2136-2154 San Pablo Avenue
INITIAL STUDY

Public Review Draft

City of Berkeley
Department of Planning and Development
1947 Center Street
Berkeley, CA 94704

August 2022

URBAN PLANNING PARTNERS INC.

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Appendix A: CalEEMoD Output
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I. PROJECT DESCRIPTION

The following is an Initial Study and Environmental Checklist for the proposed 2136-2154 San Pablo Avenue Mixed-Use Project (project). Copies of all materials referenced in this report are available for review in the project file during regular business hours at the City of Berkeley Planning and Development Department, Land Use Planning Division, as well as on the City's website at: https://aca.cityofberkeley.info/CitizenAccess/Default.aspx. (Search in Zoning tab, select Permit, Records, Attachments.)

1. **Project Title:** 2136-2154 San Pablo Avenue Mixed-Use Project

2. **Lead Agency Name and Address:**
   City of Berkeley
   Department of Planning and Development, Land Use Division
   1947 Center Street, Second Floor
   Berkeley, CA 94704

3. **Contact Person and Phone Number:**
   Sharon Gong, Senior Planner
   (510) 981-7429
   SGong@cityofberkeley.info

4. **Project Sponsor's Name and Address:**
   San Pablo Investors Two LLC
   200 Spectrum Center Drive, Suite 1450
   Irvine, CA 92618

5. **General Plan Designation:** Avenue Commercial

6. **Zoning:** West Berkeley Commercial (C-W)

7. **Project Location:**

The project site is located at 2136-2154 San Pablo Avenue between the northwest and southwest neighborhoods in the city of Berkeley. The rectangular parcel (Assessor's Parcel Number [APN] 056-1977-011-01) encompasses 23,301 square feet (0.53 acres) and is located on the west side of San Pablo Avenue, mid-block between Addison Street to the north and Allston Way to the south. The site is bounded by a multi-story senior residential care facility to the north, currently under construction, San Pablo Avenue to the east, a commercial liquor store to the south, and George Florence Park to the west.

Major local roadways include San Pablo Avenue, directly abutting the project site to the east; University Avenue, one and a half blocks to the north of the project site; Dwight Way approximately ½-mile to the south; and Sixth Street, approximately ¼-mile to the west of the project site. Additionally, Sacramento Street is approximately ½-mile to the east, Ashby Avenue (CA-13) is 1 mile to the south, and Gilman Street is 1 mile to the north. Regional vehicular access to the site is provided by Interstate 80/580 via the University Avenue on- and off-ramps located approximately ½-mile west of the project site. Figure 1 depicts the project location.

The project site is in close proximity to many transit options. It is approximately 1 mile southwest of the North Berkeley Bay Area Rapid Transit (BART) station and approximately ½-mile east of the Berkeley Amtrak Station. It is also directly adjacent to several Alameda County Transit (AC Transit) bus lines. The nearest public bus stops are each approximately 0.1-mile away from the project site on San Pablo Avenue. AC Transit Line 72 runs along San Pablo Avenue in either direction, with stops at San Pablo and University Avenue, and at San Pablo and Allston Way. In addition, AC Transit Line 51B runs along University Avenue with several stops at the intersection of San Pablo Avenue and University Avenue, ¼-mile from the project site.

8. Environmental Setting:

The project is in an urban developed area. A four-story mixed-use senior residential care facility is under construction on the property north of the project site along San Pablo Avenue. A one-story auto-repair shop is directly across San Pablo Avenue from the project site, bordered by a single-story commercial building to the south. Directly south is a one-story commercial liquor store. The other properties along Allston Way south of the project site include two- and three-story residential buildings. Figure 2 shows the project site within the context of the existing surrounding land uses.

9. Description of Project:

The project site characteristics and the project are described below.

Existing Conditions

The 0.54-acre project site is privately owned. The rectangular parcel, oriented north-to-south, is fully developed with an approximately 8,000-square-foot single-story main building with a parapet wall abutting San Pablo Avenue; it is setback from the south (side) and west (rear) lot lines and the resulting open areas are occupied by drive aisles, vehicle parking, and a temporary storage tent.

The concrete-walled building was designed by architects William E. Schirmer (1891-1957) and A.S. Bugbee (dates unknown) and constructed in 1923 in the Classical Revival/Beaux-Arts architectural style. The primary building elevation is divided equally into eight distinct storefronts.

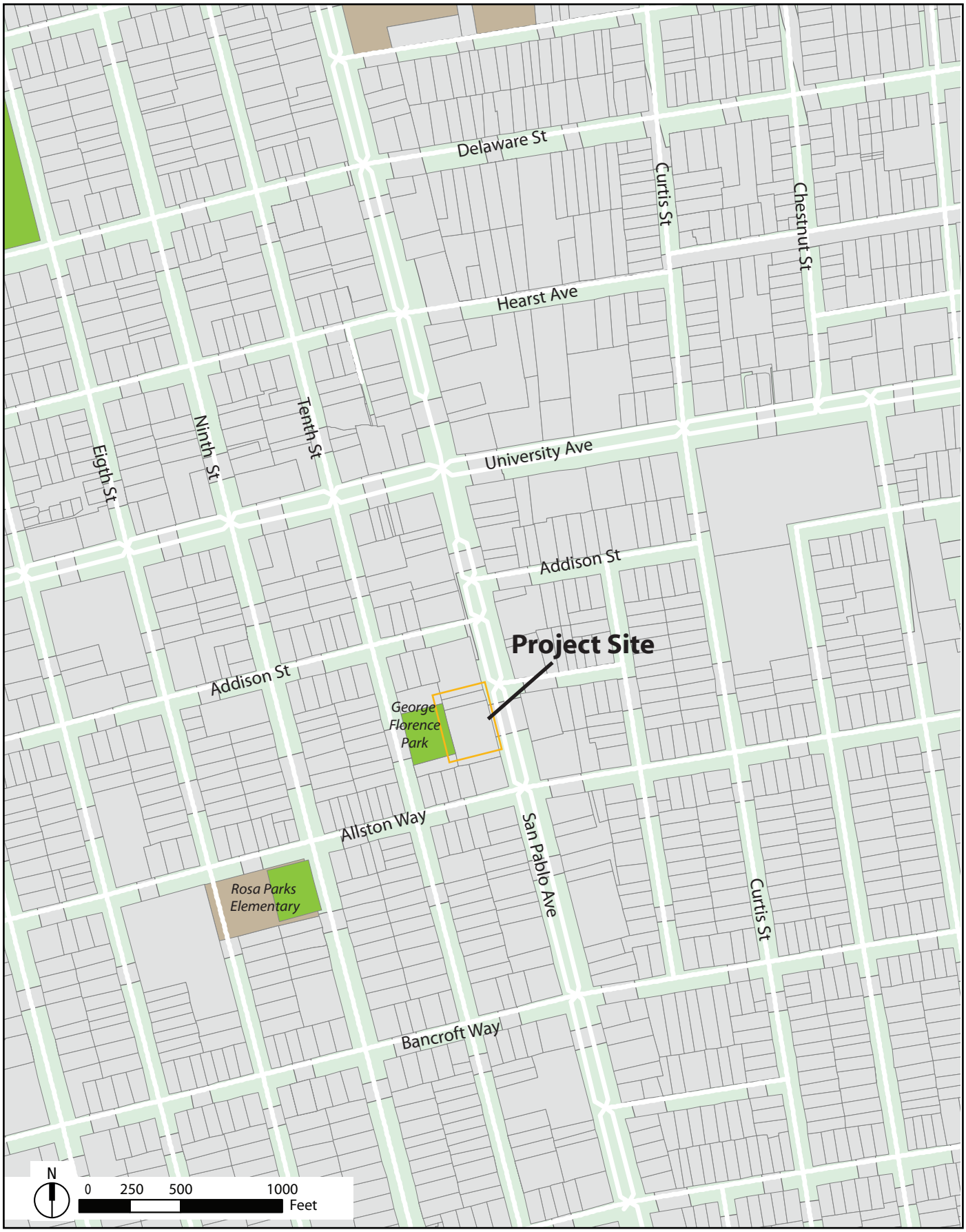


Figure 1
Project Location

bays separated by pilasters that resemble classical columns with ornamental bases and a three-part decorative entablature spanning the length of the façade. The building was designated a City of Berkeley Landmark in 2020 for its architectural merit, and therefore is considered a historic resource pursuant to the California Environmental Quality Act (CEQA).

An existing sidewalk runs along San Pablo Avenue on the east side of the project site. Existing landscaping includes three mature street trees along San Pablo Avenue. Vehicles can access the property from San Pablo Avenue via an existing curb cut at the southeast corner of the property. A metal gate spans the width of the existing driveway. Street parking is available on San Pablo Avenue and surrounding streets.

Project Characteristics

The project would demolish the existing 9,000-square-foot one-story building on the project site and construct a new six-story mixed-use building. The proposed building has the following characteristics:

1. Six stories and 69 feet 6 inches in height;
2. 123 dwelling units and three live-work units;
3. 82,824 square feet of gross floor area with Density Bonus;
4. A parking garage with 50 vehicle parking spaces;
5. A secure ground-floor bicycle storage room with long-term parking for 64 bicycles and short-term parking for eight bicycles; and
6. 6,319 square feet of open space.

The three live-work units and six lofts would be at the ground floor, with the live-work units fronting San Pablo Avenue and the loft units facing the back of the lot to the west. Each of the live-work units would have a mezzanine for exclusively residential space. In addition to housing the live work and loft units, the ground floor would include a community room, lounge, mail room, trash room, parking garage, and bicycle storage room, as shown in Figure 3. Floors 2 through 5 would be comprised of 117 dwelling units, consisting of 36 studios, 76 one-bedroom units, and 5 two-bedroom units, as shown in Figure 5. The building's massing would step down from six stories at the front facing San Pablo Avenue to four stories at the rear towards the west. West-facing rooftop gardens would be accessed via the fourth and sixth floors. The proposed project also features a common open space area at the podium level (level 2) facing west the rear of the property.

4 VIEW FROM SAN PABLO LOOKING SOUTH

2 VIEW FROM COWPER LOOKING WEST

3 VIEW FROM SAN PABLO LOOKING NORTH

1 GOOGLE EARTH BIRD'S EYE CONTEXT VIEW

Figure 2
Existing Site Conditions

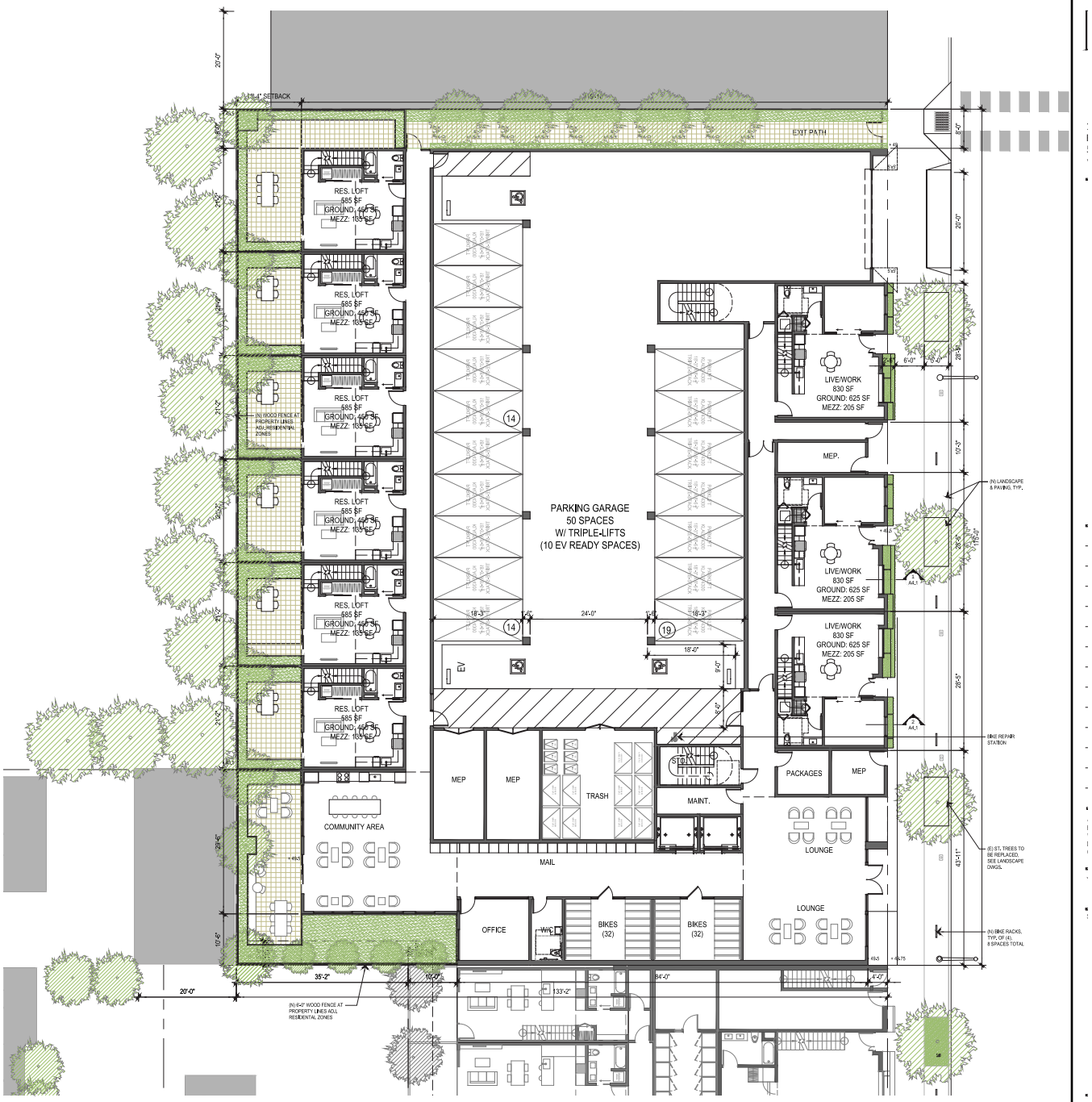
Automobile access to and from the parking garage would be via a driveway at the northeast corner of the building on San Pablo Avenue. Primary building access would be through the lobby on San Pablo Avenue. Pedestrian access between the garage and the lobby would be provided through a hallway on the ground level of the building. Figure 3 shows the location of these vehicular and pedestrian entrances.

The project would provide a total of 6,319 square feet of open space, consisting of 532 square feet of common usable open space at the ground level, and 2,345 square feet at the podium level (level 2). Two roof decks, one on the fourth floor's western edge overlooking 10th Street, and one on the eastern edge overlooking San Pablo Avenue, would provide another 2,802 square feet of common open space for building residents. Sixteen dwelling units would have 40-square-foot private patios, which would provide a total of 640 square feet of private open space.

Per California's State Density Bonus law, the inclusion of very low income (VLI) units entitles a project to a bonus in residential density and waivers and modifications to development standards.[1] The applicant has proposed a code-compliant base project of 95 dwelling units and three live-work units, with 10 units (10 percent of the base units, rounded up) affordable to VLI households. By providing 10 VLI units, the project is entitled to a 32.5 percent density increase (up to 31 additional units), for a total of 123 dwelling units. In order to accommodate the additional units while retaining a significant building setback from the lower-density homes to west, the project would have a right to, and would use, a waiver/modification of local development standards to increase the building's height to 69 feet 6 inches and six stories, above the maximum permitted in the C-W District (50 feet and four stories). Additionally, the project would use a waiver to accommodate the project's proposed floor area ratio (FAR) of 3.55, above the maximum permitted in the C-W District (3.0). The project would also request a concession to reduce the off-street automobile parking requirement by 17 parking spaces, which would allow the project to provide the proposed 50 off-street automobile parking spaces.

Construction is anticipated to last approximately 18 months.[2] The excavation depth would be a maximum of 9 feet, with up to approximately 2,473 cubic yards of soil excavated and off-hauled from the site. Groundwater depth at the site is estimated to be 8 to 24 feet below ground surface. No pile driving would occur or be required. The project would not include an emergency generator. Three existing street trees along San Pablo Avenue would be removed during project construction and replaced.

[1] California Government Code Section 65915-65918
[2] Heather Lee, Heather Lee Consulting. Personal communication with Alison Lenci at Urban Planning Partners, Inc., April 14,2022.



N

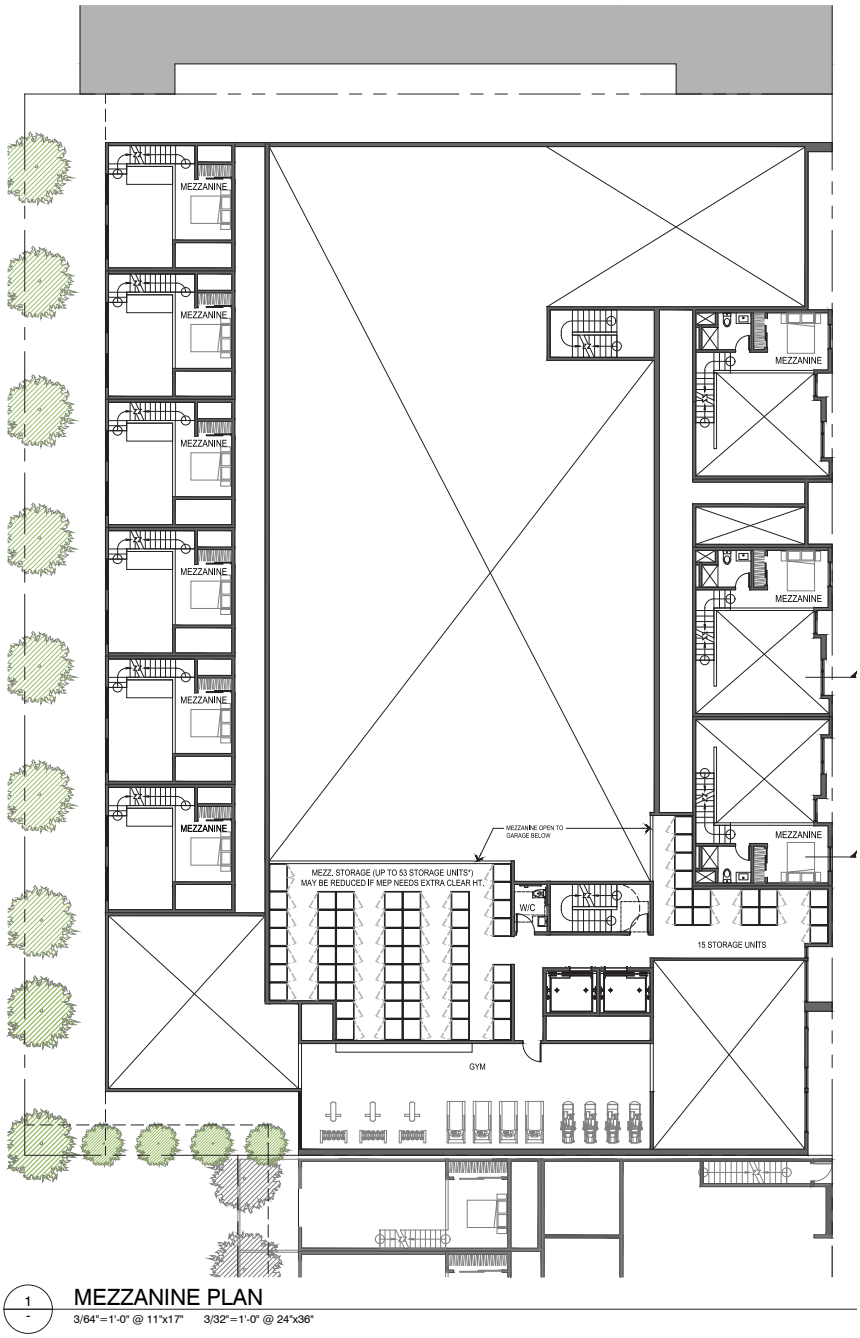
0 125 250 500 Feet

1 inch = 500 feet

Source: Trachtenberg Architects, 2021.

Figure 3

Ground Floor Site Plan



N

0 125 250 500 Feet

1 inch = 500 feet

Source: Trachtenberg Architects, 2021.

Figure 4

Mezzanine Level Site Plan

Source: Trachtenberg Architects, 2021.

Figure 5

Levels 2-5 Site Plan

2136-2154 San Pablo Initial Study

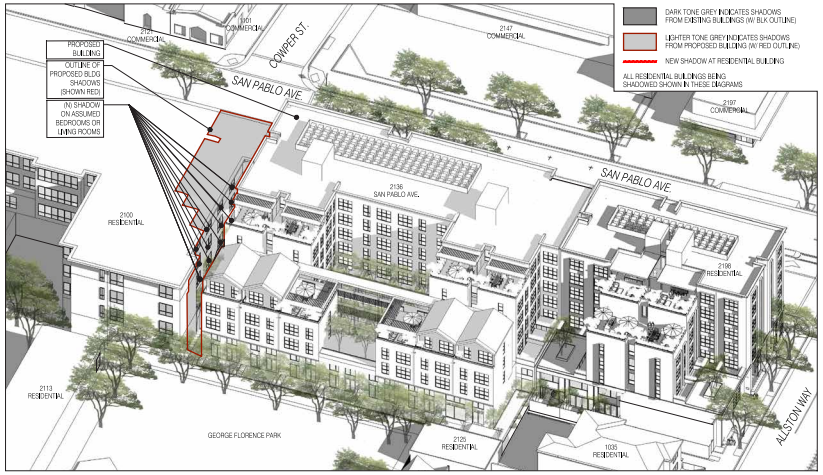
2 WEST ELEVATION
3/64"=1'-0" @ 11X17 3/32" = 1'-0" @ 24X36

1 EAST ELEVATION
1/32"=1'-0" @ 11X17 2/32" = 1'-0" @ 24X36

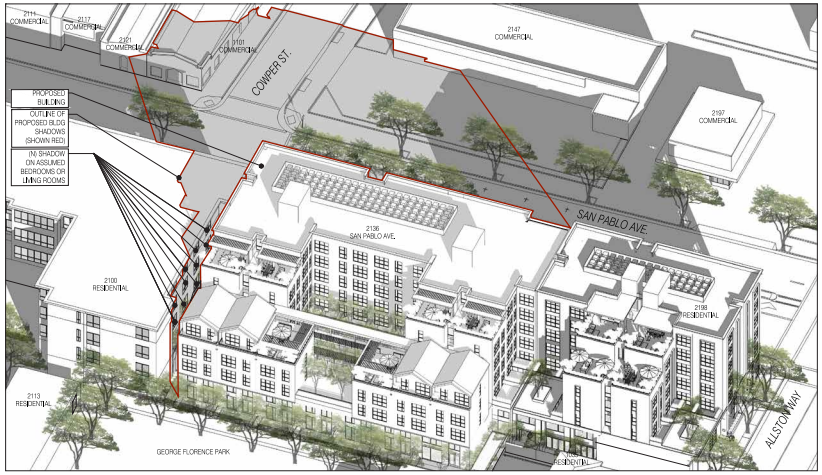
2 NORTH ELEVATION
1/32"=1'-0" @ 11X17 2/32" = 1'-0" @ 24X36

Source: Trachtenberg Architects, 2021.

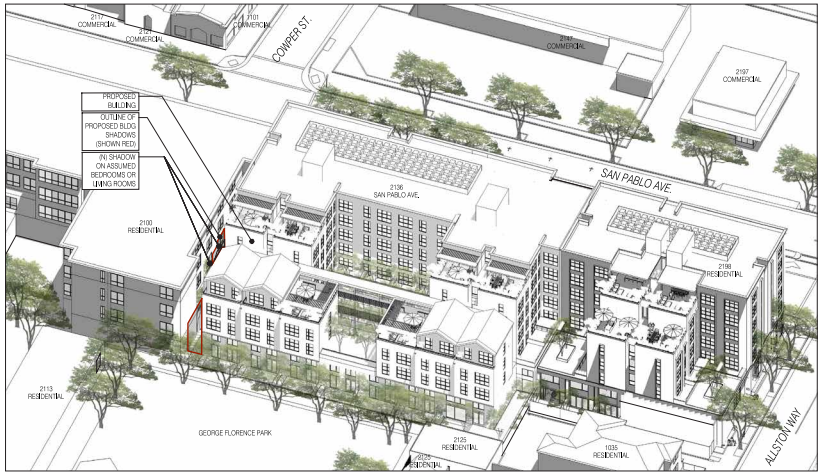
Figure 6
Proposed Elevations



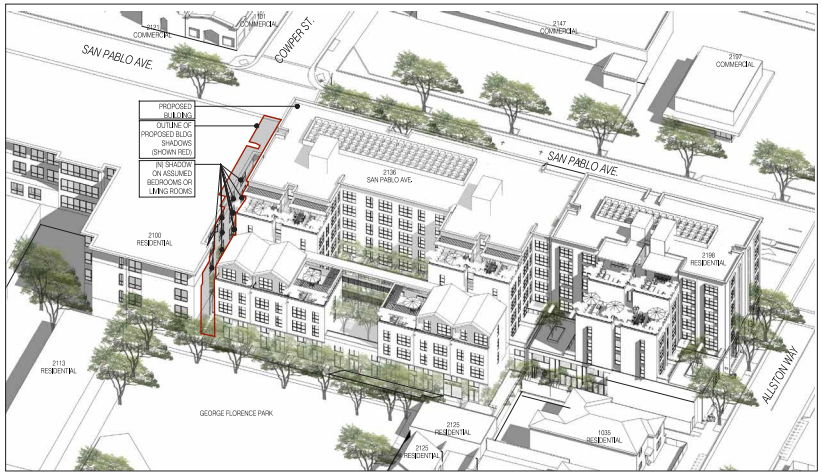
2 SHADOW STUDY AXONOMETRIC - DECEMBER 21ST: NOON
NTS



1 SHADOW STUDY AXONOMETRIC - DECEMBER 21ST: 2-HOURS BEFORE SUNSET
NTS



1 SHADOW STUDY AXONOMETRIC - JUNE 21ST: NOON
NTS



1 SHADOW STUDY AXONOMETRIC - OCT 4TH: NOON
NTS

Source: Trachtenberg Architects, 2021.

Figure 7
Density Massing and Shadows

Required Approvals from the City of Berkeley:

The following approvals by the City of Berkeley will be required for the project:

1. Use Permit under BMC Section 23.326.070.A to demolish a non-residential building or structure;
2. Use Permit under BMC Section 23.204.140.B.2(a) to construct a mixed-use development over 20,000 square feet;
3. Use Permit under BMC Table 23.204-1 for the construction of dwelling units in the C-W zone;
4. Use Permit under BMC Table 23.204-2 to construct new gross floor area of 5,000 square feet or more;
5. Administrative Use Permit under BMC Table 23.304-5 to construct architectural elements that exceed the District's height limit and represent no more than 15 percent of the average floor area of the building's floors;
6. Administrative Use Permit under BMC Section 23.312.030.3.(a)i. to establish live-work units;
7. Design Review under BMC Section 23.406.070.B.1.(a) ;
8. Building permit and other related on-site and off-site work permits; and
9. The project will likely require an Operation & Maintenance agreement for permanent BMPs to meet requirements of Provision C3 of the MRP.

10. Other Public Agencies Whose Approval is Required:

The City of Berkeley is the lead agency with responsibility for approving the project. Discretionary approval from other public agencies is not required, although some ministerial approvals from other public agencies may be needed, such as an encroachment permit from Caltrans for any work in the right-of-way or a water connection permit from East Bay Municipal Utility District (EBMUD).

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun?

The City of Berkeley started the AB 52 and SB 18 90-day Tribal Consultation opportunity period, according to Government Code Section 65352.3, by sending out certified written notices on February 10, 2022, inviting the appropriate tribes to consult on the project. The tribes that were notified are: Amah Mutsun Tribal Band of Mission San Juan Bautista, Costanoan Rumsen Carmel Tribe, Guidiville Indian Rancheria, Indian Canyon Mutsun Band of Costanoan, Muwekma Ohlone Indian Tribe of the SF Bay Area, North Valley Yokuts Tribe, The Ohlone Indian Tribe, Wuksache Indian Tribe/Eshom Valley Band, and The Confederated Villages of Lisjan (Tribes). The

Confederated Villages of Lisjan tribe requested a consultation. On March 23, 2022, the first consultation meeting occurred between the Confederated Villages of Lisjan and the City of Berkeley; consultation is ongoing.

II. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

- ❒ Aesthetics
- ❒ Agriculture and Forestry Resources
- ❒ Air Quality
- ❒ Biological Resources
- ■ Cultural Resources
- ❒ Energy
- ❒ Geology/Soils
- ❒ Greenhouse Gas Emissions
- ❒ Hazards and Hazardous Materials
- ❒ Hydrology/Water Quality
- ❒ Land Use/Planning
- ❒ Mineral Resources
- ❒ Noise
- ❒ Parks and Recreation
- ❒ Population/Housing
- ❒ Public Services
- ❒ Transportation
- ❒ Tribal Cultural Resources
- ❒ Utilities/Service Systems
- ❒ Wildfire
- ❒ Mandatory Findings of Significance

Determination:

On the basis of this initial evaluation:

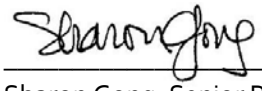
❒ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

❒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

■ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

❒ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

❒ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.



Sharon Gong, Senior Planner

August 17, 2022
Date

III. ENVIRONMENTAL CHECKLIST

I. AESTHETICS

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?)	☐	☐	☐	☒
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Public Resources Code Section 21099(d), effective January 1, 2014, provides that:

> "Aesthetic (…) impacts of a residential, mixed-use residential, or employment center project on an infill site located within a transit priority area shall not be considered significant impacts on the environment."

