7.16).
- 7.4.10 Foundations for small outlying structures, such as block walls up to 6 feet high, planter walls or trash enclosures, which will not be tied to the proposed building, may be supported on conventional foundations deriving support on a minimum of 12 inches of newly placed engineered fill which extends laterally at least 12 inches beyond the foundation area. Where excavation and proper compaction cannot be performed or is undesirable, foundations may derive support directly in the undisturbed older alluvial soils at or below a depth of 24 inches, and should be deepened as necessary to maintain a minimum 12-inch embedment into the recommended bearing materials. If the soils exposed in the excavation bottom are soft or loose, compaction of the soils will be required prior to placing steel or concrete. Compaction of the foundation excavation bottom is typically accomplished with a compaction wheel or mechanical whacker and must be observed and approved by a Geocon representative.

- 7.4.11 Utility trenches should be properly backfilled in accordance with the requirements of the Green Book (latest edition). The pipe should be bedded with clean sands (Sand Equivalent greater than 30) to a depth of at least 1 foot over the pipe, and the bedding material must be inspected and approved in writing by the Geotechnical Engineer (a representative of Geocon). The use of gravel is not acceptable unless used in conjunction with filter fabric to prevent the gravel from having direct contact with soil. The remainder of the trench backfill may be derived from onsite soil or approved import soil, compacted as necessary, until the required compaction is obtained. The use of minimum 2-sack slurry as backfill is also acceptable. Prior to placing any bedding materials or pipes, the excavation bottom must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon).
- 7.4.12 All imported fill shall be observed, tested, and approved by Geocon West, Inc. prior to bringing soil to the site. Rocks larger than 6 inches in diameter shall not be used in the fill. If necessary, import soils used as structural fill should have an expansion index less than 20 and corrosivity properties that are equally or less detrimental to that of the existing onsite soils (see Figure B18). Import soils placed in the building area should be placed uniformly across the building pad or in a manner that is approved by the Geotechnical Engineer (a representative of Geocon).
- 7.4.13 All trench and foundation excavation bottoms must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon), prior to placing bedding materials, fill, steel, gravel, or concrete.

7.5 Shrinkage

- 7.5.1 Shrinkage results when a volume of material removed at one density is compacted to a higher density. A shrinkage factor of up to 8 percent should be anticipated when excavating and compacting the upper 3 feet of existing earth materials on the site to an average relative compaction of 92 percent.
- 7.4.2 If import soils will be utilized in the building pad, the soils must be placed uniformly and at equal thickness at the direction of the Geotechnical Engineer (a representative of Geocon West, Inc.). Soils can be borrowed from non-building pad areas and later replaced with imported soils.

7.6 Foundation Design

- 7.6.1 Subsequent to the recommended grading, the proposed structures may be supported on conventional shallow spread foundations deriving support in newly placed engineered fill and/or dense undisturbed older alluvium found at or below a depth of three feet below the existing ground surface.

- 7.6.2 Continuous footings may be designed for an allowable bearing capacity of 2,400 pounds per square foot (psf), and should be a minimum of 12 inches in width, 18 inches in depth below the lowest adjacent grade, and 12 inches into the recommended bearing materials.
- 7.6.3 Isolated spread foundations may be designed for an allowable bearing capacity of 2,800 psf, and should be a minimum of 24 inches in width, 18 inches in depth below the lowest adjacent grade, and 12 inches into the recommended bearing materials.
- 7.6.4 The soil bearing pressures above may be increased by 200 psf and 400 psf for each additional foot of foundation width and depth, respectively, up to a maximum allowable soil bearing pressure of 4,800 psf.
- 7.6.5 The allowable bearing pressures may be increased by one-third for transient loads due to wind or seismic forces.
- 7.6.6 If depth increases are utilized for the exterior wall footings, this office should be provided a copy of the final construction plans so that the excavation recommendations presented herein could be properly reviewed and revised if necessary.
- 7.6.7 Continuous footings should be reinforced with four No. 4 steel reinforcing bars, two placed near the top of the footing and two near the bottom. Reinforcement for spread footings should be designed by the project structural engineer.
- 7.6.8 The above foundation dimensions and minimum reinforcement recommendations are based on soil conditions and building code requirements only, and are not intended to be used in lieu of those required for structural purposes.
- 7.6.9 No special subgrade presaturation is required prior to placement of concrete. However, the moisture in the foundation subgrade should be sprinkled as necessary to maintain a moist condition at the time of concrete placement.
- 7.6.10 Foundation excavations should be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon West, Inc.), prior to the placement of reinforcing steel and concrete to verify that the excavations and exposed soil conditions are consistent with those anticipated. If unanticipated soil conditions are encountered, foundation modifications may be required.
- 7.6.11 This office should be provided a copy of the final construction plans so that the excavation recommendations presented herein could be properly reviewed and revised if necessary.

7.7 Foundation Settlement

- 7.7.1 The maximum expected static settlement of the proposed structures supported on conventional foundations deriving support in the recommended bearing material, and designed with a maximum bearing pressure of 4,800 psf is estimated to be less than 1 inch and occur below the heaviest loaded structural element. Settlement of the foundation system is expected to occur on initial application of loading. Differential settlement is not expected to exceed ½ inch over a distance of 20 feet.
- 7.7.2 Once the design and foundation loading configurations for the proposed structures proceeds to a more finalized plan, the estimated settlements presented in this report should be reviewed and revised, if necessary. If the final foundation loading configurations are greater than the assumed loading conditions, the potential for settlement should be reevaluated by this office.

7.8 Miscellaneous Foundations

- 7.8.1 Foundations for small outlying structures, such as block walls up to 6 feet in height, planter walls or trash enclosures, which will not be tied to the proposed structure, may be supported on conventional foundations deriving support on a minimum of 12 inches of newly placed engineered fill which extends laterally at least 12 inches beyond the foundation area. Where excavation and compaction cannot be performed or is undesirable, foundations may derive support directly in the competent undisturbed older alluvial soils at and below a depth of 24 inches, and should be deepened as necessary to maintain a minimum 12-inch embedment into the recommended bearing materials.
- 7.8.2 If the soils exposed in the excavation bottom are soft, compaction of the soft soils will be required prior to placing steel or concrete. Compaction of the foundation excavation bottom is typically accomplished with a compaction wheel or mechanical whacker and must be observed and approved by a Geocon representative. Miscellaneous foundations may be designed for a bearing value of 1,500 psf, and should be a minimum of 12 inches in width, 18 inches in depth below the lowest adjacent grade and 12 inches into the recommended bearing material. The allowable bearing pressure may be increased by up to one-third for transient loads due to wind or seismic forces.
- 7.8.3 Foundation excavations should be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon West, Inc.), prior to the placement of reinforcing steel and concrete to verify that the excavations and exposed soil conditions are consistent with those anticipated.

7.9 Lateral Design

- 7.9.1 Resistance to lateral loading may be provided by friction acting at the base of foundations, slabs and by passive earth pressure. An allowable coefficient of friction of 0.35 may be used with the dead load forces in the competent older alluvial soils or in properly compacted engineered fill.
- 7.9.2 Passive earth pressure for the sides of foundations and slabs poured against properly compacted engineered fill or competent alluvial soils may be computed as an equivalent fluid having a density of 240 pounds per cubic foot (pcf) with a maximum earth pressure of 2,400 psf. When combining passive and friction for lateral resistance, the passive component should be reduced by one-third.

7.10 Concrete Slabs-on-Grade

- 7.10.1 Concrete slabs-on-grade subject to vehicle loading should be designed in accordance with the recommendations in the *Preliminary Paving Design* section of this report (Section 7.11).
- 7.10.2 Unless specifically evaluated and designed by a qualified structural engineer, concrete slabs-on-grade for structures, not subject to vehicle loading, should be a minimum of 4 inches thick and minimum slab reinforcement should consist of No. 3 steel reinforcing bars placed 18 inches on center in both horizontal directions. Steel reinforcing should be positioned vertically near the slab midpoint. The concrete slab-on-grade may derive support directly on the newly placed engineered fill subsequent the grading.

- 7.10.3 Slabs-on-grade at the ground surface that may receive moisture-sensitive floor coverings or may be used to store moisture-sensitive materials should be underlain by a vapor retarder placed directly beneath the slab. The vapor retarder and acceptable permeance should be specified by the project architect or developer based on the type of floor covering that will be installed. The vapor retarder design should be consistent with the guidelines presented in Section 9.3 of the American Concrete Institute's (ACI) Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials (ACI 302.2R-06) and should be installed in general conformance with ASTM E 1643 (latest edition) and the manufacturer's recommendations. A minimum thickness of 15 mils extruded polyolefin plastic is recommended; vapor retarders which contain recycled content or woven materials are not recommended. The vapor retarder should have a permeance of less than 0.01 perms demonstrated by testing before and after mandatory conditioning. The vapor retarder should be installed in direct contact with the concrete slab with proper perimeter seal. If the California Green Building Code requirements apply to this project, the vapor retarder should be underlain by 4 inches of clean aggregate. It is important that the vapor retarder be puncture resistant since it will be in direct contact with angular gravel. As an alternative to the clean aggregate suggested in the Green Building Code, it is our opinion that the concrete slab-on-grade may be underlain by a vapor retarder over 4 inches of clean sand (sand equivalent greater than 30), since the sand will serve a capillary break and will minimize the potential for punctures and damage to the vapor barrier.
- 7.10.4 For seismic design purposes, a coefficient of friction of 0.35 may be utilized between concrete slabs and subgrade soils without a moisture barrier, and 0.15 for slabs underlain by a moisture barrier.
- 7.10.5 Exterior slabs for walkways or flatwork, not subject to traffic loads, should be at least 4 inches thick and reinforced with No. 3 steel reinforcing bars placed 18 inches on center in both horizontal directions, positioned near the slab midpoint. Prior to construction of slabs, the upper 12 inches of subgrade should be moistened to optimum moisture content and properly compacted to at least 95 percent relative compaction, as determined by ASTM Test Method D 1557 (latest edition). Crack control joints should be spaced at intervals not greater than 10 feet and should be constructed using saw-cuts or other methods as soon as practical following concrete placement. Crack control joints should extend a minimum depth of one-fourth the slab thickness. The project structural engineer should design construction joints as necessary.

7.10.6 The recommendations of this report are intended to reduce the potential for cracking of slabs due to settlement. However, even with the incorporation of the recommendations presented herein, foundations, stucco walls, and slabs-on-grade may exhibit some cracking due to minor soil movement and/or concrete shrinkage. The occurrence of concrete shrinkage cracks is independent of the supporting soil characteristics. Their occurrence may be reduced and/or controlled by limiting the slump of the concrete, proper concrete placement and curing, and by the placement of crack control joints at periodic intervals, in particular, where re-entrant slab corners occur.

7.11 Preliminary Paving Design

7.11.1 Where new paving is to be placed, it is recommended that all existing fill and soft or unsuitable alluvial materials be excavated and properly recompacted for paving support. The client should be aware that excavation and compaction of all existing artificial fill and soft alluvium in the area of new paving is not required; however, paving constructed over existing unsuitable material may experience increased settlement and/or cracking, and may therefore have a shorter design life and increased maintenance costs. As a minimum, the upper 12 inches of paving subgrade should be scarified, moisture conditioned to optimum moisture content, and properly compacted to at least 95 percent relative compaction, as determined by ASTM Test Method D 1557 (latest edition).

7.11.2 The following pavement sections are based on site specific R-Value of 20. Once site grading activities are complete an R-Value should be obtained by laboratory testing to confirm the properties of the soils serving as paving subgrade, prior to placing pavement.

7.11.3 The Traffic Indices listed below are estimates. Geocon does not practice in the field of traffic engineering. The actual Traffic Index for each area should be determined by the project civil engineer. If pavement sections for Traffic Indices other than those listed below are required, Geocon should be contacted to provide additional recommendations. Pavement thicknesses were determined following procedures outlined in the *California Highway Design Manual* (Caltrans). It is anticipated that the majority of traffic will consist of automobile and large truck traffic.

PRELIMINARY PAVEMENT DESIGN SECTIONS

Location	Estimated Traffic Index (TI)	Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)
Automobile Parking And Driveways	4.0	3.0	4.0
Trash Truck & Fire Lanes	7.0	4.0	12.0

- 7.11.4 Asphalt concrete should conform to Section 203-6 of the “*Standard Specifications for Public Works Construction*” (Green Book). Class 2 aggregate base materials should conform to Section 26-1.02A of the “*Standard Specifications of the State of California, Department of Transportation*” (Caltrans). The use of Crushed Miscellaneous Base in lieu of Class 2 aggregate base is acceptable. Crushed Miscellaneous Base should conform to Section 200-2.4 of the “*Standard Specifications for Public Works Construction*” (Green Book).
- 7.11.5 Unless specifically designed and evaluated by the project structural engineer, where exterior concrete paving will be utilized for support of vehicles, it is recommended that the concrete be a minimum of 5 inches of concrete reinforced with No. 3 steel reinforcing bars placed 18 inches on center in both horizontal directions. Concrete paving supporting vehicular traffic should be underlain by a minimum of 4 inches of aggregate base and a properly compacted subgrade. The subgrade and base material should be compacted to 95 percent relative compaction, respectively, as determined by ASTM Test Method D 1557 (latest edition).
- 7.11.6 The performance of pavements is highly dependent upon providing positive surface drainage away from the edge of pavements. Ponding of water on or adjacent to the pavement will likely result in saturation of the subgrade materials and subsequent cracking, subsidence and pavement distress. If planters are planned adjacent to paving, it is recommended that the perimeter curb be extended at least 12 inches below the bottom of the aggregate base to minimize the introduction of water beneath the paving.

7.12 Retaining Wall Design

- 7.12.1 The recommendations presented below are generally applicable to the design of rigid concrete or masonry retaining walls having a maximum height of 5 feet. In the event that walls higher than 5 feet are planned, Geocon should be contacted for additional recommendations.
- 7.12.2 Retaining wall foundations may be designed in accordance with the recommendations provided in the *Foundation Design* sections of this report (see Section 7.6).
- 7.12.3 Retaining walls with a level backfill surface that are not restrained at the top should be designed utilizing a triangular distribution of pressure (active pressure) of 30 pcf.
- 7.12.4 Restrained walls are those that are not allowed to rotate more than 0.001H (where H equals the height of the retaining portion of the wall in feet) at the top of the wall. Where walls are restrained from movement at the top, walls may be designed utilizing a triangular distribution of pressure (at-rest pressure) of 60 pcf.

- 7.12.5 The wall pressures provided above assume that the retaining wall will be properly drained preventing the buildup of hydrostatic pressure. If retaining wall drainage is not implemented, the equivalent fluid pressure to be used in design of undrained walls is 90 pcf. The value includes hydrostatic pressures plus buoyant lateral earth pressures.
- 7.12.6 The wall pressures provided above assume that the proposed retaining walls will support relatively undisturbed alluvial soils. If sloping techniques are to be utilized for construction of proposed walls, which would result in a wedge of engineered fill behind the retaining walls, revised earth pressures may be required, especially if the wall backfill does not consist of the existing onsite soils. This should be evaluated once the use of sloping measures is established and once the geotechnical characteristics of the engineered backfill soils can be further evaluated.
- 7.12.7 Additional active pressure should be added for a surcharge condition due to sloping ground, vehicular traffic or adjacent structures and should be designed for each condition as the project progresses.
- 7.12.8 It is recommended that line-load surcharges from adjacent wall footings, use horizontal pressures generated from NAV-FAC DM 7.2. The governing equations are:

$$\text{For } x/H \leq 0.4$$

$$\sigma_H(z) = \frac{0.20 \times \left(\frac{z}{H}\right)}{\left[0.16 + \left(\frac{z}{H}\right)^2\right]^2} \times \frac{Q_L}{H}$$

and

$$\text{For } x/H > 0.4$$

$$\sigma_H(z) = \frac{1.28 \times \left(\frac{x}{H}\right)^2 \times \left(\frac{z}{H}\right)}{\left[\left(\frac{x}{H}\right)^2 + \left(\frac{z}{H}\right)^2\right]^2} \times \frac{Q_L}{H}$$

where x is the distance from the face of the excavation or wall to the vertical line-load, H is the distance from the bottom of the footing to the bottom of excavation or wall, z is the depth at which the horizontal pressure is desired, Q_L is the vertical line-load and $\sigma_H(z)$ is the horizontal pressure at depth z .

- 7.12.9 It is recommended that vertical point-loads, from construction equipment outriggers or adjacent building columns use horizontal pressures generated from NAV-FAC DM 7.2. The governing equations are:

$$\text{For } x/H \leq 0.4$$

$$\sigma_H(z) = \frac{0.28 \times \left(\frac{z}{H}\right)^2}{\left[0.16 + \left(\frac{z}{H}\right)^2\right]^3} \times \frac{Q_P}{H^2}$$

and

$$\text{For } x/H > 0.4$$

$$\sigma_H(z) = \frac{1.77 \times \left(\frac{x}{H}\right)^2 \times \left(\frac{z}{H}\right)^2}{\left[\left(\frac{x}{H}\right)^2 + \left(\frac{z}{H}\right)^2\right]^3} \times \frac{Q_P}{H^2}$$

then

$$\sigma'_H(z) = \sigma_H(z) \cos^2(1.1\theta)$$

where x is the distance from the face of the excavation/wall to the vertical point-load, H is distance from the outrigger/bottom of column footing to the bottom of excavation, z is the depth at which the horizontal pressure is desired, Q_P is the vertical point-load, $\sigma_H(z)$ is the horizontal pressure at depth z , θ is the angle between a line perpendicular to the excavation/wall and a line from the point-load to location on the excavation/wall where the surcharge is being evaluated, and $\sigma_H(z)$ is the horizontal pressure at depth z .

- 7.12.10 In addition to the recommended earth pressure, the upper 10 feet of the retaining wall adjacent to the street or driveway areas should be designed to resist a uniform lateral pressure of 100 psf, acting as a result of an assumed 300 psf surcharge behind the wall due to normal street traffic. If the traffic is kept

7.13 Retaining Wall Drainage

- 7.13.1 Retaining walls not designed for hydrostatic pressure should be provided with a drainage system extended at least two-thirds the height of the wall. At the base of the drain system, a subdrain covered with a minimum of 12 inches of gravel should be installed, and a compacted fill blanket or other seal placed at the surface (see Figure 6). The clean bottom and subdrain pipe, behind a retaining wall, should be observed by the Geotechnical Engineer (a representative of Geocon), prior to placement of gravel or compacting backfill.

- 7.13.2 As an alternative, a plastic drainage composite such as Miradrain or equivalent may be installed in continuous, 4-foot-wide columns along the entire back face of the wall, at 8 feet on center. The top of these drainage composite columns should terminate approximately 18 inches below the ground surface, where either hardscape or a minimum of 18 inches of relatively cohesive material should be placed as a cap (see Figure 7). These vertical columns of drainage material would then be connected at the bottom of the wall to a collection panel or a 1-cubic-foot rock pocket drained by a 4-inch subdrain pipe.
- 7.13.3 Subdrainage pipes at the base of the retaining wall drainage system should outlet to an acceptable location via controlled drainage structures.
- 7.13.4 Moisture affecting below grade walls is one of the most common post-construction complaints. Poorly applied or omitted waterproofing can lead to efflorescence or standing water. Particular care should be taken in the design and installation of waterproofing to avoid moisture problems, or actual water seepage into the structure through any normal shrinkage cracks which may develop in the concrete walls, floor slab, foundations and/or construction joints. The design and inspection of the waterproofing is not the responsibility of the geotechnical engineer. A waterproofing consultant should be retained in order to recommend a product or method, which would provide protection to subterranean walls, floor slabs and foundations.

7.14 Elevator Pit Design

- 7.14.1 The elevator pit slab and retaining wall should be designed by the project structural engineer. Elevator pits may be designed in accordance with the recommendations in the *Foundation Design and Retaining Wall Design* section of this report (see Sections 7.6 and 7.12).
- 7.14.2 Additional active pressure should be added for a surcharge condition due to sloping ground, vehicular traffic, or adjacent foundations and should be designed for each condition as the project progresses.
- 7.14.3 If retaining wall drainage is to be provided, the drainage system should be designed in accordance with the *Retaining Wall Drainage* section of this report (see Section 7.13).
- 7.14.4 It is suggested that the exterior walls and slab be waterproofed to prevent excessive moisture inside of the elevator pit. Waterproofing design and installation is not the responsibility of the geotechnical engineer.

7.15 Elevator Piston

- 7.15.1 If a plunger-type elevator piston is installed for this project, a deep drilled excavation will be required. It is important to verify that the drilled excavation is not situated immediately adjacent to a foundation or the drilled excavation could compromise the existing foundation support, especially if the drilling is performed subsequent to the foundation construction.
- 7.15.2 Caving is anticipated especially where granular soils are encountered. The contractor should be prepared to use casing and should have it readily available at the commencement of drilling activities. Continuous observation of the drilling and installation of the elevator piston by the Geotechnical Engineer (a representative of Geocon West, Inc.) is required.
- 7.15.3 The annular space between the piston casing and drilled excavation wall should be filled with a minimum of 1½-sack slurry pumped from the bottom up. As an alternative, pea gravel may be utilized. The use of soil to backfill the annular space is not acceptable.

7.16 Temporary Excavations

- 7.16.1 Excavations on the order of 5 feet in height may be required during grading operations. The excavations are expected to expose artificial fill and alluvial soils, which are suitable for vertical excavations up to 5 feet in height where loose soils or caving sands are not present, and where not surcharged by adjacent traffic or structures.
- 7.16.2 Vertical excavations greater than 5 feet or where surcharged by existing structures will require sloping or shoring measures in order to provide a stable excavation. Where sufficient space is available, temporary unsurcharged embankments could be sloped back at a uniform 1:1 slope gradient or flatter up to maximum height of 10 feet. A uniform slope does not have a vertical portion.
- 7.16.3 If excavations in close proximity to an adjacent property line and/or structure are required, special excavation measures such as slot-cutting or shoring may be necessary in order to maintain lateral support of offsite improvements. Recommendations for special excavation measures can be provided under separate cover.
- 7.16.4 Where sloped embankments are utilized, the top of the slope should be barricaded to prevent vehicles and storage loads at the top of the slope within a horizontal distance equal to the height of the slope. If the temporary construction embankments are to be maintained during the rainy season, berms are suggested along the tops of the slopes where necessary to prevent runoff water from entering the excavation and eroding the slope faces. Geocon personnel should inspect the soils exposed in the cut slopes during excavation so that modifications of the slopes can be made if variations in the soil conditions occur. All excavations should be stabilized within 30 days of initial excavation.