Accordingly, aesthetics is no longer to be considered in determining if a project has the potential to result in significant environmental effects for projects that meet all of the following three criteria:

- The project is a residential, mixed-use residential, or employment center.
- The project is on an infill site.[3]
- The project is in a transit priority area.[4]

[3] Public Resources Code Section 21099(a) defines an "infill site" as a lot located within an urban area that has been previously developed, or a vacant site where at least 75 percent of the perimeter of the site adjoins or is separated only by an improved public right-of-way from parcels that are developed with qualified urban uses.

[4] Public Resources Code (PRC) Section 21099(a) defines a "transit priority area" as an area within ½-mile of an existing or planned major transit stop. Per Appendix M of the CEQA Guidelines, a "major transit stop" includes an intersection of two or more major bus routes with frequencies of service intervals of 15 minutes or less during the morning and afternoon peak commute periods.

The project meets all three criteria: (1) it is located in a transit priority area (less than 1/4-mile south of the intersection of San Pablo Avenue and University Avenue, which includes AC Transit Line 51B, which operates every 10 minutes during commute hours, and AC Transit Line 72, which operates every 15 minutes during commute hours); (2) the project site is an infill site within the urban area of the city of Berkeley and is currently developed with a commercial building and surface parking lot; and (3) the project is a residential mixed-use project.

Accordingly, aesthetic impacts are not significant in determining the project's significant impacts under CEQA. Project elements that would result in changes to aesthetic conditions at the site and vicinity, including but not limited to proposed building heights, architecture, and effects of new light and glare will, however, be considered as part of the planning review process, including review by the Design Review Committee and the Zoning Adjustments Board. Implementation of the City's standard condition of approval **Exterior Lighting** will also prevent excessive glare beyond the subject property. Refer to *Section XI, Land Use and Planning*, for a discussion of consistency with applicable policies related to urban design.

II. AGRICULTURAL AND FOREST RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California agricultural land evaluation and site assessment model (1997) prepared by the California Dept. of conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significantly environmental effects, lead agencies may refer to information compiled by the California department of forestry and fire protection regarding the state's inventory of forest land, including the forest and range assessment project and the forest legacy assessment project; and forest carbon measurement methodology provided in forest protocols adopted by the California air resources board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to a non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Governmental Code Section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to a non-agricultural use?

No Impact. The project site is classified as "Urban and Built-Up Land" by the State Department of Conservation.[5] The Land Use Element of the City's General Plan does not designate land for agricultural use in the City of Berkeley. Neither the project site nor adjacent properties are enrolled in Williamson Act contracts, and the area does not support forest land.[6] No agricultural or forest resources are located on or near the project site. The surrounding area is developed with commercial and residential uses and the zoning districts in the area do not include agricultural uses as permissible. Therefore, development of the project would not convert agricultural land, including Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use, nor forest land to non-forest use.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact. Refer to discussion 2.a above.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?

No Impact. Refer to discussion 2.a above.

[5] California Department of Conservation (CDC), 2016. Division of Land Resource Protection, Farmland Mapping and Monitoring Program. Available online at: https://maps.conservation.ca.gov/dlrp/ciff/, accessed February 24, 2022.
[6] Alameda County Assessor's Office Parcel Viewer, 2022 . California Land Conservation Act. Williamson Act assessment value. Available online at http://gis.acgov.org/Html5Viewer/index.html?viewer=parcel_viewer, accessed May 5, 2022.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. Refer to discussion 2.a above.

e) Involve other changes in the existing environment which, due to their location or mature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

No Impact. Refer to discussion 2.a above.

III. AIR QUALITY

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concen-trations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☐	☒

All criteria air pollutants that would be generated by the project are associated with adverse health effects (e.g., cardiovascular disease and asthma). In accordance with the federal Clean Air Act and California Clean Air Act, areas in California are classified as either in attainment, maintenance (i.e., former nonattainment), or nonattainment of the National Ambient Air Quality Standards and California Ambient Air Quality Standards for each criteria air pollutant. These standards were designed to minimize health risks to communities exposed to criteria air pollutants. The project site is located in the San Francisco Bay Area Air Basin (SFBAAB), which is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The SFBAAB is designated as a nonattainment area for ozone, coarse particulate matter (PM10), and fine particulate matter (PM2.5).

Regional air pollutants, such as ozone, PM10, and PM2.5, can be formed and/or transported over long distances and affect ambient air quality far from the emissions source. Ground-level ozone is formed through reactions of nitrogen oxides (NOx) and reactive organic gases (ROG), and particulate matter is a complex mixture of solids and aerosols. The magnitude and location of

specific health effects from exposure to increased ozone, PM10, and PM2.5 concentrations are the result of emissions generated by numerous sources throughout the SFBAAB, as opposed to a single project. The BAAQMD has adopted thresholds of significance to assist lead agencies in the evaluation of ozone precursors (NOx and ROG), PM10, and PM2.5 emitted from individual projects that could have a cumulatively considerable contribution to adverse air quality in the SFBAAB. In accordance with the BAAQMD's current CEQA Air Quality Guidelines,[7] the project's average daily and annual emissions of NOx, ROG, PM10, and PM2.5 are estimated in this analysis and compared to the BAAQMD's threshold of significance to evaluate regional air quality impacts.

Localized air pollutants generally dissipate with distance from the emission source and can pose a health risk to nearby populations. Toxic air contaminants (TACs), such as diesel particulate matter (DPM), are considered localized pollutants. PM2.5 is also considered a localized air pollutant, in addition to being considered a regional air pollutant. Air dispersion models can be used to reliably quantify the health risks to nearby receptors associated with emissions of localized air pollutants from an individual project. The BAAQMD has adopted thresholds of significance to assist lead agencies in the evaluation of health risks for people exposed to TACs and PM2.5 emissions from an individual project. In accordance with the BAAQMD's current CEQA Air Quality Guidelines, the local concentrations of DPM and PM2.5 and associated health risks from the project are estimated in this analysis and compared to the BAAQMD's threshold of significance to evaluate local air quality impacts.

It should be noted that the specific health risks associated with regional air pollutant emissions from the proposed project are not estimated in this analysis. The BAAQMD and other air districts use regional air dispersion models to correlate the cumulative emissions of regional pollutants to potential community health effects. However, these dispersion models have limited sensitivity to the relatively small (or negligible) changes in criteria air pollutant concentrations associated with an individual project. Therefore, it is not feasible to provide reliable estimates of specific health risks associated with regional air pollutant emissions from the proposed project.

a) Conflict with or obstruct implementation of the applicable air quality plan?

Less Than Significant. In accordance with the federal Clean Air Act and California Clean Air Act, the BAAQMD is required to prepare and update an air quality plan that outlines measures by which both stationary and mobile sources of pollutants can be controlled in order to achieve federal and State ambient air quality standards. In April 2017, the BAAQMD adopted the 2017 Clean Air Plan: Spare the Air, Cool the Climate (2017 CAP), which includes 85 control measures to reduce ROG, NOx, PM10, PM2.5, TACs, and greenhouse gases (GHGs). The 2017 CAP was developed based on a multi-pollutant evaluation method that incorporates well-established

[7] Bay Area Air Quality Management District (BAAQMD), 2017. CEQA Air Quality Guidelines, May.

studies and methods on quantifying the health benefits and air quality regulations, computer modeling and analysis of existing air quality monitoring data and emission inventories, and growth projections prepared by the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG).

Based on the BAAQMD's current CEQA Air Quality Guidelines, the following criteria should be considered to determine if a project would conflict with or obstruct implementation of the 2017 CAP:

1. Does the project include applicable control measures from the air quality plan?
2. Does the project disrupt or hinder implementation of any air quality plan control measures?
3. Does the project support the primary goals of the air quality plan?

The 2017 CAP includes control measures that aim to reduce air pollution and GHGs from stationary, area, and mobile sources. The control measures are organized into nine categories: stationary sources, transportation, buildings, energy, agriculture, natural and working lands, waste, water, and super-GHG pollutants (e.g., methane, black carbon, and fluorinated gases). As described in Table 1, the project would be consistent with applicable control measures from the 2017 CAP. Because the project would not result in any significant and unavoidable air quality impacts related to emissions, ambient concentrations, or public exposures (see subsections b through d and *Section VIII, Greenhouse Gas Emissions*), the project supports the primary goals of the 2017 CAP. Therefore, based on the BAAQMD's CEQA Air Quality Guidelines, the project would not conflict with or obstruct implementation of the applicable air quality plan, and the impact would be less than significant.

TABLE 1 PROJECT CONSISTENCY WITH BAAQMD'S 2017 CAP

Control Measures	Project Consistency
Stationary Source	The stationary source measures, which are designed to reduce emissions from stationary sources, are incorporated into rules adopted by the BAAQMD and then enforced by the BAAQMD's Permit and Inspection programs. Since the project would not include any stationary sources, the stationary source control measures of the 2017 CAP are not applicable to the project.
Transportation	The transportation control measures are designed to reduce vehicle trips, use, miles traveled, idling, or traffic congestion for the purpose of reducing vehicle emissions. The project would include live-work units and residential land uses that would be located near a public transportation center. In addition, the project would include on-site bike parking. This would encourage alternative modes of travel and reduce trips and vehicle miles traveled generated by the project. Therefore, the project would be consistent with the goals for transportation control in the 2017 CAP.
Energy	The energy control measures are designed to reduce emissions of criteria air pollutants, TACs, and GHGs by decreasing the amount of fossil fuels consumed in the Bay Area, as well as decreasing the carbon intensity of the electricity used by switching to less GHG-intensive fuel sources for electricity generation. Since these measures apply to electrical utility providers and local government agencies (and not individual projects), the energy control measures of the 2017 CAP are not applicable to the project. However, the project's electricity will be

TABLE 1 PROJECT CONSISTENCY WITH BAAQMD'S 2017 CAP

Control Measures	Project Consistency
	supplied by East Bay Community Energy (EBCE) which purchases power mainly from clean sources like hydropower, wind, and solar.[a]
Buildings	The BAAQMD has authority to regulate emissions from certain sources in buildings such as boilers and water heaters, but has limited authority to regulate buildings themselves. Therefore, the building control measures focus on working with local governments that have authority over local building codes to facilitate adoption of best practices and policies to control GHG emissions. In accordance with the City of Berkeley Natural Gas Prohibition & Reach Code for Electrification, the project would exceed the 2019 Title 24 energy efficiency standards through the construction of an all-electric building (i.e., no natural gas) and the incorporation of a rooftop solar photovoltaic system that provides at least 15 percent of the total roofing area. Therefore, the proposed project would not conflict with any of the Building Control Measures.
Agriculture	The agriculture control measures are designed to primarily reduce emissions of methane. Since the project does not include any agricultural activities, the agriculture control measures of the 2017 CAP are not applicable to the project.
Natural and Working Lands	The control measures for the natural and working lands sector focus on increasing carbon sequestration on rangelands and wetlands, as well as encouraging local governments to ordinances that promote urban-tree plantings. Since the project does not include the disturbance of any rangelands or wetlands, the natural and working lands control measures of the 2017 CAP are not applicable to the project.
Waste Management	The waste management measures focus on reducing or capturing methane emissions from landfills and composting facilities, diverting organic materials away from landfills, and increasing waste diversion rates through efforts to reduce, reuse, and recycle. The project would comply with local requirements for waste management (e.g., recycling and composting services). Therefore, the project would be consistent with the waste management control measures of the 2017 CAP.
Water	The water control measures to reduce emissions from the water sector will reduce emissions of criteria pollutants, TACs, and GHGs by encouraging water conservation, limiting GHG emissions from publicly owned treatment works (POTWs), and promoting the use of biogas recovery systems. Since these measures apply to POTWs and local government agencies (and not individual projects), the water control measures of the 2017 CAP are not applicable to the project.
Super GHGs	The super-GHG control measures are designed to facilitate the adoption of best GHG control practices and policies through the BAAQMD and local government agencies. Since these measures do not apply to individual projects, the super-GHG control measures of the 2017 CAP are not applicable to the project.

Source: Bay Area Air Quality Management District (BAAQMD), 2017. CEQA Air Quality Guidelines, May.

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Less Than Significant. The SFBAAB is designated as a nonattainment area for ozone, PM10, and PM2.5. Construction and operation of the project would generate criteria pollutant emissions that could potentially impact regional air quality. The BAAQMD currently recommends using the most recent version of the California Emissions Estimator Model (CalEEMod Version 2020.4.0) to estimate construction and operational emissions of pollutants for a project. CalEEMod utilizes

widely accepted models for emission estimates combined with appropriate default data for a variety of land use projects that can be used if site-specific information is not available. The default data (e.g., type and power of construction equipment) are supported by substantial evidence provided by regulatory agencies and a combination of Statewide and regional surveys of existing land uses. The primary input data used to estimate emissions associated with construction and operation of the project are summarized in Table 2. A copy of the CalEEMod report for the project, which summarizes the input parameters, assumptions, and findings, is provided in Appendix A.

TABLE 2 SUMMARY OF CALEEMOD LAND-USE INPUT PARAMETERS

Land-Use Type	CalEEMod Land-Use Type	Units	Unit Amount
Residential Apartments	Apartments Mid Rise	Dwelling Units	123
		Square Feet	81,000
Parking Garage	Enclosed Parking Structure with Elevator	Spaces	50
		Square Feet	20,800
Live-Work	General Office Building	Square Feet	1,300

Source: California Emissions Estimator Model (CalEEMod), Appendix A.

Construction Emissions

Project construction would generate ROG, NOx, PM10, and PM2.5 from the exhaust of off-road construction equipment and on-road construction vehicles (worker vehicles, vendor trucks, and haul trucks). In addition, fugitive ROG emissions would result from the application of architectural coatings and paving during construction. Emissions of ROG, NOx, PM10, and PM2.5 during project construction were estimated using the CalEEMod input parameters summarized in Table 3.

TABLE 3 SUMMARY OF CALEEMOD CONSTRUCTION INPUT PARAMETERS

CalEEMod Input Category	Construction Assumptions and Changes to Default Data
Construction Phase	CalEEMod applies default equipment usage and construction phase lengths based on the findings of a survey of construction projects less than 5 acres. The survey results are organized in CalEEMod based on lot acreage size. While the project is approximately 0.53 acres, the multi-story development projects included in the construction survey were at least 2 acres. Therefore, the default equipment usage and construction phase lengths for a 2-acre lot were used to estimate the total hours of equipment operation (and associated emissions) required to construct the project.
Material Movement	Approximately 330 cubic yards of soil is expected to be hauled off-site.
Demolition	Approximately 8,050 square feet of existing buildings would be demolished and hauled off-site.

Notes: Demolition and material movement information provided by the project sponsor. Default CalEEMod data was used for all other parameters not described.
Source: California Emissions Estimator Model (CalEEMod), Appendix A.

It is assumed that project construction would begin in 2023 and last approximately 18 months , based on the CalEEMod default assumptions. Since the project construction would last more than 2 months, the **COA Air Quality – Diesel Particulate Matter during Construction** would apply to all off-road construction equipment used for the project. In accordance with this COA, the project must comply with at least one of the following measures:

1. The project applicant shall prepare a health risk assessment that demonstrates the project's on-site emissions of diesel particulate matter during construction will not exceed health risk screening criteria after a screening-level health risk assessment is conducted in accordance with current guidance from BAAQMD and OEHHA. The health risk assessment shall be submitted to the Land Use Planning Division for review and approval prior to the issuance of building permits; or
2. All construction equipment shall be equipped with Tier 2 or higher engines and the most effective Verified Diesel Emission Control Strategies (VDECS) available for the engine type (Tier 4 engines automatically meet this requirement) as certified by the California Air Resources Board (CARB). The equipment shall be properly maintained and tuned in accordance with manufacturer specifications.

In addition, a Construction Emissions Minimization Plan (Emissions Plan) shall be prepared that includes the following:

3. An equipment inventory summarizing the type of off-road equipment required for each phase of construction, including the equipment manufacturer, equipment identification number, engine model year, engine certification (tier rating), horsepower, and engine serial number. For all VDECS, the equipment inventory shall also include the technology type, serial number, make, model, manufacturer, CARB verification number level, and installation date.
4. A Certification Statement that the Contractor agrees to comply fully with the Emissions Plan and acknowledges that a significant violation of the Emissions Plan shall constitute a material breach of contract. The Emissions Plan shall be submitted to the Public Works Department for review and approval prior to the issuance of building permits.

In accordance with **COA Air Quality – Diesel Particulate Matter during Construction**, this analysis assumed off-road construction equipment utilized for this project will be equipped with Tier 4 engines.

The total emissions of ROG, NOx, and exhaust PM10 and PM2.5 estimated during construction with and without the implementation of **COA Air Quality – Diesel Particulate Matter during Construction** were averaged over the total working days (246 days) and compared to the BAAQMD's thresholds of significance in Table 4. For both scenarios, the project's estimated emissions for ROG, NOx, and exhaust PM10 and PM2.5 were below the applicable thresholds and, therefore, the air quality impact related to the generation of criteria pollutant emissions during construction would be less than significant.

TABLE 4 ESTIMATED CONSTRUCTION EMISSIONS (POUNDS PER DAY)

			Exhaust	
Emissions Scenario	**ROG**	**NOx**	**PM10**	**PM2.5**
Construction Emissions without COA Air Quality – Diesel Particulate Matter during Construction	6.4	12.2	0.51	0.49
Construction Emissions with COA Air Quality – Diesel Particulate Matter during Construction[a]	5.2	4.0	0.04	0.04
Thresholds of Significance	54	54	82	54
Exceed Threshold?	No	No	No	No

[a] The emissions scenario assumes the use of construction equipment with Tier 4 engines per COA Air Quality – Diesel Particulate Matter during Construction .
Source: California Emissions Estimator Model (CalEEMod), Appendix A.

Fugitive dust emissions of PM10 and PM2.5 would be generated by soil disturbance activities and demolition. The BAAQMD does not have a quantitative threshold of significance for fugitive dust PM10 and PM2.5 emissions; however, the BAAQMD considers implementation of best management practices (BMPs) to control dust during construction sufficient to reduce potential impacts to a less-than-significant level. Therefore, the air quality impact from dust generated during project construction would be less than significant with the implementation of **COA Public Works – Implement BAAQMD-Recommended Measures during Construction.**

In accordance with **COA Public Works – Implement BAAQMD-Recommended Measures during Construction,** the project will implement the following best management practices recommended by the BAAQMD to reduce fugitive dust emissions:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. All vehicle speeds on unpaved roads shall be limited to 15 mph.
5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control

measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.
8. Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

With implementation of **COA Public Works – Implement BAAQMD-Recommended Measures during Construction** and **COA Air Quality – Diesel Particulate Matter during Construction,** construction of the project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment. Therefore, the air quality impact related to the generation of criteria pollutant emissions during project construction would be less than significant.

Operational Emissions

Project operation would generate criteria air pollutant emissions that could potentially affect regional air quality. The primary pollutant emissions of concern during project operation would be ROG, NOx, and exhaust PM10 and PM2.5 from mobile sources, energy use, and area sources (e.g., consumer products, architectural coatings, and landscape maintenance equipment). Project emissions were estimated for 2024, which is the earliest expected year of operation. Since statewide vehicle emission standards are required to improve over time in accordance with the Pavley (Assembly Bill (AB) 1493) and Low-Emission Vehicle regulations (Title 13, CCR, Section 1961.2), estimating emissions for the earliest year of operation provides the maximum expected annual emissions. Additional project-specific information used to calculate operation emissions in CalEEMod, including changes to default data, is summarized in Table 5.

TABLE 5 SUMMARY OF CALEEMOD OPERATION INPUT

CalEEMod Input Category	Operation Assumptions and Changes to Default Data
Vehicle Trips	Daily trip rates for each type of land use were adjusted according to the project Transportation Impact Analysis prepared by Abrams Associates Traffic Engineering, Inc. A trip reduction of 19 percent was applied to the default trip generation rate to account for conditions in West Berkeley along the San Pablo Avenue bus transit corridor.
Hearths	The project does not include woodstoves or wood-burning fireplaces.

Notes: Default CalEEMod data was used for all other parameters not described.
Source: California Emissions Estimator Model (CalEEMod), Appendix A.

The City of Berkeley has adopted the 2019 California Green Building Code (CALGreen), with local amendments. The project must implement mandatory measures from the CALGreen Code. While implementation of the CALGreen Code could potentially result in additional reductions in energy use, these potential reductions are not known at this time and therefore were not included in the analysis to estimate unmitigated emissions of criteria pollutants for the project. In addition, the building will be all electric to comply with the City of Berkeley's Natural Gas Prohibition & Reach Code; however, to be conservative, the default CalEEMod assumptions regarding natural gas use were applied.

The estimated emissions of criteria pollutants and precursors during the operational phase of the project are compared to the BAAQMD's thresholds of significance in Table 6. Because the estimated emissions for ROG, NOx, and exhaust PM10 and PM2.5 were below the thresholds, the project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment. Therefore, the air quality impact related to the generation of criteria pollutant emissions during the operational phase of the project would be less than significant.

TABLE 6 ESTIMATED OPERATION EMISSIONS

	Maximum Annual Emissions (Tons)				Average Daily Emissions (Pounds)			
Emissions Source	**ROG**	**NOx**	**Exhaust PM10**	**Exhaust PM2.5**	**ROG**	**NOx**	**Exhaust PM10**	**Exhaust PM2.5**
Area	0.41	0.01	0.01	0.01	2.25	0.07	0.03	0.03
Energy	0.01	0.05	<0.01	<0.01	0.03	0.28	0.02	0.02
Mobile	0.23	0.26	<0.01	<0.01	1.29	1.44	0.02	0.02
Total Project Emissions	0.7	0.3	<0.1	<0.1	3.6	1.8	0.1	0.1
Thresholds of Significance	10	10	15	10	54	54	82	54
Exceed Threshold?	No	No	No	No	No	No	No	No

Source: California Emissions Estimator Model (CalEEMod), Appendix A.

Cumulative Emissions

In developing thresholds of significance related to criteria air pollutants, the BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. As discussed above, criteria pollutant and precursor emissions from construction and operation of the project are below the BAAQMD's thresholds of significance with implementation of the City's COAs. Therefore, criteria air pollutant emissions from the project would not be cumulatively considerable and the impact would be less than significant.

c) Expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant. Sensitive receptors include schools, convalescent homes, and hospitals because the very young, the old, and the infirm are more susceptible than the rest of the public to air-quality-related health problems. Residential areas are also considered sensitive to poor air quality because people are often at home for extended periods, thereby increasing the duration of exposure to potential air contaminants. The BAAQMD recommends evaluating the potential impacts to sensitive receptors located within 1,000 feet of a project. The project's potential impacts to sensitive receptors from emissions of TACs are discussed below.

Toxic Air Contaminants from Construction

Project construction would generate DPM and PM2.5 emissions from the exhaust of off-road diesel construction equipment. DPM and PM2.5 from diesel-powered engines are a complex mixture of soot, ash particulates, metallic abrasion particles, volatile organic compounds, and other components that can penetrate deeply into the lungs and contribute to a range of health problems. In 1998, CARB identified DPM from diesel-powered engines as a TAC based on its potential to cause cancer and other adverse health effects.[8]

The annual average concentrations of DPM and exhaust PM2.5 during construction were estimated within 1,000 feet of the project using the U.S. Environmental Protection Agency's Industrial Source Complex Short Term (ISCST3) air dispersion model. For this analysis, emissions of exhaust PM10 were used as a surrogate for DPM, which is a conservative assumption because more than 90 percent of DPM is less than 1 micron in diameter. The input parameters and assumptions used for estimating emission rates of DPM and PM2.5 from off-road diesel construction equipment are included in Appendix A.

Daily emissions from construction were assumed to occur over the permitted construction hours according to **COA Construction Hours**. The exhaust from off-road equipment was represented in the ISCST3 model as a series of volume sources with a release height of 5 meters to represent the mid-range of the expected plume rise from frequently used construction equipment.

A uniform grid of receptors spaced 10 meters apart with receptor heights of 1.8 meters (for ground-level receptors) was encompassed around the project site as a means of developing isopleths (i.e., concentration contours) that illustrate the air dispersion pattern from the various emission sources. The ISCST3 model input parameters included 5 years of BAAQMD meteorological data from Station 2950 located about 4 miles northwest of the project.

[8] California Air Resources Board (CARB), 1998. Initial Statement of Reasons for Rulemaking; Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant, June.

Based on the annual average concentrations of DPM and PM2.5 estimated using the air dispersion model (Appendix A), potential health risks were evaluated for the maximally exposed individual resident (MEIR) located adjacent of the project site to the southwest. Rosa Parks Elementary School is located about 780 feet southwest to the project site. Although schools are considered as sensitive receptors, health risks at the elementary school are not evaluated in this analysis because the potential health risks at the MEIR represent the worst-case scenario.

In accordance with guidance from the BAAQMD[9] and Office of Environmental Health Hazard Assessment (OEHHA),[10] the health risk assessment calculated the incremental increase in cancer risk and chronic hazard index (HI) to sensitive receptors from DPM emissions during construction. The acute HI for DPM was not calculated because an acute reference exposure level has not been approved by OEHHA and CARB, and the BAAQMD does not recommend analysis of acute non-cancer health hazards from construction activity. The annual average concentration of DPM at the MEIR was used to conservatively assess potential health risks to nearby sensitive receptors.

The incremental increase in cancer risk from on-site DPM emissions during construction was assessed for an infant exposed to DPM starting from infancy in the third trimester of pregnancy. This exposure scenario represents the most sensitive individual who could be exposed to adverse air quality conditions in the vicinity of the project. It was also assumed that the infant at the MEIR location would be exposed to an annual average DPM concentration over the entire estimated duration of construction, which is about 12 months; therefore, this analysis is conservative. The input parameters and results of the health risk assessment are included in Appendix A.

Table 7 summarizes the estimated health risks at the MEIR due to DPM and PM2.5 emissions from project construction, with and without the implementation of **COA Air Quality – Diesel Particulate Matter during Construction**,[11] and compares them to the BAAQMD's thresholds of significance. The estimated chronic HI for DPM was below the BAAQMD's threshold both with and without implementation of **COA Air Quality – Diesel Particulate Matter during Construction** during construction. However, without implementation of **COA Air Quality – Diesel Particulate Matter during Construction** the estimated cancer risk for DPM and annual average PM2.5 concentration from construction emissions would exceed the BAAQMD's thresholds of significance. Implementation of **COA Air Quality – Diesel Particulate Matter during Construction** would reduce the cancer risk and annual average PM2.5 by about 95 percent, which is well below the BAAQMD's thresholds of significance. Therefore, project construction would not expose sensitive receptors to substantial pollutant concentrations with

[9] Bay Area Air Quality Management District (BAAQMD), 2012. Recommended Methods for Screening and Modeling Local Risks and Hazards, May.
[10] Office of Environmental Health Hazard Assessment (OEHHA), 2015. Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments, May.
[11] In compliance with COA #49, it was assumed that construction equipment will be equipped with Tier 4 engines. If construction equipment with Tier 4 engines is not available, construction equipment with Tier 2 or higher engines and the most effective VDECS should be used.

implementation of **COA Air Quality – Diesel Particulate Matter during Construction** and the impact would be less than significant.

Toxic Air Contaminants from Operation

The project does not include operation of an emergency diesel generator or any other stationary sources of TACs. Therefore, project operations would have no impact on nearby sensitive receptors associated with the exposure to substantial pollutant concentrations.

TABLE 7 HEALTH RISKS AT MEIR DURING PROJECT CONSTRUCTION

	Diesel Particulate Matter		Exhaust PM2.5
Sensitive Receptor: Maximally Exposed Individual Resident	**Cancer Risk (per million)**	**Chronic Hazard Index**	**Annual Average Concentration (µg/m³)**
Health Risks without COA Air Quality – Diesel Particulate Matter during Construction	**70.6**	0.12	**0.58**
Health Risks with COA Air Quality – Diesel Particulate Matter during Construction	4.1	<0.01	0.04
BAAQMD's Thresholds of Significance	10	1	0.3

Note: µg/m³ = micrograms per cubic meter
Bold font with gray shading exceeds the threshold of significance.
Source: See Appendix A.

Cumulative Toxic Air Contaminants Emissions

In addition to a project's individual TAC emissions during construction and operation, the potential cumulative health risks to the MEIR from existing and reasonably foreseeable future sources of TACs were evaluated to represent the worst-case-exposure scenario for sensitive receptors in the project vicinity. The BAAQMD's online screening tools were used to provide conservative estimates of how much existing and foreseeable future TAC sources would contribute to cancer risk, HI, and PM2.5 concentrations. The individual health risks associated with each source were summed to find the cumulative health risk at the MEIR. The supporting health risk calculations are included in Appendix A.

Based on the BAAQMD's 2018 permitted stationary source risk map, there is one existing stationary source within 1,000 feet of the MEIR: the Kirby Berkeley Gas Station (Plant 109474). Preliminary health risk screening values at the MEIR were determined using the 2018 permitted stationary source inventory data[12] and BAAQMD Health Risk Calculator (Beta Version 4.0). In addition, there are four future developments located within 1,000 feet of the MEIR that could require an emergency generator or other stationary source of TACs: 1110 University Avenue, 2198

[12] Bay Area Air Quality Management District (BAAQMD), 2022. CSV file for 2017 permitted stationary sources provided by Matthew Hanson, BAAQMD, to Yilin Tian, Baseline Environmental Consulting, April 14.

San Pablo Avenue, 2100 San Pablo Avenue, and 2147 San Pablo Avenue in Berkeley.[13] four stories to six storiesIt was conservatively assumed that all four developments would involve operation of an emergency diesel generator.

Preliminary health risk screening values at the MEIR from exposure to mobile sources of TACs were estimated based on the BAAQMD's Bay Area modeling of health risks from highways, railroads, and major roadways with an average annual daily traffic (AADT) volume greater than 30,000 vehicles per day. According to the BAAQMD's modeling of mobile sources, one major roadway (University Avenue) and one highway (San Pablo Avenue) are located within 1,000 feet of the MEIR.

Estimates of the cumulative health risks at the MEIR, with and without the implementation of **COA Air Quality – Diesel Particulate Matter during Construction**, are summarized and compared to the BAAQMD's cumulative thresholds of significance in Table 8. The estimated chronic HI was below the BAAQMD's cumulative threshold both with and without implementation of **COA Air Quality – Diesel Particulate Matter during Construction** during construction. However, without implementation of **COA #49,** the estimated cumulative cancer risk and annual average PM2.5 concentration would exceed the BAAQMD's cumulative thresholds of significance. Implementation of **COA Air Quality – Diesel Particulate Matter during Construction** would reduce the estimated cumulative cancer risk and annual average PM2.5 by about 66 percent, which is well below the BAAQMD's cumulative thresholds of significance. Therefore, the project's emissions of DPM and PM2.5 during construction and operation would have a less-than-significant cumulative impact on nearby sensitive receptors with implementation of **COA Air Quality – Diesel Particulate Matter during Construction.**

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

No Impact. Project construction and operation would not be expected to generate significant odors because the project would not include handling or generation of noxious materials. Therefore, the project would have no impact related to other emissions.

[13] Alison Lenci, Urban Planning Partners, Inc. Email communication with Yilin Tian at Baseline Environmental Consulting, March 10, 2022.

TABLE 8 SUMMARY OF CUMULATIVE HEALTH RISKS AT THE MEIR

Source	Source Type	Method Reference	Cancer Risk (per million)	Chronic Hazard Index	PM2.5 (µg/m³)
Project					
Construction without COA Air Quality – Diesel Particulate Matter during Construction	Diesel Exhaust		70.6	0.12	0.58
Construction with COA Air Quality – Diesel Particulate Matter during Construction	Diesel Exhaust		4.1	<0.01	0.04
Existing Stationary Sources					
Kirby Berkeley (Plant 109474)	Gas Dispensing Facility	1,2	0.34	<0.01	<0.01
Existing Mobile Sources					
Major Roadways	Mobile	3	1.2	NA	0.02
Highways	Mobile	3	14.0	NA	0.31
Future Stationary Sources					
1110 University Avenue, Berkeley	Diesel Exhaust	2,4	1.0	<0.01	<0.01
2198 San Pablo Avenue, Berkeley	Diesel Exhaust	2,4	8.5	<0.01	<0.01
2100 San Pablo Avenue, Berkeley	Diesel Exhaust	2,4	10.0	<0.01	<0.01
2147 San Pablo Avenue, Berkeley	Diesel Exhaust	2,4	5.0	<0.01	<0.01
Cumulative Health Risks without COA Air Quality – Diesel Particulate Matter during Construction			**111**	0.1	**0.9**
Cumulative Health Risks with COA Air Quality – Diesel Particulate Matter during Construction			44	<0.1	0.4
BAAQMD's Cumulative Thresholds			100	10.0	0.8

Notes: µg/m³ = micrograms per cubic meter; NA = not applicable; AADT=annual average daily traffic
Bold font with gray shading exceeds the threshold of significance.
Health risk screening values derived using the following BAAQMD tools and methodologies:
1) BAAQMD's 2018 stationary source emissions data.
2) BAAQMD's Gasoline Dispensing Facility (GDF) Distance Multiplier Tool.
3) BAAQMD Planning Healthy Places Highway, Major Street, and Rail health risk raster files, 2014.
4) BAAQMD's Diesel Internal Combustion Engine Distance Multiplier Tool.

IV. BIOLOGICAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

No Impact. The project site is located in a densely urbanized area and is currently developed with a single-story commercial building and surface parking lot. The existing vegetation consists of several shrubs and medium-sized trees at the northwest corner of the site which serves as an existing parking lot and storage area, as well as three street trees (Sycamore) proposed to be removed and replaced with London Plane Trees. The project site is in an urban location and does not contain substantial areas of native vegetation or biological resources suitable to provide habitat for candidate, sensitive, or special status species, such as riparian habitat or other sensitive natural communities. The site contains minimal ground-level green-space and is fully developed. Common wildlife species that are adapted to urban environments are expected to

continue to use the site after redevelopment. The site is not occupied by, or suited for, any special-status species. Therefore, the project would not result in direct or indirect adverse effects on special-status plant or wildlife species.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service?

No Impact. The project site is in a developed area of Berkeley and does not support any riparian habitats as there are no rivers or streams on or adjacent to the site. Development of the project would not directly or indirectly adversely affect any existing riparian habitat within this area. Furthermore, compliance with pre-existing stormwater quality requirements, including City COAs, as discussed in *Section X, Hydrology and Water Quality*, would further ensure that the project would not result in an adverse effect on any riparian habitat or other sensitive natural community; therefore, there would be no impact.

c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No Impact. The project site is mostly impervious surface covered with building and concrete and asphalt and does not support any wetlands on-site nor is it adjacent to any wetlands. Therefore, the project would not impact any federally protected wetlands. Compliance with all applicable pre-existing requirements, including City COAs, associated with the protection of water quality in stormwater runoff would further ensure that the project would not directly impact wetlands within or beyond the project vicinity. Compliance with stormwater quality requirements is discussed in *Section X, Hydrology and Water Quality*.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Less than Significant. The project site is entirely developed and is not located within a migratory wildlife movement corridor.[14] The species that use the project site are likely "generalists" that are adept at moving through urban landscapes. Trees generally have the potential to support nests of common native bird species. All native birds and their nests, regardless of their regulatory status, are protected under the federal Migratory Bird Treaty Act and California Fish and Game Code.

The project site has existing vegetation including a few shrubs and medium-sized trees in the north-west corner of the site which would be removed during construction. There are three existing street trees (Sycamore) fronting San Pablo Avenue, which are proposed to be removed

[14] California Department of Fish and Wildlife Biographic Information and Observation System, 2022. Available online at: https://apps.wildlife.ca.gov/bios/?bookmark=648, accessed April 13, 2022.

and replaced, in compliance with the City's Street Tree Ordinance. The project would also plant approximately 16 trees in total along its northern, western, and southern property lines as visual screening and 12 trees in the landscaped open spaces at the podium level. Furthermore, the City's **Avoid Disturbance of Nesting Birds**, prohibits initial site disturbance activities, including vegetation and concrete removal, during the February 1 to August 30 bird nesting season, if feasible. If nesting season avoidance is not feasible, nesting bird surveys conducted by a qualified biologist are required and no ground-disturbing activities are permitted in proximity to the nests until they are no longer active.

The project site is in a busy urban area with little to no native vegetation, and the project would not decrease the total amount of vegetation on or adjacent to the site. Furthermore, the City's **COA Avoid Disturbance of Nesting Birds** would ensure avoidance of effects to nesting birds during site disturbance activities. For all these reasons, the project would have a less-than-significant impact on the movement of native or resident migratory wildlife.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Less than Significant. According to Policy EM-31 of the City's General Plan, new development should contribute to the urban forest through preservation of existing on-site trees, wherever feasible; replacement of trees on site; and the addition of new trees in the public right-of-way. The three existing street trees on the sidewalk of San Pablo Avenue adjacent to the project site will be replaced. The street trees that would be removed from the project site are not coast live oaks and are therefore not protected by the City's moratorium on the removal of coast live oak trees. The removal of the existing street trees in the public right-of-way will be subject to the standard City permit review. Therefore, the project would have a less-than-significant impact related to policies or ordinances protecting biological resources.

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

No Impact. The project is not located within the boundaries of an adopted conservation plan. Therefore, the project would not conflict with the provisions of a habitat conservation plan, natural community plan, or other approved local, regional, or State habitat conservation plan.

V. CULTURAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	☒	☐	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☐	☒	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?

Potentially Significant Impact. CEQA Section 15064.5 defines a historical resource has a resource listed in or determined to be eligible for listing in the California Register of Historical Resources; listed in a local register of historical places; or as determined by the Lead Agency. The project site currently contains a structure that was built in 1923 and has been designated as a City of Berkeley Landmark. Furthermore, an Historic Resources Evaluation (HRE) was prepared and identified the project as eligible for listing in the California Register of Historical Resources under Criterion 3, Design/Construction, as its architecture embodies distinctive characteristics of its type and period. For these reasons, the subject building qualifies an "historic resource" under CEQA.

The project proposes the complete demolition of the subject building and is therefore presumed to change the significance of the historical resource. For this reason, it is considered to be a potentially significant impact and will be evaluated in greater detail in the Focused EIR.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Less Than Significant. Prehistoric and historic archaeological deposits may be buried within the project area. As a result, ground-disturbing activities associated with new construction and related underground utility installation could result in the destruction or disturbance of unidentified subsurface archaeological resources, which would represent a potentially significant impact. Such impacts are unlikely here because the site has been previously developed and other development has occurred around the project area without such discoveries. However, the following COA for projects in the City of Berkeley would ensure impacts to any potential archeological resources would be reduced to a less-than-significant level:

Standard Conditions of Approval

COA Archaeological Resources. Pursuant to CEQA Guidelines section 15064.5(f), "provisions for historical or unique archaeological resources accidentally discovered during construction" should be instituted. Therefore:

A. In the event that any prehistoric or historic subsurface cultural resources are discovered during ground disturbing activities, all work within 50 feet of the resources shall be halted and the project applicant and/or lead agency shall consult with a qualified archaeologist, historian or paleontologist to assess the significance of the find.

B. If any find is determined to be significant, representatives of the project proponent and/or lead agency and the qualified professional would meet to determine the appropriate avoidance measures or other appropriate measure, with the ultimate determination to be made by the City of Berkeley. All significant cultural materials discovered shall be subject to scientific analysis, professional museum curation, and/or a report prepared by the qualified professional according to current professional standards.

C. In considering any suggested measure proposed by the qualified professional, the project applicant shall determine whether avoidance is necessary or feasible in light of factors such as project design, costs, and other considerations.

D. If avoidance is unnecessary or infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed on other parts of the project site while mitigation measures for cultural resources is carried out.

E. If significant archaeological resources are recovered, the qualified professional shall prepare a report on the findings for submittal to the Northwest Information Center.

c) Disturb any human remains, including those interred outside of formal cemeteries?

Less Than Significant. The potential to uncover Native American human remains exists in locations throughout California. The site has been previously developed and other development has occurred around the project area and discoveries are not expected. Although not anticipated, human remains could be identified during site-preparations and grading activities, resulting in a potentially significant impact to Native American cultural resources. The following COA for projects in the City of Berkeley would ensure impacts to human remains would be reduced to a less-than-significant level:

Standard Conditions of Approval

COA Human Remains. In the event that human skeletal remains are uncovered at the project site during ground-disturbing activities, all work shall immediately halt and the Alameda County Coroner shall be contacted to evaluate the remains, and following the procedures and

protocols pursuant to Section 15064.5 (e)(1) of the CEQA Guidelines. If the County Coroner determines that the remains are Native American, the City shall contact the California Native American Heritage Commission (NAHC), pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, and all excavation and site preparation activities shall cease within a 50-foot radius of the find until appropriate arrangements are made. If the agencies determine that avoidance is not feasible, then an alternative plan shall be prepared with specific steps and timeframe required to resume construction activities. Monitoring, data recovery, determination of significance and avoidance measures (if applicable) shall be completed expeditiously.

VI. ENERGY

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Less than Significant. The project would involve the demolition of an existing commercial structure and surface parking lot and the construction of a six-story mixed-use building. Both the demolition and construction would require the use of construction equipment and generate construction-related vehicle trips that would combust fuel. The use of fuel to operate the construction equipment and construction-related vehicles is necessary to construct the project and is not wasteful. In addition, compliance with the City's **COA Construction Noise Reduction Program**, as described in *Section XIII, Noise*, would prohibit unnecessary idling of internal combustion engines, preventing wasteful use of energy resources during construction.

Additionally, the project would be required to comply with Berkeley's local amendments to the California State Green Building Code (CALGreen) (Berkeley Green Code, BMC 19.37), which ensures that the project would be operated in an energy efficient manager. The project will also need to comply with **COA Prohibition of Natural Gas Infrastructure in New Buildings**. Moreover, as described above, the project will likely be served by EBCE's 100 Renewable product and will be required to have a solar PV system as per **COA Solar Photovoltaic (Solar PV)**.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Impact. As discussed in subsection a), the project would comply with the energy efficiency requirements in Berkeley's local amendments to CALGreen, **COA Prohibition of Natural Gas Infrastructure in New Buildings**. In addition, the project will likely be served by EBCE's 100 Renewable product and have solar PV system.

VII. GEOLOGY AND SOILS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii. Strong seismic ground shaking?	☐	☐	☒	
iii. Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv. Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or unique geologic feature?	☐	☐	☒	☐

The information presented in this section is based on data and findings provided in the Geotechnical Investigation[15] prepared for the project, as well as maps and technical reports from United States Geological Survey (USGS), and the California Geological Survey (CGS), and other sources.

The project site is located within the central portion of the Coast Ranges geomorphic province[16] which includes numerous active faults. CGS defines an active fault as one that has ruptured during the Holocene Epoch (i.e., the last 11,000 years). Active faults near the project site include the Hayward fault (approximately 2 miles east of the project site), Concord fault (16 miles east of the project site), and the San Andreas fault (approximately 17 miles west of the project site). The Working Group on California Earthquake Probabilities and USGS have predicted a 22 percent probability of a Moment Magnitude (M_w)[17] 6.7 or greater earthquake on the Northern San Andreas Fault between 2014 and 2043, a 33 percent chance on the Hayward Fault, and a total probability of 72 percent that an earthquake of M_w 6.7 or greater will occur on one of the regional Bay Area faults during that time.[18]

CGS has mapped Seismic Hazard Zones that delineate areas susceptible to liquefactions that require additional investigation to determine the extent and magnitude of potential ground failure. According to the CGS, the southwest portion of the project site is located within a Seismic Hazard Zone for liquefaction.[19] The Seismic Hazards Mapping Act requires that site-specific geotechnical investigations be conducted that identify the hazard and provide recommendations prior to permit approval for most developments designed for human occupancy within the Zones of Required Investigation. In addition, as specified under Policy S-14 in the Disaster Preparedness and Safety Element of the City of Berkeley General Plan,[20] soil investigation and/or geotechnical reports in conjunction with development and/or redevelopment would be required on sites within designated hazard zones such as areas with high potential for soil erosion, landslide, fault rupture, liquefaction, and other soil-related constraints.

Furthermore, the City has adopted the 2019 California Building Code (CBC, Title 24, California Code of Regulations), with local amendments, which provides for stringent construction requirements on projects in areas of high seismic risk. The design and construction is required to

[15] Rockridge Geotechnical, 2019. *Geotechnical Investigation, Proposed Mixed-Use Building, 2136-2154 San Pablo Avenue, Berkeley, California,* October 23.
[16] A geomorphic province is a naturally defined geologic region that displays a distinct combination of features based on geology, faults, topography, and climate. Eleven geomorphic provinces are recognized in California.
[17] M_W, as opposed to Richter Magnitude, is now commonly used to characterize seismic events. M_W is determined from the physical size (area) of the rupture of the fault plane, the amount of horizontal and/or vertical displacement along the fault plane, and the resistance to rupture of the rock type along the fault.
[18] United States Geological Survey (USGS), 2016. Earthquake Outlook for the San Francisco Bay Region 2014-2043, USGS Fact Sheet 2016-3020. Revised August.
[19] California Geological Survey, 2003. Seismic Hazard Zones; Oakland West Quadrangle, February 14.
[20] City of Berkeley, 2001. City of Berkeley General Plan.

conform with, or exceed, current best standards for earthquake resistant construction in accordance with the 2019 CBC (or more recent applicable code) and with the generally accepted standards of geotechnical practice for seismic design in Northern California.

The California Supreme Court concluded in its *CBIA v. BAAQMD* decision that "CEQA generally does not require an analysis of how existing environmental conditions will affect a project's future users or residents." With this ruling, CEQA no longer considers the impact of the environment on a project (such as the impact of existing seismic hazards on new project occupants) to be an environmental impact, unless the project could exacerbate an existing environmental hazard. The project would not change existing seismic hazards and, therefore, would not exacerbate existing hazards related to surface fault rupture and seismic ground shaking. As such, the following discussions of seismic hazards are provided for informational purposes only.

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

No Impact. Surface fault rupture occurs when the ground surface is broken due to fault movement during an earthquake and is generally expected to occur along active fault traces. Areas susceptible to fault rupture are delineated by the CGS Alquist-Priolo Earthquake Fault Zones. The Alquist-Priolo Earthquake Fault Zoning Act's (Act) main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Act requires specific geological investigations prior to certain kinds of development to reduce the threat to public health and safety and to minimize the loss of life and property posed by earthquake-induced ground failure. The project site is not located within or adjacent to an Alquist-Priolo Earthquake Fault Zone.[21] Therefore, the project would have no impact on people and structures related to fault rupture.

ii. Strong seismic ground shaking?

Less Than Significant. Seismic ground shaking generally refers to all aspects of motion of the earth's surface resulting from an earthquake and is normally the major cause of damage in seismic events. The Geotechnical Investigation[22] characterized the potential level of ground shaking at the project site to be strong to very strong during a large earthquake on one of the nearby faults.

[21] California Department of Conservation (CDC), 1982. Special Studies Zones; Oakland West, January 1.
[22] Rockridge Geotechnical, 2019. *Geotechnical Investigation, Proposed Mixed-Use Building, 2136-2154 San Pablo Avenue, Berkeley, California,* October 23.

The risk of ground shaking impacts is reduced through adherence to the design and materials standards set forth in the California Building Code and recommendations in a site-specific geotechnical investigation and/or geotechnical report (which is required by the Seismic Hazards Mapping Act and City of Berkeley General Plan).

The 2019 CBC requires that a site-specific geotechnical investigation be conducted and a geohazard report be prepared by a licensed professional for all proposed construction to evaluate geologic and seismic hazards, except for one-story, wood-frame and light-steel-frame buildings that are located outside of the Earthquake Fault Zones or Seismic Hazard Zones as shown in the CGS maps with less than or equal to 4,000 square feet in floor area. The purpose of a site-specific geotechnical investigation is to identify seismic and geologic conditions that may need to be addressed to ensure safety and adequate performance of improvements, such as ground shaking, liquefaction, differential settlement, and expansive soils. Based on the conditions of the site, the building code requires specific design parameters to ensure construction of buildings that will resist collapse during an earthquake. These design parameters do not protect buildings from all earthquake shaking hazards but are designed to reduce hazards to a manageable level. Requirements for the geotechnical investigation are presented in Chapter 16 "Structural Design" and Chapter 18 "Soils and Foundation" of the 2019 CBC.

The Geotechnical Investigation[23] was prepared for the project in 2019 and provided seismic design recommendations in accordance with the 2016 CBC. The 2019 CBC became effective in 2020, therefore compliance with the City's building code would require the seismic design recommendations in the Geotechnical Investigation to be updated, as necessary, to comply with the 2019 CBC.

Compliance with the 2019 CBC would ensure that the project would be designed and constructed in accordance with geotechnical recommendations to account for and withstand seismic and geologic hazards that could have adverse effects on the project, thereby minimizing exposure of people and structures to substantial risk of loss, injury, or death during a large regional earthquake.

It is acknowledged that seismic hazards cannot be completely eliminated, even with implementation of site-specific geotechnical investigation/design measures and advanced building practices. However, the seismic design standards of the 2019 CBC are intended to prevent catastrophic building failure in the most severe earthquakes currently anticipated. Therefore, compliance with the existing building codes, described above, would ensure that potential impacts related to seismic ground shaking would be reduced to the extent feasible and this impact is considered less than significant.

[23] Rockridge Geotechnical, 2019. *Geotechnical Investigation, Proposed Mixed-Use Building, 2136-2154 San Pablo Avenue, Berkeley, California,* October 23.

iii. Seismic-related ground failure, including liquefaction?

Less Than Significant. The potential for different types of seismic-related ground failure to occur at the project site is discussed below.

Liquefaction

Soil liquefaction is a phenomenon primarily associated with saturated soil layers located close to the ground surface. During ground shaking, these soils lose strength and acquire a "mobility" sufficient to permit both horizontal and vertical movements. Soils that are most susceptible to liquefaction are clean, loose, uniformly graded, saturated, fine-grained sands that lie relatively close to the ground surface. However, loose sands that contain significant amounts of fines (silt and clay) may also liquefy. The southwest portion of the project site is located within a CGS-designated Liquefaction Hazard Zone.[24]

The Geotechnical Investigation concluded that the soils underlying the project site are sufficiently cohesive and/or sufficiently dense such that the potential for liquefaction is low and liquefaction induced settlement would be negligible.[25] Therefore, potential impacts related to liquefaction would be less than significant.

Lateral Spreading

Lateral spreading is a form of horizontal displacement of soil toward an open channel or other "free" face, such as an excavation boundary. In a lateral spread failure, a layer of ground at the surface is carried on an underlying layer of liquefied material over a nearly flat surface toward a river channel or other bank. The lateral spreading hazard tends to mirror the liquefaction hazard for a site (assuming a free face is located nearby). Lateral spreading would not occur at the project site because the potential for liquefaction is low and the project site is relatively flat and there are no slopes or free faces on or adjacent to the project site.

Cyclic Densification

Settlement can occur when non-saturated, cohesionless soil is densified by earthquake vibrations (known as cyclic densification). The Geotechnical Investigation concluded the potential for cyclic densification at the project site is very low due to the cohesion of the soil above the groundwater table.[26] Therefore, potential impacts related to cyclic densification would be less than significant.

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[24] California Geological Survey, 2003. Seismic Hazard Zones; Oakland West Quadrangle, February 14.
[25] Rockridge Geotechnical, 2019. *Geotechnical Investigation, Proposed Mixed-Use Building, 2136-2154 San Pablo Avenue, Berkeley, California,* October 23.
[26] Rockridge Geotechnical, 2019. *Geotechnical Investigation, Proposed Mixed-Use Building, 2136-2154 San Pablo Avenue, Berkeley, California,* October 23.

iv. Landslides?

No Impact. Seismically induced landslides occur as the rapid movement of large masses of soil on unstable slopes during an earthquake. The Seismic Hazard Zones mapped by CGS delineate areas susceptible to seismically induced landslides that require additional investigation to determine the extent and magnitude of potential ground failure. The Project site is relatively flat and, according to CGS, the project site is not located within a Seismic Hazard Zone for seismically induced landslides.[27] Therefore, no impacts related to landslides would occur.

b) Result in substantial soil erosion or the loss of topsoil?

Less Than Significant. The topography of the project site and surroundings is relatively level, which reduced the likelihood of erosion. Soil erosion, which is discussed in detail in *Section X, Hydrology and Water Quality*, could occur during project grading and construction. As described in *Section X, Hydrology and Water Quality*, compliance with the City's COAs related to water quality and stormwater protection during construction would ensure that the project would have a less-than-significant impact related to erosion or the loss of topsoil. This includes the City's **COA Stormwater Requirements** that requires the applicant to prepare an erosion prevention plan, which must be approved by the City, for any soil disturbance activities during the rainy season. During operation of the project, the project site would be covered with buildings, pavement surfaces, and landscaping, which would minimize post-development erosion. Therefore, the potential impacts related to substantial erosion or loss of topsoil would be less than significant.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Less Than Significant. As discussed above, potential hazards related to unstable soil including liquefaction, lateral spreading, cyclic densification, and landslides are not a concern for the project site due to the cohesion and density of the soil and the flat topography of the area.

Subsidence or Collapse

Subsidence or collapse can result from the removal of subsurface water resulting in either catastrophic or gradual depression of the surface elevation of the project site. The Geotechnical Investigation indicated that the historic high groundwater level at the project site is approximately 5 feet below ground surface.[28] As a result, temporary dewatering from excavations could be necessary during construction. The temporary dewatering of excavations (if

[27] California Geological Survey, 2003. Seismic Hazard Zones; Oakland West Quadrangle, February 14.
[28] Rockridge Geotechnical, 2019. *Geotechnical Investigation, Proposed Mixed-Use Building, 2136-2154 San Pablo Avenue, Berkeley, California,* October 23.

needed) would be the only removal of subsurface water associated with the project, and would be temporary, localized, and of relatively low magnitude. Additionally, land subsidence generally does not occur in response to declines in shallow groundwater;[29] therefore, potential impacts related to subsidence or soil collapse would be less than significant.

Consolidation

Consolidation (or static settlement) of soils is a process by which the soil volume decreases as water is expelled from saturated soils or loose compressible soils consolidate under static loads. As the water moves out from the pore space of the soil, the solid particles realign into a denser configuration which results in settlement. Consolidation typically occurs from new buildings or fill materials being placed over compressible soils. The Geotechnical Investigation concluded that total settlement of the proposed building supported on properly designed and constructed footings would be less than 1 inch and differential settlement would be less than ½-inch over 30 feet.[30] Compliance with the mandatory building code structural specifications and adherence to the geotechnical recommendations would ensure that potential impacts related to consolidation would be less than significant.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

Less Than Significant. Expansive soils are characterized by the potential for shrinking and swelling as the moisture content of the soil decreases and increases, respectively. Shrink-swell potential is influenced by the amount and type of clay minerals present and can be measured by the percent change of the soil volume. The Geotechnical Investigation indicated that near-surface highly expansive clay was encountered to depths up to about 5 feet at the project site. The Geotechnical Investigation provided recommendations for the design and construction of the project to mitigate the effects of the expansive clay including moisture-conditioning the expansive soil below slabs, providing non-expansive soil below slabs, and supporting foundations below the zone of severe moisture change. The Geotechnical Investigation also indicated that some species of high water-demand trees can induce ground-surface settlement by drawing water from the expansive clay, causing it to shrink, and recommended that certain types of trees not be planted within 25 feet of the proposed building to prevent this potential issue.[31] Implementation of the recommendations in the Geotechnical Investigation would ensure that potential impacts related to expansive soils would be less than significant.

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[29] EBMUD GSA and City of Hayward GSA, 2022. East Bay Plan Subbasin, Groundwater Sustainability Plan.
[30] Rockridge Geotechnical, 2019. *Geotechnical Investigation, Proposed Mixed-Use Building, 2136-2154 San Pablo Avenue, Berkeley, California,* October 23
[31] Rockridge Geotechnical, 2019. *Geotechnical Investigation, Proposed Mixed-Use Building, 2136-2154 San Pablo Avenue, Berkeley, California,* October 23

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

No Impact. The project would not involve the use of septic tanks or alternative wastewater disposal systems; therefore, no impact would occur.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less Than Significant. There are no unique geologic features at the project site and there is no evidence or previous findings of paleontological resources in the vicinity of the project site.[32] However, demolition, site preparation, and construction activities associated with the project could adversely impact previously unidentified fossils. Such fossils, if present, could be identified during excavation. Development projects that require a use permit are required to comply with the following COA that addresses this potential impact. Implementation of this COA would ensure that this impact would be less than significant.

Standard Conditions of Approval:

> **COA Paleontological Resources.** Ongoing throughout demolition, grading, and/or construction). In the event of an unanticipated discovery of a paleontological resource during construction, excavations within 50 feet of the find shall be temporarily halted or diverted until the discovery is examined by a qualified paleontologist (per Society of Vertebrate Paleontology standards [SVP 1995,1996]). The qualified paleontologist shall document the discovery as needed, evaluate the potential resource, and assess the significance of the find. The paleontologist shall notify the appropriate agencies to determine procedures that would be followed before construction is allowed to resume at the location of the find. If the City determines that avoidance is not feasible, the paleontologist shall prepare an excavation plan for mitigating the effect of the project on the qualities that make the resource important, and such plan shall be implemented. The plan shall be submitted to the City for review and approval.

[32] City of Berkeley, 2010. West Berkeley Project Draft Environmental Impact Report, January.

VIII. GREENHOUSE GAS EMISSIONS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Climate change refers to change in the Earth's weather patterns, including the rise in temperature due to an increase in heat-trapping greenhouse gases (GHGs) in the atmosphere. According to the California Air Resources Board (CARB), some of the potential effects of increased GHG emissions and the associated climate change may include loss in snow pack (affecting water supply), sea level rise, more frequent extreme weather events, more large forest fires, and more drought years. In addition, climate change may increase electricity demand for cooling, decrease the availability of hydroelectric power, and affect regional air quality and public health.[33]

The primary GHG emissions of concern are carbon dioxide, methane, and nitrous oxide. Other GHGs of concern include hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, but their contribution to climate change is less than one percent of the total GHGs that are well mixed.[34] Each GHG has a different global warming potential. As a result, emissions of GHGs are reported in metric tons of carbon dioxide equivalents (CO_2e), where each GHG is weighted by its global warming potential relative to carbon dioxide. Carbon dioxide emissions dominate the GHG inventory in the SFBAAB, accounting for more than 90 percent of the total CO_2e emissions reported.