7.17 Stormwater Infiltration

7.17.1 During the October 10, 2019, site exploration, boring B3 was utilized to perform percolation testing. Slotted casing was placed in the boring, and the annular space between the casing and excavation was filled with gravel. The boring was then filled with water to pre-saturate the soils. The casing was refilled with water and percolation test readings were performed after repeated flooding of the cased excavation. Based on the test results, the measured percolation rate and design infiltration rate, for the earth materials encountered, are provided in the following table. These values have been calculated in accordance with the Boring Percolation Test Procedure in the County of Los Angeles Department of Public Works GMED *Guidelines for Geotechnical Investigation and Reporting, Low Impact Development Stormwater Infiltration* (June 2017). Percolation test field data and calculation of the measured percolation rate and design infiltration rate are provided on Figure 5.

Boring	Soil Type	Infiltration Depth (ft)	Measured Percolation Rate (in / hour)	Design Infiltration Rate (in / hour)
B3	ML/SM	3-16	0.08	0.04

7.17.2 Based on the test method utilized (Boring Percolation Test), the reduction factor RF_t may be taken as 2.0 in the infiltration system design. Based on the number of tests performed and consistency of the soils throughout the site, it is suggested that the reduction factor RF_v be taken as 1.0. In addition, provided proper maintenance is performed to minimize long-term siltation and plugging, the reduction factor RF_s may be taken as 1.0. Additional reduction factors may be required and should be applied by the engineer in responsible charge of the design of the stormwater infiltration system and based on applicable guidelines.

7.17.3 Based on the results of percolation testing performed at the site, a stormwater infiltration system is not considered feasible for this project (see Figure 5). It is suggested that stormwater be retained, filtered and discharged in accordance with the requirements of the local governing agency.

7.18 Surface Drainage

7.18.1 Proper surface drainage is critical to the future performance of the project. Uncontrolled infiltration of irrigation excess and storm runoff into the soils can adversely affect the performance of the planned improvements. Saturation of a soil can cause it to lose internal shear strength and increase its compressibility, resulting in a change in the original designed engineering properties. Proper drainage should be maintained at all times.

- 7.18.2 All site drainage should be collected and controlled in non-erosive drainage devices. Drainage should not be allowed to pond anywhere on the site, and especially not against any foundation or retaining wall. The site should be graded and maintained such that surface drainage is directed away from structures in accordance with 2016 CBC 1804.4 or other applicable standards. In addition, drainage should not be allowed to flow uncontrolled over any descending slope. Discharge from downspouts, roof drains and scuppers are not recommended onto unprotected soils within 5 feet of the building perimeter. Planters which are located adjacent to foundations should be sealed to prevent moisture intrusion into the soils providing foundation support. Landscape irrigation is not recommended within 5 feet of the building perimeter footings except when enclosed in protected planters.
- 7.18.3 Positive site drainage should be provided away from structures, pavement, and the tops of slopes to swales or other controlled drainage structures.
- 7.18.4 Landscaping planters immediately adjacent to paved areas are not recommended due to the potential for surface or irrigation water to infiltrate the pavement's subgrade and base course. Either a subdrain, which collects excess irrigation water and transmits it to drainage structures, or impervious above-grade planter boxes should be used. In addition, where landscaping is planned adjacent to the pavement, it is recommended that consideration be given to providing a cutoff wall along the edge of the pavement that extends at least 12 inches below the base material.

7.19 Plan Review

- 7.19.1 Grading, shoring and foundation plans should be reviewed by the Geotechnical Engineer (a representative of Geocon West, Inc.), prior to finalization to verify that the plans have been prepared in substantial conformance with the recommendations of this report and to provide additional analyses or recommendations.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

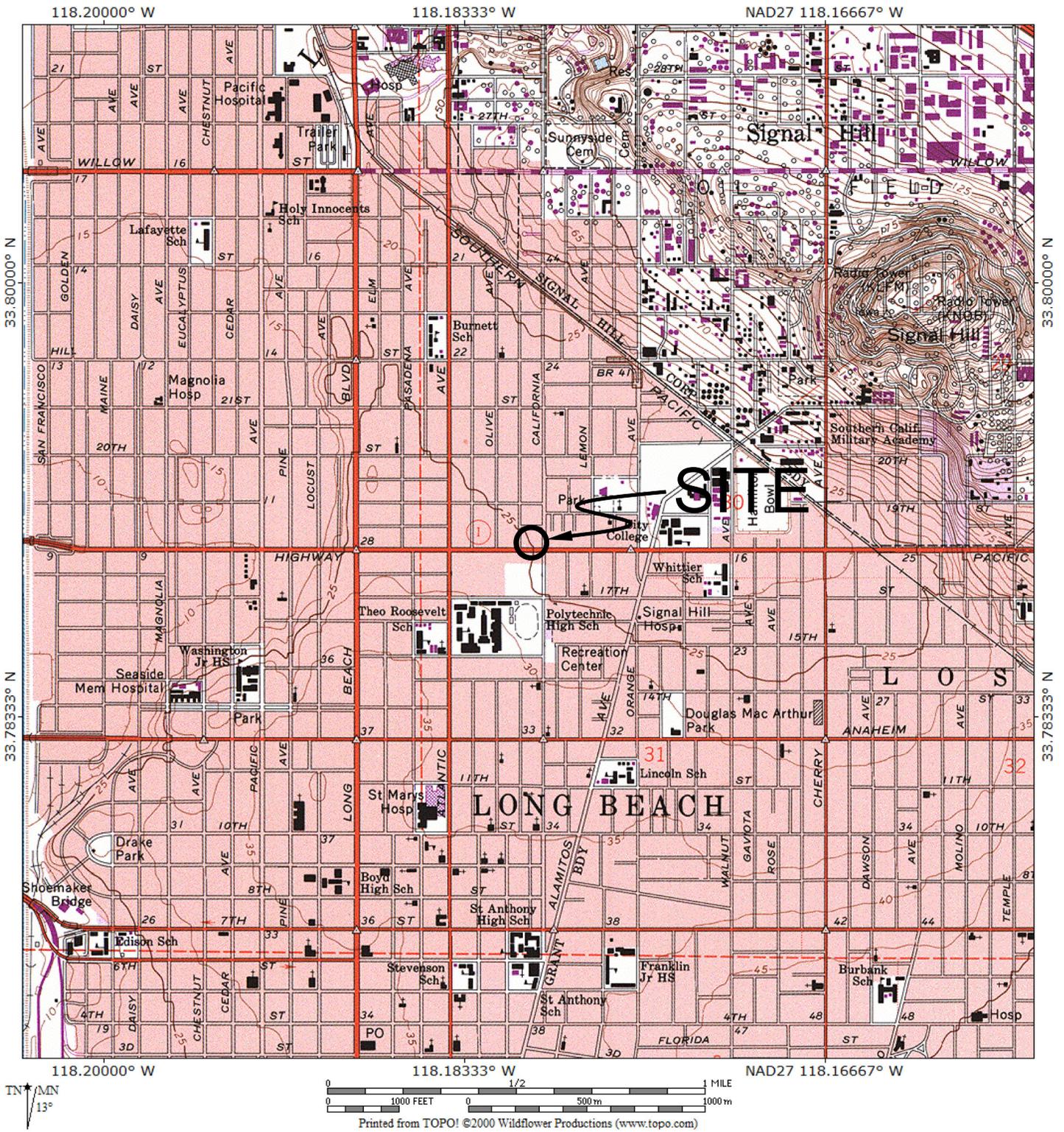
1. The recommendations of this report pertain only to the site investigated and are based upon the assumption that the soil conditions do not deviate from those disclosed in the investigation. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that anticipated herein, Geocon West, Inc. should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous or corrosive materials was not part of the scope of services provided by Geocon West, Inc.
2. This report is issued with the understanding that it is the responsibility of the owner, or of his representative, to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project and incorporated into the plans, and the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.
3. The findings of this report are valid as of the date of this report. However, changes in the conditions of a property can occur with the passage of time, whether they are due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of three years.
4. The firm that performed the geotechnical investigation for the project should be retained to provide testing and observation services during construction to provide continuity of geotechnical interpretation and to check that the recommendations presented for geotechnical aspects of site development are incorporated during site grading, construction of improvements, and excavation of foundations. If another geotechnical firm is selected to perform the testing and observation services during construction operations, that firm should prepare a letter indicating their intent to assume the responsibilities of project geotechnical engineer of record. A copy of the letter should be provided to the regulatory agency for their records. In addition, that firm should provide revised recommendations concerning the geotechnical aspects of the proposed development, or a written acknowledgement of their concurrence with the recommendations presented in our report. They should also perform additional analyses deemed necessary to assume the role of Geotechnical Engineer of Record.

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U.S.G.S. TOPOGRAPHIC MAPS, 7.5 MINUTE SERIES, LONG BEACH, CA QUADRANGLE

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DRAFTED BY: CB

CHECKED BY: SFK

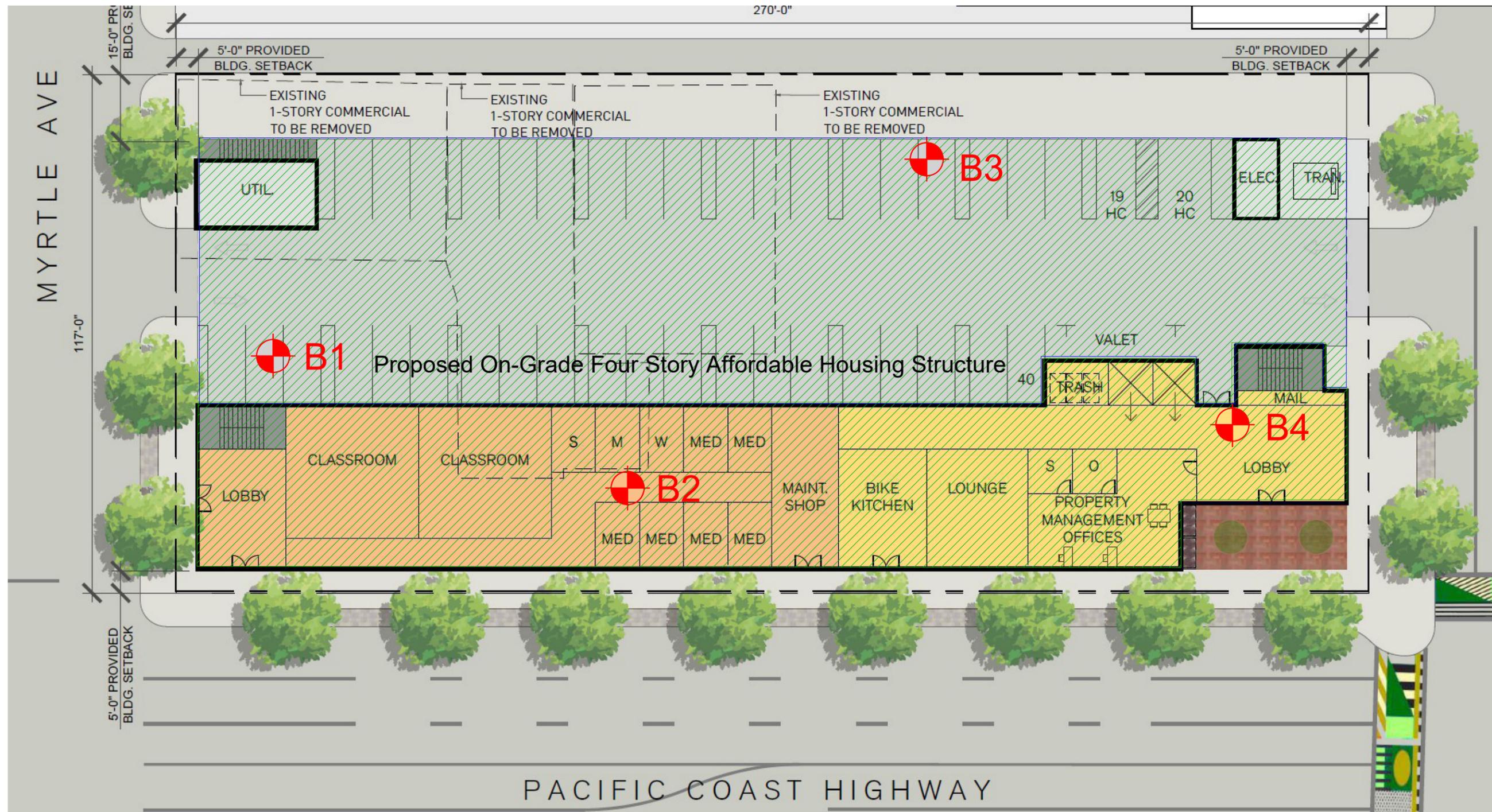
VICINITY MAP

901-941 EAST PACIFIC COAST HIGHWAY
LONG BEACH, CALIFORNIA

NOV. 2019

PROJECT NO. W1071-06-01

FIG. 1



Legend

-  B1 Boring Locations
-  Limit of Proposed Improvements



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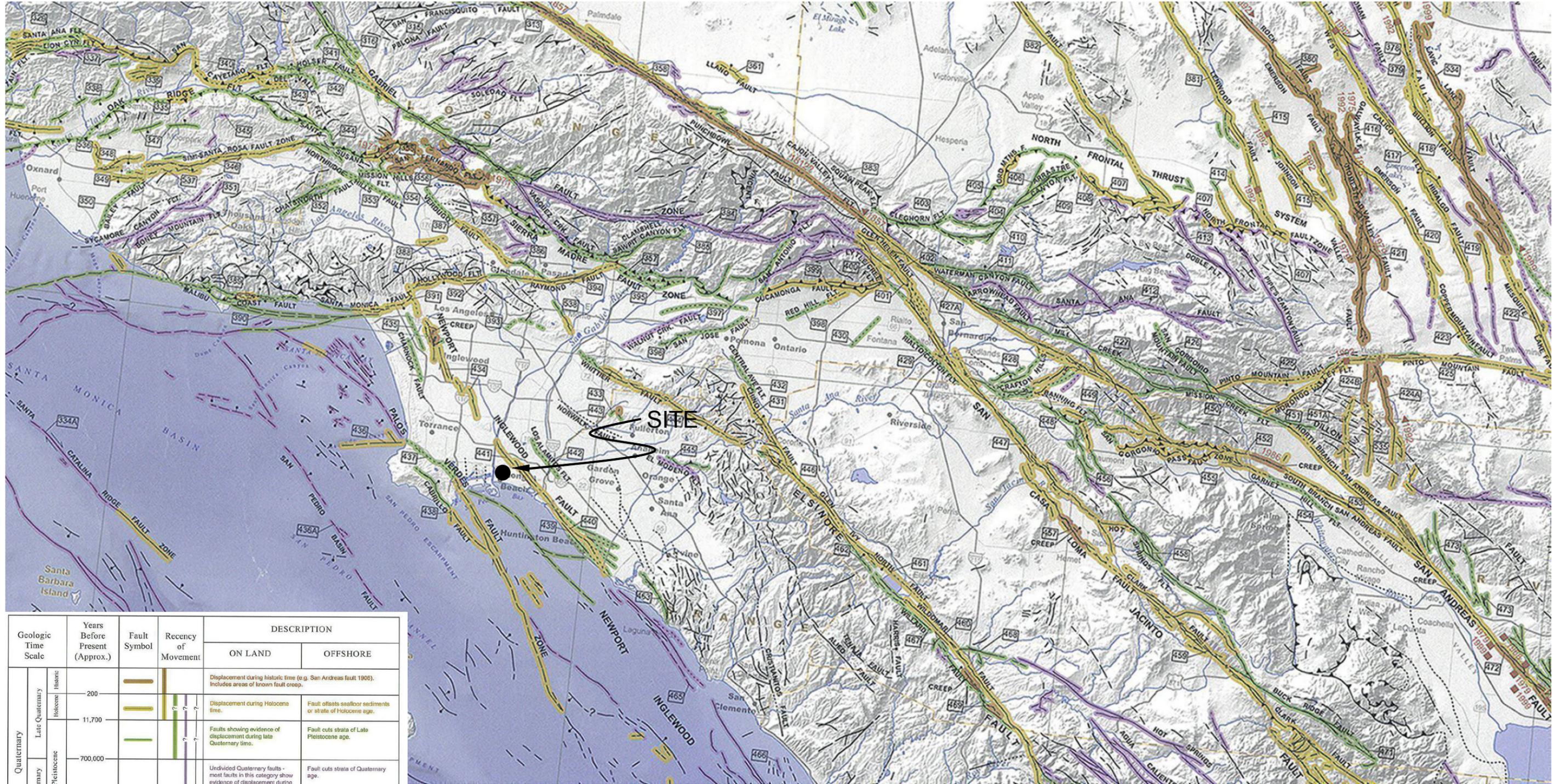
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SITE PLAN

901-941 East Pacific Coast Highway
Long Beach, California

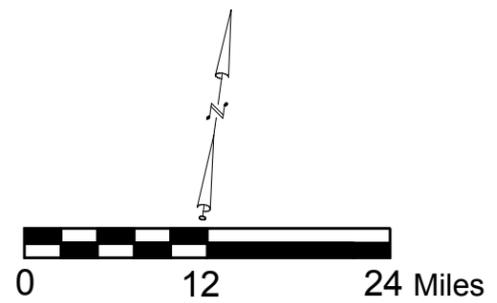
NOV. 2019 PROJECT NO: W1071-06-01 FIG. 2

Reference: Jennings, C.W. and Bryant, W. A., 2010, Fault Activity Map of California, California Geological Survey Geologic Data Map No. 6.



Geologic Time Scale	Years Before Present (Approx.)	Fault Symbol	Recency of Movement	DESCRIPTION	
				ON LAND	OFFSHORE
Quaternary	Late Quaternary Holocene 0 - 11,700			Displacement during historic time (e.g. San Andreas fault 1906). Includes areas of known fault creep.	Fault offsets surficial sediments or strata of Holocene age.
	Pleistocene 0 - 700,000			Faults showing evidence of displacement during late Quaternary time.	Fault cuts strata of Late Pleistocene age.
Early Quaternary	0 - 1,600,000			Undivided Quaternary faults - most faults in this category show evidence of displacement during the last 1,600,000 years; possible exceptions are faults which displace rocks of undifferentiated Plio-Pleistocene age.	Fault cuts strata of Quaternary age.
Pre-Quaternary	1,600,000 - 4.5 billion (Age of Earth)			Faults without recognized Quaternary displacement or showing evidence of no displacement during Quaternary time. Not necessarily inactive.	Fault cuts strata of Pliocene or older age.

* Quaternary now recognized as extending to 2.6 Ma (Walker and Geissman, 2009). Quaternary faults in this map were established using the previous 1.6 Ma criterion.



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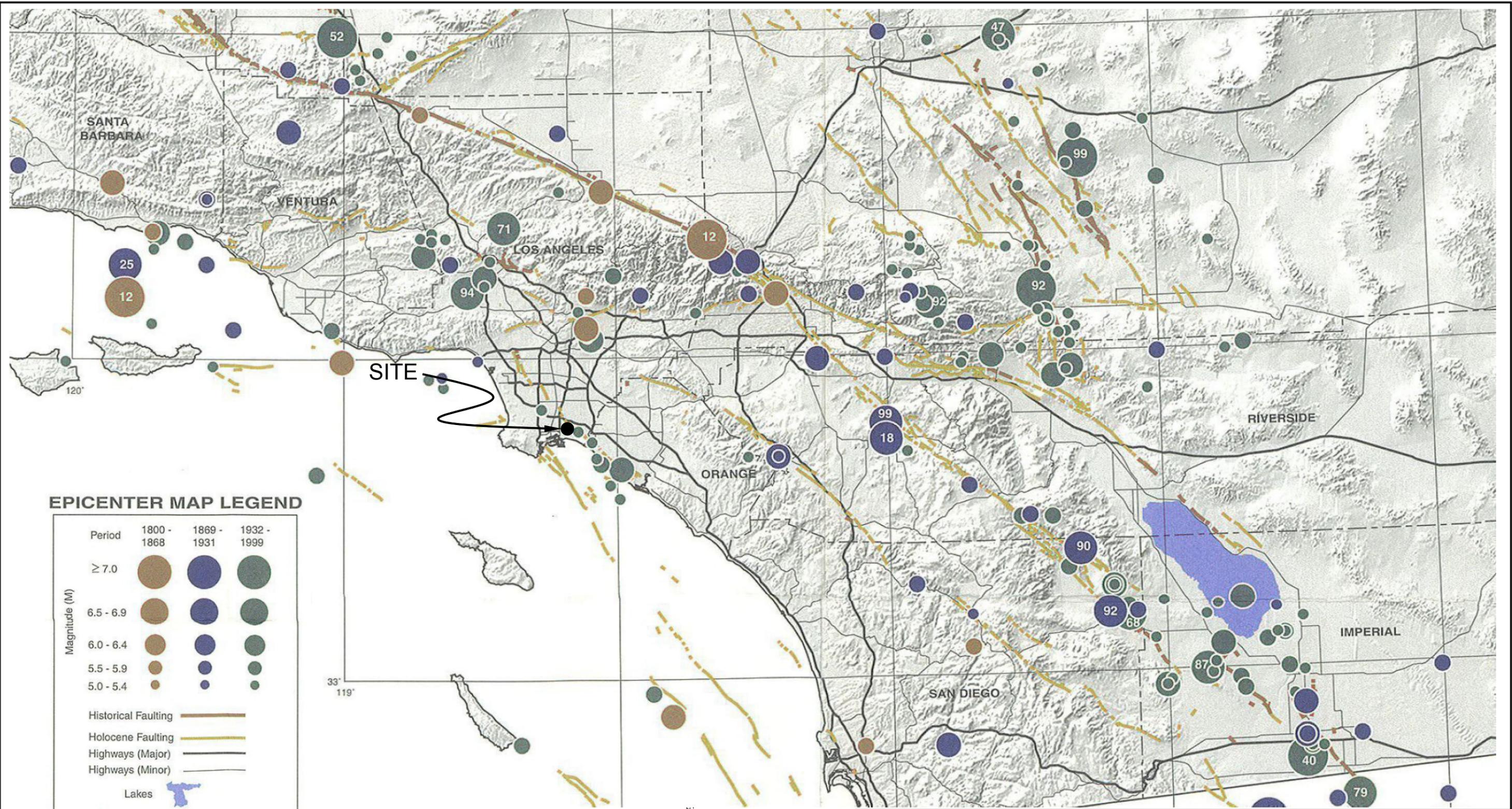
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REGIONAL FAULT MAP

901-941 EAST PACIFIC COAST HIGHWAY
 LONG BEACH, CALIFORNIA

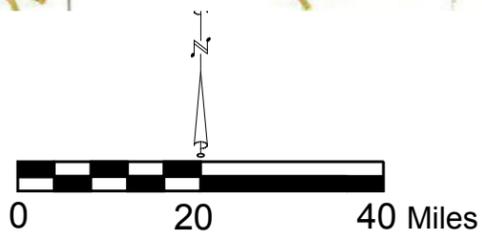
NOV. 2019 PROJECT NO. W1071-06-01 FIG. 3



EPICENTER MAP LEGEND

Period	1800 - 1868	1869 - 1931	1932 - 1999
Magnitude (M) ≥ 7.0			
6.5 - 6.9			
6.0 - 6.4			
5.5 - 5.9			
5.0 - 5.4			
Historical Faulting			
Holocene Faulting			
Highways (Major)			
Highways (Minor)			
Lakes			
	Last two digits of M ≥ 6.5 earthquake year		

Reference: Topozada, T., Branum, D., Petersen, M., Hallstrom, C., Cramer, C., and Reichle, M., 2000, Epicenters and Areas Damaged by M \geq 5 California Earthquakes, 1800 - 1999, California Geological Survey, Map Sheet 49.