For the State of California, Executive Order S-3-05 issued in 2005 set a GHG reduction goal of 80 percent below 1990 levels by 2050. The California State Legislature passed the California Global Warming Solutions Act (AB 32) in 2006, which requires the CARB to develop and implement regulatory and market mechanisms that will reduce GHG emissions to 1990 levels by 2020. In December 2008, CARB adopted the Scoping Plan, which outlines a statewide strategy to achieve AB 32 goals. In 2016, the state legislature adopted Senate Bill (SB) 32, which requires further reduction of GHG emissions to 40 percent below the 1990 level by 2030. In 2017, CARB updated the Scoping Plan to identify measures to meet the 2030 target and adopted the revised Scoping

[33] California Air Resources Board (CARB), 2017. The 2017 Climate Change Scoping Plan Update, January 20.
[34] Intergovernmental Panel on Climate Change (IPCC), 2013. Climate Change 2013, the Physical Science Basis.

Plan (2017 Scoping Plan). In 2018, Executive Order B-55-18 set a statewide target to achieve carbon neutrality no later than 2045.

The project is located in the San Francisco Bay Area Air Basin (SFBAAB), which is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The BAAQMD established a climate protection program to reduce pollutants that contribute to global climate change and affect air quality in the SFBAAB. The BAAQMD also seeks to support current climate protection programs in the region and to stimulate additional efforts through public education and outreach, technical assistance to local governments and other interested parties, and promotion of collaborative efforts among stakeholders.

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less Than Significant. The proposed project would generate temporary GHG emissions during construction activities and long-term GHG emissions during project operations related to the direct and indirect use of fossil fuels such as electricity, diesel, and gasoline.

Construction Emissions

Construction activities could generate GHG emissions from several sources, such as the operation of on-site heavy construction equipment and off-site construction vehicle trips, vendor vehicle trips, and worker commute trips. The BAAQMD does not recommend a threshold of significance for GHG emissions during construction because there is not sufficient evidence to determine a level at which temporary construction emissions are significant. A construction contractor would also have no incentive to waste fuel during construction and, therefore, it is generally assumed that GHG emissions during construction would be minimized to the maximum extent feasible. Furthermore, implementation of **COA Public Works – Implement BAAQMD-Recommended Measures during Construction**, as mentioned in *Section III, Air Quality,* will limit the idling times for off-road construction equipment to 5 minutes to reduce emissions from diesel-fueled vehicles. Therefore, GHG emissions from construction of the project would have a less-than-significant impact on the environment.

Operational Emissions

The BAAQMD is in the process of updating their CEQA Guidelines to include revised significance thresholds to evaluate the statewide GHG reduction goal for 2030 (based on SB 32) and goal of carbon neutrality by 2045 (based on EO B-55-18). In February 2022, BAAQMD released the Draft Justification Report[35] which provides the framework for analyzing climate impacts under CEQA

[35] Bay Area Air Quality Management District (BAAQMD), 2022. Draft Justification Report – CEQA Thresholds for Evaluating the Significance of Climate Impacts, February.

and thresholds of significance for typical land use development projects (Updated Thresholds). The Updated Threshold for land use projects identify design elements that an individual project needs to incorporate to do its "fair share" in achieving the State's goals to reduce GHG emissions to 40 percent below 1990 levels by 2030 and carbon neutrality by 2045. The Updated Thresholds for land use projects include two options, as presented below:

Option 1. Projects must include, at a minimum, the following project design elements:

Buildings

The project will not include natural gas appliances or natural gas plumbing (in both residential and nonresidential development).

The project will not result in any wasteful, inefficient, or unnecessary electrical usage as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines.

Transportation

a) Achieve compliance with electric vehicle (EV) requirements in the most recently adopted version of CALGreen Tier 2.
b) Achieve a reduction in project-generated vehicle miles traveled (VMT) below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted Senate Bill 743 VMT target, reflecting the recommendations provided in the Governor's Office of Planning and Research's Technical Advisory on Evaluating Transportation Impacts in CEQA:
    i. Residential projects: 15 percent below the existing VMT per capita
    ii. Office projects: 15 percent below the existing VMT per employee
    iii. Retail projects: no net increase in existing VMT.

Option 2. Be consistent with local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5 (b).

Chapter 12.80 of the City of Berkeley Municipal Codes (Natural Gas Ban) prohibits natural gas infrastructure, typically used to provide energy for water and space heating, cooking, and other uses, in new buildings of all types. For building energy use, the project is required to comply with the Natural Gas Ban (BMC Chapter 12.80), per **COA Prohibition of Natural Gas Infrastructure in New Buildings**. The project will not include natural gas appliances or natural gas plumbing.

In 2019, the City of Berkeley adopted a local amendment to the Berkeley Energy Code (Reach Code), which exceeds the energy efficiency standards of the California Energy Code (also known as Title 24) through all-electric construction or mixed-fuel construction. The Reach Code also extends solar photovoltaic system requirements to nonresidential buildings, high-rise residential and hotels/motels. This project is required to comply with the Reach Code. The project would exceed the 2019 Title 24 energy efficiency standards through the use of an all-electric building design and the installation of a rooftop solar photovoltaic system that covers at least 15 percent

of the roof area subject to the exceptions in Section 110.10 of the Energy Code **(COA Solar Photovoltaic (Solar PV)).** Therefore, the project will not result in any wasteful, inefficient, or unnecessary electrical usage.

For EV charging infrastructure, the 2019 California Green Building Code (CALGreen) Tier 2 requires that 20 percent of total parking spaces should be "EV Capable" for multifamily dwellings. In accordance with **COA Electric Vehicle (EV) Charging**, the project must install a raceway, wiring, and power for each unit to allow for future Level 2 (240 Volt/40 amp) plug-in EV charging system installation as specified by the Berkeley Green Code (BMC Section 19.37.040). Therefore, the project will meet the CALGreen Tier 2 EV requirement.

For transportation, based on the City of Berkeley VMT Criteria and Thresholds,[36] the project is located in a transit priority area (TPA) and also is within an area with an average VMT per resident that is at least 15 percent below the Bay Area average. The project is located near the North Berkeley BART station and numerous bus stops. According to the VMT analysis conducted by Abrams Associate,[37] the project would have a less than significant impact on VMT in the area. Therefore, the project will meet the VMT reduction target for residential projects.

In summary, the project is designed to incorporate the four design elements identified in the Updated Thresholds. Therefore, the project will contribute its "fair share" to achieve the State's climate goals and have a less-than-significant impact on the environment.

b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less Than Significant. Since the GHG emissions from the project would be below the BAAQMD Updated Threshold, it is also consistent, and not in fundamental conflict, with the SB 32 and the 2017 Scoping Plan.

The City of Berkeley created and adopted its Climate Action Plan in 2009 (2009 CAP) in order to implement measures to reduce GHG emissions and adapt to climate change. The Climate Action Plan sets the target of reducing the City of Berkeley's GHG emissions by 33 percent below the 2000 levels by 2020, and by 80 percent below the 2000 levels by 2050. The Climate Action Plan includes detailed recommendations for sustainable transportation and land use, building energy use, waste reduction and recycling, community outreach and empowerment, and preparing for climate change impacts. In addition, the City of Berkeley has added additional climate goals to support the implementation of the 2009 CAP. In 2018, the City of Berkeley adopted a resolution establishing the goal of becoming a fossil fuel-free city and a Climate Emergency Declaration. In 2021, the City adopted a resolution to commit to the C40 Race to Zero Campaign and to achieve

[36] City of Berkeley, 2020. City of Berkeley VMT Criteria and Thresholds, June 29
[37] Abrams Associates, 2021. VMT Analysis for the 2136 San Pablo Avenue Project, June 8

net-zero carbon emissions no later than 2045. The City of Berkeley has adopted the 2019 California Green Building Code and California Energy Code, with local amendments.

The project's consistency with the applicable goals in the Climate Action Plan is summarized in Table 9.

TABLE 9 PROJECT CONSISTENCY WITH THE CITY OF BERKELEY'S CLIMATE ACTION PLAN

Chapter	Climate Action Plan Goals	Project Consistency
Transportation and Land Use	Increase cycling and walking	The project would provide live-work units and on-site bicycle parking.
	Increase compact development patterns (especially along transit corridors)	The project would provide high-density housing in a transit priority area. The project would achieve an approximate 19 percent reduction in daily trip generation due to its location near major public transit stops.
	Increase the usage of low-carbon vehicles	The project includes 50 parking spaces, including 10 EV Charger Ready parking spaces. The project will meet the CALGreen Tier 2 EV requirement.
Building and Energy Use	Make green building business as usual in the new construction and remodel market	The project would exceed the 2019 Title 24 energy efficiency standards through all-electric construction. The project is required to meet the energy efficiency standards in CALGreen Code as adopted and amended under Chapter 19.37 of the Berkeley Green Code. In addition, the project is required to comply with BMC Chapter 19.37 and reduce cement in concrete mix design by at least 25 percent, per COA Low-Carbon Concrete (#52).
	Increase residential and commercial renewable energy use	The project includes the installation of a solar photovoltaic system that covers at least 15 percent of the rooftop area to provide renewable energy on-site.
Waste Reduction and Recycling	Increase residential composting, recycling, and source reduction	The project is required to comply with the CALGreen Code. The project is also required to include recycling and organics collection areas for occupants in accordance with the Alameda County Mandatory Recycling Ordinance (ACWMA Ordinance 2012-01).
	Increase recycling and construction and demolition (C&D) debris	Per COA Construction and Demolition Diversion (#20), the project would include a Construction Waste Management Plan that meets the requirements of BMC Chapter 19.37 including 100 percent diversion of asphalt, concrete, excavated soil and land-clearing debris and a minimum 65 percent diversion of other nonhazardous construction and demolition waste.
Additional	Becoming fossil free city; Commitment to carbon neutrality by 2045; and the Climate Emergency declaration	The project will not include natural gas infrastructure and is consistent with the goal to become a fossil-free city. Since the project is below the BAAQMD Updated Threshold, the project does its "fair share" in achieving the State's GHG reduction goals and carbon neutrality by 2045.

Source: Berkeley, 2009. Climate Action Plan, June.

As demonstrated in Table 9, the project is consistent with, and would not hinder, the GHG reduction goals set forth in the City of Berkeley's Climate Action Plan. In addition to the conditions of approval mentioned above, the project is subject to the following conditions, which would reduce GHG emissions: **COA Water Efficient Landscaping, COA Recycling and Organics Collection, COA Exterior Lighting**, and **COA Transportation Demand Management**.

Overall, the project would not conflict with applicable GHG plans, policies or regulations and this impact would be less than significant.

IX. HAZARDS AND HAZARDOUS MATERIALS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼-mile of an existing or proposed school?	☐	☐	☒	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☐	☒

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less Than Significant. The project proposes the demolition of the existing structures on the project site and construction of a new mixed-use residential building with a ground floor parking garage, live-work spaces, and residential units. These types of proposed land uses would generally not involve transport, use, or disposal of significant quantities of hazardous materials. Small quantities of hazardous materials such as paints and cleaning products would be used for routine maintenance.

During project construction, hazardous materials such as fuel, lubricants, paint, sealants, and adhesives would be transported and used at the project site. The routine transport, use, or disposal of these hazardous materials could pose a potential hazard to construction workers at the project site as they would be handling the hazardous materials and could therefore be exposed through inhalation of vapors, direct contact with skin, or accidental ingestion. The routine transport, use, or disposal of these hazardous materials would not pose a significant hazard to the public or environment unless the hazardous materials were accidentally spilled or released into the environment, as discussed in sub-section (b), below.

All future uses on the project site would be subject to existing regulatory programs for hazardous materials. A Hazardous Materials Business Plan (HMBP), in compliance with Berkeley Municipal Code (BMC) Section 15.12.040, must be submitted to the Berkeley Toxics Management Division (TMD) within 30 days if on-site hazardous materials exceed in aggregate any of the following: 55 gallons for liquids; 500 pounds for solids; or 200 cubic feet of gases at standard temperature and pressure. This requirement is outlined in section d. of **COA Toxics**, below.

COA Toxics. The applicant shall contact the Toxics Management Division (TMD) at 1947 Center Street or (510) 981-7470 to determine which of the following documents are required and timing for their submittal:

1. Environmental Site Assessments:
    1. Phase I & Phase II Environmental Site Assessments (latest ASTM 1527-13). A recent Phase I ESA (less than 2 years old*) shall be submitted to TMD for developments for:
        - All new commercial, industrial and mixed-use developments and all large improvement projects.
        - All new residential buildings with 5 or more dwelling units located in the Environmental Management Area (or EMA).
        - EMA is available online at: http://www.cityofberkeley.info/uploadedFiles/IT/Level_3_-_General/ema.pdf.
    2. Phase II ESA is required to evaluate Recognized Environmental Conditions (REC) identified in the Phase I or other RECs identified by TMD staff. The TMD may require a third party toxicologist to review human or ecological health risks that may be

identified. The applicant may apply to the appropriate state, regional or county cleanup agency to evaluate the risks.

3. If the Phase I is over 2 years old, it will require a new site reconnaissance and interviews. If the facility was subject to regulation under Title 15 of the Berkeley Municipal Code since the last Phase I was conducted, a new records review must be performed.

2. Soil and Groundwater Management Plan:

    1. A Soil and Groundwater Management Plan (SGMP) shall be submitted to TMD for all non-residential projects, and residential or mixed-use projects with five or more dwelling units, that: (1) are in the Environmental Management Area (EMA) and (2) propose any excavations deeper than 5 feet below grade. The SGMP shall be site specific and identify procedures for soil and groundwater management including identification of pollutants and disposal methods. The SGMP will identify permits required and comply with all applicable local, state and regional requirements.

    2. The SGMP shall require notification to TMD of any hazardous materials found in soils and groundwater during development. The SGMP will provide guidance on managing odors during excavation. The SGMP will provide the name and phone number of the individual responsible for implementing the SGMP and post the name and phone number for the person responding to community questions and complaints.

    3. TMD may impose additional conditions as deemed necessary. All requirements of the approved SGMP shall be deemed conditions of approval of this Use Permit.

3. Building Materials Survey:

    1. Prior to approving any permit for partial or complete demolition and renovation activities involving the removal of 20 square or lineal feet of interior or exterior walls, a building materials survey shall be conducted by a qualified professional. The survey shall include, but not be limited to, identification of any lead-based paint, asbestos, polychlorinated biphenyl (PCB) containing equipment, hydraulic fluids in elevators or lifts, refrigeration systems, treated wood and mercury containing devices (including fluorescent light bulbs and mercury switches). The Survey shall include plans on hazardous waste or hazardous materials removal, reuse or disposal procedures to be implemented that fully comply state hazardous waste generator requirements (22 California Code of Regulations 66260 et seq). The Survey becomes a condition of any building or demolition permit for the Project. Documentation evidencing disposal of hazardous waste in compliance with the survey shall be submitted to TMD within 30 days of the completion of the demolition. If asbestos is identified, Bay Area Air Quality Management District Regulation 11-2-401.3 a notification must be made and the J number must be made available to the City of Berkeley Permit Service Center.

4. Hazardous Materials Business Plan:
    1. A Hazardous Materials Business Plan (HMBP) in compliance with BMC Section 15.12.040 shall be submitted electronically at http://cers.calepa.ca.gov/ within 30 days if on-site hazardous materials exceed BMC 15.20.040. HMBP requirement can be found at http://ci.berkeley.ca.us/hmr/.

Worker health and safety is regulated at the federal level by the US Department of Labor, Occupational Safety and Health Administration (OSHA). OSHA regulations include training requirements for construction workers and a requirement that hazardous materials are accompanied by manufacturer's Safety Data Sheets (SDSs). The Federal Occupational Safety and Health Act of 1970 authorizes states to establish their own safety and health programs with OSHA approval. Worker health and safety protections in California are regulated by the California Department of Industrial Relations (DIR). The DIR includes the Division of Occupational Safety and Health (DOSH), which acts to protect workers from safety hazards through its California OSHA (Cal/OSHA) program. Cal/OSHA regulations include requirements for protective clothing, training, and limits on exposure to hazardous materials. California standards for workers dealing with hazardous materials are contained in CCR Title 8 and include practices for all industries (General Industrial Safety Orders), and specific practices for construction, and other industries.

In 1990 and 1994, the federal Hazardous Material Transportation Act was amended to improve the protection of life, property, and the environment from the inherent risks of transporting hazardous material in all major modes of commerce. The United States Department of Transportation (DOT) developed hazardous materials regulations, which govern the classification, packaging, communication, transportation, and handling of hazardous materials, as well as employee training and incident reporting. The transportation of hazardous materials is subject to DOT, Resource Conservation and Recovery Act (RCRA), and State regulations. The California Highway Patrol, the California Department of Transportation (Caltrans), and the California Environmental Protection Agency (Cal/EPA) Department of Toxic Substances Control (DTSC) are responsible for enforcing federal and State regulations pertaining to the transportation of hazardous materials.

Construction of the project would result in the generation of various waste materials that would require recycling and/or disposal, including some waste materials that may be classified as hazardous waste. Hazardous wastes would be required to be transported by a licensed hazardous waste hauler and disposed of at facilities that are permitted to accept such materials as required by DOT, RCRA, and State regulations.

Compliance with the regulations described above, including BMC Section 15.12.040, OSHA and Cal/OSHA regulations, CCR Title 8, DOT, RCRA, and State regulations, would ensure that the project would not create a significant hazard to the public or the environment associated with the routine transport, use, or disposal of hazardous materials by ensuring that these materials are

properly handled during construction and operation of the project. Therefore, this impact would be less than significant.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Less Than Significant. The public and/or the environment could be affected by the release of hazardous materials from the project into the environment, by: (1) exposing workers, the public, future site occupants, or the environment to potentially contaminated soil and groundwater during construction and/or operation of the project, or (2) exposing workers, the public, or the environment to hazardous building materials (e.g., PCBs, lead paint, asbestos) during demolition of existing commercial structures. However, development projects that require a use permit are required to comply with **COA Toxics**, described above, that addresses each of these potential impacts.

Hazardous Building Materials

Due to the age of the buildings on the project site, hazardous building materials such as asbestos-containing materials (ACMs), lead-based paints (LBP), PCBs containing equipment/materials, and mercury containing devices may be present in the buildings. Demolition and renovation activities could cause the release of hazardous building materials into the environment if hazardous building materials are present in the buildings and are not identified and abated prior to demolition and renovation activities.

COA Toxics, as outlined above, requires that prior to approval of any permit for partial or complete demolition activities involving the removal of 20 square or lineal feet of interior or exterior walls, a building materials survey shall be conducted by a qualified professional. The survey shall include, but not be limited to, identification of any lead-based paint, asbestos, PCB containing equipment, hydraulic fluids in elevators or lifts, refrigeration systems, treated wood and mercury containing devices (including fluorescent light bulbs and mercury switches). The survey shall include plans on hazardous waste or hazardous materials removal, reuse, or disposal procedures to be implemented that fully comply with state hazardous waste generator requirements (22 California Code of Regulations 66260 et seq). The survey becomes a condition of any building or demolition permit for the project. Documentation evidencing disposal of hazardous waste in compliance with the survey shall be submitted to TMD within 30 days of the completion of the demolition. If asbestos is identified, BAAQMD Regulation 11-2-401.3 notification must be made and the BAAQMD Job Number (or "J Number") must be made available to the City of Berkeley Permit Service Center. Compliance with the requirements described above and outlined in **COA Toxics** would ensure that potential impacts related to hazardous building materials would be less than significant.

Hazardous Soil and Groundwater Conditions

A Phase I Environmental Site Assessment (ESA)[38] was prepared for the project site in 2018. The Phase I ESA indicated that auto repair operations have been performed at the project site since 1986, and no indication of underground storage tanks (USTs), in-ground hydraulic lifts, floor drains, sumps, or oil/water separators were observed at the project site. Staining typical of limited auto repair operations was observed in several areas but overall housekeeping was considered good. The project site was not listed in any regulatory databases or records for spills or releases of hazardous materials. Based on these findings the Phase I ESA concluded that the auto repair operations at the project site were not expected to represent a significant environmental concern.[39] Staining was observed on the ground surface in the unpaved (gravel covered) area in the northeast portion of the project site which is used for storage of vehicles and is adjacent to paved and covered areas where storage of hazardous materials and auto repair activities are performed. Although the staining was noted in the Phase I ESA to be relatively minor and not a concern, sampling and analysis of soil is necessary to evaluate the degree of potential impacts to the subsurface from spills/leaks in this area, as this cannot be evaluated based solely on visual observation of the current ground surface.

The Phase I ESA also identified land uses of potential environmental concern in areas surrounding the project site including a former gas station located adjacent to the south of the project site at 2198 San Pablo Avenue from the 1940s to 1970s, and a former auto wrecking yard located to the east of project site at 2147 San Pablo Avenue from 1929 to 1950, and a former gas station located to the southeast of project site at 2197 San Pablo Avenue from 1929 to 1963. The Phase I ESA indicated that the property located adjacent to the south of the project site at 2198 San Pablo Avenue was redeveloped in the 1980s and no evidence of a release was reported. Based on the lack of a documented release and the direction of groundwater flow, the Phases I ESA concluded that this property was not expected to represent a significant environmental concern for the project site.[40]

The Phase I ESA did not provide any conclusions regarding the potential for the former gas station located at 2197 San Pablo Avenue or the former auto wrecking yard located at 2147 San Pablo Avenue to have impacted the environmental condition of the project site. Because environmental investigations have not been performed at these surrounding properties, it is not known whether hazardous materials releases occurred at the properties. These former gas stations were in operation during a period when fuel USTs were typically constructed of single

[38] Partner Engineering and Science, Inc., 2018. Phase I Environmental Site Assessment Report, 2136-2154 San Pablo Avenue, Berkeley, California 94702, October 4.
[39] Partner Engineering and Science, Inc., 2018. Phase I Environmental Site Assessment Report, 2136-2154 San Pablo Avenue, Berkeley, California 94702, October 4.
[40] Partner Engineering and Science, Inc., 2018. Phase I Environmental Site Assessment Report, 2136-2154 San Pablo Avenue, Berkeley, California 94702, October 4.

walled steel that commonly leaked, and the former auto wrecking yard was in operations during a period when environmentally protective hazardous waste storage and disposal practices were not established, and automotive waste fluids were commonly spilled/released onto the ground surface at auto wrecking yards. Based on their proximity to the project site and the potentially upgradient location of the properties located across San Pablo Avenue from the project site, if hazardous materials releases occurred at these off-site properties, the hazardous materials could have migrated beneath the project site in groundwater and/or soil vapor.

The project is located within the City's EMA.[41] These areas in the City are known or suspected to have groundwater contamination.[42] Projects within the City's EMA must comply with the **COA Toxics**, as outlined above, which indicates that a Phase II ESA is required to evaluate Recognized Environmental Conditions (RECs) identified in the Phase I ESA or other RECs identified by TMD staff. The Phase I ESA did not identify any of the environmental concerns discussed above as RECs, nor did it recommend further investigation of the project site through a Phase II ESA. However, TMD staff indicted that a Phase II ESA should be conducted for the project site given its past use, neighboring parcels past use, and the observed staining.[43] **COA Toxics** also indicates that the TMD may require a third party toxicologist to review human or ecological health risks that may be identified in the Phase II ESA, and that the applicant may apply to the appropriate State, regional, or county cleanup agency to evaluate the risks.

A Limited Phase II Investigation[44] was performed at the project site in March 2022, which included collecting three sub-slab soil gas samples for analysis of volatile organic compounds (VOCs) and advancing five borings for soil sampling and analysis. The soil borings were advanced to a depth of approximately 5 feet in the unpaved area behind the site building, including areas previously used for parking and in an area of surface soil staining in front of an auto repair canopy. Two soil gas samples were collected below the auto repair slab on the west side of the building and one soil gas sample was collected below the entrance slab adjacent to the sidewalk on the east side of the building. Because the site building has a raised floor and a crawl space, sub-slab soil gas samples were not collected directly below the building.

The Limited Phase II Investigation indicated that concentrations of petroleum hydrocarbons (diesel and motor oil) were detected in only one soil sample, and the detected concentrations were below the residential Environmental Screening Levels (ESLs) established by the San Francisco Regional Water Quality Control Board (Regional Water Board). Concentrations of semi-volatile organic compounds (SVOCs) were also detected in the one soil sample analyzed for

[41] City of Berkeley, 2010. Environmental Management Area. Available online at: www.cityofberkeley.info/uploadedFiles/IT/Level_3_-_General/ema.pdf, accessed February 24, 2022.
[42] City of Berkeley, 2022. Environmental Management Area Website. Available online at: www.ci.berkeley.ca.us/Planning_and_Development/Toxics_Management/Environmental_Management_Area.aspx, accessed February 24.
[43] Meredith Lear, TMD, 2022. Email communication with Sharon Gong, City of Berkeley, February 10.
[44] Harris & Lee Environmental Sciences, LLC, 2022. Limited Phase II Investigation Results, 2136-2154 San Pablo Avenue Berkeley, California 94702, May 3.

SVOCs, and the detected concentrations were below their residential ESLs. Concentrations of heavy metals including arsenic, cobalt, and lead that exceeded their residential ESLs were detected in multiple soil samples. The detected concentrations of arsenic were within the range of naturally occurring background concentrations. The Limited Phase II Investigation indicated that detected concentrations of other heavy metals in soil samples including barium, vanadium, and zinc exceeded their residential ESLs; however, the Limited Phase II Investigation erroneously compared the analytical results for some heavy metals to Tier 1 ESLs[45] rather than residential ESLs, and the detected concentrations of barium, vanadium, and zinc in soil did not actually exceed their residential ESLs. Concentrations of VOCs were not detected in any of the soil samples analyzed.

The Limited Phase II Investigation indicated that concentrations of tetrachloroethene (PCE) and benzene exceeding their residential ESLs were detected in sub-slab soil gas samples collected from the west of the site building, and PCE and benzene were not detected in the sub-slab soil gas samples collected from the east of the site building.[46]

Because soil gas contamination exceeding residential ESLs was found at the west (presumed downgradient) side of the project site but not in the soil gas sample from the east (presumed upgradient) side of the building, it appears that the source of the soil gas contamination is on the project site and could potentially be beneath the site building.

Based on the findings of the Limited Phase II Investigation, TMD staff indicted that the TMD would require sign off from either the Regional Water Board, DTSC, or Alameda County Department of Environmental Health to confirm that any proposed development of the project site sufficiently addresses the contaminants and potential risks identified by the Limited Phase II Investigation.[47]

Based on the findings of the Limited Phase II Investigation, the subsurface of the project site has been impacted by past releases of hazardous materials; however, the sources and extent of hazardous materials contamination have not been defined. The public, environment, construction workers, and future site occupants could potentially be exposed to hazardous materials that could be accidentally released into the environment if appropriate management of subsurface contamination is not performed during construction. Construction activities that would involve disturbance of soil and groundwater could exacerbate the hazardous materials conditions at the project site and potentially result in the release of hazardous materials into the environment in the form of vapors, dust, or dewatering discharges if contaminated soil and

[45] Tier 1 ESLs are the most conservative (lowest) ESLs and can be lower than residential ESLs that are based on human health risk from direct exposure to soil. Tier 1 ESLs can be based on soil leaching to groundwater, terrestrial habitat, and odor nuisance levels which can be lower than residential ESLs.
[46] Harris & Lee Environmental Sciences, LLC, 2022. Limited Phase II Investigation Results, 2136-2154 San Pablo Avenue Berkeley, California 94702, May 3.
[47] Meredith Lear, TMD, 2022b. Email communication with Sharon Gong, City of Berkeley, May 24.

groundwater are present and not managed appropriately. Future occupants of the project site could also be exposed to hazardous materials through soil vapor intrusion to indoor air as VOCs have been detected at concentration exceeding residential ESLs in soil gas samples collected from the project site.

Because the project is within the City's EMA and would include excavation deeper than 5 feet below grade, it must comply with **COA Toxics**, as outlined above, which requires preparation of a site specific SGMP to identify procedures for soil and groundwater management including identification of pollutants and disposal methods. The SGMP would identify permits required and comply with all applicable local, State, and regional requirements. The SGMP would require notification to TMD of any hazardous materials found in soils and groundwater during development. The SGMP would provide guidance on managing odors during excavation, and TMD may impose additional conditions as deemed necessary. For example, if the Phase II ESA identifies soil gas contamination at concentrations exceeding applicable regulatory screening levels for the protection of indoor air quality, then the TMD could require the installation of vapor intrusion mitigation systems beneath the proposed structures.

Implementation of further investigation/risk assessment/remediation under regulatory agency oversight as required by TMD and preparation and implementation of a SGMP under the oversight of the TMD, as required by **COA Toxics**, would ensure that, appropriate investigation, health risk assessment, remediation (as necessary), and soil and groundwater management would occur to ensure that potential impacts related to the accidental release of hazardous materials into the environment due to subsurface contamination would be less than significant.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼-mile of an existing or proposed school?

Less Than Significant. Black Pine Circle School, a private school located at 2027 Seventh Street, and Via Center, a private school located at 2126 Sixth Street, are less than ¼-mile west of the project site. Rosa Parks Elementary School, a public school located at 920 Allston Way, and Nia House, a private preschool located at 2234 Ninth Street, are less than ¼-mile southwest of the project site. Oxford Elementary at West Campus, a public school located at 1222 University Avenue, is less than ¼-mile northeast of the project site. Compliance with federal, State, and local regulations for the management of hazardous materials, as discussed in sub-section (a), above; and compliance with **COA Toxics**, as discussed in sub-section (b), above, would ensure that potential impacts to nearby schools associated with hazardous materials emissions from the project site would be less than significant.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

No Impact. The provisions of Government Code Section 65962.5 require the DTSC, the State Water Board, the California Department of Health Services, and the California Department of Resources Recycling and Recovery (formerly the California Integrated Waste Management Board) to submit information pertaining to sites associated with solid waste disposal, hazardous waste disposal, leaking underground storage tank (LUST) sites, and/or hazardous materials releases to the Secretary of Cal/EPA. The project site is also not included on any of the lists of hazardous materials release sites compiled in accordance with Government Code Section 65962.5.[48] Therefore no impacts would occur related to being included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

No Impact. The project site is located approximately 10 miles north of the Oakland International Airport. The project site is not located within a public airport land use plan or within 2 miles of a public use airport.[49] Therefore, the project would not result in a safety hazard to people working or residing in the area due to the proximity of an airport.

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less Than Significant. The project would be consistent with the policies outlined in the City of Berkeley General Plan's Disaster Preparedness and Safety Element and would not obstruct emergency evacuation routes.[50] University Avenue and San Pablo Avenue are the designated emergency access and evacuation routes in the project area. The project would not alter the existing roadway network. During construction the project may require temporary closure of portions of San Pablo Avenue. Compliance with traffic control requirements imposed by the City for the permitting of temporary closure of street areas would ensure that appropriate emergency access is maintained at all times during construction activities. Therefore, the project would not be expected to impair the function of nearby emergency evacuation routes and would have a less-than-significant impact on implementation of an adopted emergency response plan or emergency evacuation plan.

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[48] California Environmental Protection Agency (Cal/EPA), 2022. Cortese List Data Resources. Available online at: https://calepa.ca.gov/sitecleanup/corteselist/, accessed February 24.
[49] Alameda County Community Development Agency, 2010. Oakland International Airport, Airport Land Use Compatibility Plan, December.
[50] City of Berkeley, 2001. Disaster Preparedness and Safety Element, April 23. Available online at: https://www.cityofberkeley.info/Planning_and_Development/Home/General_Plan_-_Disaster_Preparedness_and_Safety_Element.aspx, accessed February, 2022.

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?

No Impact. The project site is in an urban area and is not within or adjacent to a wildland fire hazard area (see *Section XX, Wildfire*, for more information). Therefore, the project would not expose people or structures to a significant loss, injury or death involving wildland fires.

X. HYDROLOGY AND WATER QUALITY

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would:				
i) result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	☐	☒	☐	☐
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☒	☐	☐
iv) impede or redirect flood flows?	☐	☐	☐	☒
d) In flood hazard, tsunami, or seiches zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

The project site is located within the Strawberry Creek Watershed.[51] The dominant hydrologic features in the vicinity of the project site are San Francisco Bay and the lagoons of Aquatic Park. The lagoons are mostly shallow, subtidal aquatic habitat with a sandy/muddy bottom, similar to

[51] Sowers, Janet M., 1993. Creek and Watershed Map of Oakland and Berkeley, The Oakland Museum of California (Revised 2000) Available online at: explore.museumca.org/creeks/MapOak.html, accessed May 2020.

adjacent portions of Central San Francisco Bay. Under typical conditions, hydrology within the lagoons are strongly influenced by tidal hydrology, as the lagoons are directly and indirectly connected to Central San Francisco Bay.[52]

Stormwater runoff from the project site is conveyed from roof downspouts and surface flow into San Pablo Avenue and the unpaved area in the western portion of the project site. Surface runoff from the unpaved area in the western portion of the project site is conveyed as overland flow towards the park adjacent to the west of the project site. Stormwater runoff in San Pablo Avenue is captured in a subsurface storm drain and discharges into a culvert beneath University Avenue (which conveys Strawberry Creek) which discharges to the north end of the Aquatic Park Main Lagoon and into San Francisco Bay to the west of the Main Lagoon.[53]

Water quality in the State of California is regulated by the State Water Quality Control Board (State Water Board) and the nine Regional Water Quality Control Boards. The City of Berkeley is located in the jurisdiction of the San Francisco Bay Regional Water Quality Control Board. Section 303(d) of the Federal Clean Water Act (CWA) requires that states identify water bodies including bays, rivers, streams, creeks, and coastal areas that do not meet water quality standards and the pollutants that are causing the impairment. Total Maximum Daily Loads (TMDLs) describe the maximum amount of a pollutant that a water body can receive while still meeting established water quality standards. A TMDL requires that all sources of pollution and all aspects of a watershed's drainage system be reviewed and set forth action plans that examine factors and sources adversely affecting water quality and identify specific plans to improve overall water quality and reduce pollutant discharges into impaired water bodies. Central San Francisco Bay is listed as an impaired water body for several pollutants including pesticides (chlordane, DDT, and dieldrin), dioxins, furans, invasive species, mercury, PCBs, selenium, and trash in water. TDMLs have been established for mercury, PCBs, and selenium and will ultimately be prepared for other pollutants affecting the Bay.[54]

The National Pollutant Discharge Elimination System (NPDES) was created under the CWA and is regulated by the State Water Board in California to prohibit the discharge of pollutants to receiving waters unless the discharge is in compliance with NPDES permit requirements. NPDES requirements that would apply to both the construction-phase and the operation phase of the Project are described below.

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[52] City of Berkeley, 2012. Aquatic Park Improvement Program Draft Environmental Impact Report.
[53] Sowers, Janet M., 1993. Creek and Watershed Map of Oakland and Berkeley, The Oakland Museum of California (Revised 2000) Available at: explore.museumca.org/creeks/MapOak.html, accessed May 2020.
[54] State Water Resources Control Board (State Water Board), 2018. Final 2018 California Integrated Report (Clean Water Act Section 303(d) List/305(b) Report). Available at: https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2018_integrated_report.html, accessed September 27, 2021.

The San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)[55] establishes beneficial water uses for waterways, water bodies, and groundwater within the region and is a master policy document for managing water quality in the region. The Central San Francisco Bay is listed in the Basin Plan as providing the beneficial uses of industrial service supply, industrial process supply, commercial and sport fishing, shellfish harvesting, estuarine habitat, fish migration, preservation of rare and endangered species, fish spawning, wildlife habitat, water contact and noncontact recreation, and navigation. Berkeley Aquatic Park is listed in the Basin Plan as providing existing beneficial uses of estuarine habitat, fish migration, wildlife habitat, water contact and noncontact recreation; and the potential beneficial use of fish spawning. The project site is located within the Santa Clara Valley Groundwater Basin, East Bay Plain Groundwater Subbasin. The East Bay Plain Subbasin is listed in the Basin Plan as providing the beneficial uses of municipal and domestic water supply, industrial process water supply, industrial service water supply, and agricultural water supply.

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

Less Than Significant. The project includes demolition of the existing on-site buildings, excavation of soil, and construction of the proposed mixed-use building. Pollutants of concern during construction include sediments, trash, concrete waste (dry and wet), petroleum products, and other chemicals typically used in construction. Each of these pollutants on its own or in combination with other pollutants can have a detrimental effect on water quality. During construction activities, excavated soil would be exposed, and there would be an increased potential for soil erosion and sedimentation compared to existing conditions. In addition, chemicals, liquid products, petroleum products (e.g., paints, solvents, oils and fuels), and concrete-related waste may be spilled or leaked and have the potential to be transported via storm water runoff into receiving waters (i.e., the Berkeley Aquatic Park and Central San Francisco Bay).

Compliance with COAs, as outlined below, including incorporation of construction BMPs to target and reduce pollutants of concern in stormwater runoff, would ensure that potential impacts related to violation of waste discharge requirements and water quality standards and degradation of water quality during construction would be less than significant.

> **COA Stormwater Requirements.** The applicant shall demonstrate compliance with the requirements of the City's National Pollution Discharge Elimination System (NPDES) permit as described in BMC Section 17.20. The following conditions apply:

[55] San Francisco Bay Regional Water Quality Control Board, 2017. San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan). Incorporating all amendments as of May 4.

1. The project plans shall identify and show site-specific Best Management Practices (BMPs) appropriate to activities conducted on-site to limit to the maximum extent practicable the discharge of pollutants to the City's storm drainage system, regardless of season or weather conditions.
2. Trash enclosures and/or recycling area(s) shall be covered; no other area shall drain onto this area. Drains in any wash or process area shall not discharge to the storm drain system; these drains should connect to the sanitary sewer. Applicant shall contact the City of Berkeley and EBMUD for specific connection and discharge requirements. Discharges to the sanitary sewer are subject to the review, approval and conditions of the City of Berkeley and EBMUD.
3. Landscaping shall be designed with efficient irrigation to reduce runoff, promote surface infiltration and minimize the use of fertilizers and pesticides that contribute to stormwater pollution. Where feasible, landscaping should be designed and operated to treat runoff. When and where possible, xeriscape and drought tolerant plants shall be incorporated into new development plans.
4. Design, location and maintenance requirements and schedules for any stormwater quality treatment structural controls shall be submitted to the Department of Public Works for review with respect to reasonable adequacy of the controls. The review does not relieve the property owner of the responsibility for complying with BMC Chapter 17.20 and future revisions to the City's overall stormwater quality ordinances. This review shall be [sic] conducted prior to the issuance of a Building Permit.
5. All paved outdoor storage areas must be designed to reduce/limit the potential for runoff to contact pollutants.
6. All on-site storm drain inlets/catch basins must be cleaned at least once a year immediately prior to the rainy season. The property owner shall be responsible for all costs associated with proper operation and maintenance of all storm drainage facilities (pipelines, inlets, catch basins, outlets, etc.) associated with the project, unless the City accepts such facilities by Council action. Additional cleaning may be required by City of Berkeley Public Works Engineering Dept.
7. All private or public projects that create and/or replace 10,000 square feet or more of impervious surface must comply with Provision C.3 of the Alameda County NPDES permit and must incorporate stormwater controls to enhance water quality. Permit submittals shall include a Stormwater Requirement Checklist and detailed information showing how the proposed project will meet Provision C.3 stormwater requirements, including a) Site design measures to reduce impervious surfaces, promote infiltration, and reduce water quality impacts; b) Source Control Measures to keep pollutants out of stormwater runoff; c) Stormwater treatment measures that are hydraulically sized to remove pollutants from stormwater; d) an O & M (Operations and Maintenance)

agreement for all stormwater treatment devices and installations; and e) Engineering calculations for all stormwater devices (both mechanical and biological).

8. All on-site storm drain inlets must be labeled "No Dumping – Drains to Bay" or equivalent using methods approved by the City.
9. Most washing and/or steam cleaning must be done at an appropriately equipped facility that drains to the sanitary sewer. Any outdoor washing or pressure washing must be managed in such a way that there is no discharge or soaps or other pollutants to the storm drain. Sanitary connections are subject to the review, approval and conditions of the sanitary district with jurisdiction for receiving the discharge.
10. Sidewalks and parking lots shall be swept regularly to prevent the accumulation of litter and debris. If pressure washed, debris must be trapped and collected to prevent entry to the storm drain system. If any cleaning agent or degreaser is used, wash water shall not discharge to the storm drains; wash waters should be collected and discharged to the sanitary sewer. Discharges to the sanitary sewer are subject to the review, approval and conditions of the sanitary district with jurisdiction for receiving the discharge.
11. The applicant is responsible for ensuring that all contractors and sub-contractors are aware of and implement all stormwater quality control measures. Failure to comply with the approved construction BMPs shall result in the issuance of correction notices, citations, or a project stop work order.
12. All piles of debris, soil, sand, or other loose materials shall be covered at night and during rainy weather with plastic at least one-eighth millimeter thick and secured to the ground.
13. The applicant shall ensure that all excavation takes into account surface and subsurface waters and underground streams so as not to adversely affect adjacent properties and rights-of-way.
14. The project sponsor shall maintain sandbags or other devices around the site perimeter during the rainy season to prevent on-site soils from being washed off site and into the storm drain system. The project sponsor shall comply with all City ordinances regarding construction and grading.
15. Prior to any excavation, grading, clearing, or other activities involving soil disturbance during the rainy season the applicant shall obtain approval of an erosion prevention plan by the Building and Safety Division and the Public Works Department. The applicant shall be responsible for following these and any other measures required by the Building and Safety Division and the Public Works Department.

The Geotechnical Investigation prepared for the project site concluded the historic high groundwater is approximately 5 feet below ground surface.[56] As a result, dewatering from excavations could be required during construction. Improper management and discharge of dewatering effluent into the storm drainage system could adversely affect water quality as contaminants and sediment may be present in the dewatering effluent.

Groundwater dewatering effluent could be discharge to the sanitary sewer, subject to EBMUD permit requirements, which would ensure that discharge standards are met through permit requirements for dewatering effluent testing and treatment. Groundwater could also be discharged to the storm drain system; however, the discharger would be required to prepare a Report of Waste Discharge, and if approved by the Regional Water Board, be issued site-specific waste discharge requirements (WDRs) under NPDES regulations. Site-specific WDRs contain rigorous monitoring requirements and performance standards that, when implemented, ensure that receiving water quality is not substantially degraded.

As discussed in *Section IX, Hazards and Hazardous Materials*, the project site is located within the City's mapped EMA, and soil and groundwater contamination could be present beneath the project site and adjacent areas. For development projects within the EMA where dewatering is anticipated, the City's TMD has adopted specific requirements. Since dewatering activities can draw in contamination from outside areas, monitoring of the groundwater discharges may be required. The Toxics Management Division may require dewatering and monitoring plans to ensure the discharge of clean water and the protection of the community from vapors or other health hazards. Additionally, where there is sufficient information indicating soil contamination is present, the Toxics Management Division could require testing of excavation spoils and documentation of proper disposal.[57] The specific requirements for the project would be specified by the City as standard conditions of approval for the Use Permit, as outlined in **COA Toxics**, and at a minimum would require the preparation of a SGMP that would identify procedures for groundwater management. Compliance with the City of Berkeley requirements would ensure that contaminated groundwater is not discharged to surface water. Therefore, potential groundwater dewatering impacts related to violation of waste discharge requirements and water quality standards and degradation of water quality would be less than significant.

Infiltration of stormwater has the potential to affect groundwater quality in areas of shallow groundwater. As stated previously, the Geotechnical Investigation concluded that groundwater is anticipated to exist on the project site at depths as shallow as approximately 5 feet below the existing ground surface. Therefore, due to the shallow groundwater table, stormwater may infiltrate during project construction, potentially affecting groundwater quality given the direct

[56] Rockridge Geotechnical, 2019. *Geotechnical Investigation, Proposed Mixed-Use Building, 2136-2154 San Pablo Avenue, Berkeley, California,* October 23.
[57] City of Berkeley, Toxics Management Division. Environmental Management Area. Available online at: www.cityofberkeley.info/Planning_and_Development/Toxics_Management/Environmental_Management_Area.aspx, accessed May 2020.

path for pollutants to reach the groundwater table. Proposed construction BMPs, as required by **COA Stormwater Requirements**, would reduce infiltration of pollutants to groundwater during construction. Therefore, project construction would not substantially degrade groundwater quality and this impact would also be less than significant.

Project operation and maintenance would be subject to the Regional Water Board's MRP, Order R2-2015-0049, NPDES Permit No. CAS612008. Provision C.3 of the MRP sets forth appropriate and site-specific source control, site design, and stormwater treatment measures for new and redevelopment projects to address both soluble and insoluble stormwater runoff pollutant discharges and prevent increases in runoff flows from new projects. The project is considered a regulated project because it is a redevelopment project that would replace over 10,000 square feet of impervious surfaces. Additionally, stormwater treatment systems would be required to be designed and sized to treat stormwater runoff from the entire project site pursuant to the requirements of Provision C.3 of the MRP58 and **COA Stormwater Requirements**.

The Alameda County Clean Water Program (ACCWP) has developed a C.3 Stormwater Technical Guidance document to assist in the design, implementation, and maintenance of required stormwater infrastructure.[59] Regulated projects must prepare plans in accordance with the C.3 Stormwater Technical Guidance to detail the BMPs to be implemented as part of the project. Regulated projects must implement source control, site design, and treatment BMPs. Source control BMPs are preventative measures that are implemented to prevent the introduction of pollutants into stormwater. Site design BMPs are stormwater management strategies that emphasize conservation and use of existing site features to reduce the amount of runoff and pollutant loading generated from a project site. Treatment BMPs are structural BMPs designed to treat and reduce pollutants in stormwater runoff prior to releasing it to receiving waters.

In Section F.3 of the C.3 Stormwater Technical Guidance, ACCWP acknowledges that stormwater treatment designs should generally maximize infiltration to the underlying soils; however, at sites with shallow groundwater and/or groundwater contamination, where stormwater infiltration could promote migration of contamination and/or interfere with remediation, flow-through planters and other stormwater controls that are isolated from underlying soils are appropriate.[60] The stormwater control and treatment plans would be reviewed by the City to ensure compliance with the Provision C.3 requirement of the of MRP and ACCWP guidelines. According to the Stormwater Requirements Checklist prepared for the project,[61] stormwater treatment BMPs would include biotreatment areas (flow-through planters).

[58] San Francisco Bay Regional Water Quality Control Board, 2015. San Francisco Bay Region Municipal Regional Stormwater NPDES Permit, Order No. R2-2015-0049, NPDES Permit No. CAS612008, November 19.
[59] Alameda County Clean Water Program (ACCWP), 2021. C.3 Stormwater Technical Guidance, 3rd Revision, Version 7.1, February 8.
[60] Alameda County Clean Water Program (ACCWP), 2021. C.3 Stormwater Technical Guidance, 3rd Revision, Version 7.1, February 8.
[61] San Pablo Investors Two, LLC, 2021, Stormwater Requirements Checklist, 2136 San Pablo Mixed-Use, March 8.

As previously discussed, infiltration of stormwater could affect groundwater quality in areas of shallow groundwater. Due to the groundwater depth being as shallow as approximately 5 feet below the existing ground surface of the project site, stormwater infiltration during project operation could potentially affect groundwater quality given the direct path for pollutants to reach the groundwater table. The project would be required to implement operational BMPs (including source control, site design, and treatment BMPs) to treat stormwater before it could reach groundwater. These proposed BMPs would treat stormwater runoff on-site and would reduce the volume of stormwater and the infiltration of pollutants into groundwater during operation. Therefore, project operation would not substantially degrade groundwater quality.

Compliance with the requirements of the MRP and **COA Stormwater Requirements**, including incorporation of operational BMPs to target pollutants of concern, would ensure that operational impacts related to violation of waste discharge requirements and water quality standards and degradation of water quality would be less than significant.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Less than Significant. The City of Berkeley is located within the Santa Clara Valley Groundwater Basin, East Bay Plain Subbasin, which encompasses approximately 122 square miles in Alameda and Contra Costa counties. The East Bay Plain Subbasin generally extends from north to south from the San Pablo Bay to the Niles Cone Groundwater Basin near Hayward. A substantial amount of artificial fill (thicknesses ranging from 1 to 50 feet) has been placed within the basin, with thickest deposits found nearer to San Francisco Bay. Historical groundwater levels in the East Bay Plain Subbasin have varied between 10 to 140 feet below mean sea level; however, levels have been rising continuously since the 1950s.[62]

As discussed in subsection (a), above, according to the Geotechnical Investigation prepared for the project site, groundwater may be present as shallow as approximately 5 feet below the existing ground surface, therefore temporary dewatering from certain areas of excavation (e.g., the vehicle lift pits) could be necessary during construction. Such dewatering would be localized and temporary and would not result in the lowering of surrounding groundwater levels.

Water supply to the project would be provided by the EBMUD water system, which is supplied from the Mokelumne River.[63] Because EBMUD does use groundwater from the East Bay Plain Subbasin for municipal water supply, water use during operation of the project would not affect groundwater. Development of the project would result in an increase in impervious surfaces on

[62] California Department of Water Resources (DWR), 2004. California's Groundwater Bulletin 118 – Santa Clara Valley Groundwater Basin, East Bay Plain Subbasin, February 27. Available online at: water.ca.gov/Programs/Groundwater-Management/Bulletin-118, accessed May 2020.
[63] East Bay Municipal Utility District (EBMUD), 2022. Water Supply. Available online at: www.ebmud.com/water/about-your-water/water-supply, accessed February 25.

the project site from approximately 11,588 square feet to approximately 18,065 square feet. The Geotechnical Investigation prepared for the project site indicates that the soil underlying the project site consists of primarily of stiff to very stiff clay.[64] The presence of such stiff clayey soil limits the infiltration of stormwater and the recharge of groundwater; therefore, the increase in impervious surface area that would occur under the project would not have a substantial effect on groundwater recharge. For the reason listed above, impacts related to the decrease of groundwater supplies or interference with groundwater recharge would be less than significant

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

i. Result in substantial erosion or siltation on- or off-site;

Less than Significant. The project would not alter the course of a stream or a river. Site preparation and grading and excavation activities may slightly and temporarily alter on-site drainage; however, the existing drainage patterns would generally be maintained and would not be substantially altered or modified. During construction, excavated soil would be exposed, and there would be an increased potential for soil erosion and sedimentation compared to existing conditions. Compliance with the **COA Stormwater Requirements**, which requires approval and implementation of an erosion prevention plan, would ensure that potential impacts related to erosion and siltation would be less than significant.

ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;

Less than Significant with Mitigation Incorporated. The project would increase the amount of impervious surface area on the project site which could increase the volume and rate of stormwater runoff discharged from the project site; however, as discussed above, the project site is underlain by stiff clayey soil that limits the infiltration of stormwater; therefore, the increase in runoff compared to existing conditions would not be expected to be substantial. The project would convey stormwater runoff to biotreatment areas (flow-through planters). The on-site stormwater drainage systems would discharge to the City's existing off-site stormwater drainage systems. The City would ensure that the on-site stormwater drainage systems would be appropriately sized to convey stormwater runoff. Although the project would not be expected to result in a substantial increase in runoff compared to existing conditions, if existing storm drain systems that receive runoff from the project site are already at or near their capacity during significant rain events, then an increase in runoff from the project site could contribute to exceeding the capacity of storm drain systems, which could results in flooding on- or off-site. This

[64] Rockridge Geotechnical, 2019. *Geotechnical Investigation, Proposed Mixed-Use Building, 2136-2154 San Pablo Avenue, Berkeley, California,* October 23.

would be a potentially significant impact. In order to control the risk of exceeding the capacity of existing off-site storm drain system, the project shall implement Mitigation Measure HYD-1.

> **Mitigation Measure HYD-1:** Hydraulic modeling shall be performed to evaluate the rates of stormwater discharge from the project site under existing conditions and from the proposed project. The available capacity of existing off-site storm drain systems that would receive runoff from the proposed project shall be evaluated and the evaluation shall account for contribution of runoff from the project site and other development projects that are under construction or planned which would discharge stormwater into the same storm drain systems. If an increase in stormwater discharge from the project site could cause an exceedance of the available capacity of existing storm drain systems, the project shall incorporate stormwater retention systems (e.g., swales, retention ponds, or cisterns with metered outlets) into the project design to ensure that stormwater runoff from the project would not contribute to exceeding the capacity of existing off-site storm drain systems. The results of the hydraulic modeling, evaluation of the capacity of existing off-site storm drain systems, and any changes to the project's stormwater management system designs shall be submitted to the City for review and approval prior to the issuance of grading or building permits.

Implementation of Mitigation Measure HYD-1 would ensure that potential impacts related to on- or off-site flooding related to an increase in runoff from the project site would be less than significant.

iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or

Less than Significant with Mitigation Incorporated. As discussed above, the project site is underlain by stiff clayey soil that limits the infiltration of stormwater; therefore, the increase in impervious surface area that would occur under the project would not be expected to result in a substantial increase in runoff compared to existing conditions. Although the project would not be expected to result in a substantial increase in runoff compared to existing conditions, if existing storm drain systems that receive runoff from the project site are already at or near their capacity during significant rain events, then an increase in runoff from the project site could contribute to exceeding the capacity of storm drains. Implementation of Mitigation Measure HYD-1 would ensure that , potential impacts related to runoff from the project site exceeding the capacity of existing or planned stormwater drainage systems would be less than significant. As discussed under subsection (a), above, compliance with the requirements of the MRP, **COA Stormwater Requirements**, would ensure that potential impacts related to additional sources of polluted runoff would be less than significant.

iv. Impede or redirect flood flows?

No Impact. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) No 06001C0056H,[65] the Project site is within Zone X, Areas of Minimal Flood Hazard, and is not located within a 100-year or 500-year flood hazard zone. Therefore, the project would not impede or redirect flood flows.

d) In flood hazard, tsunami, or seiches zones, risk release of pollutants due to project inundation?

No Impact. As discussed above, the project site is not located within a 100-year or 500-year flood hazard zone. The project site is not located in an area mapped by the California Emergency Management Agency as being potentially inundated by a tsunami.[66] Seiches are waves that are created in an enclosed body of water such as a bay, lake, or harbor and go up and down or oscillate and do not progress forward like standard ocean waves. Seiches are also referred to as standing waves and are triggered by strong winds, changes in atmospheric pressure, earthquakes, tsunamis or tidal influence. The height and frequency of seiches are determined by the strength of the triggering factor(s) and the size of the basin. Based on the distance of the project site from the Bay and Aquatic Park lagoons and its elevation above these water bodies, it is highly unlikely that seiches in the Bay and Aquatic Park, if they occur, would impact the project site. Therefore, no impacts would occur related to the release of pollutants in the event of inundation from flooding.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Less than Significant. As discussed above, the Basin Plan is the master policy document that establishes the water quality objectives and strategies needed to protect designated beneficial water uses in the San Francisco Bay region. The State Water Board and the Regional Water Board enforce compliance with the water quality objectives of the Basin Plan through the issuance of NPDES permits. The project's compliance with existing permit requirements and the City's COAs would ensure that the project would not have the potential to conflict with the Basin Plan.

A Groundwater Sustainability Plan (GSP) for the Santa Clara Valley Groundwater Basin, East Bay Plain Subbasin[67] was recently issued by the EBMUD and City of Hayward groundwater sustainability agencies (GSAs). According to the GSP, the sustainability goal for the East Bay Plain Subbasin is to manage and protect the Subbasin in a manner that avoids the six undesirable

[65] Federal Emergency Management Agency (FEMA), 2018. Flood Insurance Rate Map (FIRM) No. 06001C0056H, effective December 21. Available online at: https://msc.fema.gov/portal/search?AddressQuery=berkeley%20ca#searchresultsanchor, accessed February 25, 2022.
[66] California Emergency Management Agency (CalEMA), 2009. Tsunami Inundation Map for Emergency Planning, Oakland West Quadrangle, July.
[67] East Bay Municipal Utility District Groundwater Sustainability Agency (EBMUD GSA) and City of Hayward GSA, 2021. East Bay Plan Subbasin, Groundwater Sustainability Plan, Public Review Draft, September 17.

results listed below while continuing to collect and analyze data to support science-based decision making to evaluate new opportunities for sustainable groundwater beneficial uses:

- Chronic lowering of groundwater levels, indicating a significant and unreasonable depletion of supply.
- Significant and unreasonable reduction of groundwater storage.
- Significant and unreasonable seawater intrusion.
- Significant and unreasonable degraded water quality.
- Significant and unreasonable land subsidence.
- Depletions of interconnected surface water and groundwater that have significant and unreasonable reductions in beneficial uses of surface water, including beneficial use by ecosystems that depend on groundwater.

According to the GSP, the East Bay Plain Subbasin is not experiencing a chronic lowering of groundwater levels and is currently in a sustainable and stable condition because estimated groundwater pumping from the 1990s to present is well below the estimated sustainable yield of the Subbasin. Additionally, the Subbasin has not experienced significant seawater intrusion even during historical periods of much greater groundwater pumping than is occurring today, and the Subbasin has no observed inelastic land subsidence even during historical periods of much greater groundwater pumping and much lower confined aquifer groundwater elevations than are occurring today.

As detailed above, any groundwater extracted during construction dewatering would be minimal and the increase in impervious surface area that would occur under the project would not have a substantial effect on groundwater recharge. Additionally, project operation would not include groundwater extraction, as municipal water for the project would not be supplied from the groundwater basin. For these reasons, the project would not conflict with or obstruct the implementation of a sustainable groundwater management plan and this impact would be less than significant.

XI. LAND USE AND PLANNING

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐

a) Physically divide an established community?

No Impact. The physical division of an established community typically refers to the construction of a physical feature (such as an interstate highway or railroad tracks) or removal of a means of access (such as a local road or bridge) that would impair mobility within an existing community, or between a community and outlying areas. For instance, the construction of an interstate highway through an existing community may constrain travel from one side of the community to another; similarly, such construction may also impair travel to areas outside of the community.

The project site is an underutilized property located in an urbanized area of Berkeley. The project does not involve street closures, linear features, or development that would separate land uses or neighborhoods. Development of the 0.53-acre project site would not physically divide an established community and therefore, no impact would occur.

b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Less Than Significant. The project's consistency with the General Plan, West Berkeley Plan, and Zoning Ordinance is described below.

General Plan

The project site is designated Avenue Commercial in the Berkeley General Plan. The General Plan describes these areas of Berkeley as characterized by pedestrian-oriented commercial development and multi-family residential structures. These areas are typically located on wide, multi-lane avenues served by transit or BART. Appropriate uses for these areas include: local-serving and regional-serving commercial, residential, office, community service, and institutional. The project would be consistent with the General Plan by providing multi-family residential and ground-level commercial space.

The project would also be consistent with a number of policies from the General Plan related to environmental issues addressed by CEQA, including the following:

- Policy EM-5 "Green" Buildings. Promote and encourage compliance with "green" building standards. (Also see Policies EM-8, EM-26, EM-35, EM-36, and UD-6.)
- Policy LU-3 Infill Development. Encourage infill development that is architecturally and environmentally sensitive, embodies principles of sustainable planning and construction, and is compatible with neighboring land uses and architectural design and scale.
- Policy UD-33 Sustainable Design. Promote environmentally sensitive and sustainable design in new buildings.
- Policy H-12 Transit-Oriented New Construction. Encourage construction of new medium- and high-density housing on major transit corridors and in proximity to transit stations consistent with zoning, applicable area plans, design review guidelines, and the Climate Action Plan.
- Policy T-16 Access by Proximity, Action B. Encourage higher density housing and commercial infill development that is consistent with General Plan.