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REGIONAL SEISMICITY MAP

901-941 EAST PACIFIC COAST HIGHWAY
LONG BEACH, CALIFORNIA

NOV. 2019

PROJECT NO. W1071-06-01

FIG.4

BORING PERCOLATION TEST FIELD LOG

<p>Date: <u>Wednesday, October 9, 2019</u></p> <p>Project Number: <u>W1071-06-01</u></p> <p>Project Location: <u>901-941 E. Pacific Coast Hwy</u></p> <p>Earth Description: <u>ML/SM</u></p> <p>Tested By: <u>JJK</u></p> <p>Liquid Description: <u>Water</u></p> <p>Measurement Method: <u>Sounder</u></p> <p>Start Time for Pre-Soak: <u>11:51 AM</u></p> <p>Start Time for Standard: <u>12:56 PM</u></p>	<p>Boring/Test Number: <u>B3</u></p> <p>Diameter of Boring: <u>8</u> inches</p> <p>Diameter of Casing: <u>2</u> inches</p> <p>Depth of Boring: <u>16.6</u> feet</p> <p>Depth to Invert of BMP: <u>15</u> feet</p> <p>Depth to Water Table: <u>26.6</u> feet</p> <p>Depth to Initial Water Depth (d_i): <u>37.2</u> inches</p> <p>Water Remaining in Boring (Y/N): <u>Yes</u></p> <p>Standard Time Interval Between Readings: <u>30</u></p>
--	---

Reading Number	Time Start (hh:mm)	Time End (hh:mm)	Elapsed Time Δtime (min)	Water Drop During Standard Time Interval, Δd (in)	Soil Description Notes Comments
1	12:00 PM	12:30 PM	30	10.2	
2	12:45 PM	1:15 PM	30	9.2	
3	1:22 PM	1:52 PM	30	7.4	
4	1:57 PM	2:27 PM	30	5.8	
5	2:30 PM	3:00 PM	30	4.6	
6	3:05 PM	3:35 PM	30	3.2	Stabilized Readings
7	3:37 PM	4:07 PM	30	3.7	Achieved with Readings
8	4:10 PM	4:40 PM	30	3.0	6, 7, and 8

MEASURED PERCOLATION RATE & DESIGN INFILTRATION RATE CALCULATIONS*

* Calculations Below Based on Stabilized Readings Only

Boring Radius, r: 4 inches
 Test Section Height, h: 162.0 inches

Test Section Surface Area, A = 2πrh + πr²
 A = **4122** in²

Discharged Water Volume, V = πr²Δd

Percolation Rate = (V/A) / ΔT

Reading 6	V =	163	in ³	Percolation Rate =	0.08	inches/hour
Reading 7	V =	187	in ³	Percolation Rate =	0.09	inches/hour
Reading 8	V =	151	in ³	Percolation Rate =	0.07	inches/hour

Measured Percolation Rate = **0.08** inches/hour

Reduction Factors

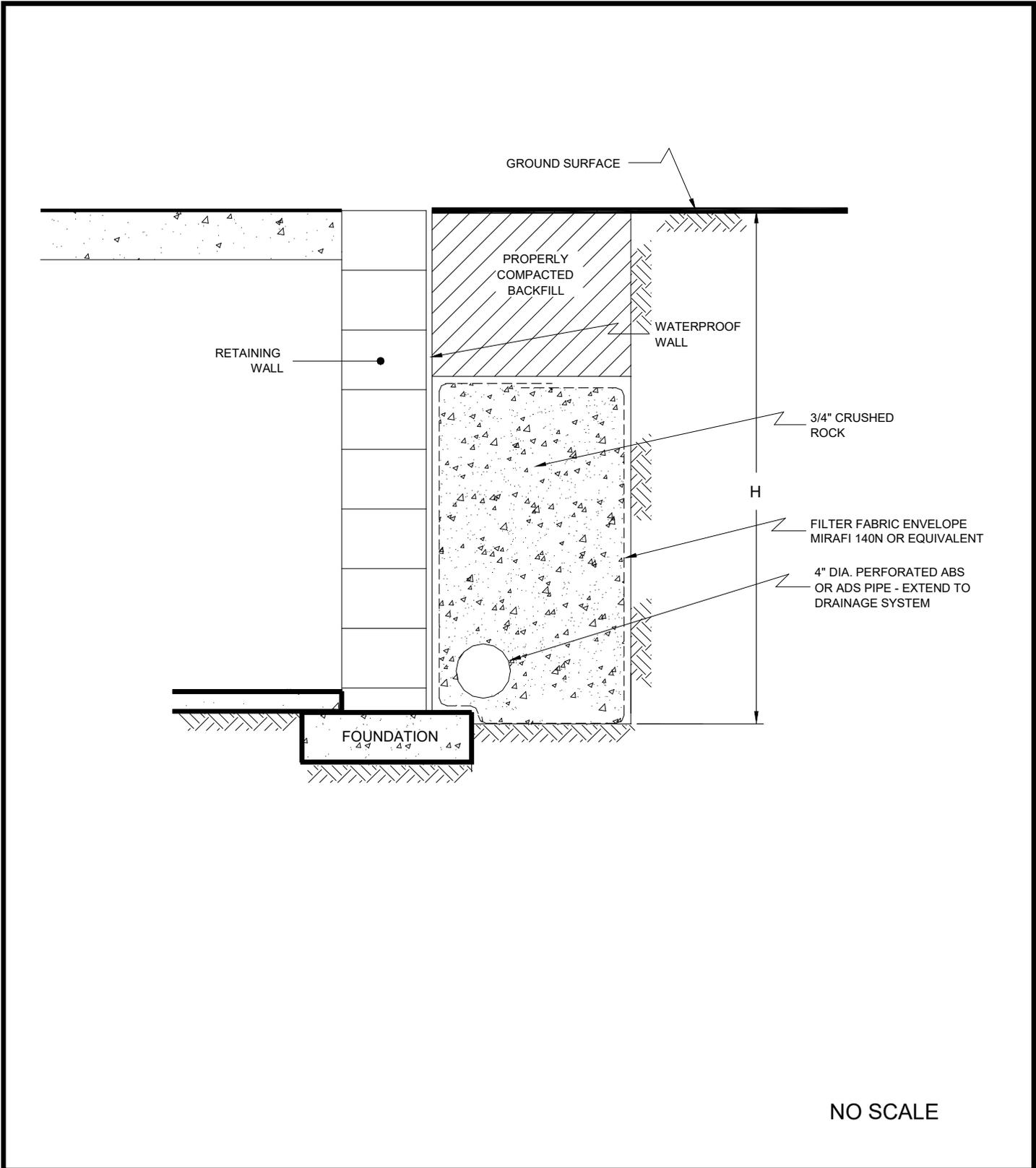
Boring Percolation Test, RF_t = 2
 Site Variability, RF_v = 1
 Long Term Siltation, RF_s = 1

Total Reduction Factor, RF = RF_t × RF_v × RF_s
 Total Reduction Factor = 2

Design Infiltration Rate

Design Infiltration Rate = Measured Percolation Rate / RF

Design Infiltration Rate = **0.04** inches/hour



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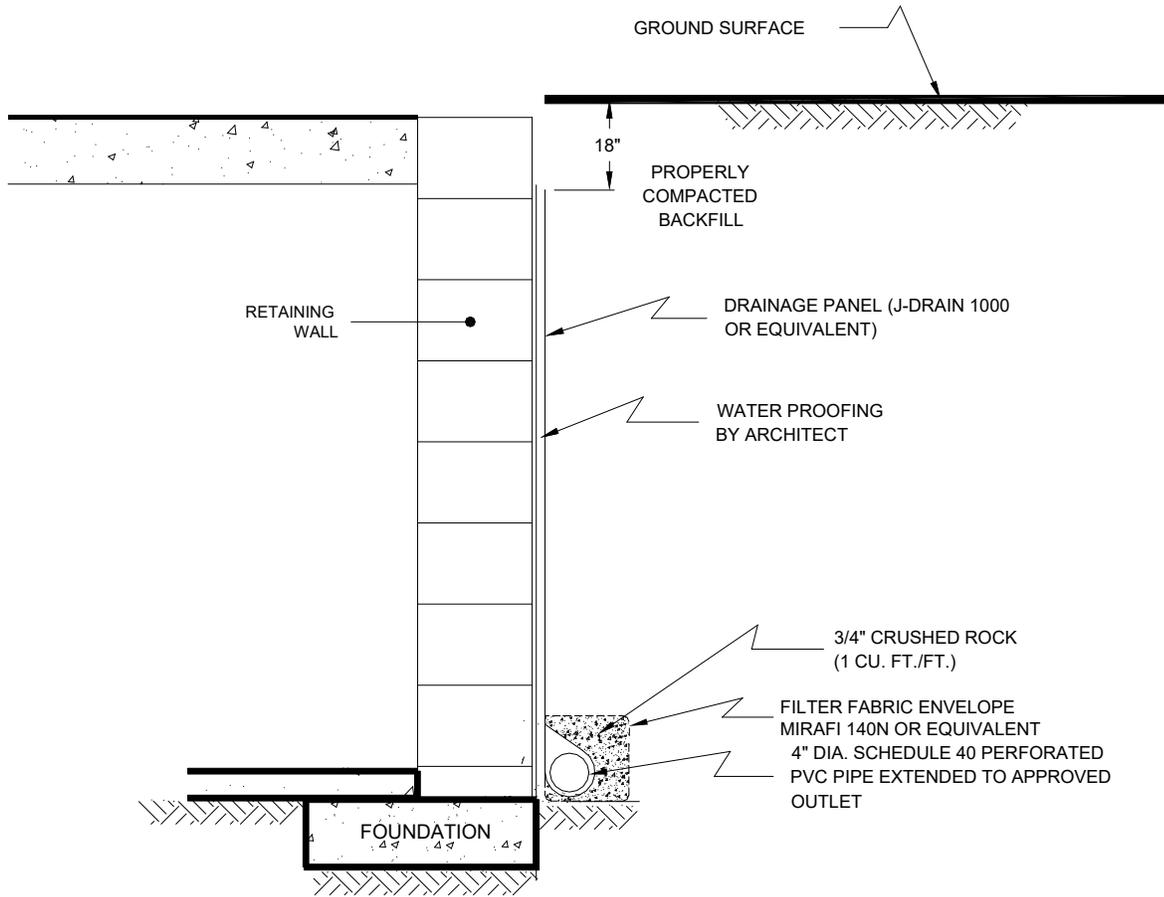
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RETAINING WALL DRAIN DETAIL

901-941 East Pacific Coast Highway

Long Beach, California

NOV. 2019 PROJECT NO. W1071-06-01 FIG. 6



NO SCALE

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CHECKED BY: HHD

RETAINING WALL DRAIN DETAIL

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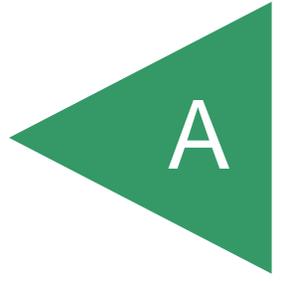
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PROJECT NO. W1071-06-01

FIG. 7

APPENDIX

A



APPENDIX A

FIELD INVESTIGATION

The site was explored on October 9, 2019, by excavating four 8-inch-diameter borings using a truck-mounted hollow-stem auger drilling machine. The borings were excavated to a maximum depth of 30½ feet below the existing ground surface. Representative and relatively undisturbed samples were obtained by driving a 3-inch, O. D., California Modified Sampler into the “undisturbed” soil mass with blows from a 140-pound auto-hammer falling 30 inches. The California Modified Sampler was equipped with 1-inch by 2³/₈-inch diameter brass sampler rings to facilitate soil removal and testing. Bulk samples were also obtained.

The soil conditions encountered in the borings were visually examined, classified and logged in general accordance with the Unified Soil Classification System (USCS). The logs of the borings are presented on Figures A1 through A4. The logs depict the soil and geologic conditions encountered and the depth at which samples were obtained. The logs also include our interpretation of the conditions between sampling intervals. Therefore, the logs contain both observed and interpreted data. We determined the lines designating the interface between soil materials on the logs using visual observations, penetration rates, excavation characteristics and other factors. The transition between materials may be abrupt or gradual. Where applicable, the logs were revised based on subsequent laboratory testing. The location of the borings are shown on Figure 2.

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	BORING 1		PENETRATION RESISTANCE (BLOWS/FT*)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					ELEV. (MSL.) --	DATE COMPLETED <u>10/9/19</u>			
					EQUIPMENT <u>HOLLOW STEM AUGER</u> BY: <u>JJK</u>				
MATERIAL DESCRIPTION									
0	BULK 0-5'					ASPHALT: 5.5" BASE: NONE ARTIFICIAL FILL Sandy Silt, stiff, slightly moist, brown.			
2	B1@2'			ML		ALLUVIUM Clayey Silt, hard, moist, reddish brown.	65	117.7	15.4
4						Sandy Silt, hard, moist, reddish brown, fine-grained sand.			
6	B1@5'			ML			47	122.7	14.1
8	B1@7'					Silty Sand, medium dense, moist, brown, fine-grained sand.	22	165.2	11.8
10	B1@10'			SM		- more silt	29	121.7	12.1
14						Silt, hard, slightly moist, olive brown.			
16	B1@15'			ML			90	111.0	19.7
18						Silty Sand, medium dense, slightly moist, olive brown, fine-grained sand.			
20	B1@20'			SM			47	115.8	14.4
24									
25	B1@25'			SP-SM		Sand with Silt, poorly graded, dense, very moist, olive gray, fine-grained.	75	98.1	26.8
					Total depth of boring: 25.5 feet Fill to 2.5 feet. Seepage encountered at 23.5 feet. Backfilled with soil cuttings and tamped. Patched with cold patch A/C. *Penetration resistance for 140-pound hammer falling 30 inches by auto-hammer.				

Figure A1,
Log of Boring 1, Page 1 of 1

W1071-06-01 BORING LOGS.GPJ

SAMPLE SYMBOLS		... SAMPLING UNSUCCESSFUL		... STANDARD PENETRATION TEST		... DRIVE SAMPLE (UNDISTURBED)
		... DISTURBED OR BAG SAMPLE		... CHUNK SAMPLE		... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	BORING 2		PENETRATION RESISTANCE (BLOWS/FT*)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					ELEV. (MSL.) --	DATE COMPLETED <u>10/9/19</u>			
					EQUIPMENT <u>HOLLOW STEM AUGER</u> BY: <u>JJK</u>				
MATERIAL DESCRIPTION									
0									
2	B2@2'					CONCRETE: 3" BASE: NONE ARTIFICIAL FILL Sandy Silt, stiff, slightly moist, reddish brown, fine-grained sand.			
4	B2@5'			ML		ALLUVIUM Clayey Silt, hard, slightly moist, reddish brown, trace fine-grained sand.	36	127.5	13.2
6							48	122.1	14.0
8	B2@7'					Sandy Silt, stiff, moist, reddish brown, trace clay, fine-grained sand.	28	121.9	14.1
10	B2@10'			ML		- no clay	25	113.3	16.2
12									
14				SM		Silty Sand, very dense, slightly moist, grayish brown, fine-grained sand.			
16	B2@15'					Silt, hard, slightly moist, grayish brown.	50 (5")	120.2	12.0
18				ML					
20	B2@20'					Sand with Silt, poorly graded, very dense, brownish olive gray, fine-grained sand.	50 (2")	114.8	9.4
22				SP-SM					
24						Silt, hard, slightly moist to moist, olive brown, areas of cementation.			
25	B2@25'			ML			65	105.0	26.1
					Total depth of boring: 25.5 feet Fill to 2.5 feet. No groundwater encountered. Backfilled with soil cuttings and tamped. Concrete patched. *Penetration resistance for 140-pound hammer falling 30 inches by auto-hammer.				

Figure A2,
Log of Boring 2, Page 1 of 1

W1071-06-01 BORING LOGS.GPJ

SAMPLE SYMBOLS	 ... SAMPLING UNSUCCESSFUL	 ... STANDARD PENETRATION TEST	 ... DRIVE SAMPLE (UNDISTURBED)
	 ... DISTURBED OR BAG SAMPLE	 ... CHUNK SAMPLE	 ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	BORING 3		PENETRATION RESISTANCE (BLOWS/FT*)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					ELEV. (MSL.) --	DATE COMPLETED <u>10/9/19</u>			
					EQUIPMENT <u>HOLLOW STEM AUGER</u> BY: <u>JJK</u>				
MATERIAL DESCRIPTION									
0					ARTIFICIAL FILL Silt with Sand, hard, dry, brown, fine-grained sand.				
2	B3@2'						50 (4")	116.6	4.8
4				ML	ALLUVIUM Silt, hard, dry to slightly moist, reddish brown, trace fine-grained sand.				
6	B3@5'						55	123.5	6.7
8	B3@7'			ML	Clayey Silt, hard, dry to slightly moist, reddish brown, trace fine-grained sand.		53	120.1	11.6
10	B3@10'			SM	Silty Sand, loose, slightly moist, brown, fine-grained.		16	112.1	13.3
14					Silt, hard, moist, brownish olive gray.				
16	B3@15'			ML			50 (4")	110.8	19.5
18				SP-SM	Sand with Silt, poorly graded, dense, moist, olive gray, fine- to medium-grained.				
20	B3@20'			ML	Silt, hard, moist, olive gray.		68	109.8	4.0
22					Silty Sand, very dense, moist, olive gray, fine-grained.				
24									
26	B3@25'			SM			50 (5")	108.1	23.5
28				SP	Sand, poorly graded, very dense, wet, olive gray, fine- to medium-grained.				

Figure A3,
Log of Boring 3, Page 1 of 2

W1071-06-01 BORING LOGS.GPJ

SAMPLE SYMBOLS		... SAMPLING UNSUCCESSFUL		... STANDARD PENETRATION TEST		... DRIVE SAMPLE (UNDISTURBED)
		... DISTURBED OR BAG SAMPLE		... CHUNK SAMPLE		... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	BORING 3			PENETRATION RESISTANCE (BLOWS/FT*)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					ELEV. (MSL.) --	DATE COMPLETED	10/9/19			
					EQUIPMENT <u>HOLLOW STEM AUGER</u>			BY: <u>JKK</u>		
MATERIAL DESCRIPTION										
30	B3@30'			SP	Total depth of boring: 30.5 feet Fill to 3 feet. Seepage encountered at 26 feet. Set percolation well at 16 feet. *Penetration resistance for 140-pound hammer falling 30 inches by auto-hammer.			50 (5")	103.3	25.4

**Figure A3,
Log of Boring 3, Page 2 of 2**

W1071-06-01 BORING LOGS.GPJ

SAMPLE SYMBOLS	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED.
IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	BORING 4		PENETRATION RESISTANCE (BLOWS/FT*)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					ELEV. (MSL.) --	DATE COMPLETED <u>10/9/19</u>			
					EQUIPMENT <u>HOLLOW STEM AUGER</u> BY: <u>JJK</u>				
					MATERIAL DESCRIPTION				
0	BULK 0-5'				ARTIFICIAL FILL Silt, stiff, dry, brown.				
2	B4@2'				- hard		50 (5")	109.6	4.3
4	B4@5'			ML	ALLUVIUM Sandy Silt, hard, dry to slightly moist, reddish brown, fine-grained sand.		50 (5")	109.5	12.4
6	B4@7'				- stiff, slightly moist, trace clay		32	102.8	10.5
8									
10	B4@10'			ML	Clayey Silt, firm, slightly moist, reddish brown.		20	101.5	11.4
12									
14	B4@15'			ML	Silt with Sand, stiff, slightly moist to moist, brownish olive gray.		22	108.9	18.9
16									
18									
20	B4@20'			ML	Sandy Silt, stiff, moist, fine-grained sand.		42	108.3	9.3
22									
24	B4@25'				- hard, olive gray		78	107.3	21.9
					Total depth of boring; 25.5 feet Fill to 3 feet. No groundwater encountered. Backfilled with soil cuttings and tamped. *Penetration resistance for 140-pound hammer falling 30 inches by auto-hammer				

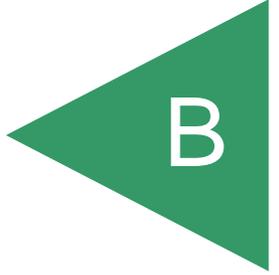
Figure A4,
Log of Boring 4, Page 1 of 1

W1071-06-01 BORING LOGS.GPJ

SAMPLE SYMBOLS		... SAMPLING UNSUCCESSFUL		... STANDARD PENETRATION TEST		... DRIVE SAMPLE (UNDISTURBED)
		... DISTURBED OR BAG SAMPLE		... CHUNK SAMPLE		... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

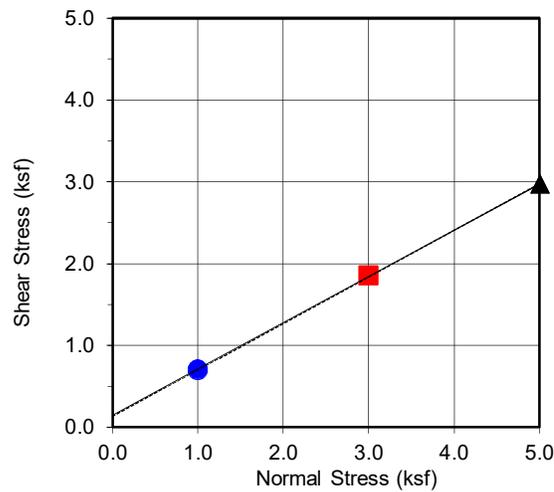
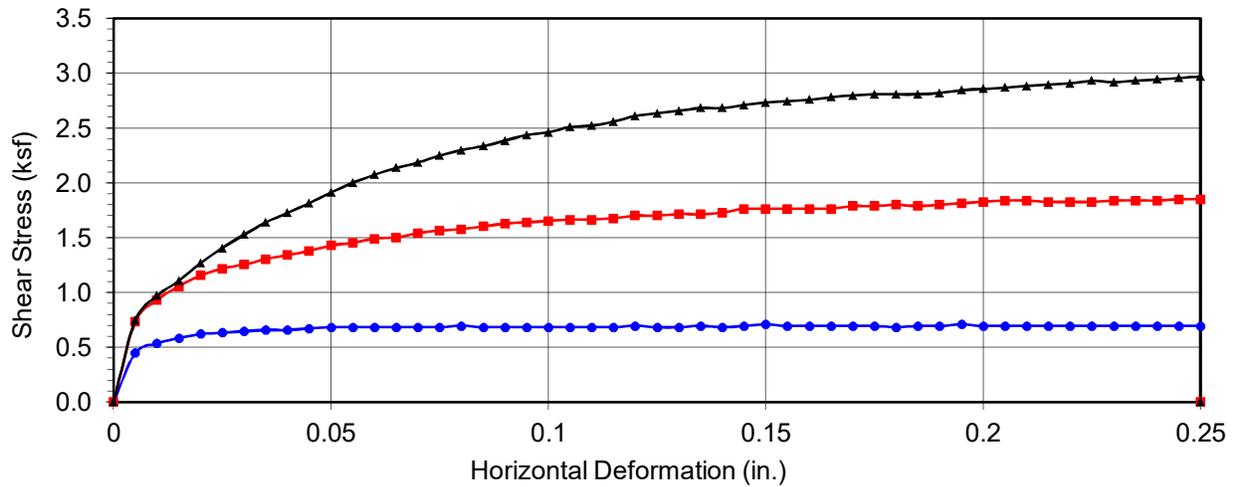
APPENDIX



APPENDIX B

LABORATORY TESTING

Laboratory tests were performed in accordance with generally accepted test methods of the International ASTM, or other suggested procedures. Selected samples were tested for direct shear strength, compaction, consolidation characteristics, expansive index, corrosivity, in-place dry density and moisture content. The results of the laboratory tests are summarized in Figures B1 through B18. The in-place dry density and moisture content of the samples tested are presented on the boring logs, Appendix A.