The project would also be consistent with several policies from the General Plan which are not directly intended to mitigate environmental effects. Policies particularly relevant to the project include:

- **Policy LU-4 Discretionary Review.** Preserve and enhance the aesthetic, environmental, economic, and social character of Berkeley through careful land use and design review decision.
- **Policy LU-7 Neighborhood Quality of Life.** Preserve and protect the quality of life in Berkeley's residential areas through careful land use decisions.
- **Policy LU 27 Avenue Commercial Areas.** Maintain and improve Avenue Commercial areas, such as University, San Pablo, Telegraph, and South Shattuck, as pedestrian-friendly, visually attractive areas of pedestrian scale and ensure that Avenue areas fully serve neighborhood needs as well as a broader spectrum of needs.
- **Policy H-1 Extremely Low-, Very Low-, Low- and Moderate-Income Housing.** Increase the number of housing units affordable to Berkeley residents with lower income levels.

The project would be consistent with the policies above, as it would promote infill and transit-oriented development, follow required discretionary review standards, and provide a mix of affordable housing.

West Berkeley Plan

The project site is also located in the West Berkeley Plan Area, defined as the area between San Pablo Avenue (incorporating both sides of the street) and the Eastshore Freeway. The West Berkeley Plan is intended to guide the development of West Berkeley. It sets forth the City's key land use, environmental, economic development, transportation, housing and social services, and physical form (urban design, historic preservation, open space) policies for West Berkeley. The

project would be generally consistent with applicable policies of the West Berkeley Plan related to environmental issues addressed by CEQA, including the following:

- **Environmental Policy 1.6:** Avoid the establishment of new uses which pose unmitigable environmental hazards (see Permitted and Prohibited Uses in Land Use Element).
- **Environmental Policy 5.2:** Reduce existing traffic and adequately mitigate the impact of future traffic (see Transportation Element).
- **Environmental Policy 5.6:** Avoid the establishment of new uses which would create immitigable odors in residential districts.
- **Environmental Policy 5.7:** Institute tree planting as an anti-pollution measure (see Physical Form Element for Implementation Measures).
- **Transportation Goal 1:** Improve traffic flow and air quality by reducing reliance on single occupant automobiles, by encouraging use of alternative means of transportation.

As discussed throughout this Initial Study, the project would not result in unmitigable environmental hazards such as those from hazardous materials and geological resources. As discussed in *Section XVII, Transportation*, impacts related to traffic would be less than significant. As discussed in *Section III, Air Quality*, impacts related to odors would be less than significant. The project would remove three existing street trees along San Pablo Avenue in front of the subject property and replace with three new trees (London Plane) in the same location. The project would be located on an infill site, less than a few hundred feet from three AC Transit bus lines (72, 72M, and 802). In addition, the project would provide 72 bicycle spaces, exceeding the minimum requirement by 14 bicycle spaces.

Berkeley Municipal Code

The project site is designated as West Berkeley Commercial (C-W) by the Berkeley Zoning Ordinance. Some of the main purposes of the C-W District include:

- Encourage the intensification of commercial activity at designated nodes to help develop more pedestrian-oriented environments at those locations;
- Increase the opportunities for development of housing in commercial areas to support local retailing and use of transit lines and opportunities for mixed use projects combining pedestrian-oriented neighborhood-serving uses with mixed income housing in locations abutting residential districts; and
- Promote development compatible with adjacent commercial, residential and industrial areas.

The project would be consistent with C-W District purposes above, as it would provide ground-floor and pedestrian-oriented commercial spaces and provide housing along a major commercial corridor. Furthermore, the project would be consistent with the various C-W District standards, including lot coverage, open space, setback, and permitted uses. While the project would exceed

some C-W District development standards, such as permitted height, stories, FAR, etc., the project includes use of the State Density Bonus, which allows projects that provide affordable housing to receive waivers, incentives or concessions related to development standards. The State Density Bonus is incorporated into the Berkeley Municipal Code (BMC) in BMC Chapter 23.330 and, therefore, the project would be consistent with the BMC.

Landmarks Preservation Ordinance

Chapter 3.24 of the BMC establishes the provisions for the City of Berkeley's Landmarks Preservation Commission, which is generally intended to promote the health, safety, and general welfare of citizens of the City through:

- The protection, enhancement, perpetuation and use of structures, sites and areas that are reminders of past eras, events and persons important to local, state or national history, or which provide significant examples of architectural styles of the past, or are landmarks in the history of architecture, or which are unique and irreplaceable assets to the City and its neighborhoods, or which provide for this generation and future generations examples of the physical surroundings in which past generations lived.
- The development and maintenance of appropriate settings and environments for such structures, in such sites and areas.
- The enhancement of property values, the stabilization of neighborhoods and areas of the City, and the increase of economic and financial benefits to the City and its inhabitants.
- The preservation and encouragement of a City of varied architectural styles, reflecting the distinct phases of its history--cultural, social, economic, political and architectural.
- The enrichment of human life in its educational and cultural dimensions in order to serve spiritual as well as material needs by fostering knowledge of the living heritage of the past.

For the project applicant to alter or demolish an existing historic resource, they would be required to seek discretionary review from the Landmarks Preservation Commission, who would be required to make appropriate findings to do so. For this reason, while the project proposes the demolition of an historic structure, the project applicant would have to follow all applicable procedures intended to reduce these sorts of impacts and would therefore be consistent with Chapter 3.24 of the BMC.

A more in-depth discussion of the project's impacts related to Cultural Resources, including those related to policies, will be studied in the Cultural Resources section of the Focused EIR.

Summary

As described above, the project would be consistent with applicable policies of the Berkeley General Plan, BMC, and West Berkeley Plan with the potential exception of those policies related

to historic preservation and protection of cultural resources. Because these policies are specific to historic preservation and protection of cultural resources, it will be studied in the Cultural Resource section of the Infill EIR, and thus would have a less-than-significant impact pertaining to land use.

XII. MINERAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?

No impact. The project site is located within an urban area on an infill site. There are no known mineral resources within or in the vicinity of the project site. The Environmental Management Element of the City's General Plan states that there is no active mineral extraction in Berkeley.[68] The project would not result in the loss of availability of a known mineral resource of value to the region or residents of the State. Therefore, the project would have no impact related to mineral resources.

b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

No impact. As stated above, the project would not result in the loss of availability of any known locally important mineral resource recovery sites. Therefore, the project would have no impact related mineral resources.

[68] City of Berkeley, 2001. Berkeley General Plan, Environmental Management Element, April 23.

XIII. NOISE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive ground borne vibration or ground borne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less Than Significant. Noise is commonly defined as unwanted sound that annoys or disturbs people and can have an adverse psychological or physiological effect on human health. Sound is measured in decibels (dB), which is a logarithmic unit. Decibels describe the purely physical intensity of sound based on changes in air pressure, but they cannot accurately describe sound as perceived by the human ear since the human ear is only capable of hearing sound within a limited frequency range. For this reason, a frequency-dependent weighting system is used, and monitoring results are reported in A-weighted decibels (dBA).[69]

In an unconfined space, such as outdoors, noise attenuates with distance according to the inverse square law. Noise levels at a known distance from point sources (e.g., construction equipment) are reduced by at least 6 dBA for every doubling of that distance over hard surfaces and 7.5 dBA for every doubling of that distance over soft surfaces. Noise levels at a known distance from line sources (e.g., roadways) are reduced by at least 3 dBA for every doubling of that distance over hard surfaces and 4.5 dBA for every doubling of that distance over soft surfaces.[70] A greater decrease in noise levels can result from the presence of intervening structures or buffers.

[69] Charles M. Salter Associates, Inc., 1998. Acoustics – Architecture, Engineering, the Environment.
[70] California Department of Transportation (Caltrans), 1998. Technical Noise Supplement: A Technical Supplement to the Traffic Noise Analysis Protocol.

A typical method for determining a person's subjective reaction to a new noise is by comparing it to existing conditions. The following describes the general effects of noise on people:[71]

- A change of 1 dBA cannot typically be perceived, except in carefully controlled laboratory experiments;
- A change of 3 dBA is considered a just-perceivable difference;
- A minimum of a 5-dBA change is required before any noticeable change in community response is expected; and
- A 10-dBA change is subjectively perceived as approximately a doubling (or halving) in loudness.

Because sound pressure levels are based on a logarithmic scale, they cannot be added or subtracted using linear methods. For instance, if one noise source emits a sound level of 90 dBA, and a second source is placed beside the first and also emits a sound level of 90 dBA, the combined sound level is 93 dBA, not 180 dBA. When the second noise source is lower than the first noise source by at least 10 dBA, the contribution from the second noise source to the overall sound level is negligible (i.e., close to zero). In such cases, no adjustment factor is needed because the contribution from the lower noise source makes no perceptible difference in what people can hear or measure. For example, if one noise source generates a noise level of 95 dBA and another noise source is added that generates a noise level of 80 dBA, the higher noise source dominates and the combined noise level will be 95 dBA.

According to the General Plan Noise Contours Map, the project is located in an area with noise levels reaching 75 dBA average Day-Night Level (L_{dn}).[72,73] Traffic along San Pablo Avenue is the primary source of noise at the project site. Adjacent receptors to the project site include single-family homes to the west and southwest; a liquor store to the south on the same block as the project site; vacant apartment land to the north, and commercial land uses (auto-repair shop, a restaurant, and a fast-food restaurant) to the east across San Pablo Avenue.[74]

The City of Berkeley established construction noise standards and exterior noise standards at receiving land uses in the Berkeley Community Noise Ordinance (Ordinance), Section 13.40 of the Berkeley Municipal Code (BMC). For project construction and demolition, BMC Section 13.40.070 prohibits noise-generating construction activities from occurring between the hours of 7:00 p.m. and 7:00 a.m. on weekdays and the hours of 8:00 p.m. and 9:00 a.m. on weekends and holidays.

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[71] Charles M. Salter Associates, Inc., 1998. Acoustics – Architecture, Engineering, the Environment.
[72] L_{dn} (Day/Night Noise Level) is the average A-weighted sound pressure level during a 24-hour day, obtained after addition of 10 decibels to levels measured during the night between 10:00 p.m. and 7:00 a.m.
[73] City of Berkeley, 2001. Berkeley General Plan, Environmental Management Element (Adopted April 23). Available online at: https://www.cityofberkeley.info/Planning_and_Development/Home/General_Plan_-_Environmental_Management_Element(2).aspx, accessed February 25, 2022.
[74] City of Berkeley, 2021. Land Use Zoning Districts.

The City of Berkeley organizes construction activities into two categories: short-term (less than 10 days) operation of mobile equipment and long-term (period of 10 days or more) operation of stationary equipment. The construction of the project would take about 18 months and therefore is considered as long-term operation of stationary equipment. Where technically and economically feasible, the noise Ordinance requires construction activities to be conducted in such a manner that sound levels at receiving properties do not exceed the maximum permissible noise levels specified in Table 10.

TABLE 10 EXTERIOR NOISE LIMITS AT RECEIVING LAND USES DURING CONSTRUCTION

	Maximum Allowable Noise Level (dBA)	
Receiving Zoning District	**Weekdays 7:00 AM–10:00 PM**	**Weekends/Legal Holidays 9:00 AM–8:00 PM**
Exterior Noise Standards		
Single-, two- family, and restricted multiple-family residential	60	50
Multiple-family and multi-family residential	65	55
Commercial	70	60

Notes: The maximum sound levels for repetitively scheduled and relatively long-term operation (period of 10 days or more) of stationary equipment are shown. When the measured ambient noise level exceeds the permissible noise levels, then the permissible noise levels shall be adjusted based on the measured ambient noise level.
Source: City of Berkeley Municipal Code (BMC) Chapter 13.40.070.B.7.b.

For project operations, Table 11 presents the maximum permissible exterior noise levels based on receiving land use type and time period, as outlined in BMC Section 13.40.050 and 13.40.060.

TABLE 11 EXTERIOR NOISE LIMITS AT RECEIVING LAND USES DURING OPERATION

	Maximum Allowable Noise Level (dBA)	
Receiving Zoning District	**7:00 AM–10:00 PM**	**10:00 PM–7:00 AM**
Exterior Noise Standards		
Single-, two- family, and restricted multiple-family residential	55	45
Multiple-family and multi-family residential	60	55
Commercial	65	60

Notes: The noise standard for each land use are for a cumulative period of more than 30 minutes in any hour. When the measured ambient noise level exceeds the permissible noise levels, then the permissible noise levels shall be adjusted based on the measured ambient noise level.
Source: City of Berkeley Municipal Code (BMC) Chapter 13.40.050, Exterior Noise Standards.

Noise Generated During Project Construction

Construction activities would temporarily increase noise levels in the vicinity of the project site. The primary source of noise during construction would be generated by off-road equipment

activity on the project site. Construction noise levels would vary from day-to-day, depending on the number and condition of the equipment being used, the types and duration of activity being performed, the distance between the noise source and the receptor, and the presence or absence of barriers, if any, between the noise source and receptor. Pile driving, which can generate extreme levels of noise, is not proposed as part of the project.

The assumptions regarding the types of construction equipment that would be used on the project site are based on the default equipment list from California Emissions Estimator Model (CalEEMod). As discussed in the *Section III, Air Quality*, the default construction equipment list is based on a combination of statewide and regional surveys of land use construction projects. A copy of the CalEEMod report for the project, which summarizes the input parameters, assumptions, and outputs, is provided in Appendix A. In accordance with guidance from the Federal Transit Administration (FTA), construction noise impacts were evaluated by quantifying the maximum noise levels that would result from the simultaneous operation of the two noisiest pieces of equipment near the perimeter of the project site closest to a sensitive receptor. The types of construction equipment that would be used on the project site and the associated noise calculations are included in Appendix B.

As shown in Table 12, the project's construction noise levels were estimated at the nearest noise-sensitive receptor (single family home located about 21 feet southwest of the project boundary) for each construction phase. Based on our analysis, project construction could generate noise levels that exceed the maximum allowable noise levels established by the BMC (Table 10).

TABLE 12 POTENTIAL NOISE IMPACTS FROM PROJECT CONSTRUCTION EQUIPMENT

Construction Phase	Potential Noise Levels at Nearest Residence (dBA)	Threshold (dBA)	Threshold Exceeded?
Demolition	95	60 (weekdays) 50 (Weekends/Legal Holidays)	Yes
Site Preparation	93		Yes
Grading	93		Yes
Building Construction	91		Yes
Paving	94		Yes
Architectural Coat	85		Yes

Notes: Estimated noise levels do not include implementation of the City's Standard Conditions of Approval for noise reduction.
Noise calculations are included in Appendix B.
The maximum allowable received noise level standards for single- and two-family residential zoning areas were used as thresholds (Table 10).

Implementation of the following standard conditions of approval would lessen the impacts of construction period noise:

COA Construction Noise Reduction Program. The applicant shall develop a site-specific noise reduction program prepared by a qualified acoustical consultant to reduce construction noise impacts to the maximum extent feasible, subject to review and approval of the Zoning Officer. The noise reduction program shall include the time limits for construction listed above, as measures needed to ensure that construction complies with BMC Section 13.40.070. The noise reduction program should include, but shall not be limited to, the following available controls to reduce construction noise levels as low as practical:

1. Construction equipment should be well maintained and used judiciously to be as quiet as practical.
2. Equip all internal combustion engine-driven equipment with mufflers, which are in good condition and appropriate for the equipment.
3. Utilize "quiet" models of air compressors and other stationary noise sources where technology exists. Select hydraulically or electrically powered equipment and avoid pneumatically powered equipment where feasible.
4. Locate stationary noise-generating equipment as far as possible from sensitive receptors when adjoining construction sites. Construct temporary noise barriers or partial enclosures to acoustically shield such equipment where feasible.
5. Prohibit unnecessary idling of internal combustion engines.
6. If impact pile driving is required, pre-drill foundation pile holes to minimize the number of impacts required to seat the pile.
7. Construct solid plywood fences around construction sites adjacent to operational business, residences or other noise-sensitive land uses where the noise control plan analysis determines that a barrier would be effective at reducing noise.
8. Erect temporary noise control blanket barriers, if necessary, along building facades facing construction sites. This mitigation would only be necessary if conflicts occurred which were irresolvable by proper scheduling. Noise control blanket barriers can be rented and quickly erected.
9. Route construction related traffic along major roadways and away from sensitive receptors where feasible.

COA Construction Noise Management – Public Notice Required. At least two weeks prior to initiating any construction activities at the site, the applicant shall provide notice to businesses and residents within **500 feet** of the project site. This notice shall at a minimum provide the following: (1) project description, (2) description of construction activities during extended work hours and reason for extended hours, (3) daily construction schedule (i.e.,

time of day) and expected duration (number of months), (4) the name and phone number of the Project Liaison for the project that is responsible for responding to any local complaints, and (5) that construction work is about to commence. The liaison would determine the cause of all construction-related complaints (e.g., starting too early, bad muffler, worker parking, etc.) and institute reasonable measures to correct the problem. A copy of such notice and methodology for distributing the notice shall be provided in advance to the City for review and approval.

COA Construction Phases. The applicant shall provide the Zoning Officer with a schedule of major construction phases with start dates and expected duration, a description of the activities and anticipated noise levels of each phase, and the name(s) and phone number(s) of the individual(s) directly supervising each phase. The Zoning Officer or his/her designee shall have the authority to require an on-site meeting with these individuals as necessary to ensure compliance with these conditions. The applicant shall notify the Zoning Officer of any changes to this schedule as soon as possible.

COA Construction Hours. Construction activity shall be limited to between the hours of 8:00 AM and 6:00 PM on Monday through Friday, and between 9:00 AM and Noon on Saturday. No construction-related activity shall occur on Sunday or any Federal Holiday.

COA Construction Hours – Exceptions. It is recognized that certain construction activities, such as the placement of concrete, must be performed in a continuous manner and may require an extension of these work hours. Prior to initiating any activity that might require a longer period, the developer must notify the Zoning Officer and request an exception for a finite period of time. If the Zoning Officer approves the request, then two weeks prior to the expanded schedule, the developer shall notify businesses and residents within 500 feet of the project site describing the expanded construction hours. A copy of such notice and methodology for distributing the notice shall be provided in advance to the City for review and approval. The project shall not be allowed more than 15 extended working days.

COA Project Construction Website. The applicant shall establish a project construction website with the following information clearly accessible and updated monthly or more frequently as changes warrant:

- Contact information (i.e., "hotline" phone number, and email address) for the project construction manager.
- Calendar and schedule of daily/weekly/monthly construction activities.
- The final Conditions of Approval, Mitigation Monitoring and Reporting Program, Transportation Construction Plan, Construction Noise Reduction Program, and any other reports or programs related to construction noise, air quality, and traffic.

Measures required by the conditions of approval listed above would reduce construction noise levels at nearby receptors to the maximum extent that is technically and economically feasible. Since noise would be temporary and reduced to the maximum extent that is technically and economically feasible, the project construction would be consistent with the Berkeley noise ordinance (Section 13.40.070 of the BMC). The proper implementation of these conditions of approval would ensure that the construction of the project would not conflict with the City of Berkeley's construction noise standards and therefore, construction noise impact would be less than significant.

Noise Generated During Project Operation

Operation of the project would generate noise from commercial and residential activities and associated vehicular traffic. In general, the proposed land uses are consistent with the existing land uses in the vicinity of the project site.

Heating, Ventilation, and Air Conditioning (HVAC) Systems

The project would involve the installation of heating, ventilation, and air conditioning (HVAC) systems. As stated in Section 13.40 of the BMC, the HVAC system is required to be enclosed or muffled and maintained so that noise levels in surrounding zoning districts do not exceed the thresholds outlined in Table 11. Therefore, the stationary equipment used during operation of the project would not violate the standards in the BMC.

Traffic-Generated Noise

Noise levels near the project site would potentially increase due to the additional vehicle trips contributed by the project. The primary sources of noise in the vicinity of the project site are traffic along the San Pablo Avenue, with an average daily traffic volume of 18,840.[75] To cause a perceivable difference in ambient noise levels (3 dBA above ambient), the project would need to double the amount of traffic along San Pablo Avenue.[76] As indicated in the traffic study, operation of the project would generate a total of 28 trips during the AM peak hour and 15 trips during the PM peak hour.[77] Since the project will not double the amount of traffic on San Pablo Avenue, the project-generated traffic would not generate a substantial increase in ambient noise levels and would not violate the standards in the BMC.

b) Generation of excessive ground borne vibration or ground borne noise levels?

[75] Alameda County Transportation Commission, 2014. Countywide Travel Demand Model. Planning Area 1; 2020 Daily Model Vehicle Volumes, July.
[76] Because sound pressure level is measured on a logarithmic scale, a doubling of sound energy is equivalent to an increase of 3 dB.
[77] Abrams Associates, 2021. Transportation Impact Analysis, 2136 San Pablo Avenue, City of Berkeley, July 29

Less Than Significant. Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Several different methods are used to quantify vibration. Typically, groundborne vibration generated by human activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors to vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick), and vibration-sensitive equipment. Vibration amplitudes are usually expressed as either Peak Particle Velocity (PPV) or as Root Mean Square (RMS) velocity. PPV is appropriate for evaluating potential damage to buildings, but it is not suitable for evaluating human response to vibration because it takes the human body time to respond to vibration signals. The response of the human body to vibration is dependent on the average amplitude of a vibration event. Thus, RMS is more appropriate for evaluating human response to vibration. PPV and RMS are normally described in units of inches per second (in/sec), and RMS is also often described in vibration decibel (VdB).

Section 13.40.070 of the BMC prohibits vibration levels that annoy or disturb two or more reasonable persons of normal sensitiveness who reside in separate residences.[78] Table 13 summarizes the vibration criteria to prevent disturbance of residences adjacent to the project site.[79] In this analysis, the "infrequent events" threshold (80 VdB) is applied for construction equipment based on the nature of proposed construction activities. Table 14 summarizes the vibration criteria to prevent damage to structures. The vibration criterion for non-engineered timber and masonry buildings (0.2 in/sec) is selected to conservatively represent the building types adjacent to and near the project site. Vibration impacts from project operation and construction are discussed below with respect to the vibration criteria summarized in Table 13 and Table 14.

TABLE 13 VIBRATION CRITERIA TO PREVENT DISTURBANCE – RMS (VDB)

Land Use Category	Frequent Events[a]	Occasional Events[b]	Infrequent Events[c]
Residences and buildings where people normally sleep	72	75	80
Institutional land uses with primarily daytime use	75	78	83

[a] More than 70 vibration events of the same kind per day or vibration generated by a long freight train.
[b] Between 30 and 70 vibration events of the same kind per day.
[c] Fewer than 30 vibration events of the same kind per day.
Source: Federal Transit Administration, 2018. Transit Noise and Vibration Impact Assessment Manual. FTA Report No.0123. September.

[78] City of Berkeley Municipal Code Section 13.40.070, Prohibited Acts.
[79] According to the FTA Transit Noise and Vibration Impact Assessment Manual, the "Institutional land uses" category includes institutions and offices that have vibration-sensitive equipment and have the potential for activity interference such as schools, churches, doctors' offices. However, commercial or industrial locations including office buildings are not included in this category unless there is vibration-sensitive activity or equipment within the building.

TABLE 14 VIBRATION CRITERIA TO PREVENT DAMAGE TO STRUCTURES

Building Category	PPV (in/sec)
Reinforced-concrete, steel, or timber (no plaster)	0.5
Engineered concrete and masonry (no plaster)	0.3
Non-engineered timber and masonry buildings	0.2
Buildings extremely susceptible to vibration damage	0.12

Source: Federal Transit Administration, 2018. Transit Noise and Vibration Impact Assessment Manual. FTA Report No.0123. September.

Vibration Generated during Project Construction

Construction activities can result in varying degrees of ground vibration, depending on the equipment, activity, and relative proximity to sensitive receptors. The primary types of equipment that would generate ground vibration during project construction and the associated vibration calculations are included in Appendix B. To evaluate the project's potential vibration effects to nearby sensitive receptors, a buffer distance was estimated for each type of equipment to avoid exceeding the FTA construction vibration thresholds at the closest sensitive receptor. The buffer distance that would be required to reduce vibration levels to below the construction thresholds for disturbance and building damage are summarized in Table 15 and Table 16, respectively.

TABLE 15 POTENTIAL VIBRATION DISTURBANCE

Equipment Unit	Disturbance Vibration Threshold (RMS)	Buffer Distance to Disturbance Threshold (Feet)	Distance to Closest Receptor (Feet)	Threshold Exceeded?
Vibratory Roller	80	73	21	Yes
Large Bulldozer		43		Yes
Loaded Truck		40		Yes
Small Bulldozer		5		No

Note: Estimated vibration levels do not include implementation of the City's Standard Conditions of Approval for noise and vibration reduction.
Supporting calculations are included in Appendix B.
The following FTA threshold was used to calculate the buffer distances from construction equipment: People – Maximum vibration threshold of 80 VdB for residences from infrequent construction events (Table 13).

As shown in Table 15, the construction equipment that would require the largest buffer distance to avoid generating vibration levels that could disturb residents is a vibratory roller. Vibration from a vibratory roller could exceed the 80-VdB threshold at residences located within 73 feet. As discussed above, the closest residence is located about 21 feet from the project site boundary. Therefore, construction activities could generate excessive vibration levels that potentially

TABLE 16 POTENTIAL VIBRATION DAMAGE TO BUILDINGS

Equipment Unit	Building Damage Vibration Threshold (in/sec)	Buffer Distance to Damage Threshold (Feet)	Distance to Closest Receptor (Feet)	Threshold Exceeded?
Vibratory Roller	0.2	26	21	Yes
Large Bulldozer		15		No
Loaded Truck		13		No
Small Bulldozer		2		No

Note: Estimated vibration levels do not include implementation of the City's Standard Conditions of Approval for noise and vibration reduction.
Supporting calculations are included in Appendix B.
The following FTA threshold was used to calculate the buffer distances from construction equipment: Structures – Maximum vibration threshold of 0.2 in/sec PPV for non-engineered timber and masonry buildings (Table 14).

disturb residential activities, such as sleeping. However, implementation of **COA Construction Hours**, and **COA Construction Hours – Exceptions**, would restrict construction activities within daytime hours from Monday to Saturday, thereby restricting any impact related to noise and vibration to normal daytime hours and reducing the likelihood of disturbance of residents (e.g., sleep disturbance). Therefore, construction activities would not be expected to generate excessive vibration levels that would disturb nearby residents.

As shown in Table 16, vibration from a vibratory roller could exceed the 0.2 in/sec PPV threshold for potential structural impacts to buildings located within 26 feet. In accordance with **COA Construction Noise Reduction Program**, the project is required to develop a Construction Noise Reduction Program to ensure that project construction complies with Section 13.40.070 of the BMC. Since construction equipment that could generate high levels of noise are often those that could also generate high levels of vibration, reduction in construction noise would also result in reduction in construction vibration. The impact related to construction vibration of the project would also be reduced by implementation of the following standard condition of approval:

> **COA Damage Due to Construction Vibration.** The project applicant shall submit screening level analysis prior to, or concurrent with demolition building permit. If a screening level analysis shows that the project has the potential to result in damage to structures, a structural engineer or other appropriate professional shall be retained to prepare a vibration impact assessment (assessment). The assessment shall take into account project specific information such as the composition of the structures, location of the various types of equipment used during each phase of the project, as well as the soil characteristics in the project area, in order to determine whether project construction may cause damage to any of the structures identified as potentially impacted in the screening level analysis. If the assessment finds that the project may cause damage to nearby structures, the structural engineer or other appropriate professional shall recommend design means and methods of construction that to avoid the potential damage, if feasible. The assessment and its

recommendations shall be reviewed and approved by the Building and Safety Division and the Zoning Officer. If there are no feasible design means or methods to eliminate the potential for damage, the structural engineer or other appropriate professional shall undertake an existing conditions study (study) of any structures (or, in case of large buildings, of the portions of the structures) that may experience damage. This study shall

1. Establish the baseline condition of these structures, including, but not limited to, the location and extent of any visible cracks or spalls; and
2. Include written descriptions and photographs. The study shall be reviewed and approved by the Building and Safety Division and the Zoning Officer prior to issuance of a grading permit. Upon completion of the project, the structures (or, in case of large buildings, of the portions of the structures) previously inspected will be resurveyed, and any new cracks or other changes shall be compared to pre-construction conditions and a determination shall be made as to whether the project caused the damage. The findings shall be submitted to the Building and Safety Division and the Zoning Officer for review. If it is determined that project construction has resulted in damage to the structure, the damage shall be repaired to the pre-existing condition by the project sponsor, provided that the property owner approves of the repair.

With implementation of COAs described above, the vibration-related impact of project construction would be less than significant.

Vibration Generated during Project Operation

The project would include multiple-family residential and live-work uses. These land uses do not involve equipment or activities that generate excessive groundborne vibration or groundborne noise levels. Therefore, operation of the project would have a less-than-significant impact related to groundborne vibration or groundborne noise.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The project site is not located within the vicinity of a private airstrip.[80] Therefore, the project would have no impact related to the exposure of people to excess noise levels from private airstrips.

Oakland International Airport is the closest airport to the project site and is located approximately 10 miles to the southeast. The project site is not located within a public airport

[80] Federal Aviation Administration (FAA), 2019. Airport Data and Contact Information. Effective: February 28, 2019. Database searched for both public-use and private-use facilities in Alameda County. Available online at: http://www.faa.gov/airports/airport_safety/airportdata_5010/, accessed March 1, 2022.

land use plan or within 2 miles of any other public use airport.[81] Therefore, the project would have no impact related to the exposure of people to excess noise levels from public use airports.