Boring No.	B1 & B4
Sample No.	B1 & B4 @ 0-5'
Depth (ft)	0-5'
<u>Sample Type:</u>	Ring

<u>Soil Identification:</u>		
Brown Silty Sand (SM)		
Strength Parameters		
	C (psf)	ϕ ($^{\circ}$)
Peak	147	29.5
Ultimate	133	29.6

Normal Stress (kip/ft ²)	1	3	5
Peak Shear Stress (kip/ft ²)	● 0.71	■ 1.85	▲ 2.97
Shear Stress @ End of Test (ksf)	○ 0.70	□ 1.85	△ 2.97
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	10.2	10.1	10.2
Initial Dry Density (pcf)	114.0	114.0	114.0
Initial Degree of Saturation (%)	57.4	56.8	57.5
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	16.6	16.1	15.6



DIRECT SHEAR TEST RESULTS

Consolidated Drained ASTM D-3080

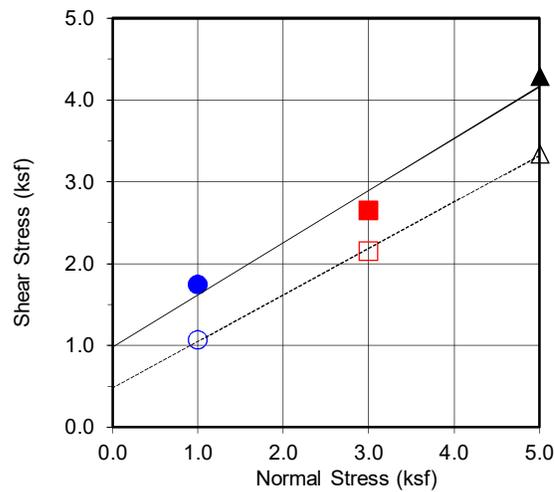
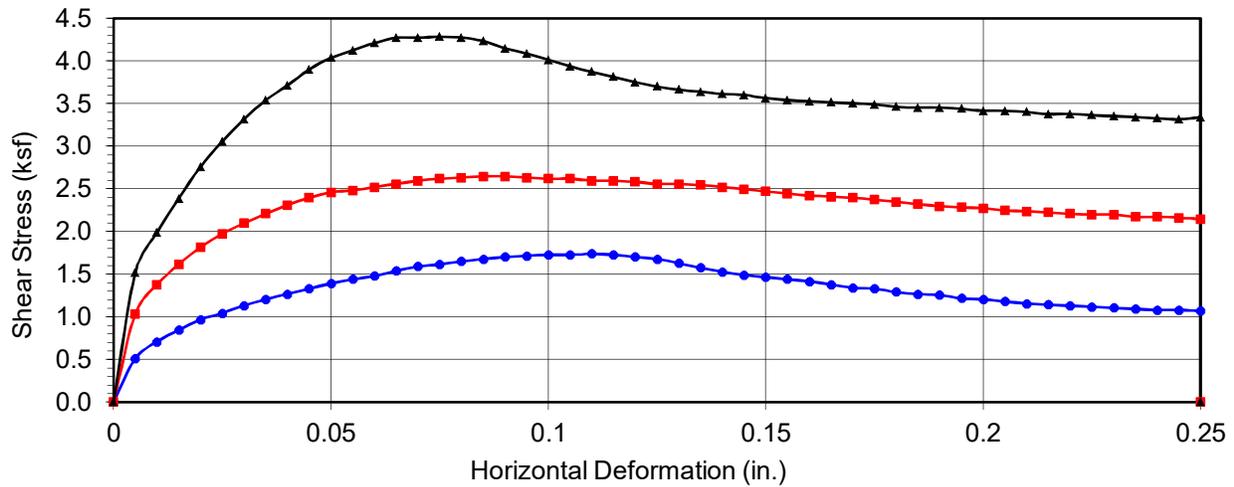
Checked by: JJK

Project No.: W1071-06-01

901-941 East Pacific Coast Highway
Long Beach, California

NOV. 2019

Figure B1



Boring No.	B1
Sample No.	B1 @ 2'
Depth (ft)	2
<u>Sample Type:</u>	Ring

<u>Soil Identification:</u>		
Reddish Brown Silt (ML)		
Strength Parameters		
	C (psf)	ϕ ($^{\circ}$)
Peak	980	32.5
Ultimate	481	29.6

Normal Stress (kip/ft ²)	1	3	5
Peak Shear Stress (kip/ft ²)	● 1.74	■ 2.65	▲ 4.28
Shear Stress @ End of Test (ksf)	○ 1.07	□ 2.15	△ 3.34
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	15.1	14.1	15.4
Initial Dry Density (pcf)	117.8	120.8	119.3
Initial Degree of Saturation (%)	94.8	96.2	100.8
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	16.6	14.5	15.8



DIRECT SHEAR TEST RESULTS

Consolidated Drained ASTM D-3080

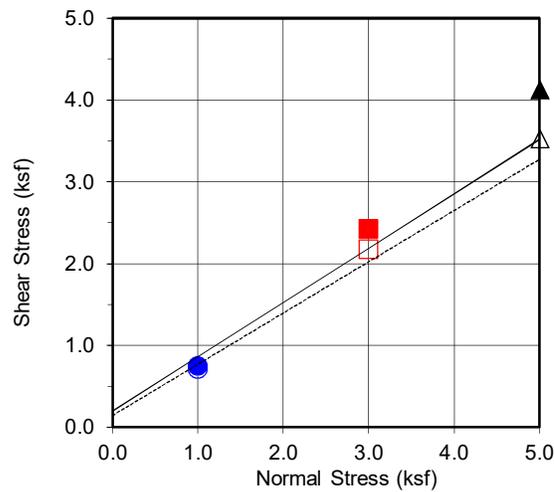
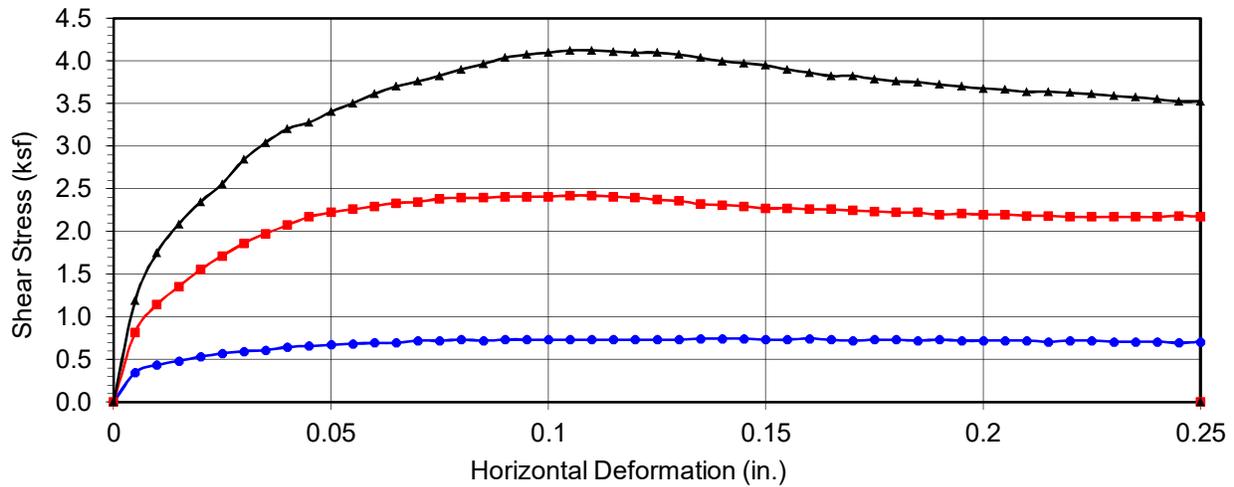
Checked by: JJK

Project No.: W1071-06-01

901-941 East Pacific Coast Highway
Long Beach, California

NOV. 2019

Figure B2



Boring No.	B4
Sample No.	B4@5
Depth (ft)	5
<u>Sample Type:</u>	Ring

<u>Soil Identification:</u>		
Brown Sandy Silt (ML)		
Strength Parameters		
	C (psf)	ϕ ($^{\circ}$)
Peak	197	33.6
Ultimate	144	32.1

Normal Stress (kip/ft ²)	1	3	5
Peak Shear Stress (kip/ft ²)	● 0.75	■ 2.42	▲ 4.12
Shear Stress @ End of Test (ksf)	○ 0.71	□ 2.17	△ 3.53
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	11.9	12.1	12.4
Initial Dry Density (pcf)	101.8	109.3	117.9
Initial Degree of Saturation (%)	49.0	60.0	78.0
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	19.5	17.2	16.6



DIRECT SHEAR TEST RESULTS

Consolidated Drained ASTM D-3080

Checked by: JJK

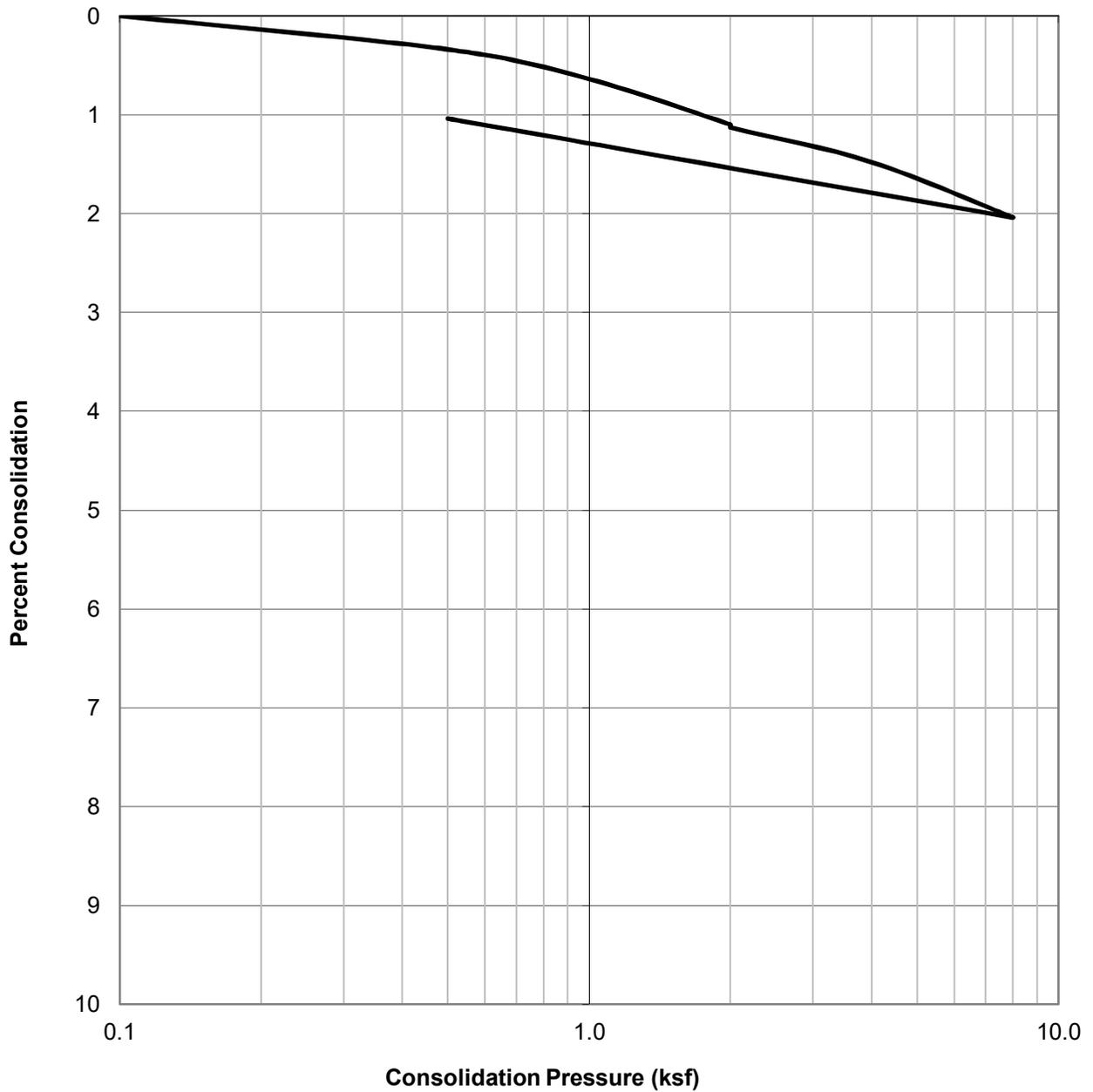
Project No.: W1071-06-01

901-941 East Pacific Coast Highway
Long Beach, California

NOV. 2019

Figure B3

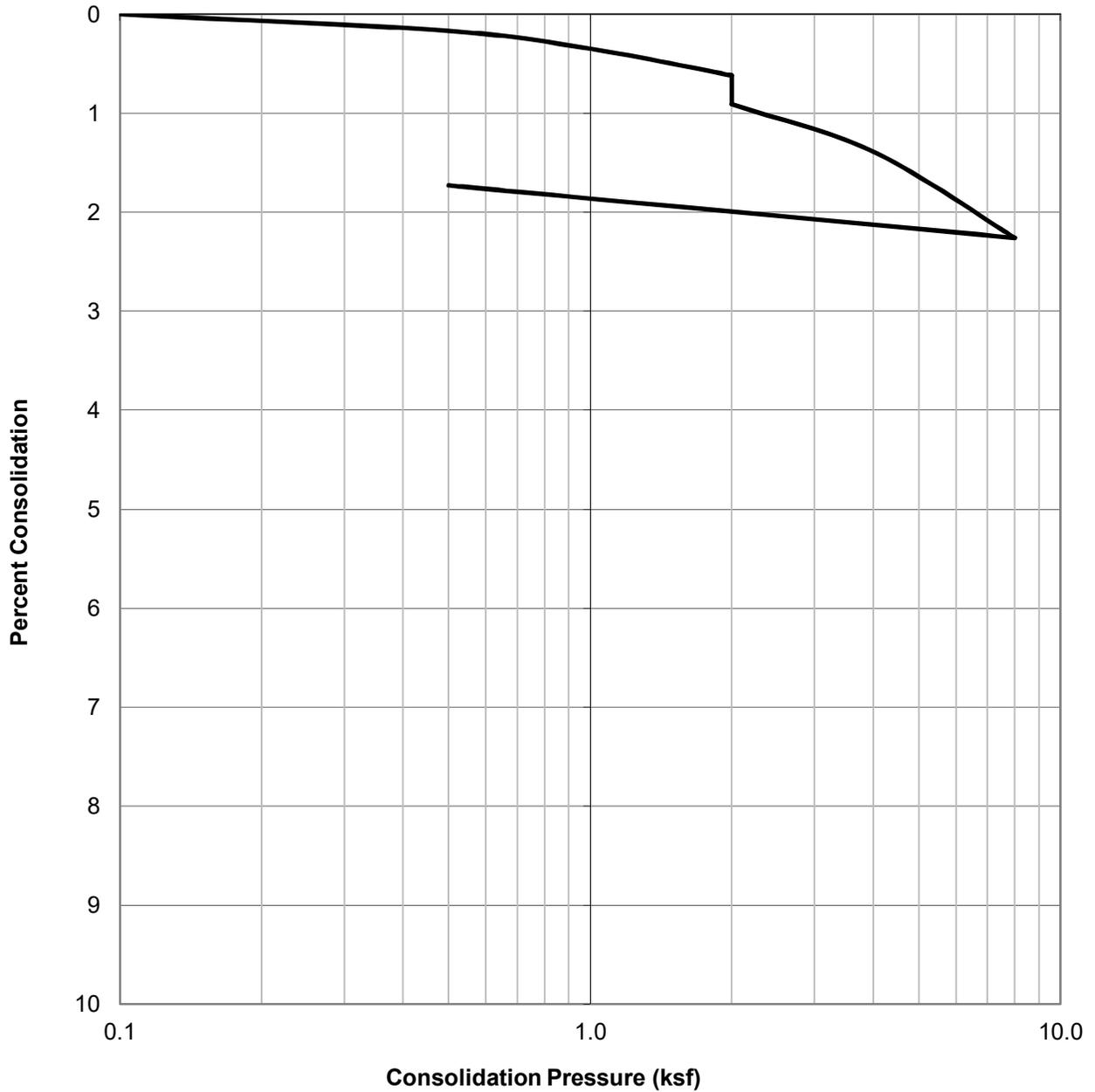
WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B1@5	Dark Brown Silt (ML)	118.2	14.1	14.7

	CONSOLIDATION TEST RESULTS ASTM D-2435	Project No.: W1071-06-01
	Checked by: JJK	901-941 East Pacific Coast Highway Long Beach, California
		NOV. 2019 Figure B4

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B1@7	Brown Silty Sand (SM)	114.2	11.8	14.8



CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: JJK

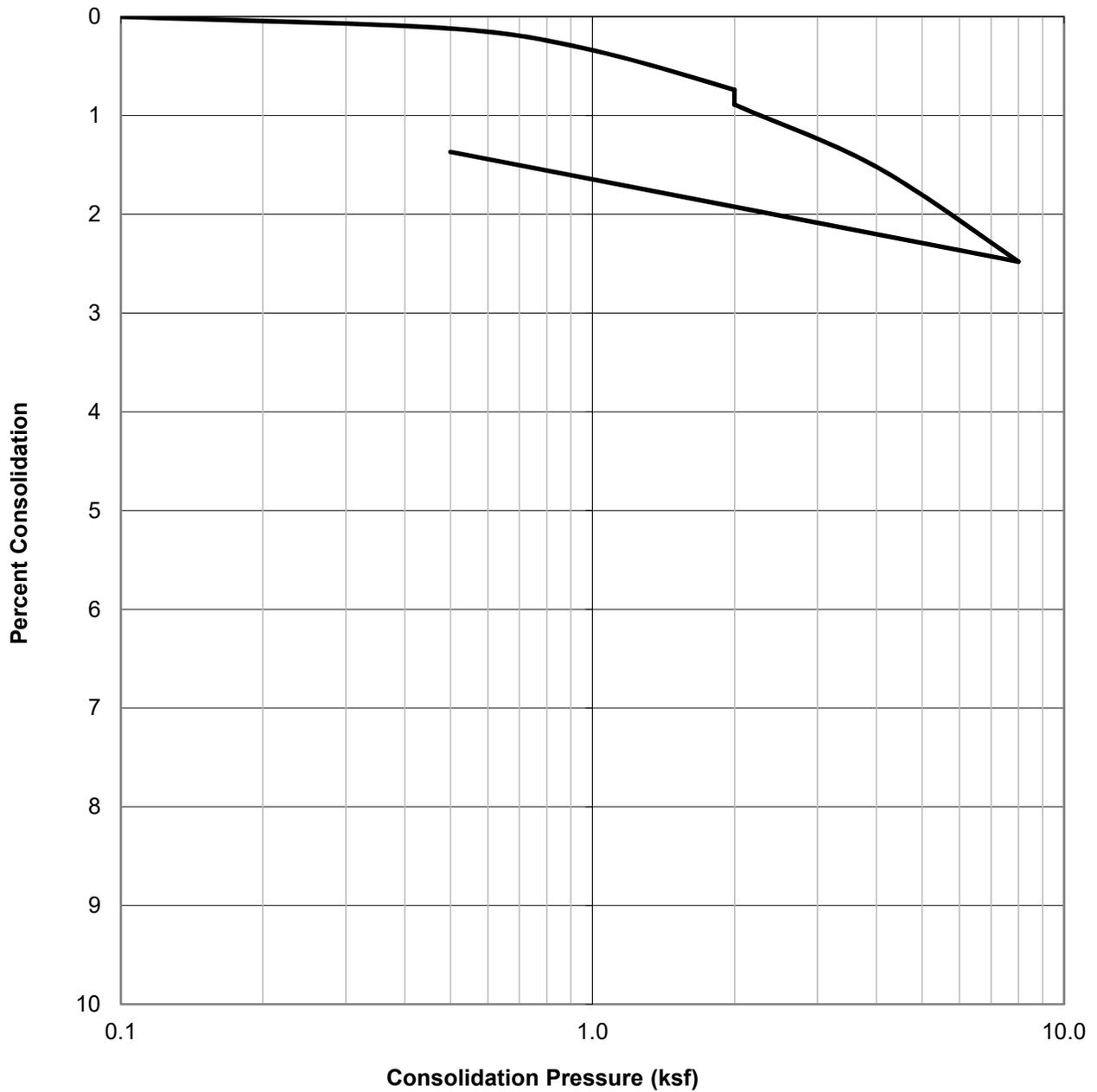
Project No.: W1071-06-01

901-941 East Pacific Coast Highway
Long Beach, California

NOV. 2019

Figure B5

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B1@15	Olive Brown Silt (ML)	106.9	19.7	21.6



CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: JJK

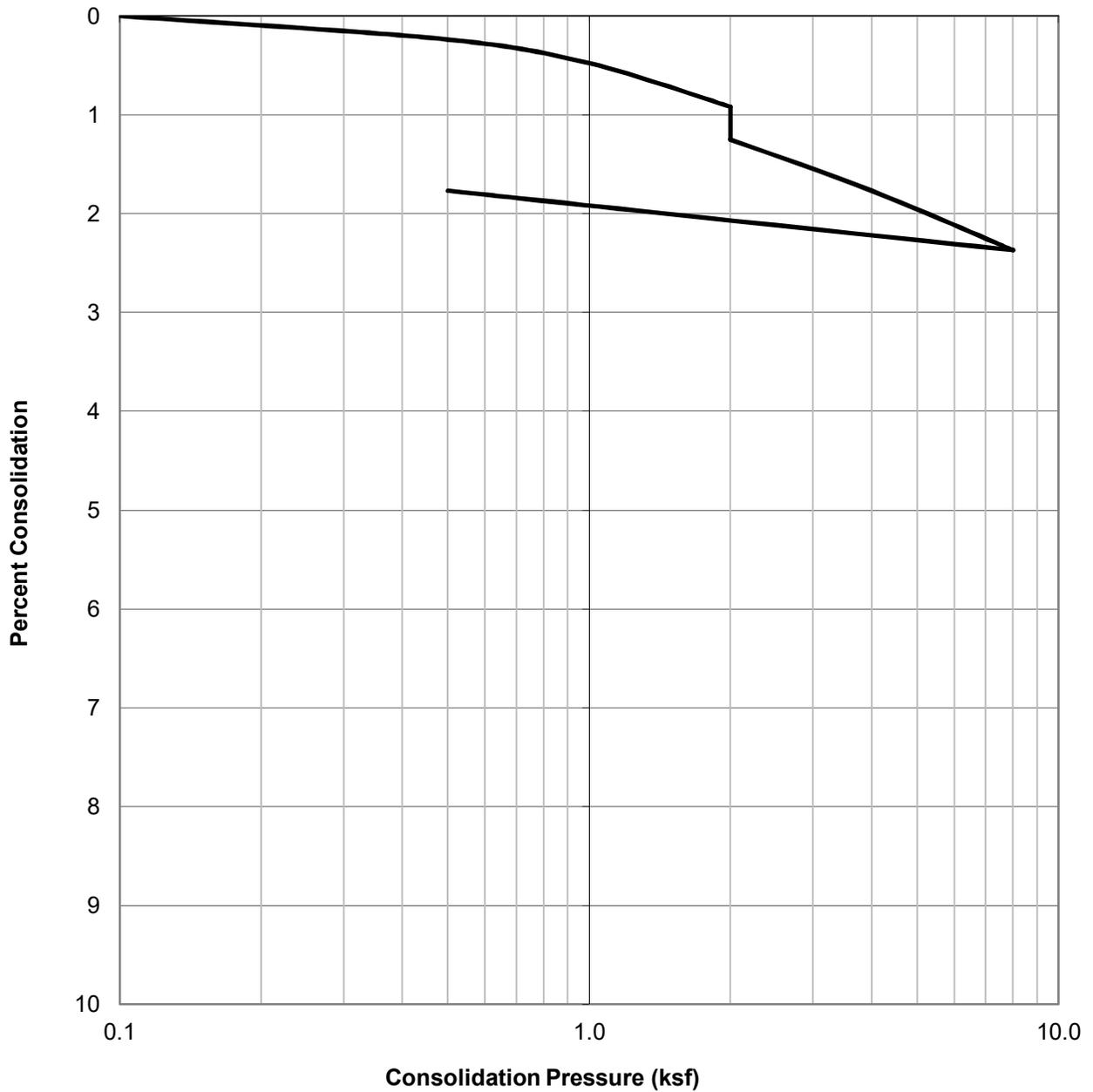
Project No.: W1071-06-01

901-941 East Pacific Coast Highway
Long Beach, California

NOV. 2019

Figure B6

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B1@20	Brown Sandy Silt (ML)	110.8	14.4	16.1



CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: JJK

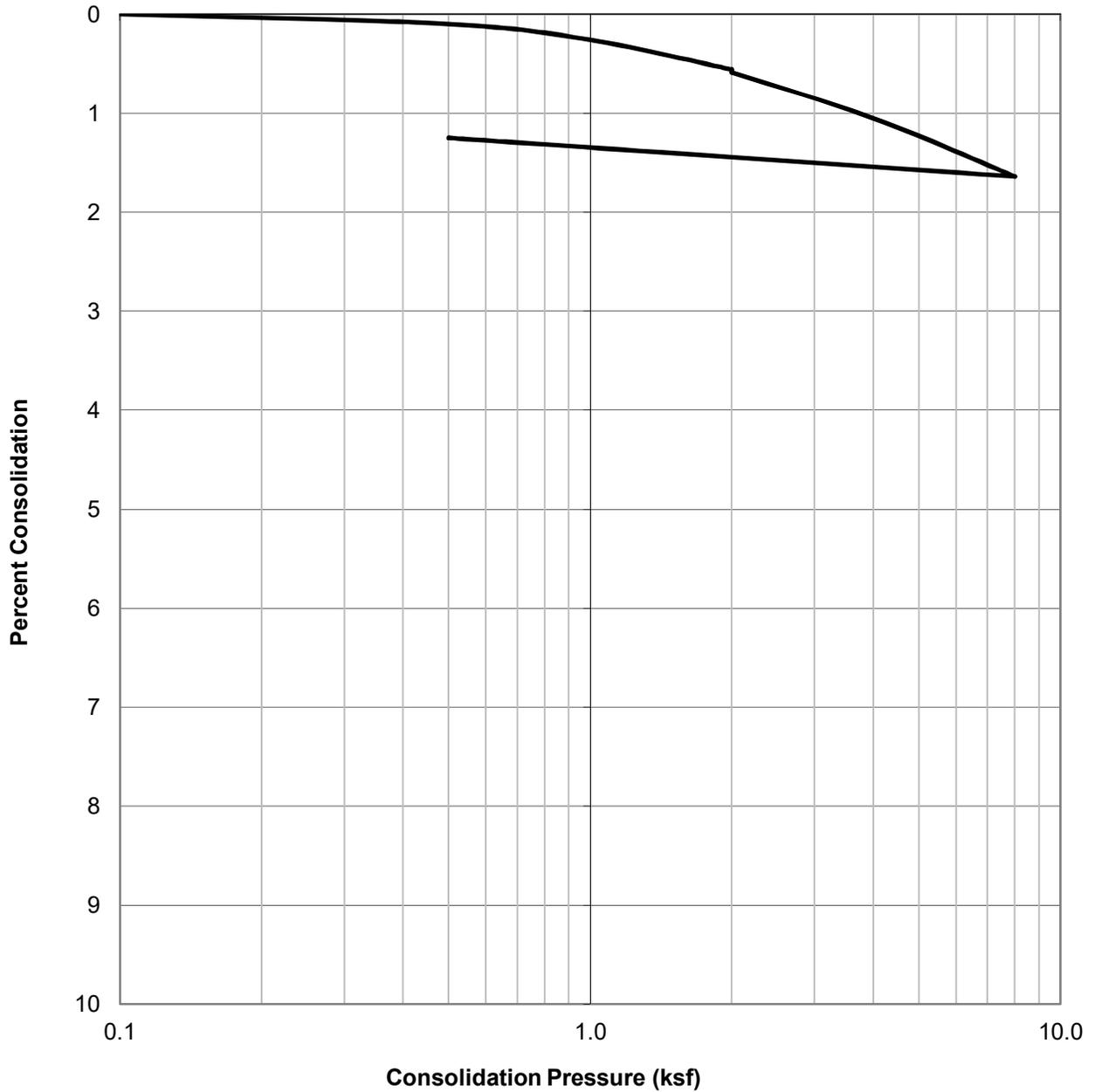
Project No.: W1071-06-01

901-941 East Pacific Coast Highway
Long Beach, California

NOV. 2019

Figure B7

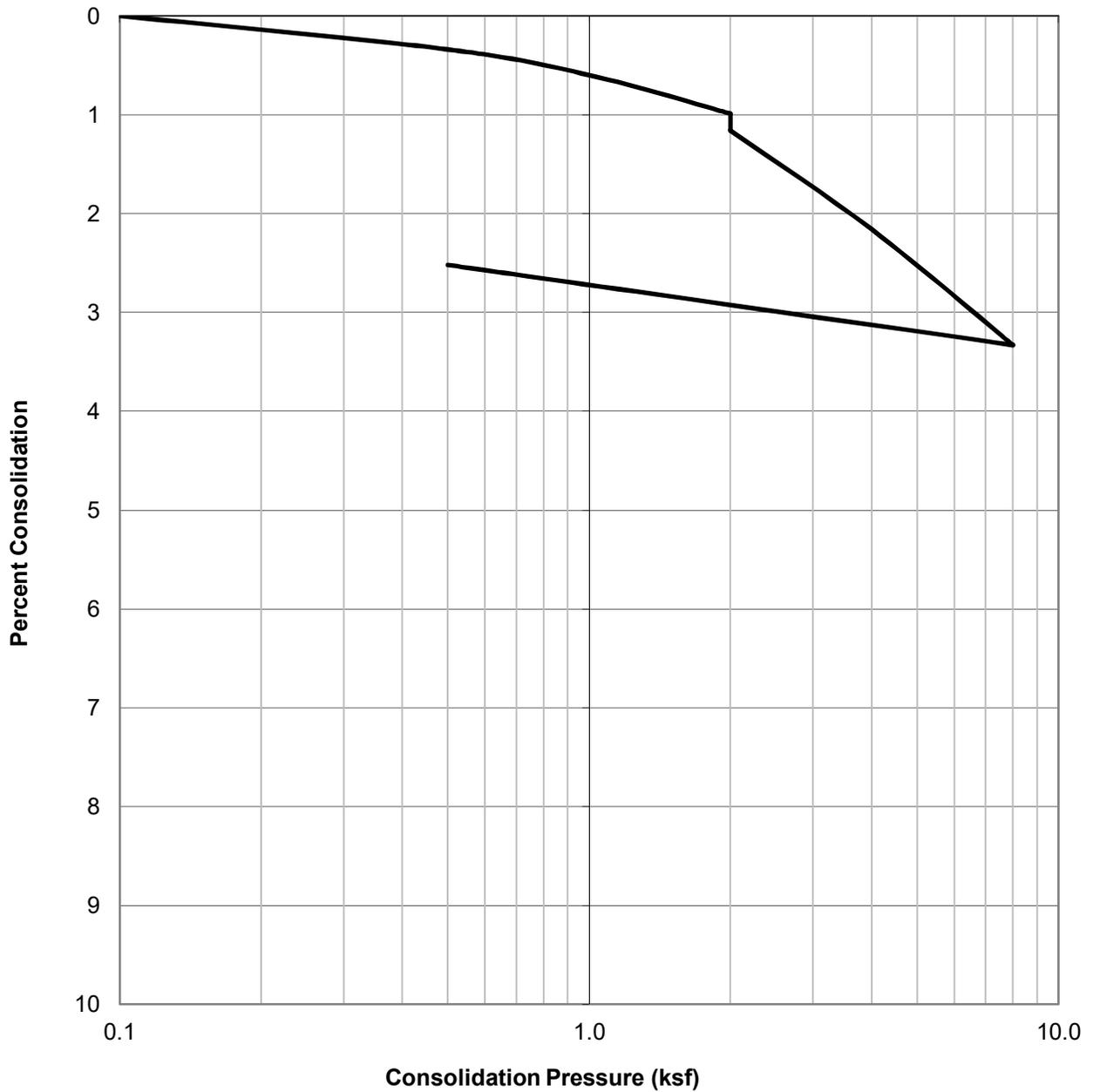
WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B1@25	Olive Gray Sand w/ Silt (SP-SM)	92.5	26.9	26.3

	CONSOLIDATION TEST RESULTS ASTM D-2435	Project No.: W1071-06-01
	Checked by: JJK	901-941 East Pacific Coast Highway Long Beach, California
		NOV. 2019 Figure B8

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B3@5	Brown Silt (ML)	114.3	6.7	13.5



CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: JJK

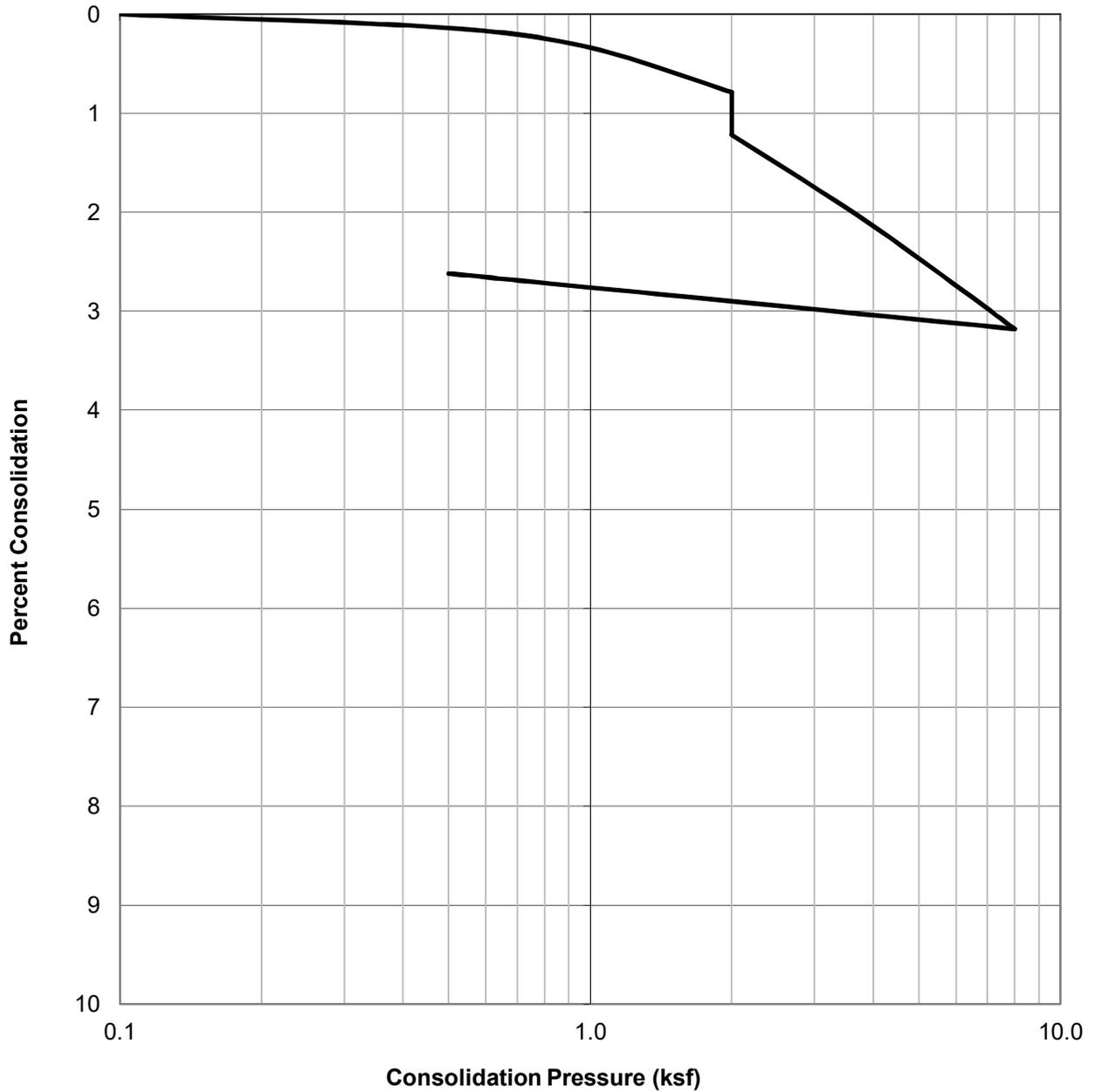
Project No.: W1071-06-01

901-941 East Pacific Coast Highway
Long Beach, California

NOV. 2019

Figure B9

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B3@10	Brown Silty Sand (SM)	110.9	13.3	16.1



CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: JJK

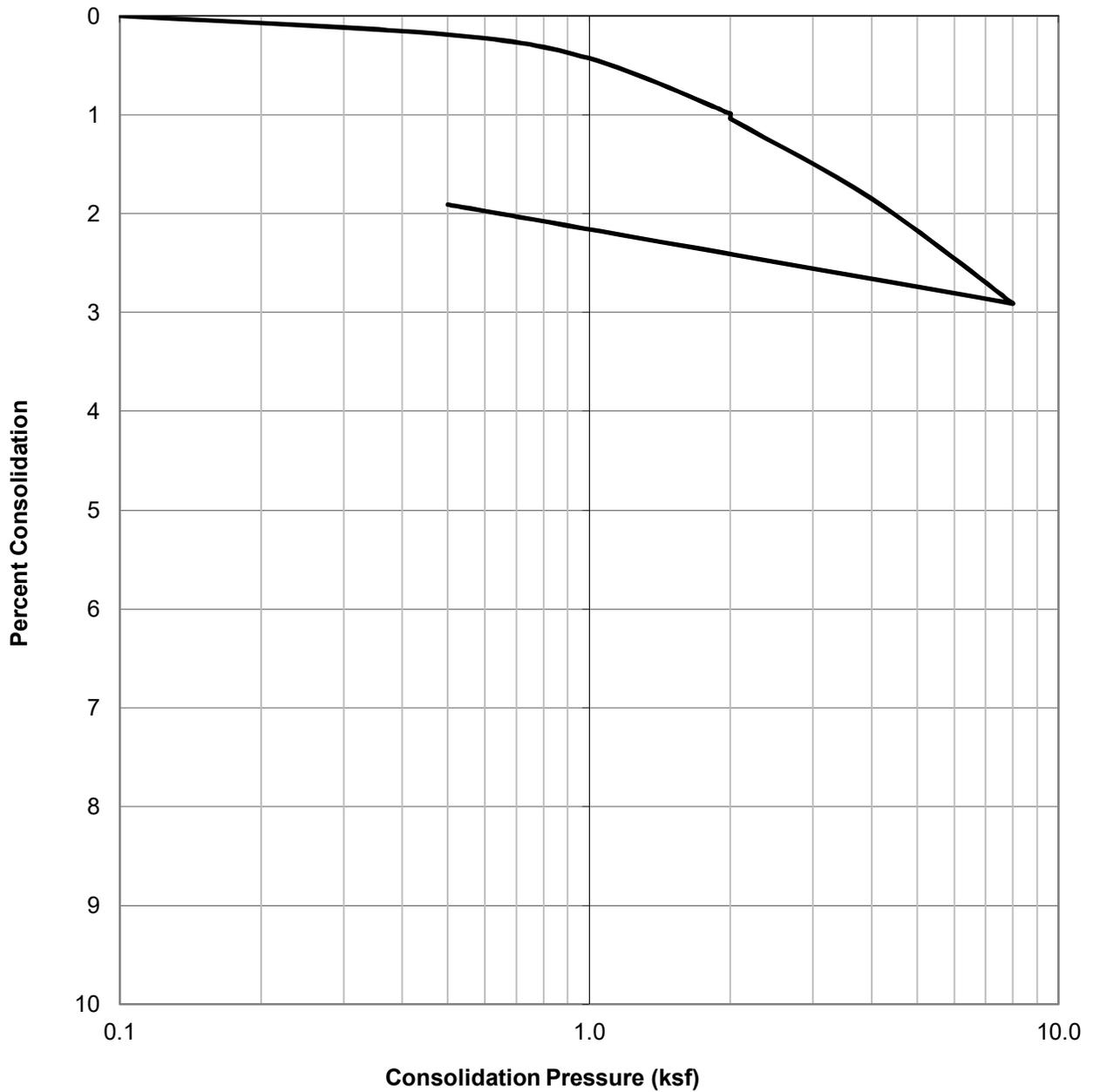
Project No.: W1071-06-01

901-941 East Pacific Coast Highway
Long Beach, California

NOV. 2019

Figure B10

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B3@15	Brown Silt (ML)	105.4	19.5	20.9



CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: JJK

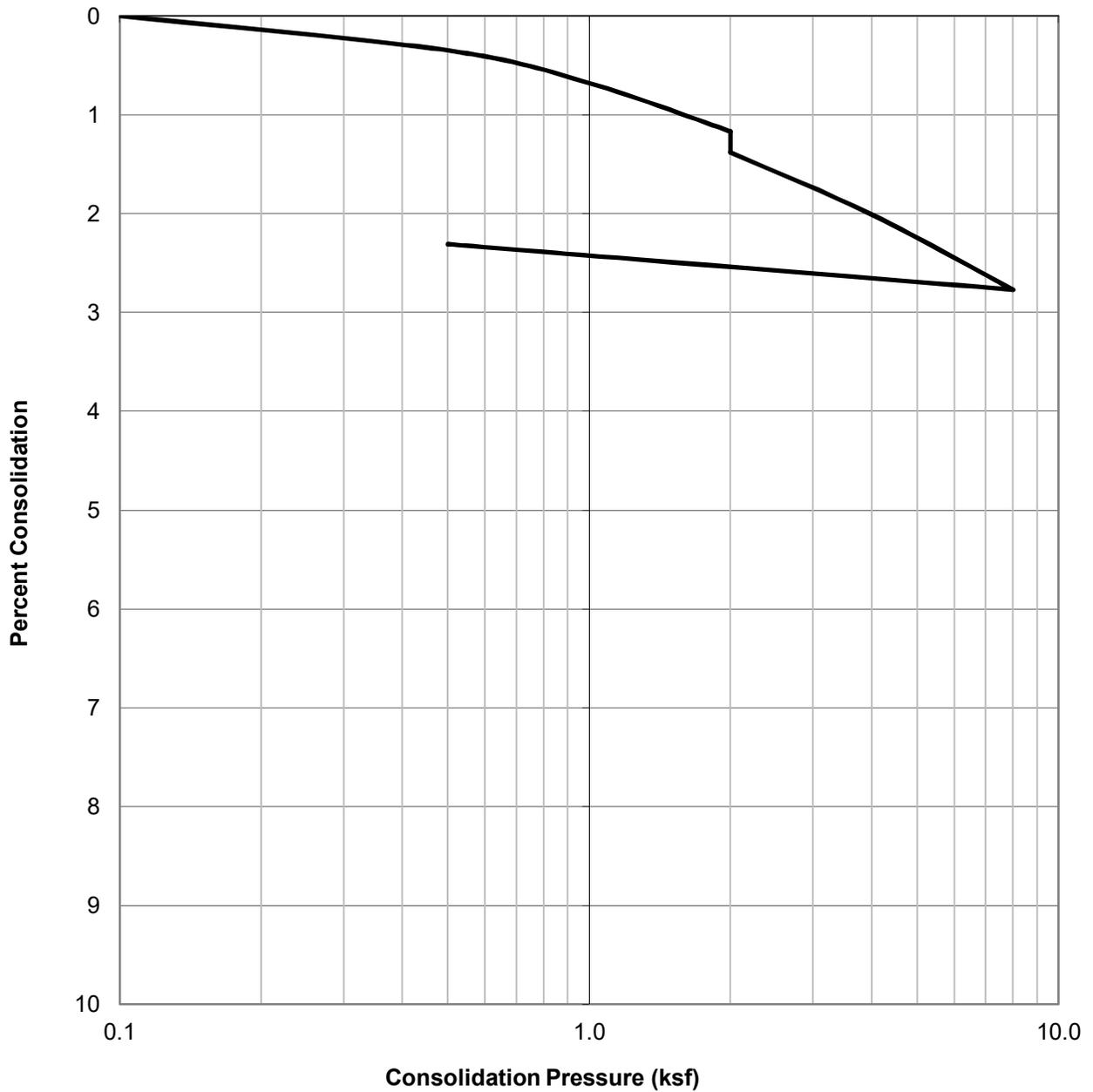
Project No.: W1071-06-01

901-941 East Pacific Coast Highway
Long Beach, California

NOV. 2019

Figure B11

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B3@20	Gray Sand with Silt (SP-SM)	94.7	4.0	24.2



CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: JJK

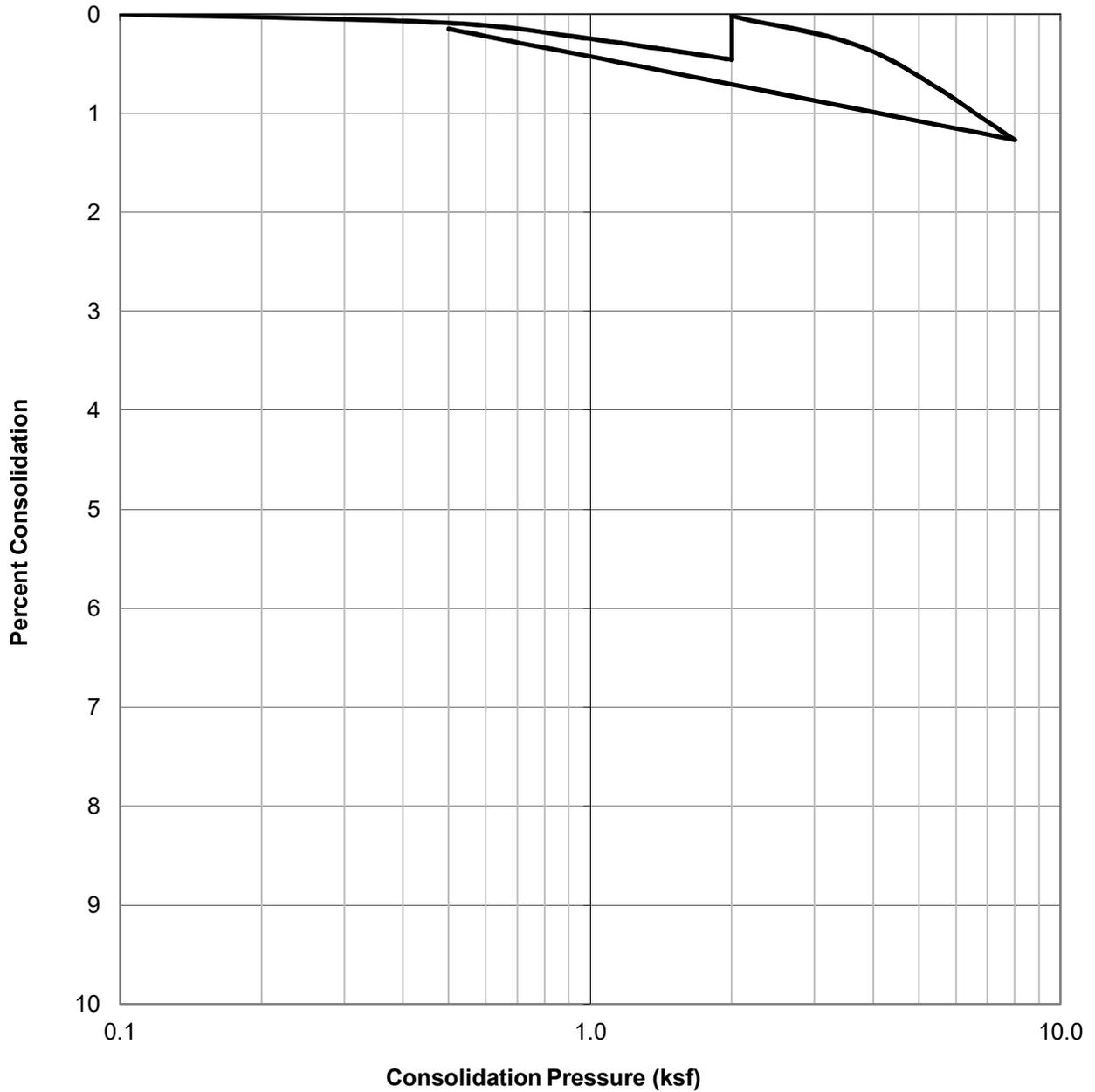
Project No.: W1071-06-01

901-941 East Pacific Coast Highway
Long Beach, California

NOV. 2019

Figure B12

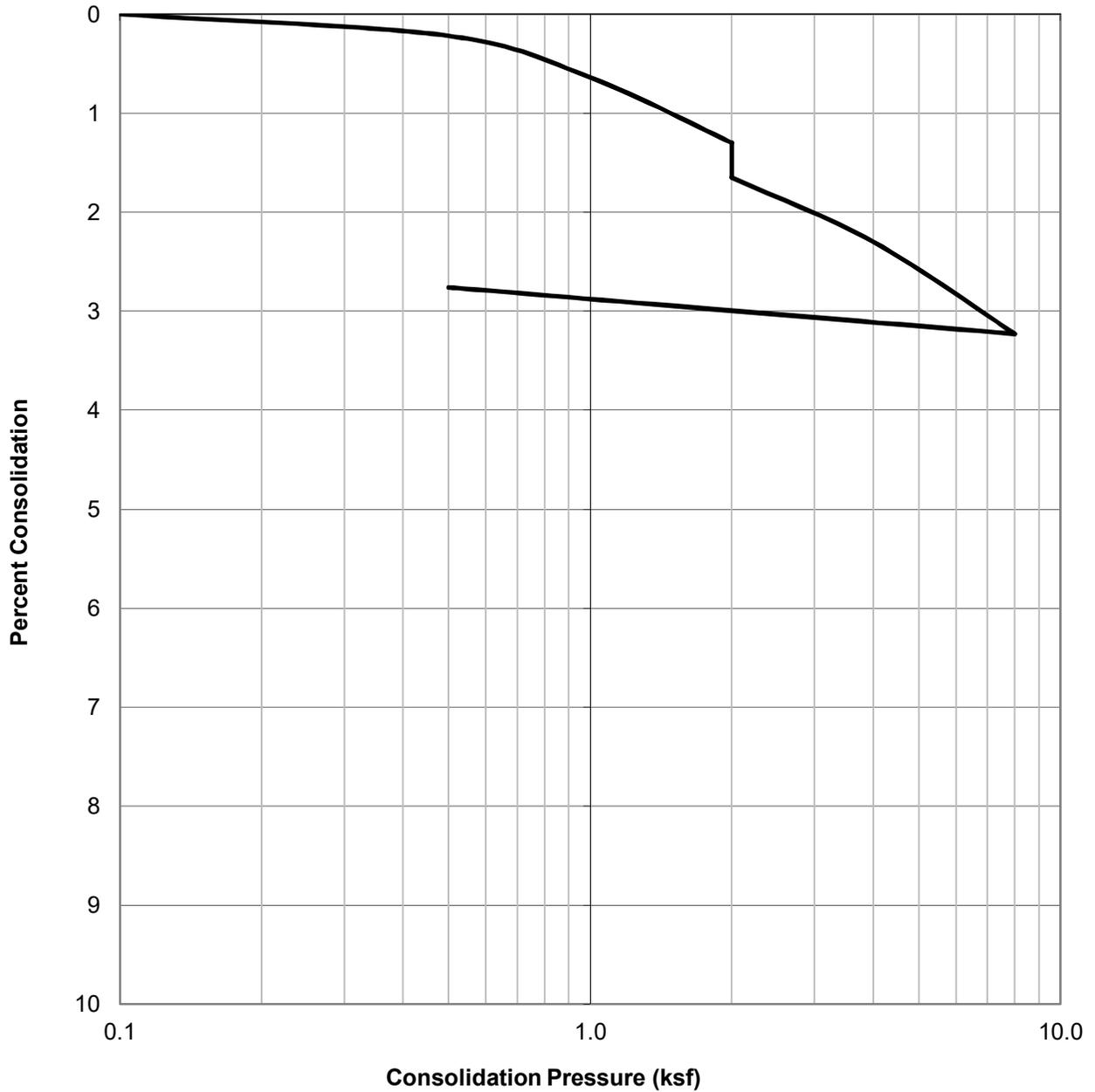
WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B4@5	Brown Sandy Silt (ML)	127.6	10.2	14.1

	CONSOLIDATION TEST RESULTS ASTM D-2435	Project No.: W1071-06-01
		901-941 East Pacific Coast Highway Long Beach, California
	Checked by: JJK	NOV. 2019

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B4@10	Brown Silt (ML)	94.8	11.4	20.6



CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: JJK

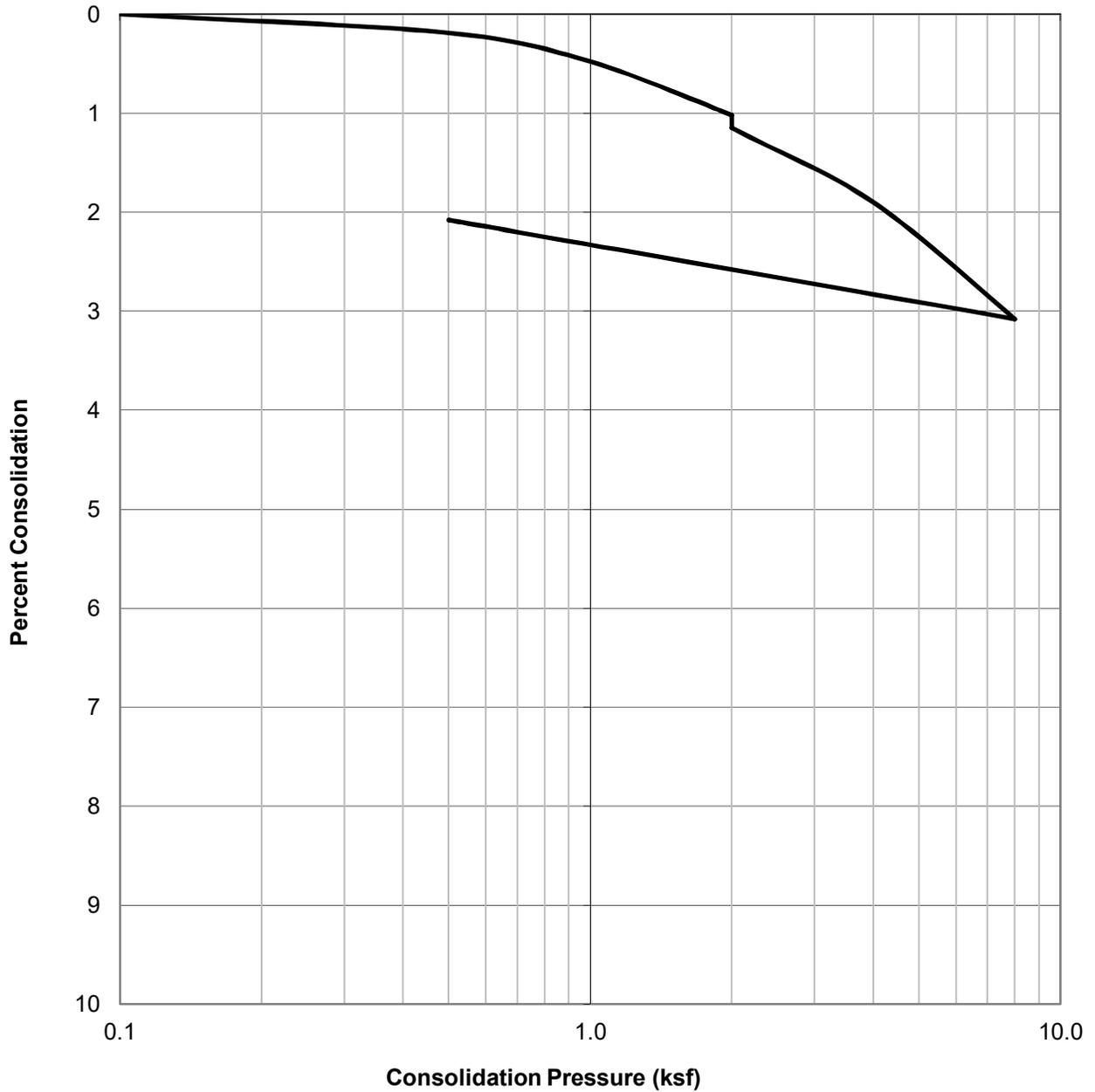
Project No.: W1071-06-01

901-941 East Pacific Coast Highway
Long Beach, California

NOV. 2019

Figure B14

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B4@15	Brownish Gray Sand w/ Silt (SP-SM)	106.0	18.9	20.4



CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: JJK

Project No.: W1071-06-01

901-941 East Pacific Coast Highway
Long Beach, California

NOV. 2019

Figure B15

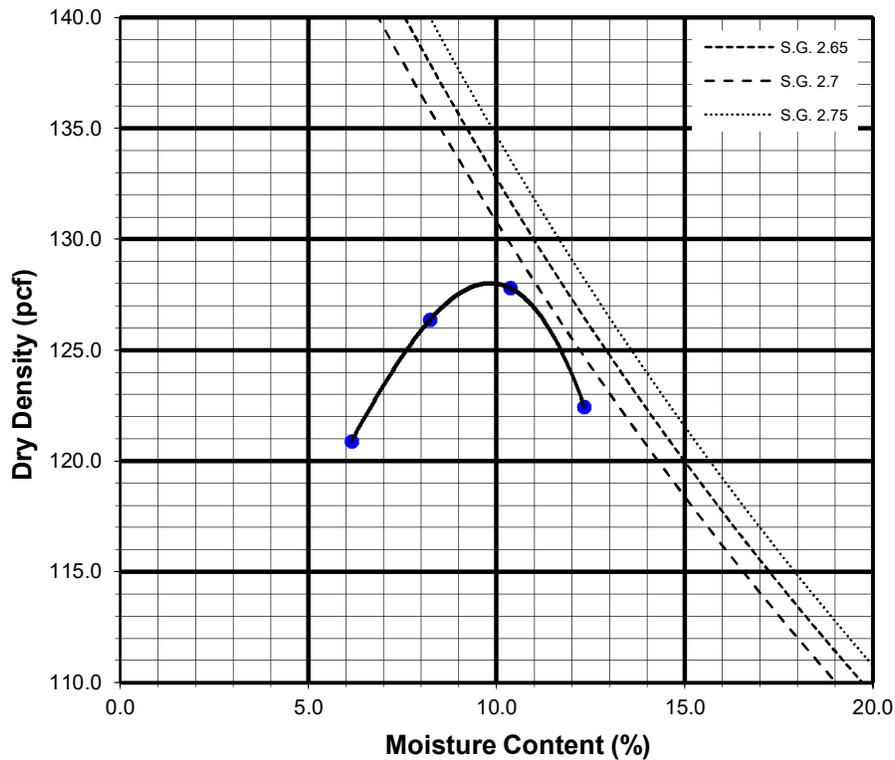
Sample No:

B1 & B4 @ 0-5'	Brown Silty Sand (SM)
---------------------------	-----------------------

TEST NO.		1	2	3	4	5	6
Wt. Compacted Soil + Mold	(g)	6091	6219	6283	6230		
Weight of Mold	(g)	4153	4153	4153	4153		
Net Weight of Soil	(g)	1938	2066	2130	2077		
Wet Weight of Soil + Cont.	(g)	742.6	826.6	806.6	724.8		
Dry Weight of Soil + Cont.	(g)	708.0	774.9	744.4	661.4		
Weight of Container	(g)	145.1	147.0	144.4	147.3		
Moisture Content	(%)	6.1	8.2	10.4	12.3		
Wet Density	(pcf)	128.3	136.8	141.0	137.5		
Dry Density	(pcf)	120.9	126.4	127.8	122.4		

Maximum Dry Density (pcf) 128.0

Optimum Moisture Content (%) 10.0



Preparation Method: A

	MODIFIED COMPACTION TEST OF SOILS	Project No.: W1071-06-01
	ASTM D-1557	901-941 East Pacific Coast Highway Long Beach, California
	Checked by: JJK	NOV. 2019 Figure B16

B1 & B4 @ 0-5'

MOLDED SPECIMEN		BEFORE TEST	AFTER TEST
Specimen Diameter	(in.)	4.0	4.0
Specimen Height	(in.)	1.0	1.0
Wt. Comp. Soil + Mold	(gm)	779.3	806.7
Wt. of Mold	(gm)	367.9	367.9
Specific Gravity	(Assumed)	2.7	2.7
Wet Wt. of Soil + Cont.	(gm)	502.4	806.7
Dry Wt. of Soil + Cont.	(gm)	477.1	376.7
Wt. of Container	(gm)	202.4	367.9
Moisture Content	(%)	9.2	16.5
Wet Density	(pcf)	124.1	132.2
Dry Density	(pcf)	113.6	113.5
Void Ratio		0.5	0.5
Total Porosity		0.3	0.3
Pore Volume	(cc)	67.5	70.4
Degree of Saturation	(%) [S_{meas}]	51.9	88.2

Date	Time	Pressure (psi)	Elapsed Time (min)	Dial Readings (in.)
10/15/2019	10:00	1.0	0	0.2155
10/15/2019	10:10	1.0	10	0.215
Add Distilled Water to the Specimen				
10/16/2019	10:00	1.0	1430	0.229
10/16/2019	11:00	1.0	1490	0.229

Expansion Index (EI meas) =	14
Expansion Index (Report) =	14

Expansion Index, EI_{50}	CBC CLASSIFICATION *	UBC CLASSIFICATION **
0-20	Non-Expansive	Very Low
21-50	Expansive	Low
51-90	Expansive	Medium
91-130	Expansive	High
>130	Expansive	Very High

* Reference: 2016 California Building Code, Section 1803.5.3

** Reference: 1997 Uniform Building Code, Table 18-I-B.

	EXPANSION INDEX TEST RESULTS	Project No.: W1071-06-01
	ASTM D-4829	901-941 East Pacific Coast Highway Long Beach, California
	Checked by: JJK	NOV. 2019 Figure B17

SUMMARY OF LABORATORY POTENTIAL
OF HYDROGEN (pH) AND RESISTIVITY TEST RESULTS
CALIFORNIA TEST NO. 643

Sample No.	pH	Resistivity (ohm centimeters)
B1 & B4 @ 0-5'	7.9	3300 (Moderately Corrosive)

SUMMARY OF LABORATORY CHLORIDE CONTENT TEST RESULTS
EPA NO. 325.3

Sample No.	Chloride Ion Content (%)
B1 & B4 @ 0-5'	0.007

SUMMARY OF LABORATORY WATER SOLUBLE SULFATE TEST RESULTS
CALIFORNIA TEST NO. 417

Sample No.	Water Soluble Sulfate (% SQ ₄)	Sulfate Exposure*
B1 & B4 @ 0-5'	0.002	S0

 GEOCON	CORROSIVITY TEST RESULTS	Project No.: W1071-06-01
	Checked by: JJK	901-941 East Pacific Coast Highway Long Beach, California
		NOV. 2019 Figure B18

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Attachment 17. Focused Traffic Assessment for the Mercy Housing Project

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April 2, 2020

Ms. Erika Villablanca
Mercy Housing California
1500 South Grand Avenue, Suite 100
Los Angeles, CA 90015

LLG Reference: 2.20.4270.1

Subject: **Focused Traffic Assessment for the
Mercy Housing Project**
Long Beach, California

Dear Ms. Villablanca,

Linscott, Law & Greenspan, Engineers (LLG) is pleased to submit the findings of this Traffic Assessment for the proposed Mercy Housing Project, hereinafter referred to as the Project. The Project is addressed at 901-945 Pacific Coast Highway in the City of Long Beach, California and is proposing to develop the mostly vacant site with a 68-unit affordable housing project with 4,000 SF of ground floor retail. This analysis evaluates the traffic implications associated with the proposed Project.

PROJECT LOCATION AND DESCRIPTION

The Project site is located north of Pacific Coast Highway, west of Martin Luther King Jr. Avenue, east of Myrtle Avenue, and south of the alleyway. **Figure 1** presents a Vicinity Map that illustrates the general location of the Project and surrounding street system.

The Project spans across two adjacent sites. One site located north of Pacific Coast Highway and west of Martin Luther King Jr. Avenue and is currently vacant, whereas the site located north of Pacific Coast Highway and east of Myrtle Avenue is developed with two auto shop uses with a building size of 5,447 SF and a billboard, all of which will be demolished before construction starts. **Figure 2** presents the existing aerial of the Project site.

Engineers & Planners
Traffic
Transportation
Parking

**Linscott, Law &
Greenspan, Engineers**

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Pasadena
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Philip M. Linscott, PE (1924-2000)
Jack M. Greenspan, PE (Ret.)
William A. Law, PE (Ret.)
Paul W. Wilkinson, PE
John P. Keating, PE
David S. Shender, PE
John A. Boarman, PE
Clare M. Look-Jaeger, PE
Richard E. Barretto, PE
Keil D. Maberry, PE

The Project is proposing a 68-unit new construction development within three-stories over a parking garage and ground floor retail and associated amenities. The Project will be 100% low-income and all units will be for senior residents 62 and above. Of the 68 units, 33 units will be set aside for seniors who have experienced homelessness. In addition to the residential portion there will be 4,000 square feet (SF) of commercial space for a community-serving tenant such as a non-profit which is assumed to be medical office/medical-related retail/commercial uses. As planned the project will have 38 parking spaces. The Project will look to break ground sometime in 2021 with an anticipated completion by 2023.

Vehicular access to the proposed Project's parking garage will be provided via a driveway to be located on an existing alleyway that borders the site on the north and a driveway along on Myrtle Avenue; no vehicular access is proposed from Pacific Coast Highway. Pedestrian access to both the commercial and residential components of the Project will be provided via building entries/exits located on Martin Luther King Jr. Avenue and Pacific Coast Highway. *Figure 3* presents the proposed Project site plan, prepared by Studioneleven.

EXISTING TRANSPORTATION SYSTEM

Existing Street Network

The principal local network of streets serving the project site includes Pacific Coast Highway, Myrtle Avenue and Martin Luther King Jr. Avenue. The following discussion provides a brief synopsis of these key area streets. The descriptions are based on an inventory of existing roadway conditions via the review of aerial maps provided through Google Maps.

Pacific Coast Highway is primarily a six-lane, divided roadway oriented in the east-west direction that borders the site on the south. Parking, in the immediate vicinity of the Project, is generally permitted on both sides of this roadway. The posted speed limit on Pacific Coast Highway is 35 mph.