XIV. PARKS AND RECREATION

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☒	☐

a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Less Than Significant. As discussed in *Section XVI, Public Services*, residents of the project would be expected to use local parks and community facilities in Berkeley as well as regional recreational facilities. Although the project would incrementally increase use of these facilities, particularly George Florence Park, which borders the project site to the west, this minor increase in use is not expected to result in substantial physical deterioration of local parks, trails, and community centers and this impact would be less than significant. Specifically, the project is anticipated to increase the City's population by less than one half of 1 percent, as mentioned in *Section XV, Population and Housing*, and these facilities are anticipated to have capacity to serve this minimal increase in demand. In addition, the project would provide open space in the form of communal common space at the roof decks and podium levels of the building and would comply with city open space requirements, which would reduce the burden on public recreational facilities. Therefore, the project would have a less-than-significant impact on existing parks or other recreational facilities

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Less Than Significant. The project would involve redevelopment of the project site with residential and live-work uses. The project does not include or require the construction or

[81] Alameda County Community Development Agency, 2010. Oakland International Airport, Airport Land Use Compatibility Plan, December.

expansion of existing public recreational facilities; therefore, development of the project and associated recreational opportunities for use by project residents would not result in additional environmental effects beyond those described in this document.

XV. POPULATION AND HOUSING

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Less Than Significant. The project proposes to construct 123 residential units and three live-work units. Based on the City's average household size of 2.17 persons, the project would accommodate approximately 280 residents.[82] The new residents could increase the City's population if they relocate from outside the City. New residents that relocate from within the City may not result in a net increase in the City's population, depending on the circumstances.

As of 2010, the population of Berkeley was estimated to be approximately 112,580.[83] The anticipated population growth associated with the project—if each new resident results in a net increase in the City's population—represents less than a 0.1 percent increase to the City's current population. Berkeley's population is projected to grow to a total of 140,100 people by 2040, an increase of approximately 27,520 people.[84] The project represents less than 0.1 percent of the population growth anticipated through 2040.

The State of California mandates that Housing Elements must allocate and accommodate a certain number of housing units by affordability level to help plan to meet a jurisdiction's share of projected adequate housing for the State. The Regional Housing Needs Allocation (RHNA) process determined that the City of Berkeley needs to demonstrate capacity for 8,934 new units

[82] City of Berkeley, 2015. City of Berkeley 2015-2023 Housing Element, March 30. Assumes 2.17 residents per live-work unit as well.
[83] City of Berkeley, 2015. City of Berkeley 2015-2023 Housing Element, March 30. Assumes 2.17 residents per live-work unit as well.
[84] City of Berkeley, 2015. City of Berkeley 2015-2023 Housing Element, March 30. Assumes 2.17 residents per live-work unit as well.

for the current planning period (2023-2031).[85]The City's Site Inventory and Residential Capacity Analysis process for the City of Berkeley has shown that there is a capacity of approximately 5,328 new units on underutilized parcels throughout the City, with the greatest capacity for new units in the commercial districts. The 123 residential units and three live-work units that would be constructed as a result of the project are therefore consistent with the housing capacity requirements and projections for the City of Berkeley.

Given the reasons described above, the project would not either directly or indirectly induce population growth in Berkeley beyond that planned for the City. Therefore, the project would have a less-than-significant impact related to population growth.

b) Would the project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

No Impact. The project site currently includes a single-story commercial building that would be demolished and replaced with the project. The project would not displace any housing. Therefore, the project would have no impact related to displacement of existing housing.

XVI. PUBLIC SERVICES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☒	☐
Other public facilities?	☐	☐	☒	☐

[85] Association of Bay Area Governments (ABAG), 2021. Final Regional Housing Needs Allocation (RHNA) Plan, March 28.

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: fire protection, police protection, schools, parks, or other public facilities?

The following section addresses the project's potential effects on fire service, police service, schools, parks, and other public facilities. Impacts to public services would occur if the project increases demand for services such that new or expanded facilities would be required, and construction or operation of these new facilities would cause environmental impacts.

Fire Protection

Less Than Significant. The Berkeley Fire Department currently provides fire protection and emergency medical services to the project site. The Berkeley Fire Department operates seven fire stations including seven engine companies, two truck companies, and three ambulances. Primary service to the project site would be provided by Station 1 at 2442 Eighth Street. This station is approximately ½-mile south of the project site. Station 1 houses an engine company, ambulance, and reserve ambulance. Currently, the Fire Department is staffed with 140 employees.[86] The City's goal for staffing is reviewed each budget cycle and considers historical and current year information related to fire and emergency services. Additional housing units add to the potential for increase in call volume. In 2016, the Berkeley Fire Department responded to 244 fires, including 92 structure fires, and 10,066 emergency medical calls for service.[87]

The addition of 123 residential units and three live-work units would increase the day- and night-time population on the project site and in Berkeley in general, incrementally increasing the demand for emergency fire services. Maximum building heights on the site would reach approximately 69 feet and 6 inches to the rooftop. However, the Fire Department's aerial ladder truck reaches 100 feet and the Department has the appropriate equipment to access these buildings. Furthermore, the project would be required to comply with all applicable codes for fire safety and emergency access and the Fire Department would ensure that appropriate measures are implemented to reduce hazardous conditions at the site.

The Berkeley Fire Department would continue to provide services to the project site and would not require additional firefighters to serve the project. The construction of new or expanded fire stations would not be required to meet response time goals. Therefore, the project would not result in a substantial adverse physical impact associated with the provision of additional fire facilities or services. Furthermore, the City's Fire Department evaluates staffing needs on a

[86] City of Berkeley. Berkeley Fire Department, Fire Stations and Fire Districts. Available online at: https://www.cityofberkeley.info/Fire/Home/Fire_Stations_and_Fire_Districts.aspx, accessed March 30, 2022.
[87] City of Berkeley, 2017. NFPA Response Data, January 1-December 31, 2016.

continual basis as growth occurs throughout the City. Funding for additional firefighting services, including new staff, is obtained through the City's General Fund.

In addition, the Berkeley Fire Department administers the Uniform Fire Code and applicable sections of the California Health and Safety Code, California Administrative Codes, Title 19, Public Safety and Title 24, Building Standards. The Berkeley Fire Department also actively participates in the City of Berkeley's development process by commenting on building design and materials. The project would be required to comply with all applicable codes for fire safety and emergency access and additional review by the Fire Department to ensure that appropriate measures are implemented to reduce hazardous conditions at the site and provide for adequate emergency access. Compliance with the Berkeley Fire Department's requirements would further ensure that potential impacts to fire services would be less than significant.

Police Protection

Less Than Significant. The Berkeley Police Department provides police protection services to the project site. Police headquarters are located at 2100 Martin Luther King Jr. Way, approximately 1 mile to the east of the project site. The Police Department consists of 270 employees, including 164 sworn officers, and is authorized for up to 181 sworn officers. This number allows for a ratio of 1.5 sworn officers per 1,000 residents.[88] The City's goal for staffing is reviewed each budget cycle and considers historical and current year information related to police services. City population increases are not weighed in the Police Department's staffing needs.

The Police Department has transitioned to a 16-beat system; the project site is located within Beat 16. The standard City-wide response time for Priority 1 calls (life-threatening situations) is 5 minutes from the time of dispatch.

The addition of 123 residential units and three live-work units would increase the day- and night-time population on the site and in Berkeley in general, incrementally increasing the demand for police services. However, the presence of a day- and night-time population in this area could also increase security, which could in turn reduce the potential for criminal activity. Increased demand for police services on the site would not require the alteration of existing police facilities or construction of new facilities in order to maintain existing service standards or staffing ratios. The project would not result in an adverse environmental impact related to demand for police services. Therefore, the project would have a less-than-significant impact related to police services.

[88] City of Berkeley. Berkeley Police Department, City of Berkeley Police Department Quick Facts. Available online at: https://www.cityofberkeley.info/Police/Home/Quick_Facts.aspx, accessed March 30, 2022.

Furthermore, the City's Police Department evaluates staffing needs on a continual basis as growth occurs throughout the City. Funding for additional police service, including new staff, is obtained through the City's General Fund.

Schools

Less Than Significant. The Berkeley Unified School District (BUSD) operates 20 schools, including 11 public elementary schools (grades K-5), 3 middle schools (grades 6-8), one high school (grades 9-12), and an alternative high school (grades 9-12). In addition, the BUSD has three preschool facilities and one Adult School serving several thousand students each year.

The estimated number of students the project would generate is derived by multiplying the number of students per dwelling unit (the student yield factor) by the number of dwelling units in the project (123 units). The BUSD has not developed student generation rates to estimate the number of students that might be anticipated with new development. However, the California State Allocation Board Office of Public School Instruction reports that the statewide student yield factor per dwelling unit is 0.5 students for Grades K through 6th and 0.2 students for grades 7th through 12th. Applying the statewide average student yield factor, the project could generate students—approximately 67 elementary school students and 19 middle and high school students. California state law authorizes local school districts to adopt one-time fees for new housing and commercial developments. SB 50, which revised the existing limitation on developer fees for school facilities, was enacted as urgency legislation which became effective on November 4, 1998, as a result of the California voters approving a bond measure (Proposition 1A). SB 50 established a 1998 base amount of allowable developer fees (Level One fee) for residential construction (subject to adjustment) and prohibits school districts, cities, and counties from imposing school impact mitigation fees or other requirements in excess of or in addition to those provided in the statute.

Effective June 8, 2017, most new developments in Berkeley will be assessed a one-time School Facility Fee by the BUSD. The fee is $3.48 per square foot for residential development of more than 500 square feet and $0.56 per square foot for new commercial and industrial development. This fee represents the maximum allowed under State law.89 The fees would be directed towards maintaining adequate service levels, which would ensure that any impact to schools that could result from the project would be offset. The project will be required to pay the fee of $3.48 per square foot before being issued a building permit. Therefore, potential impacts pertaining to schools would be less than significant.

[89] Berkeley Unified School District, 2017. Notice: New Developer Fees (School Facility Fee) for Berkeley Unified School District. Available online at: http://www.berkeleyschools.net/notice-new-developer-fees-school-facility-fee-for-berkeley-unified-school-district/, accessed March 30, 2022.

Parks

Less Than Significant. The City owns and operates approximately 52 parks, comprising 230 acres of urban parks. The City has a goal of two park acres per 1,000 residents. The population of Berkeley (121,485 residents) enjoys a park service ratio of 1.9 acres per 1,000 residents. With the addition of Tilden Regional Park (2,079 acres), Eastshore State Park (1,854 acres), and the Bay Trail (6.3 acres), parkland available to residents increases to over 30 acres per 1,000 residents.2

The closest park is the George Florence Park, directly adjacent to the project site on Tenth Street. This ½-acre park includes a multi-purpose turf, picnic area, and play structure. Strawberry Creek park is approximately ½-mile to the east of the project site and includes several basketball courts, tennis courts, and children's play equipment. Ohlone Park is the nearest large park (approximately 9.8 acres in size) and is located approximately 1 mile northeast of the project site. Ohlone Park features a softball field, multi-purpose turf, a basketball court, four play areas, a dog park, and other amenities. Ohlone Park is part of the Ohlone Greenway, which is a pedestrian and non-motorized vehicle path beginning in Berkeley and running north through Albany, El Cerrito, and terminating near the Richmond city limit.

Development of the project could increase the use of these parks, as well as other parks within the City and within the region. However, this increase in use is not expected to adversely affect the physical conditions of local and regional open space areas or recreational facilities or require the provision of new parks or facilities. Specifically, the project is anticipated to increase the City population by less than one-half of one percent. The project would not result in a substantial increase in demand for park or recreation services in the vicinity, such that new facilities would be required to serve the project. The project meets code requirements related to open space and offers additional open space amenities which may reduce impact on public parks. Therefore, the project would have a less-than-significant impact related to the provision of park and recreational facilities.

Other Public Facilities

Less Than Significant. Development of the project could also increase demand for other public services, including libraries, community centers, and public health care facilities. However, the increased residential population that would result from the project would not substantially increase the use of these facilities, such that new facilities would be needed to maintain service standards, as these facilities are not currently overused and have capacity to serve new demand. In addition, the general development fees related to construction contribute to public works as well as schools. Therefore, impacts to other public facilities would be less than significant.

XVII. TRANSPORTATION

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☐	☐	☒	☐
b) Conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d) Result in inadequate emergency access?	☐	☐	☒	☐

a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

Less Than Significant. The Land Use Element of the City's General Plan[90] contains several policies related to circulation systems, including transit, roadway, bicycle, and pedestrian facilities. Land Use Policy LU-27, in particular, aims to maintain and improve Avenue Commercial areas, including San Pablo Avenue, as "pedestrian-friendly, visually attractive areas of pedestrian scale and ensure that Avenue areas fully serve neighborhood needs as well as a broader spectrum of needs". Action D of LU-27 is to "Provide bicycle facilities and ample and secure bicycle parking wherever appropriate and feasible." The project would add up to 64 long-term bicycle parking spaces for residential uses, 21 more than required by BMC. The spaces would be accessible through the building lobby on San Pablo Avenue. Furthermore, the project proposes 8 short-term bicycle parking spaces, 3 more than required by BMC, thereby improving bicycle facilities at the project site.

There are bus stops less than 100 feet south of the project at the intersection of San Pablo Avenue and Allston Way and approximately 700 feet to the north at the intersection of San Pablo Avenue and University Avenue. The project does not feature any design elements which would be anticipated to interfere with these bus operations.

As the project would not include any activities or construction of structures that would decrease the performance or safety of public transit, bicycle, or pedestrian facilities, as described above, the project's impact would be less than significant

[90] City of Berkeley, 2001. General Plan, Land Use Element, accessed July 6, 2022.

b) Conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)?

Less Than Significant. The City of Berkeley's VMT Criteria and Thresholds specify that the presumption of a less-than-significant VMT impact might not be appropriate if the project:

- Has a floor area ratio (FAR) of less than 0.75.
- Includes more than 200,000 square feet of office or commercial space.
- Includes more parking supply than the project's estimated demand
- Is inconsistent with the City's General Plan, an applicable Specific Plan, or an applicable Sustainable Communities Strategy (as determined by the City, with input from the MTC).
- Replaces affordable residential units with market-rate residential units.
- Has project-specific or location-specific information that indicates that the project will generate significant levels of VMT.

In this case none of the above factors would apply to the project. The project is approximately two thirds of a mile from the North Berkeley BART station and is located near bus stops at the intersection of numerous bus lines at San Pablo Avenue and University Avenue, which is considered a major transit stop. The project also meets the other screening criteria described above and therefore, subject to City approval, this project would be assumed to have a less than significant impact on VMT in the area.

c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less Than Significant. The project proposes a full-access driveway along San Pablo Avenue and would not introduce any geometric features or incompatible uses that would create hazards or impede sightlines. Therefore, the project would have a less-than-significant impact.

d) Result in inadequate emergency access?

Less Than Significant. The project would have multiple access points, including a parking garage entrance on San Pablo Avenue, two entrances to the lobby, and an egress point along the north of the site. The project is less than a ½-mile from Berkeley Fire Department Station 1, which is located at the intersection of Dwight Way and Eighth Street. Lastly, the project is estimated to generate approximately 28 peak hour trips, and therefore would add minimal trips and congestion to local streets and would have minimal impact on emergency access response times. Based on these factors, the project is expected to have adequate emergency vehicle access, and this impact would be less than significant.

XVIII. TRIBAL CULTURAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or	☐	☐	☒	☐
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	☐	☐	☒	☐

a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or

ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?

Less Than Significant. There are no known tribal cultural resources at or in the immediate vicinity of the project site. As described above in *Section V, Cultural Resources*, the potential to uncover Native American human remains and other buried tribal cultural resources exists in locations throughout California. Given that the project site has been previously developed and other development has occurred around the project area discoveries are not expected. Although not anticipated, human remains or other buried tribal cultural resources could be identified during site-preparations and grading activities, resulting in a potentially significant impact to Native American cultural resources.

Given the potential for tribal cultural resources in the vicinity, and pursuant to State law, written notices about the Project were sent to the following tribes on February 10, 2022: Amah Mutsun Tribal Band of Mission San Juan Bautista, Costanoan Rumsen Carmel Tribe, Guidiville Indian Rancheria, Indian Canyon Mutsun Band of Costanoan, Muwekma Ohlone Indian Tribe of the SF Bay Area, North Valley Yokuts Tribe, The Ohlone Indian Tribe, Wuksache Indian Tribe/Eshom Valley Band, and The Confederated Villages of Lisjan (Tribes). Pursuant to AB 52 and SB 18 and according to Government Code Section 65352.3, the tribes were provided information on the Project and invited to consultation. The Confederated Villages of Lisjan tribe requested a consultation. On March 23, 2022 the first consultation meeting occurred between The Confederated Villages of Lisjan and The City of Berkeley. Consultation is ongoing.

With implementation of **COA Archaeological Resources**, and **COA Human Remains**, described above, impacts would remain less than significant.

XIX. UTILITIES AND SERVICE SYSTEMS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

Less than Significant. The project would connect to existing water delivery systems within the vicinity of the site, and it is anticipated that existing pipelines would have sufficient capacity to support project water flows. There is a 6-inch sewer main on San Pablo Avenue and a 6-inch sewer main on Tenth Street within the vicinity of the project. If it is determined that sewer service larger than 6-inches is required for the development, the applicant shall work with EBMUD, the City's Fire Department, and the City's Public Works Department to determine response adequate location and size for the new connection. Potential solutions could include connecting to an existing sewer main on an adjacent street or upsizing the existing sewer main on San Pablo Avenue to accommodate the additional flow from the project. Implementation of the City's standard COAs through the project approval process, would ensure the applicant coordinates with EBMUD, the City's Fire Department, and the City's Public Works Department to assess water, wastewater, and fire flow requirements.

As discussed in *Section X, Hydrology and Water Quality,* development of the project would result in an increase in impervious surfaces on the project site from approximately 11,588 square feet to approximately 18,065 square feet, a 56 percent increase. The project would also include stormwater control features such as planters on the project site and sidewalk frontage. Since stormwater runoff increases linearly with the amount of impervious surface, the increase in stormwater runoff resulting from the project would be no more than 35 percent. Therefore, the project would not require the construction or expansion of new or existing water or wastewater treatment facilities, and the impact would be less than significant.

EBMUD's Orinda Water Treatment Plant (Orinda WTP) and Main Wastewater Treatment Plant (MWWTP) serve the project site and surrounding area. The Orinda WTP has the largest output of EBMUD's treatment plants with a peak capacity of 190 million gallons per day (MGD). The project would represent less than 1 percent of the total capacity of the Orinda WTP (refer to subsection b below for projected water demand) and less than 0.01 percent of the remaining capacity of the MWWTP.[91] As described below, development of the project on an infill site would not substantially increase water demand or wastewater generation at the project site such that new or expanded water or wastewater treatment facilities would be required to serve the project.

b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?

Less Than Significant. Water service at the project site and in the project area is provided by EBMUD. EBMUD obtains approximately 90 percent of its water from the Mokelumne River

[91] East Bay Municipal Utility District (EBMUD), 2021. Urban Water Management Plan 2020, June.

watershed, and transports it through pipe aqueducts to temporary storage reservoirs in the East Bay hills. EBMUD has water rights and facilities to divert up to a daily maximum of 325 MGD from the Mokelumne River. Average daily water demand within the entire EBMUD service area was 238 MGD in 2020 and is projected to reach 245 MGD in 2025.

The project would generate a water demand of 32,000 gallons per day for new residential uses (123 units including the live-work units) and the commercial portions of the live-work units (1,245 square feet). This amount accounts for approximately 0.013 percent of EBMUD's projected service-wide daily water demand for 2020 and 2025. Furthermore, EBMUD's projected water demand accounts for projected growth within the region as identified by ABAG. Per the discussion in *Section XV, Population and Housing*, the project site is an appropriate location for residential and job growth and would meet the demand for growth as outlined in various planning documents, including the City's Housing Element and Plan Bay Area. EBMUD would not require new or expanded water entitlements to serve the project.

EBMUD completed development of a revised Water Supply Management Program (WSMP) 2040 in April of 2012, which is the District's plan for providing water to its customers over the next 30 years.[92] According to the WSMP, EBMUD's water supplies are estimated to be sufficient during the planning period (2010-2040) in normal and single dry years. Therefore, new or expanded entitlements are not anticipated to be required to provide water service to the project and the impact related to sufficient water supplies would be less than significant.

The WSMP 2040 emphasizes maximum conservation and recycling strategies, with a total of 50 MGD of future supply to be provided from those two component categories. However, looking toward 2040, EBMUD's current supply is projected to be insufficient to meet customer needs during multi-year droughts despite EBMUD's aggressive water conservation and recycled water programs. According to the WSMP, the combination of rationing, conservation, and raw and recycled water will satisfy increased customer demand through 2040. Supplemental supply will also be needed to keep rationing at a lower level and to meet the need for water in drought years.

In response to Governor's Executive Order B-29-15, issued on April 1, 2015, EBMUD implemented mandatory water restrictions on all customers within its service area, with the goal of reducing water demand by 20 percent. EBMUD's Policy 3.07 ensures that priority for new water service connections during restrictive periods is given to proposed developments within EBMUD's service area that include housing units affordable to lower income households in accordance with California Government Code 65589.7. The policy also states that EBMUD will not deny an application for services to a proposed development that includes affordable housing unless certain conditions are met (e.g., water shortage emergency conditions are in effect). On May 10, 2016 EBMUD declared an end to the drought emergency in its service area, and eased the

[92] East Bay Municipal Utility District (EBMUD), 2022. Water Supply Management Program 2040 Plan, April.

drought level to Stage 0, indicating normal water supplies. On April 7, 2017, the drought emergency was lifted in all counties except Fresno, Kings, Tulare and Tuolumne, with the signing of Governor's Executive Order B-40-17.The Regional Water Board will maintain urban water use reporting requirements and prohibitions on wasteful practices.

Future users of the site (and all EBMUD customers) should plan for shortages in times of drought. Policy EM-26 in the City of Berkeley General Plan promotes water conservation through City programs and requirements, including cooperation with EBMUD to make recycled water available for irrigation and other uses. Compliance with standard City requirements for incorporating water conservation measures into the project design will ensure efficient use of water at the project site and minimize the project's potential water demand such that the project's impact would be less than significant. Furthermore, per Senate Bill 7, signed into law on September 26, 2016, new apartment buildings constructed after January 1, 2018, are required to include submeters for every rental unit and to bill tenants accordingly. This ensures future tenants know how much water they are using and have a direct financial incentive to conserve.In addition, these new residential units, unlike many other single-family residences, do not have individual rear yards, and so will likely use less water than other types of residences in the city may.

EBMUD also imposes a system capacity charge on new developments to fund system maintenance and the development of new water sources. The project applicant would be required to pay this fee and undertake water conservation measures to conserve water such as the installation of low-flow toilets. In addition, the project applicant would also be required to comply with the City's **COA Water Efficient Landscaping**, which specifies that the applicant shall provide a Bay-Friendly Basics Landscape Checklist that includes detailed notes of any measures that would not be fully met by the project (if any). The applicant's Bay-Friendly Basics Landscape Checklist indicates the applicant will implement the following measures, including but not limited to: protecting all soil on site with a minimum of 3 inches of mulch after construction, amending the soil with compost before planting, and minimizing lawn area.

Landscape improvements are required to be consistent with the current versions of the State's Water Efficient Landscape Ordinance as well as Section 31 of EBMUD's Water Service Regulations (Water Efficiency Requirements). Section 31 also specifies water-efficiency requirements for water-using equipment (i.e., toilets, showerheads, dishwashers, etc.) that are included as part of the project.

With the implementation of measures indicated in the Bay-Friendly Basics Landscape Checklist and compliance with requirements of the State's Water Efficient Landscape Ordinance, Section 31 of EBMUD's Water Service Regulations, and **COA Water Efficient Landscaping**, the project's impacts pertaining to water supplies would be less than significant.

c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Less Than Significant. In Berkeley, sanitary sewage flows to EBMUD's wastewater interceptors, which then directly flows to the MWWTP in the City of Oakland. Sanitary sewers in Berkeley begin with building connections at the upper laterals (which are privately-owned and maintained) and continue to the lower laterals and the sewer mains (which are City-owned and maintained). Within the City of Berkeley, there are approximately 254 miles of sanitary sewer mains, with an estimated 31,600 lateral connections. The sewer mains vary from 1 to 100 years old, and vary in size from 6 to 48 inches in diameter.

The City's sewer system is connected to trunk lines that convey flows to the MWWTP. The MWWTP has a primary treatment capacity of 320 MGD and a secondary treatment capacity of 168 MGD .[93] Storage basins provide plant capacity for a short-term hydraulic peak of 415 MGD . The average annual daily flow into the MWWTP is approximately 60 MGD , representing 36 percent of the plant's secondary treatment capacity.[94] Treated effluent is disinfected, dechlorinated, and discharged through a deep-water outfall 1 mile off the East Bay shoreline into San Francisco Bay.

In compliance with the September 22, 2014, Consent Decree, the City has implemented a long-term mandated Sanitary Sewer Capital Improvement Program to eliminate Sanitary Sewer Overflows and reduce stormwater infiltration and inflow (I/I) into the sanitary sewer system. Under this program, the City utilizes a comprehensive asset management approach based on complex and evolving hydraulic modeling and condition assessments to repair, replace, or upgrade the City's portion of the sanitary sewer system, ultimately to meet requirements of the Consent Decree.

The project would generate domestic wastewater, which would be treated by the EBMUD treatment facilities. EBMUD is required to meet applicable Regional Water Board treatment requirements. In addition, the project would use an incremental portion of EBMUD's wet weather treatment capacity. Wastewater generated by the project is assumed to be equal to indoor water demand, 32,000 gallons per day (see subsection b above for further detail), which represents less than 0.01 percent of the remaining capacity of the MWWTP. Therefore, the project would not generate wastewater exceeding the wastewater treatment requirements of the Regional Water Board.

[93] East Bay Municipal Utility District (EBMUD). Wastewater Treatment. Available online at: www.ebmud.com/wastewater/collection-treatment/wastewater-treatment, accessed March 30, 2022.
[94] East Bay Municipal Utility District (EBMUD), 2016. East Bay Sewer System Management Plan. Available online at: www.ebmud.com/wastewater/collection-treatment/sewers, accessed March 30, 2022.

Because the project would be served by the MWWTP for its wastewater treatment, it would not violate the wastewater treatment requirements of the San Francisco Bay RWQCB Therefore, the impact to wastewater treatment requirements would be less than significant.

d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Less Than Significant. The project would entail the demolition of the one existing single-story building on the project site. Per the City's **COA Construction and Demolition,** the applicant is required to submit a Waste Diversion Form and Waste Diversion Plan that meet the diversion requirements of BMC Chapters 19.24 and 19.37. Furthermore, standard condition of approval *Construction and Demolition Diversion* requires the project to submit a Waste Diversion Report, with receipts or weigh slips documenting debris disposal or recycling during all phases of the project, to the City's Building and Safety Division. These requirements would divert as much demolition debris as possible from the waste stream.

Prior to approval of large development projects, the City of Berkeley Zero Waste Management Division staff reviews proposed plans for the adequate design of trash and recycling facilities. The project would also comply with General Plan Policy EM-5, which promotes and encourages compliance with "green" building standards. These requirements would divert as much solid waste as possible from the waste stream.

The City of Berkeley operates its own refuse collection system. The City provides curbside recycling, green waste and refuse collection services to the project site. Solid waste would be transported from the Berkeley Transfer Station, located at 1021 Second Street, to the Altamont Landfill and Resource Recovery Facility, located near the Altamont Pass, northeast of the City of Livermore. As of March 22, 2019, the Altamont Landfill had 65,400,000 cubic yards of capacity remaining, approximately half of its maximum permitted capacity.[95] As described above, the City's SCA and requirements for solid waste diversion would ensure the project generates as little landfill waste as possible. In 2016 and 2017, the City of Berkeley diverted approximately 76 and 68 percent of its solid waste from landfills through recycling and/or composting efforts. The Altamont Landfill would have sufficient capacity to accommodate the solid waste generated by the project, and therefore, this impact would be less than significant.

e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Less Than Significant. The project would comply with Berkeley's Municipal Code Section 19.37.050 and the California Green Building Standards Code, both of which regulate solid waste

[95] CalRecycle.ca.gov, 2019. Facility/Site Summary Details: Altamont Landfill and Resource Recovery (01-AA-0009). Available online at: https://www2.calrecycle.ca.gov/swfacilities/Directory/01-AA-0009, accessed March 30, 2022.

and recycling during construction. The Berkeley Municipal Code regulates solid waste and recycling and is consistent with the City of Berkeley's 1986 Solid Waste Management Plan, the County of Alameda Solid Waste Management Plan, and the legislative intent and findings of the State of California Solid Waste Management and Resource Recovery Act of 1972 (Government Code Section 66700 et seq.). Therefore, the project would comply with all applicable regulations related to solid waste and any impacts would be less than significant.

XX. WILDFIRE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evaluation plan?	☐	☐	☒	☐
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

a) Substantially impair an adopted emergency response plan or emergency evaluation plan?

Less Than Significant. The project would be consistent with the policies outlined in the General Plan's Disaster Preparedness and Safety Element and would not obstruct emergency evacuation routes.[96] University Avenue, Sixth Street, San Pablo Avenue, and Dwight Way are the designated emergency access and evacuation routes in the vicinity of the project. The project would not alter the adjacent roadways. Therefore, the project would not be expected to impair the function of nearby emergency evacuation routes and would have a less-than-significant impact on implementation of an adopted emergency response plan or emergency evacuation plan.