Myrtle Avenue is primarily a two-lane, undivided roadway oriented in the north-south direction that borders the site on the west. Parking is permitted on both sides of this roadway within the vicinity of the Project site. The prima facie speed limit on Myrtle Avenue is 25 mph.

Martin Luther King Jr. Avenue is primarily a two-lane, undivided roadway oriented in the north-south direction, except adjacent to the site, north of Pacific Coast Highway. This section is a two-lane divided roadway with a raised landscaped

median, which terminates just north of the alley way. Access to the alleyway from Martin Luther King Jr. Avenue is considered to be right-turn in/right-turn out only. Parking is generally permitted on either side of the roadway within the vicinity of the Project site. The posted speed limit on Martin Luther King Jr. Avenue is 30 mph.

Existing Public Transit

The Los Angeles County Metropolitan Transportation Authority and Long Beach Transit (LBT) provide public transit services in the vicinity of the proposed Project. In the vicinity of the Project, the Metro Blue Line currently serves Long Beach Boulevard, with a transit station located approximately 300 feet south of Pacific Coast Highway and approximately a ½ mile from the project site. LBT Route 61 serve Atlantic Avenue while LBT Routes 71 and 72 currently serves Orange Avenue, with transit stops at its intersection with Pacific Coast Highway. LBT Routes 171, 172, 173 and 174 currently serve Pacific Coast Highway, with stops located at Martin Luther King Jr. Avenue, adjacent to the Project site. *Figure 4* graphically illustrates the transit routes of Long Beach Transit within the vicinity of the Project site. *Figure 5* identifies the location of the existing bus stops in proximity to the Project site.

Existing Bicycle Master Plan

The City of Long Beach promotes bicycling as a means of mobility and a way in which to improve the quality of life within its community. The Bicycle Master Plan recognizes the needs of bicycle users and aims to create a complete and safe bicycle network throughout the City. The City of Long Beach Bicycle Facilities in the vicinity of the Project site (existing and proposed) is shown on *Figure 6*.

PROJECT TRAFFIC CHARACTERISTICS

Trip Generation Forecast

Traffic generation is expressed in vehicle trip ends, defined as one-way vehicular movements, either entering or exiting the generating land use. *Table 1* summarizes the trip generation rates used in forecasting the vehicular trips generated by the existing uses and the proposed Project and also presents the forecast peak hour and daily traffic volumes.

The trip generation potential of the existing automotive repair shops was forecast using the ITE Land Use 942: Automobile Care Center rates. The proposed Project was forecast using ITE Land Use 223: Affordable Housing Income Limits and ITE 820: Shopping Center rates contained in the 10th Edition of *Trip Generation*, published by the Institute of Transportation Engineers (ITE), [Washington, D.C., 2017] along with the 10th Edition Supplement. It should be noted that ITE 720:

Medical/Dental Office Building trip rates are included in *Table 1* for only informational purposes in comparison to the trip rates to that of Land Use 820: Shopping Center.

Review of the middle portion of *Table 1* indicates that the existing use is forecast to generate 169 daily trips, with 12 trips (8 inbound, 4 outbound) produced in the AM peak hour, 17 trips (8 inbound, 9 outbound) produced in the PM peak hour on a “typical” weekday.

The lower portion of *Table 1* indicates that the proposed Project is forecast to generate 650 daily trips, with 47 trips (32 inbound, 15 outbound) produced in the AM peak hour, 65 trips (22 inbound, 43 outbound) produced in the PM peak hour on a “typical” weekday.

Please note that based on common traffic engineering practices, the traffic generated by the existing land use may be considered to represent a “trip credit” for the Project site, against which the impact of the proposed Project might be compared.

Per the City of Long Beach *DRAFT Traffic Impact Analysis Guidelines (October 2018)*, a “TIA may be required for any project in Long Beach that is expected to generate 100 or more net new daily trips...” The decisions will be made by the City Traffic Engineer. Further, the area to be studied shall generally include at which the “proposed project will add 50 or more peak hour trips.”

Comparison of the trips generated by the proposed Project to the trips generated by the existing automotive repair shops tenancy shows that the proposed Project would generate 481 more daily trips, 35 more AM peak hour trips and 48 more PM peak hour trips. In consideration of these added trips, a qualitative assessment of the potential Project traffic impacts is provided in the following sections of this report.

Traffic Distribution and Assignment

Project trips have been further distributed and assigned to the adjacent street system based on the following considerations:

- the orientation of the site and the proximity to key area roadways (i.e. Pacific Coast Highway, Martin Luther King Jr. Avenue, etc.),
- expected localized traffic patterns based on adjacent street channelization and presence of traffic signals,
- nearby turn restrictions, and
- ingress/egress availability at the Project site driveways.

Figure 7 presents the Project trip distribution pattern through the study area. **Figures 8 and 9** present the anticipated peak hour Project traffic volumes associated with proposed Project for the AM and PM peak hours, respectively. The AM and PM peak hour traffic volume assignments presented in **Figures 8 and 9** reflect the Project trip distribution characteristics illustrated in **Figure 7** and the Project trip generation forecast presented in **Table 1**.

It should be noted that as a conservative measure the volume assignments in **Figures 8 and 9** reflect the trips generated by the full project rather than the net project volumes. Review of **Figures 8 and 9** identifies that the Project would not add more than 30 trips to the nearby signalized intersection of Pacific Coast Highway at Martin Luther King Jr. Avenue.

Traffic Impact Criteria

Per the City of Long Beach TIA Guidelines, impacts to local and regional transportation systems are considered significant if:

- The Project causes a study intersection to deteriorate from Level of Service (LOS) D to LOS E or F. The City of Long Beach considers LOS D (ICU = 0.801 - 0.900) to be the minimum acceptable LOS for all intersections; or
- The Project increases traffic demand at the study intersection by 2% of capacity (ICU increase ≥ 0.020), causing or worsening LOS E or F (ICU > 0.901) when an intersection is operating at LOS E or F in the baseline condition.

Traffic Impact Assessment

Project volumes presented in **Figures 8 and 9** have been distributed to Pacific Coast Highway at Martin Luther King Jr. Avenue. As a result, the proposed Project is anticipated to have an ICU increase of 0.011 and as a result falls below the significant impact criteria of 0.020. Therefore, it can be concluded that the proposed Project would not generate any significant impacts at the near-by intersections.

It should be noted that the ICU increase is based on trips generated by the full project rather than the net project trips. Therefore, the ICU increase generated by the net project will be less than 0.011.

Therefore, based on this qualitative analysis and in consideration of the “50 trip” threshold, it can be concluded that due to the nominal added Project volumes to the

street system no additional analysis is needed and further yet, it can be concluded that the Project's potential impact would be insignificant.

SITE ACCESS EVALUATION

Vehicular access to the proposed Project will be provided via a full access driveway along Myrtle Avenue and a full access driveway along the alleyway north edge of the property which provides connectivity to both Myrtle Avenue and Martin Luther King Jr. Avenue.

Figure 10 illustrates the turning movements required of a trash truck. The vehicle maneuvers shown were performed using the *Turning Vehicle Templates*, developed by Jack E. Leisch & Associates and *AutoTURN for AutoCAD* computer software that simulates turning maneuvers for various types of vehicles. Review of *Figure 10* shows that a trash truck can adequately access and circulate the site.

Delivery trucks (SU-30) will utilize the designated drop-off area located on Pacific Coast Highway along the project frontage. It is recommended that the drop-off area be striped/signed as a loading zone to prohibit on-street parking in the area.

SB743 COMPLIANCE

VMT Assessment

The purpose of this VMT assessment is to evaluate the Project based on Senate Bill 743 (SB 743) requirements consistent with *Technical Advisory on Evaluating Transportation Impacts in California Environmental Quality Act (CEQA)*, December 2018 prepared by State of California Governor's Office of Planning and Research (OPR) and the *City of Long Beach DRAFT Traffic Impact Analysis Guidelines, dated October 2018*.

The City Draft TIA Guidelines provides guidance for analysis of VMT assessments under SB743. The City's document provides screening thresholds to assess whether further VMT analysis is required based on project location, size, or consistency with the SCAG Regional Transportation Plan/Sustainable Communities Strategy.

Transit Service

The study area is currently served by Long Beach Transit (LBT) and Torrance Transit (TT), municipal transit agencies serving the City of Long Beach and surrounding communities. The LBT offers 2 services: Local services and a Downtown Passport bus circulator. The shuttle service (Passport) provides service to popular downtown

attractions, such as Shoreline Village, the Queen Mary, Aquarium, etc. Aqualink is a 68-foot catamaran which carries passengers from Downtown Long Beach waterfront to Alamitos Bay Landing. There is also the 49-passenger AquaBus water taxi service.

The existing transit routes in the study area are shown on *Figure 4*. The existing transit stops within a ½ mile of the Project site are shown on *Figure 5*. Currently, the study area is served by LBT Routes 171, 172, 173, 174 along Pacific Coast Highway, LBT Route 61 along Atlantic Avenue and LBT Route 71, 72 along Orange Avenue. LBT has stops located on Pacific Coast Highway at Martin Luther King Jr. Avenue, directly adjacent to the site, with stops on Atlantic Avenue and Orange Avenue, less than ½-mile from the site. In the vicinity of the Project, the Metro Blue Line currently provides service along Long Beach Boulevard, which is approximately a ½ mile to the west along Pacific Coast Highway; a transit station located approximately 200 feet south of Pacific Coast Highway.

The transit frequency at the stops along Pacific Coast Highway is every 15-minutes during the morning and afternoon peak commute periods and therefore qualifies as a high-quality transit corridor.

Presumption of Less Than Significant Impact Near Transit Stations

The City Draft TIA Guidelines 2018 TIA guidelines state that a Project that is proposed within ½ mile of a high-quality transit corridor (fixed route bus service with service intervals no longer than 15 minutes during peak commute hours) would have a less than significant impact on VMT. As shown above, the Project is located within a ½ mile of a high-quality transit corridor (routes along Pacific Coast Highway). As such, the VMT per Capita for the Project site is presumed to be less than significant. Further yet, since the Project site is located within a 2040 High-Quality Transit Area per SCAG GIS data, the Project would result in a less than significant VMT impact and no mitigation would be required.

CONCLUSION

Review of *Figures 8* and *9* indicates that the Project's impact is considered "insignificant" based on the "50 peak hour trip" threshold. In the case of the Project, the added trips at Pacific Coast Highway at Martin Luther King Jr. Avenue during the AM and PM peak hour amount to 22 and 30 trips, respectively. Therefore, using the "50 trip" threshold, the Project would not require any additional intersection analysis.

However taking this one step further, a review of the Project volumes presented in *Figures 8 and 9* indicates that the Project will add an increment of no greater than 0.011 to the AM and/or PM peak hour to the nearby signalized intersections (Pacific Coast Highway at Martin Luther King Jr. Avenue). Based on City of Long Beach significant impact criteria, an intersection is considered significantly impacted if the Project increases the V/C ratio by 2% of capacity (ICU increase ≥ 0.020). The maximum anticipated increment at Pacific Coast Highway at Martin Luther King Jr. Avenue are well below the 2% threshold and therefore the Project is not anticipated to trigger a significant impact.

Therefore, due to nominal added Project volumes to the street system no additional analysis is needed and further yet, it can be concluded that the Project's potential impact would be insignificant.

Lastly, since the proposed Project is within $\frac{1}{2}$ mile of a high-quality transit corridor, it is presumed that the Project would result in a less than significant VMT impact.

* * * * *

We appreciate the opportunity to be of service on this Project. Should you need further assistance, or have any questions regarding this analysis, please call us at (949) 825-6175.

Very truly yours,
Linscott, Law & Greenspan, Engineers

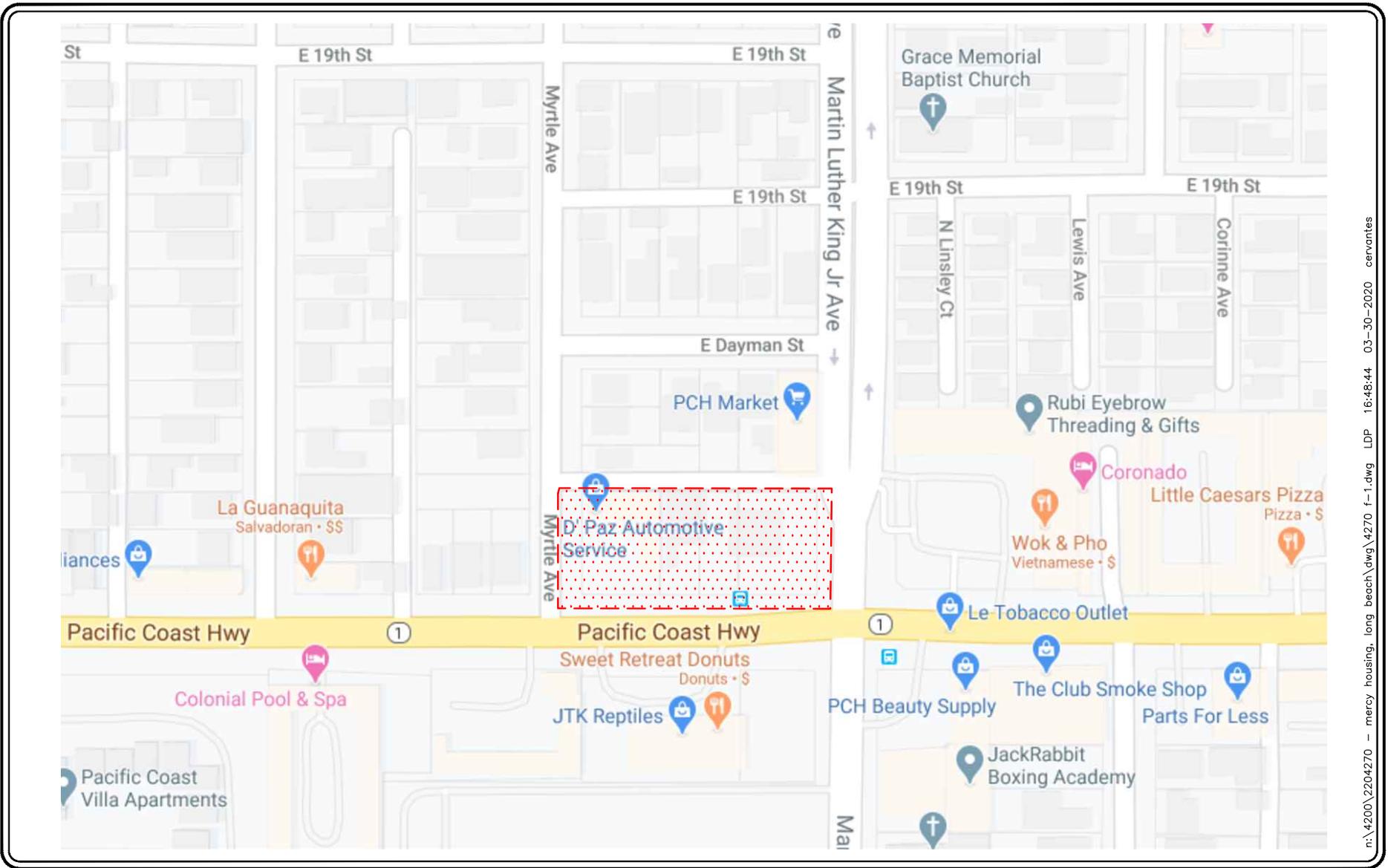


Richard E. Barretto, P.E.
Principal

cc: Shane S. Green, P.E. LLG

Attachments





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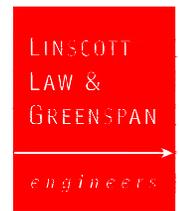
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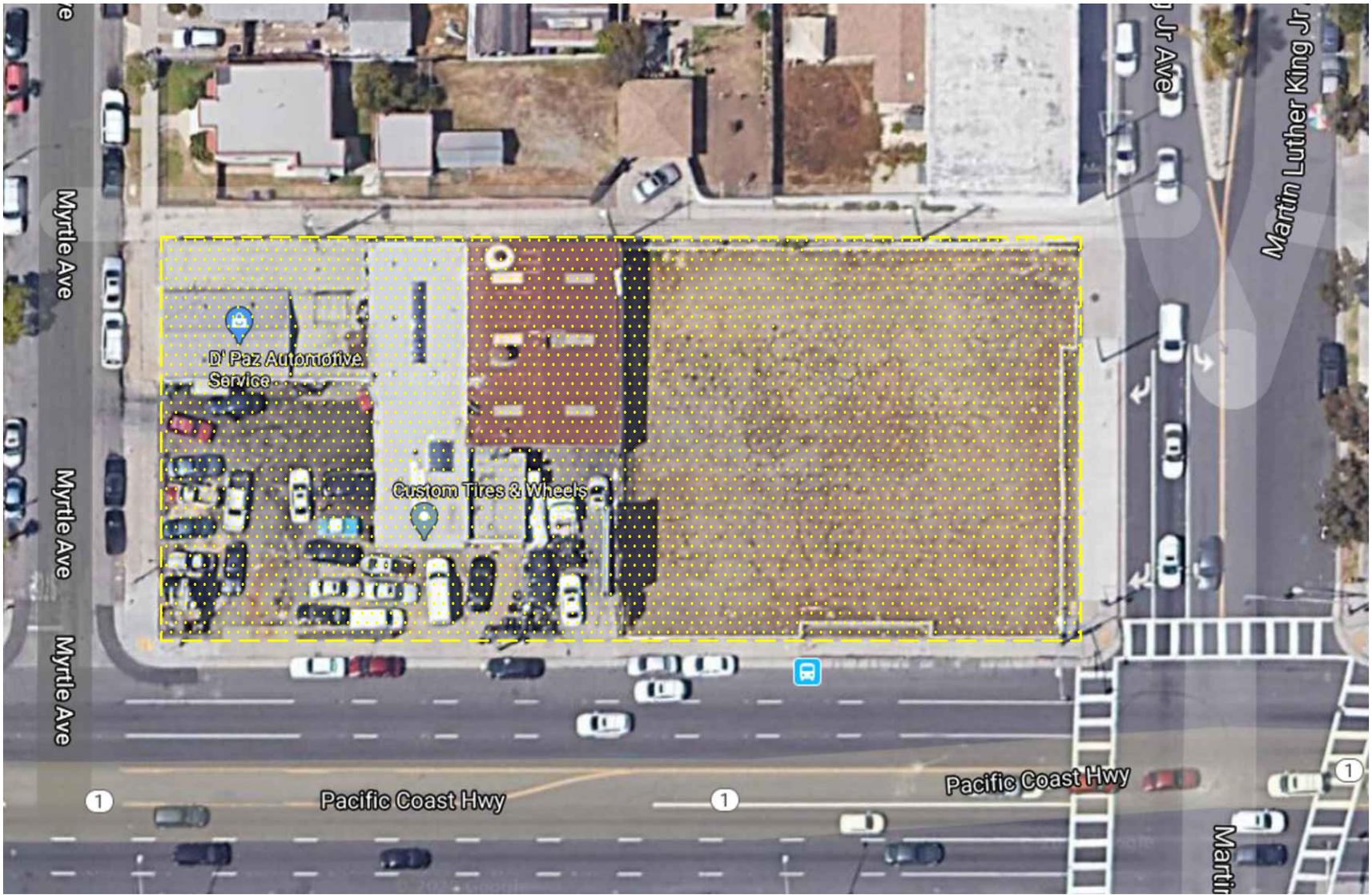
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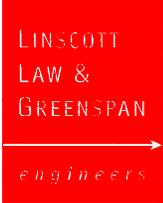
FIGURE 1

VICINITY MAP
MERCY HOUSING, LONG BEACH





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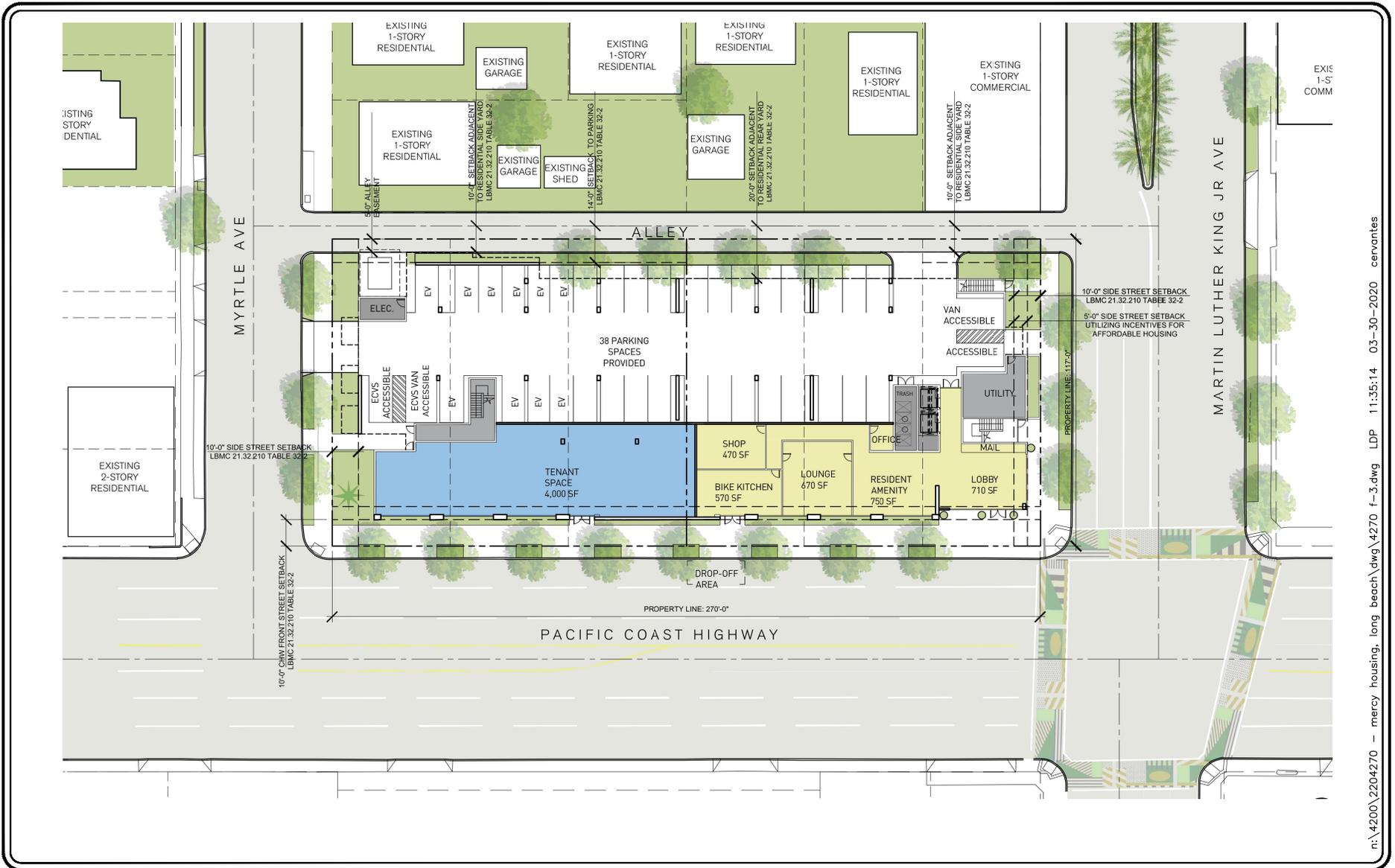
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FIGURE 2

EXISTING SITE AERIAL
MERCY HOUSING, LONG BEACH

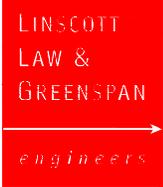


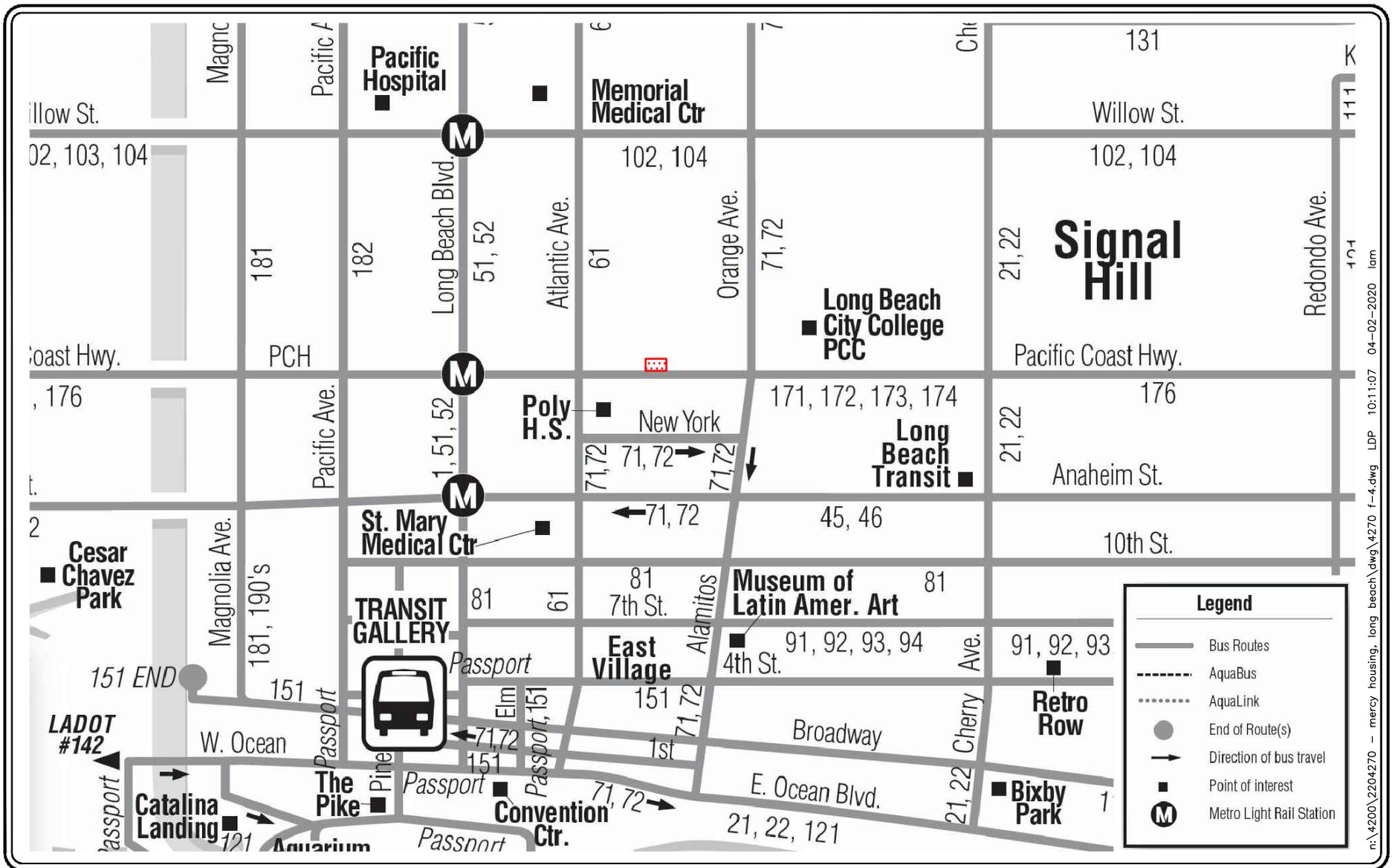
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SOURCE: STUDIOELEVEN

FIGURE 3

PROPOSED PROJECT SITE PLAN MERCY HOUSING, LONG BEACH





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NO SCALE

SOURCE: LONG BEACH TRANSIT

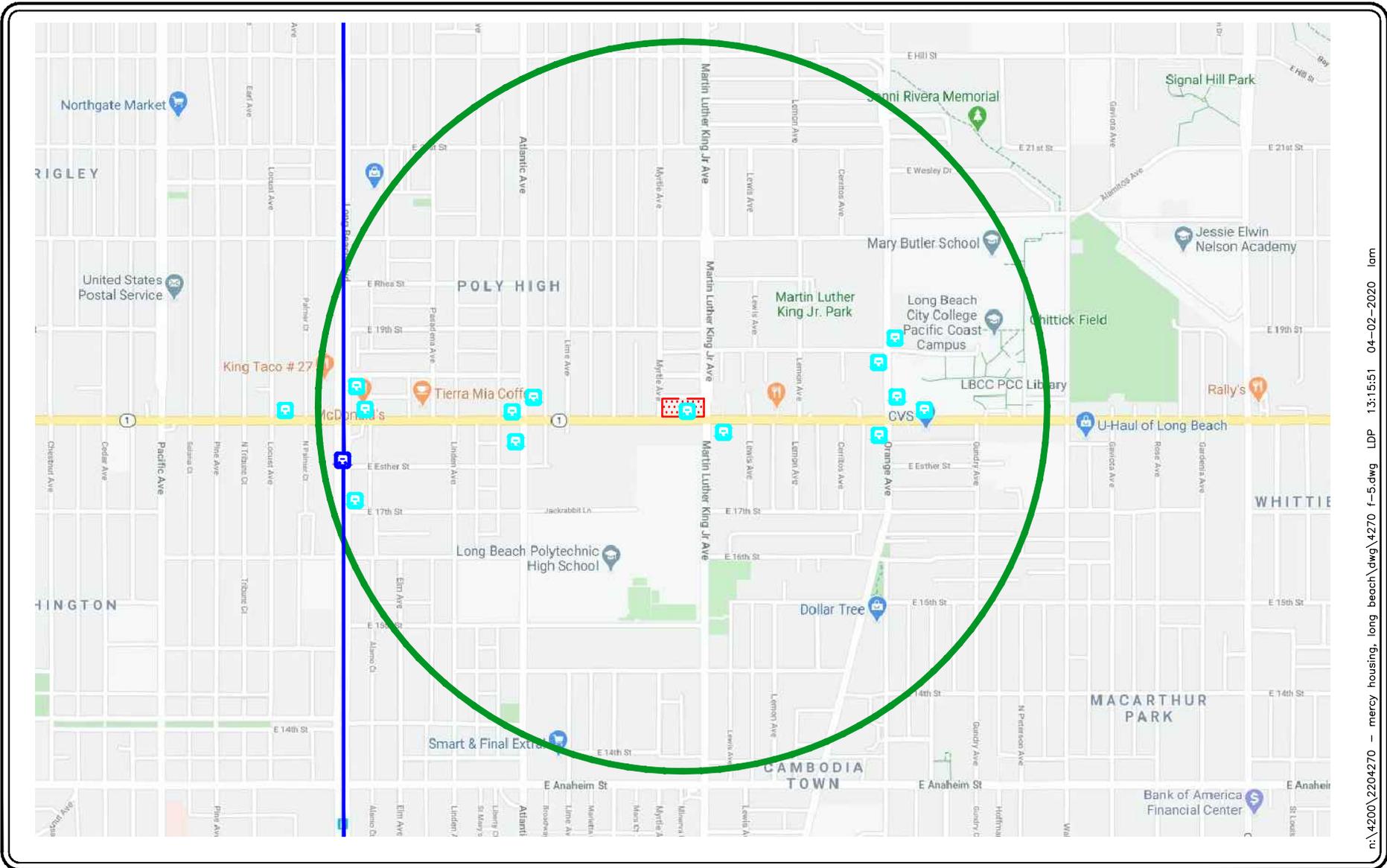
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FIGURE 4

LONG BEACH TRANSIT MAP

MERCY HOUSING, LONG BEACH



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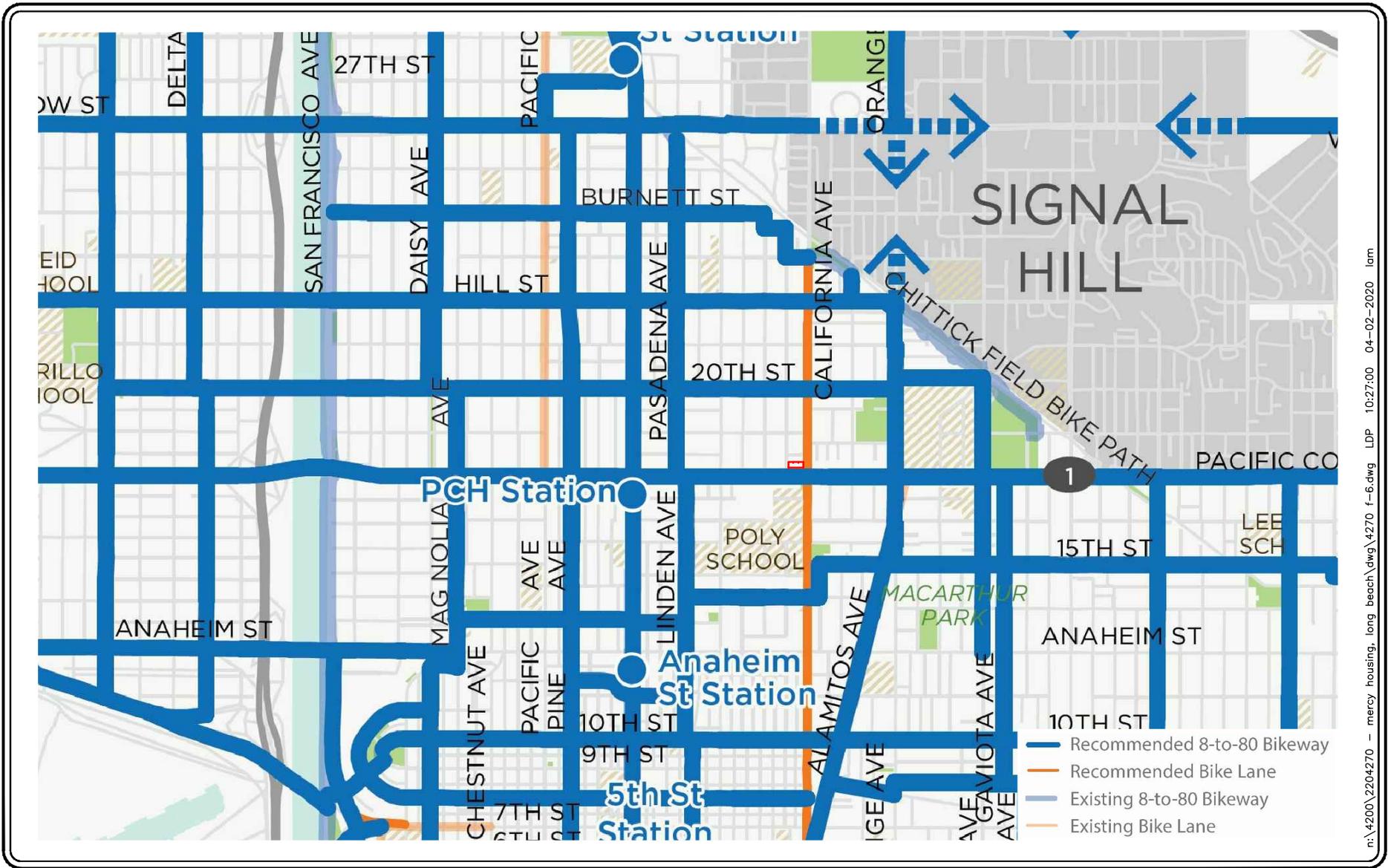
NO SCALE

SOURCE: GOOGLE MAPS
KEY

-  = PROJECT SITE
-  = TRANSIT STOP
-  = METRO BLUE LINE STOP
-  = METRO BLUE LINE
-  = 0.5 MILE RADIUS

FIGURE 5

TRANSIT STOP LOCATIONS MERCY HOUSING, LONG BEACH



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SOURCE: CITY OF LONG BEACH

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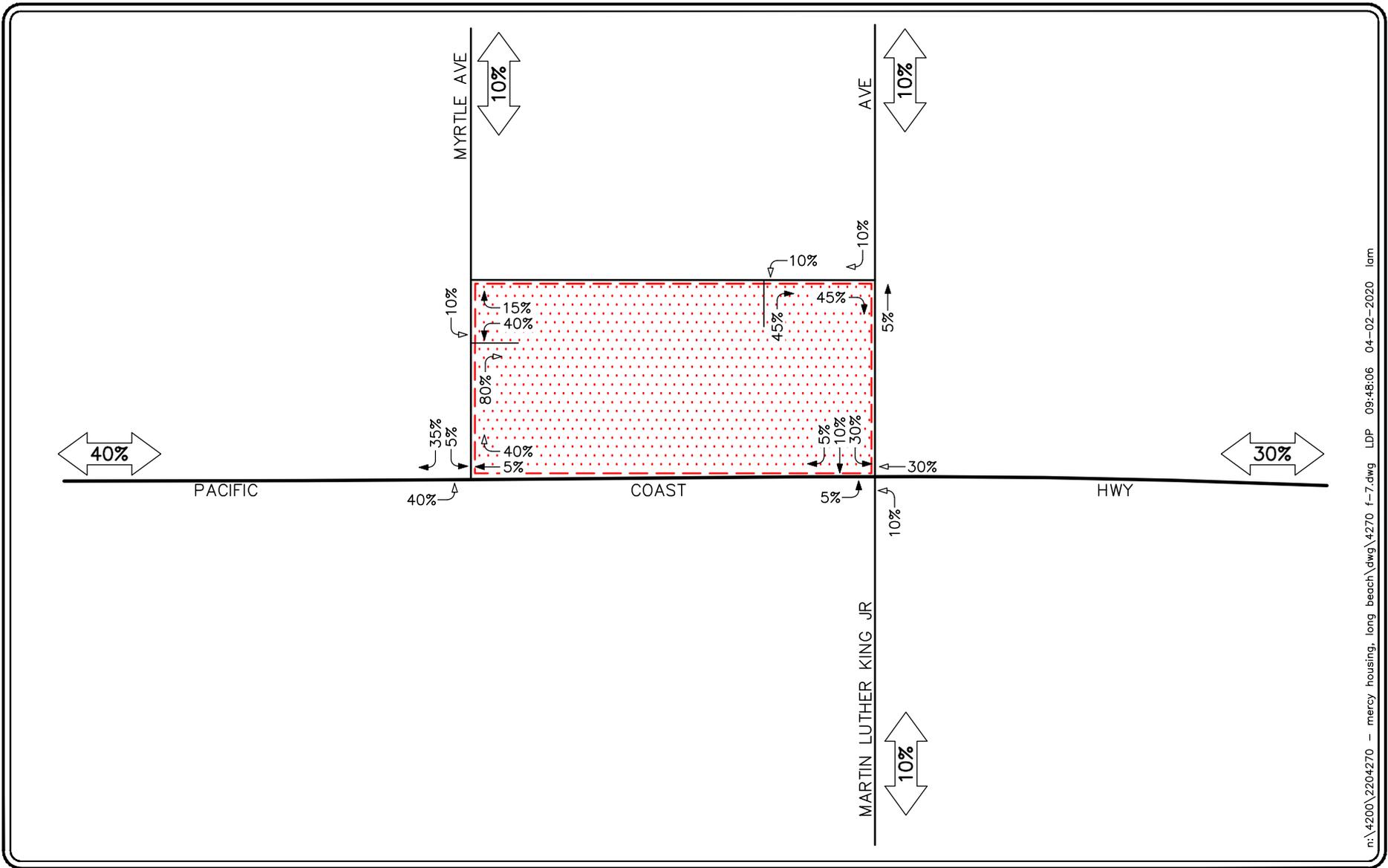
FIGURE 6

LONG BEACH BIKEWAY FACILITIES
MERCY HOUSING, LONG BEACH

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GREENSPAN
engineers



NO SCALE



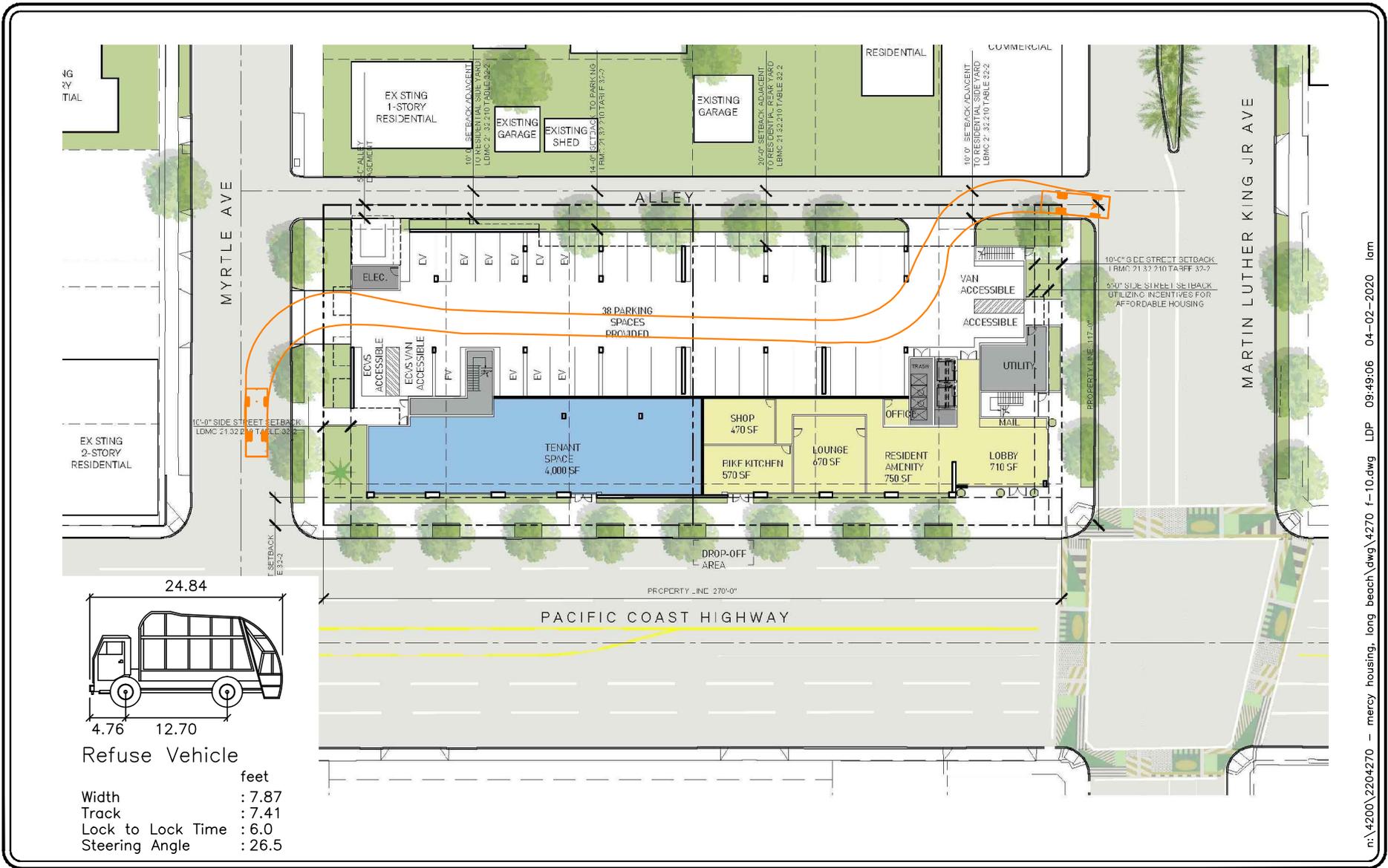
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LAW &
GREENSPAN
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FIGURE 7

PROJECT TRIP DISTRIBUTION PATTERN
 MERCY HOUSING, LONG BEACH



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SOURCE: STUDIOELEVEN

**LINSCOTT
LAW &
GREENSPAN**
engineers

NO SCALE

FIGURE 10

TRASH TRUCK MOVEMENT MERCY HOUSING, LONG BEACH

TABLE 1
PROJECT TRAFFIC GENERATION RATES AND FORECAST¹

ITE Land Use Code / Project Description	Daily 2-Way	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
<i>Trip Generation Factors:</i>							
223: Affordable Housing Income Limits (TE/Units) ²	6.20	70%	30%	0.53	30%	70%	0.62
720: Medical/Dental Office Building (TE/KSF)	34.80	78%	22%	2.78	28%	72%	3.46
820: Shopping Center (TE/KSF)	37.75	62%	38%	0.94	48%	52%	3.81
942: Automobile Care Center (TE/KSF) ³	31.10	66%	34%	2.25	48%	52%	3.11
<i>Existing Trip Generation Forecast:</i>							
Automotive Repair (5,447 SF)	169	8	4	12	8	9	17
<i>Proposed Trip Generation Forecast:</i>							
Mercy Affordable Housing (68 Units)	533	32	14	46	16	37	53
Retail (4,000 SF)	<u>151</u>	<u>2</u>	<u>2</u>	<u>4</u>	<u>7</u>	<u>8</u>	<u>15</u>
Subtotal	684	34	16	50	23	45	68
Non-Auto Trip Adjustment (5%)	<u>-34</u>	<u>-2</u>	<u>-1</u>	<u>-3</u>	<u>-1</u>	<u>-2</u>	<u>-3</u>
<i>Proposed Project Trips</i>	650	32	15	47	22	43	65
Net Added Project Trips (Proposed minus Existing)	481	24	11	35	14	34	48

Notes:

▪TE/KSF = Trip ends per 1000 SF

¹ Source: *Trip Generation*, 10th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2017). Average rates used.

² Affordable Housing Senior information is only available for the AM peak hour which has been used. Therefore, the PM peak hour trip rates are based on Affordable Housing Income Limits. The daily trip rate has been estimated to be 10 times the PM peak hour.

³ The daily trip rate has been estimated to be 10 times the PM peak hour.

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