[96] City of Berkeley, 2001. Berkeley General Plan, Disaster Preparedness and Safety Element, April 23.

b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

No Impact. The project site is not within or adjacent to a wildland fire hazard area, located within a very high fire severity zone, nor is it located within a State Responsibility Area for fire service.[97] In addition, the project site is in a highly developed, flat, and urban area and is not subject to any other external factors which could exacerbate wildfire risks. In addition, Therefore, the project would not expose people or structures to a significant loss, injury or death involving wildland fires.

c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

No Impact. The project site is in a highly developed urban area, and all infrastructure serving the project, including roads, water sources, and other utilities, is already constructed. The project would install on-site connections to this infrastructure but would not install any infrastructure that would exacerbate fire risk. The project site is not located in the wildland-urban interface (WUI) where development would exacerbate existing fire risk.

d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

No Impact. The project site is not located in an area formally identified as subject to wildland fire hazards, the nearest designated fire zone is approximately 2 miles to the east, and the project site and surrounding area are relatively flat. As discussed in *Section VII, Geology and Soils*, the project site is not located within a landslide hazard zone. The project would replace an existing commercial structure and surface parking lot with a mixed-use building, which would not alter the project site's risk from downstream flooding or landslides due to post-fire slope instability.

[97] City of Berkeley, 2014. City of Berkeley Local Hazard Mitigation Plan, June 1.

XXI. MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☒	☐	☐	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?

Potentially Significant Impact. The project site consists of an infill site in an urban area. The site does not support habitat for special-status plant or animal species. Therefore, development of the project would not: 1) degrade the quality of the environment; 2) substantially reduce the habitat of a fish or wildlife species; 3) cause a fish or wildlife species population to drop below self-sustaining levels; 4) threaten to eliminate a plant or animal community; or 5) reduce the number or restrict the range of a rare of endangered plant or animal.

However, the project could have a potentially significant impact as it relates to examples of the major periods of California history or prehistory. As described in *Section V, Cultural Resources*; the project site currently contains a structure that was built in 1923 and has been designated as a City of Berkeley Landmark. Furthermore, an Historic Resources Evaluation (HRE) was prepared and identified the project as eligible for listing in the California Register of Historical Resources under Criterion 3, Design/Construction, as its architecture embodies distinctive characteristics of its

type and period. For these reasons, the subject building qualifies an "historic resource" under CEQA Section 15064.5, which defines a historical resource as a resource listed in or determined to be eligible for listing in the California Register of Historical Resources; listed in a local register of historical places; or as determined by the Lead Agency.

The project proposes the complete demolition of the subject building and is therefore presumed to change the significance of the historical resource. For this reason, it is considered to be a potentially significant impact and will be evaluated in greater detail in the Focused EIR.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

Potentially Significant Impact. Cumulative impact analyses are specifically included for certain issue areas such as air quality, GHG emissions, noise, and traffic. Implementation of the project would result in less-than-significant environmental impacts for all topics except for Cultural Resources, with implementation of the City's COAs and compliance with the Berkeley Municipal Code and applicable State and federal regulations. Other impacts associated with the project would generally be localized at the project site and would not combine with other projects to cause cumulatively considerable environmental impacts. The Focused EIR will evaluate potentially significant impacts to cultural resources both individually and cumulatively, and is therefore considered a potentially significant impact.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Less Than Significant. In general, impacts to human beings are associated with air quality, hazards and hazardous materials, and noise impacts. As detailed in the preceding responses, the project would not result, either directly or indirectly, in substantial adverse impacts related to air quality, hazards and hazardous materials, or noise and vibration. Therefore, the project would not have substantial adverse effects on people.

IV. LIST OF PREPARERS

City of Berkeley

Sharon Gong, Senior Planner

Urban Planning Partners, Inc.

Lynette Dias, Principal
Alison Lenci, Senior Planner

V. REFERENCES

Abrams Associates, 2021. VMT Analysis for the 2136 San Pablo Avenue Project, June 8.

Abrams Associates, 2021. Transportation Impact Analysis, 2136 San Pablo Avenue, City of Berkeley, July 29.

Alameda County Assessor's Office Parcel Viewer, 2022 . California Land Conservation Act. Williamson Act assessment value. Available online at: http://gis.acgov.org/Html5Viewer/index.html?viewer=parcel_viewer, accessed May 5, 2022.

Alameda County Clean Water Program (ACCWP), 2021. C.3 Stormwater Technical Guidance, 3rd Revision, Version 7.1, February 8.

Alameda County Community Development Agency, 2010. Oakland International Airport, Airport Land Use Compatibility Plan, December.

Alameda County Transportation Commission, 2014. Countywide Travel Demand Model. Planning Area 1; 2020 Daily Model Vehicle Volumes, July.

Alison Lenci, Urban Planning Partners, Inc. Email communication with Yilin Tian at Baseline Environmental Consulting, March 10, 2022.

Association of Bay Area Governments, 2021. Final Regional Housing Needs Allocation (RHNA) Plan, March 28.

Bay Area Air Quality Management District (BAAQMD), 2012. Recommended Methods for Screening and Modeling Local Risks and Hazards, May.

Bay Area Air Quality Management District (BAAQMD), 2017. CEQA Air Quality Guidelines, May.

Berkeley, 2009. Climate Action Plan, June.

California Air Resources Board (CARB), 1998. Initial Statement of Reasons for Rulemaking; Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant, June.

California Air Resources Board (CARB), 2017. The 2017 Climate Change Scoping Plan Update, January 20.

Bay Area Air Quality Management District (BAAQMD), 2022. CSV file for 2017 permitted stationary sources provided by Matthew Hanson, BAAQMD, to Yilin Tian, Baseline Environmental Consulting, April 14.

BAAQMD, 2022. Draft Justification Report – CEQA Thresholds for Evaluating the Significance of Climate Impacts. February.

Berkeley Unified School District, 2017. Notice: New Developer Fees (School Facility Fee) for Berkeley Unified School District. Available online at: http://www.berkeleyschools.net/notice-new-developer-fees-school-facility-fee-for-berkeley-unified-school-district/, accessed March 30, 2022.

Cal/EPA, 2022. Cortese List Data Resources. Available online at: https://calepa.ca.gov/sitecleanup/corteselist/, accessed February 24.

California Department of Conservation (CDC), 1982. Special Studies Zones; Oakland West, January 1.

California Department of Conservation (CDC), 2016. Division of Land Resource Protection, Farmland Mapping and Monitoring Program. Available online at: https://maps.conservation.ca.gov/dlrp/ciff/, accessed February 24, 2022.

California Department of Fish and Wildlife Biographic Information and Observation System, 2022. Available online at: https://apps.wildlife.ca.gov/bios/?bookmark=648, accessed April 13, 2022.

California Department of Transportation (Caltrans), 1998. Technical Noise Supplement: A Technical Supplement to the Traffic Noise Analysis Protocol.

California Department of Water Resources, 2004. California's Groundwater Bulletin 118 – Santa Clara Valley Groundwater Basin, East Bay Plain Subbasin, February 27. Available online at: www. water.ca.gov/Programs/Groundwater-Management/Bulletin-118, accessed May 2020.

California Geological Survey, 2003. Seismic Hazard Zones; Oakland West Quadrangle, February 14.

California Government Code Section 65915-65918.

CalRecycle.ca.gov, 2019. Facility/Site Summary Details: Altamont Landfill & Resource Recovery (01-AA-0009). Available online at: https://www2.calrecycle.ca.gov/swfacilities/Directory/01-AA-0009, accessed March 30, 2022.

California Emergency Management Agency (CalEMA), 2009. Tsunami Inundation Map for Emergency Planning, Oakland West Quadrangle, July.

Charles M. Salter Associates, Inc., 1998. Acoustics – Architecture, Engineering, the Environment.

City of Berkeley, 2001. General Plan, Environmental Management Element, April 23.

City of Berkeley, 2001. General Plan, Environmental Management Element (Adopted April 23). Available online at: https://www.cityofberkeley.info/Planning_and_Development/Home/General_Plan_-_Environmental_Management_Element(2).aspx, accessed February 25, 2022.

City of Berkeley, 2001. General Plan, Land Use Element, accessed July 6, 2022.

City of Berkeley, 2001. Disaster Preparedness and Safety Element, April 23. Available online at: https://www.cityofberkeley.info/Planning_and_Development/Home/General_Plan_Disaster_Preparedness_and_Safety_Element.aspx, accessed February, 2022.

City of Berkeley. 2010. West Berkeley Project Draft Environmental Impact Report, January.

City of Berkeley, 2010. Environmental Management Area. Available online at: www.cityofberkeley.info/uploadedFiles/IT/Level_3_-_General/ema.pdf, accessed February 24, 2022.

City of Berkeley, 2012. Aquatic Park Improvement Program Draft Environmental Impact Report.

City of Berkeley, 2014. City of Berkeley Local Hazard Mitigation Plan, June 1.

City of Berkeley, 2015. City of Berkeley 2015-2023 Housing Element, March 30. Assumes 2.17 residents per live-work unit as well.

City of Berkeley, 2017. NFPA Response Data, January 1-December 31, 2016.

City of Berkeley, 2020. City of Berkeley VMT Criteria and Thresholds. June 29.

City of Berkeley, 2021. Land Use Zoning Districts.

City of Berkeley, 2022. Environmental Management Area Website. Available online at: www.ci.berkeley.ca.us/Planning_and_Development/Toxics_Management/Environmental_Management_Area.aspx, accessed February 24.

City of Berkeley Fire Department, Fire Stations and Fire Districts. Available online at: https://www.cityofberkeley.info/Fire/Home/Fire_Stations_and_Fire_Districts.aspx, accessed March 30, 2022.

City of Berkeley Municipal Code Section 13.40.070 Prohibited Acts.

City of Berkeley Police Department, City of Berkeley Police Department Quick Facts. Available online at: https://www.cityofberkeley.info/Police/Home/Quick_Facts.aspx, accessed March 30, 2022.

City of Berkeley Toxics Management Division, 2020. Environmental Management Area. Available online at: www.cityofberkeley.info/Planning_and_Development/Toxics_Management/Environmental_Management_Area.aspx, accessed February 24.

East Bay Municipal Utility District (EBMUD), 2016. East Bay Sewer System Management Plan. Available online at: www.ebmud.com/wastewater/collection-treatment/sewers, accessed March 30, 2022.

East Bay Municipal Utility District (EBMUD), 2021. Urban Water Management Plan 2020.

East Bay Municipal Utility District (EBMUD). Wastewater Treatment. Available online at: www.ebmud.com/wastewater/collection-treatment/wastewater-treatment, accessed March 30, 2022.

East Bay Municipal Utility District (EBMUD), 2022. Water Supply Management Program 2040 Plan, April.

East Bay Municipal Utility District (EBMUD), 2022. Water Supply. Available online at: www.ebmud.com/water/about-your-water/water-supply, accessed February 25, 2022.

East Bay Municipal Utility District (EBMUD) GSA and City of Hayward GSA, 2021. East Bay Plan Subbasin, Groundwater Sustainability Plan, Public Review Draft, September 17.

East Bay Municipal Utility District (EBMUD) GSA and City of Hayward GSA, 2022. East Bay Plan Subbasin, Groundwater Sustainability Plan.

Federal Aviation Administration (FAA), 2019. Airport Data and Contact Information. Effective: February 28, 2019. Database searched for both public-use and private-use facilities in Alameda County. Available online at: http://www.faa.gov/airports/airport_safety/airportdata_5010/, accessed March 1, 2022.

Federal Emergency Management Agency, 2018. Flood Insurance Rate Map (FIRM) No. 06001C0056H, effective December 21. Available online at: https://msc.fema.gov/portal/search?AddressQuery=berkeley%20ca#searchresultsanchor, accessed February 25, 2022.

Harris & Lee Environmental Sciences, LLC, 2022. Limited Phase II Investigation Results, 2136-2154 San Pablo Avenue.

Berkeley, California 94702, May 3.

Heather Lee, Heather Lee Consulting. Personal communication with Alison Lenci at Urban Planning Partners, Inc., April 14,2022.

Intergovernmental Panel on Climate Change, 2013. Climate Change 2013, the Physical Science Basis.

Meredith Lear, TMD. Email communication with Sharon Gong of the City of Berkeley, February 10, 2022.

Office of Environmental Health Hazard Assessment (OEHHA), 2015. Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments, May.

Partner Engineering and Science, Inc., 2018. Phase I Environmental Site Assessment Report, 2136-2154 San Pablo Avenue, Berkeley, California 94702, October 4.

Rockridge Geotechnical, 2019. Geotechnical Investigation, Proposed Mixed-Use Building, 2136-2154 San Pablo Avenue, Berkeley, California, October 23.

San Francisco Bay Regional Water Quality Control Board, 2015. San Francisco Bay Region Municipal Regional Stormwater NPDES Permit, Order No. R2-2015-0049, NPDES Permit No. CAS612008, November 19.

San Francisco Bay Regional Water Quality Control Board, 2017. San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan). Incorporating all amendments as of May 4.

San Pablo Investors Two, LLC, 2021, Stormwater Requirements Checklist, 2136 San Pablo Mixed-Use, March 8.

Sowers, Janet M, 1993. Creek and Watershed Map of Oakland and Berkeley, The Oakland Museum of California (Revised 2000). Available online at: explore.museumca.org/creeks/MapOak.html, accessed May 2020.

State Water Resources Control Board (State Water Board), 2018. Final 2018 California Integrated Report (Clean Water Act Section 303(d) List/305(b) Report), Available online at: https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2018_integrated_report.html, accessed September 27, 2021.

United States Geological Survey (USGS), 2016. Earthquake Outlook for the San Francisco Bay Region 2014-2043, USGS Fact Sheet 2016-3020. Revised August.

APPENDIX A: CALEEMOD OUTPUT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2136-54 San Pablo Ave

Bay Area AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	1.30	1000sqft	0.00	1,300.00	0
Enclosed Parking with Elevator	50.00	Space	0.00	20,800.00	0
Apartments Mid Rise	126.00	Dwelling Unit	2.00	81,000.00	360

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Default values were changed based on project plan. Changed lot acreage to 2 acres in order to generate a construction equipment list for multi-story buildings.Parking square footage also includes mech. use (750 sq ft)

Demolition -

Grading - Net cut volume was provided by the applicant

Vehicle Trips - Trip generation obtained from Abrams Associates Traffic Engineering, 2021

Woodstoves - The proposed project does not include woodstoves or fireplaces.

Energy Use - Building will be all electric. To be conersvative, default assumptions about natural gas used.

Water And Wastewater -

Construction Off-road Equipment Mitigation - Measure B of COA #49 requires use of Tier 4 final engines or Tier 2 or 3 engines with VDECS. This is not considered mitigation.

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Water Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps -

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblFireplaces	NumberGas	18.90	0.00
tblFireplaces	NumberNoFireplace	5.04	0.00
tblFireplaces	NumberWood	21.42	0.00
tblGrading	MaterialExported	0.00	330.00
tblLandUse	LandUseSquareFeet	20,000.00	20,800.00
tblLandUse	LandUseSquareFeet	126,000.00	81,000.00
tblLandUse	LotAcreage	0.03	0.00
tblLandUse	LotAcreage	0.45	0.00
tblLandUse	LotAcreage	3.32	2.00
tblVehicleTrips	ST_TR	4.91	3.98
tblVehicleTrips	ST_TR	2.21	8.20
tblVehicleTrips	SU_TR	4.09	3.31
tblVehicleTrips	SU_TR	0.70	2.60
tblVehicleTrips	WD_TR	5.44	4.40
tblVehicleTrips	WD_TR	9.74	36.15
tblWoodstoves	NumberCatalytic	2.52	0.00
tblWoodstoves	NumberNoncatalytic	2.52	0.00

2.0 Emissions Summary

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.7870	1.4972	1.7348	3.6900e-003	0.1209	0.0628	0.1836	0.0364	0.0603	0.0967	0.0000	318.6585	318.6585	0.0425	7.4300e-003	321.9349
Maximum	**0.7870**	**1.4972**	**1.7348**	**3.6900e-003**	**0.1209**	**0.0628**	**0.1836**	**0.0364**	**0.0603**	**0.0967**	**0.0000**	**318.6585**	**318.6585**	**0.0425**	**7.4300e-003**	**321.9349**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.6457	0.4945	1.8105	3.6900e-003	0.1209	4.5700e-003	0.1254	0.0364	4.5100e-003	0.0409	0.0000	318.6583	318.6583	0.0425	7.4300e-003	321.9347
Maximum	**0.6457**	**0.4945**	**1.8105**	**3.6900e-003**	**0.1209**	**4.5700e-003**	**0.1254**	**0.0364**	**4.5100e-003**	**0.0409**	**0.0000**	**318.6583**	**318.6583**	**0.0425**	**7.4300e-003**	**321.9347**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**17.95**	**66.97**	**-4.36**	**0.00**	**0.00**	**92.72**	**31.69**	**0.00**	**92.51**	**57.67**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-2-2023**	**4-1-2023**	0.4867	0.1273
2	**4-2-2023**	**7-1-2023**	0.4701	0.1701
3	**7-2-2023**	**9-30-2023**	0.4701	0.1701
		Highest	0.4867	0.1701

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	0.4092	0.0108	0.9356	5.0000e-005		5.1800e-003	5.1800e-003		5.1800e-003	5.1800e-003	0.0000	1.5291	1.5291	1.4700e-003	0.0000	1.5659
Energy	5.8700e-003	0.0502	0.0219	3.2000e-004		4.0600e-003	4.0600e-003		4.0600e-003	4.0600e-003	0.0000	115.3227	115.3227	0.0104	2.1900e-003	116.2338
Mobile	0.2348	0.2634	2.1774	4.4800e-003	0.4801	3.3300e-003	0.4835	0.1283	3.1000e-003	0.1314	0.0000	420.1954	420.1954	0.0279	0.0204	426.9607
Waste						0.0000	0.0000		0.0000	0.0000	12.0110	0.0000	12.0110	0.7098	0.0000	29.7567
Water						0.0000	0.0000		0.0000	0.0000	2.6778	5.9475	8.6253	0.2760	6.6100e-003	17.4952
Total	**0.6498**	**0.3244**	**3.1349**	**4.8500e-003**	**0.4801**	**0.0126**	**0.4927**	**0.1283**	**0.0123**	**0.1406**	**14.6888**	**542.9947**	**557.6834**	**1.0256**	**0.0292**	**592.0122**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.4092	0.0108	0.9356	5.0000e-005		5.1800e-003	5.1800e-003		5.1800e-003	5.1800e-003	0.0000	1.5291	1.5291	1.4700e-003	0.0000	1.5659
Energy	5.8700e-003	0.0502	0.0219	3.2000e-004		4.0600e-003	4.0600e-003		4.0600e-003	4.0600e-003	0.0000	115.3227	115.3227	0.0104	2.1900e-003	116.2338
Mobile	0.2348	0.2634	2.1774	4.4800e-003	0.4801	3.3300e-003	0.4835	0.1283	3.1000e-003	0.1314	0.0000	420.1954	420.1954	0.0279	0.0204	426.9607
Waste						0.0000	0.0000		0.0000	0.0000	12.0110	0.0000	12.0110	0.7098	0.0000	29.7567
Water						0.0000	0.0000		0.0000	0.0000	2.6778	5.9475	8.6253	0.2760	6.6100e-003	17.4952
Total	**0.6498**	**0.3244**	**3.1349**	**4.8500e-003**	**0.4801**	**0.0126**	**0.4927**	**0.1283**	**0.0123**	**0.1406**	**14.6888**	**542.9947**	**557.6834**	**1.0256**	**0.0292**	**592.0122**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2023	1/27/2023	5	20	
2	Site Preparation	Site Preparation	1/28/2023	1/31/2023	5	2	
3	Grading	Grading	2/1/2023	2/6/2023	5	4	

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4	Building Construction	Building Construction	2/7/2023	11/13/2023	5	200	
5	Paving	Paving	11/14/2023	11/27/2023	5	10	
6	Architectural Coating	Architectural Coating	11/28/2023	12/11/2023	5	10	

Acres of Grading (Site Preparation Phase): 1.88

Acres of Grading (Grading Phase): 4

Acres of Paving: 0

Residential Indoor: 164,025; Residential Outdoor: 54,675; Non-Residential Indoor: 1,950; Non-Residential Outdoor: 650; Striped Parking Area: 1,656 (Architectural Coating – sqft)

OffRoad Equipment

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	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	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	5	13.00	0.00	37.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	41.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	103.00	18.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	21.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.9600e-003	0.0000	3.9600e-003	6.0000e-004	0.0000	6.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0147	0.1432	0.1346	2.4000e-004		6.7700e-003	6.7700e-003		6.3300e-003	6.3300e-003	0.0000	21.0866	21.0866	5.3500e-003	0.0000	21.2202
Total	**0.0147**	**0.1432**	**0.1346**	**2.4000e-004**	**3.9600e-003**	**6.7700e-003**	**0.0107**	**6.0000e-004**	**6.3300e-003**	**6.9300e-003**	**0.0000**	**21.0866**	**21.0866**	**5.3500e-003**	**0.0000**	**21.2202**

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	4.0000e-005	2.5100e-003	5.9000e-004	1.0000e-005	3.1000e-004	2.0000e-005	3.3000e-004	9.0000e-005	2.0000e-005	1.1000e-004	0.0000	1.1041	1.1041	4.0000e-005	1.7000e-004	1.1571
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	2.3000e-004	2.8800e-003	1.0000e-005	1.0300e-003	1.0000e-005	1.0300e-003	2.7000e-004	0.0000	2.8000e-004	0.0000	0.8051	0.8051	2.0000e-005	2.0000e-005	0.8123
Total	**3.7000e-004**	**2.7400e-003**	**3.4700e-003**	**2.0000e-005**	**1.3400e-003**	**3.0000e-005**	**1.3600e-003**	**3.6000e-004**	**2.0000e-005**	**3.9000e-004**	**0.0000**	**1.9092**	**1.9092**	**6.0000e-005**	**1.9000e-004**	**1.9694**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.9600e-003	0.0000	3.9600e-003	6.0000e-004	0.0000	6.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.8100e-003	0.0122	0.1472	2.4000e-004		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004	0.0000	21.0865	21.0865	5.3500e-003	0.0000	21.2202
Total	**2.8100e-003**	**0.0122**	**0.1472**	**2.4000e-004**	**3.9600e-003**	**3.7000e-004**	**4.3300e-003**	**6.0000e-004**	**3.7000e-004**	**9.7000e-004**	**0.0000**	**21.0865**	**21.0865**	**5.3500e-003**	**0.0000**	**21.2202**

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	4.0000e-005	2.5100e-003	5.9000e-004	1.0000e-005	3.1000e-004	2.0000e-005	3.3000e-004	9.0000e-005	2.0000e-005	1.1000e-004	0.0000	1.1041	1.1041	4.0000e-005	1.7000e-004	1.1571
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	2.3000e-004	2.8800e-003	1.0000e-005	1.0300e-003	1.0000e-005	1.0300e-003	2.7000e-004	0.0000	2.8000e-004	0.0000	0.8051	0.8051	2.0000e-005	2.0000e-005	0.8123
Total	**3.7000e-004**	**2.7400e-003**	**3.4700e-003**	**2.0000e-005**	**1.3400e-003**	**3.0000e-005**	**1.3600e-003**	**3.6000e-004**	**2.0000e-005**	**3.9000e-004**	**0.0000**	**1.9092**	**1.9092**	**6.0000e-005**	**1.9000e-004**	**1.9694**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.2700e-003	0.0000	6.2700e-003	3.0000e-003	0.0000	3.0000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.1300e-003	0.0124	6.6400e-003	2.0000e-005		5.1000e-004	5.1000e-004		4.7000e-004	4.7000e-004	0.0000	1.5114	1.5114	4.9000e-004	0.0000	1.5236
Total	**1.1300e-003**	**0.0124**	**6.6400e-003**	**2.0000e-005**	**6.2700e-003**	**5.1000e-004**	**6.7800e-003**	**3.0000e-003**	**4.7000e-004**	**3.4700e-003**	**0.0000**	**1.5114**	**1.5114**	**4.9000e-004**	**0.0000**	**1.5236**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-005	1.0000e-005	1.8000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0495	0.0495	0.0000	0.0000	0.0500
Total	**2.0000e-005**	**1.0000e-005**	**1.8000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0495**	**0.0495**	**0.0000**	**0.0000**	**0.0500**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.2700e-003	0.0000	6.2700e-003	3.0000e-003	0.0000	3.0000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1000e-004	9.1000e-004	8.6700e-003	2.0000e-005		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	1.5114	1.5114	4.9000e-004	0.0000	1.5236
Total	**2.1000e-004**	**9.1000e-004**	**8.6700e-003**	**2.0000e-005**	**6.2700e-003**	**3.0000e-005**	**6.3000e-003**	**3.0000e-003**	**3.0000e-005**	**3.0300e-003**	**0.0000**	**1.5114**	**1.5114**	**4.9000e-004**	**0.0000**	**1.5236**

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	2.0000e-005	1.0000e-005	1.8000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0495	0.0495	0.0000	0.0000	0.0500
Total	**2.0000e-005**	**1.0000e-005**	**1.8000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0495**	**0.0495**	**0.0000**	**0.0000**	**0.0500**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0142	0.0000	0.0142	6.8500e-003	0.0000	6.8500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.6700e-003	0.0289	0.0174	4.0000e-005		1.2100e-003	1.2100e-003		1.1100e-003	1.1100e-003	0.0000	3.6208	3.6208	1.1700e-003	0.0000	3.6501
Total	**2.6700e-003**	**0.0289**	**0.0174**	**4.0000e-005**	**0.0142**	**1.2100e-003**	**0.0154**	**6.8500e-003**	**1.1100e-003**	**7.9600e-003**	**0.0000**	**3.6208**	**3.6208**	**1.1700e-003**	**0.0000**	**3.6501**

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	4.0000e-005	2.7800e-003	6.5000e-004	1.0000e-005	3.5000e-004	2.0000e-005	3.7000e-004	1.0000e-004	2.0000e-005	1.2000e-004	0.0000	1.2234	1.2234	4.0000e-005	1.9000e-004	1.2822
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-005	4.0000e-005	4.4000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1239	0.1239	0.0000	0.0000	0.1250
Total	**9.0000e-005**	**2.8200e-003**	**1.0900e-003**	**1.0000e-005**	**5.1000e-004**	**2.0000e-005**	**5.3000e-004**	**1.4000e-004**	**2.0000e-005**	**1.6000e-004**	**0.0000**	**1.3473**	**1.3473**	**4.0000e-005**	**1.9000e-004**	**1.4072**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0142	0.0000	0.0142	6.8500e-003	0.0000	6.8500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.0000e-004	2.1900e-003	0.0218	4.0000e-005		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	3.6208	3.6208	1.1700e-003	0.0000	3.6501
Total	**5.0000e-004**	**2.1900e-003**	**0.0218**	**4.0000e-005**	**0.0142**	**7.0000e-005**	**0.0143**	**6.8500e-003**	**7.0000e-005**	**6.9200e-003**	**0.0000**	**3.6208**	**3.6208**	**1.1700e-003**	**0.0000**	**3.6501**

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	4.0000e-005	2.7800e-003	6.5000e-004	1.0000e-005	3.5000e-004	2.0000e-005	3.7000e-004	1.0000e-004	2.0000e-005	1.2000e-004	0.0000	1.2234	1.2234	4.0000e-005	1.9000e-004	1.2822
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-005	4.0000e-005	4.4000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1239	0.1239	0.0000	0.0000	0.1250
Total	**9.0000e-005**	**2.8200e-003**	**1.0900e-003**	**1.0000e-005**	**5.1000e-004**	**2.0000e-005**	**5.3000e-004**	**1.4000e-004**	**2.0000e-005**	**1.6000e-004**	**0.0000**	**1.3473**	**1.3473**	**4.0000e-005**	**1.9000e-004**	**1.4072**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1523	1.1710	1.2611	2.2100e-003		0.0515	0.0515		0.0497	0.0497	0.0000	181.5991	181.5991	0.0308	0.0000	182.3701
Total	**0.1523**	**1.1710**	**1.2611**	**2.2100e-003**		**0.0515**	**0.0515**		**0.0497**	**0.0497**	**0.0000**	**181.5991**	**181.5991**	**0.0308**	**0.0000**	**182.3701**

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	1.9200e-003	0.0800	0.0250	3.7000e-004	0.0118	4.7000e-004	0.0123	3.4200e-003	4.5000e-004	3.8600e-003	0.0000	35.5312	35.5312	7.2000e-004	5.2600e-003	37.1156
Worker	0.0264	0.0180	0.2284	6.9000e-004	0.0814	4.2000e-004	0.0818	0.0217	3.9000e-004	0.0220	0.0000	63.7878	63.7878	1.8300e-003	1.7500e-003	64.3552
Total	**0.0283**	**0.0981**	**0.2535**	**1.0600e-003**	**0.0932**	**8.9000e-004**	**0.0941**	**0.0251**	**8.4000e-004**	**0.0259**	**0.0000**	**99.3190**	**99.3190**	**2.5500e-003**	**7.0100e-003**	**101.4709**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0293	0.3712	1.3124	2.2100e-003		3.0300e-003	3.0300e-003		3.0300e-003	3.0300e-003	0.0000	181.5989	181.5989	0.0308	0.0000	182.3698
Total	**0.0293**	**0.3712**	**1.3124**	**2.2100e-003**		**3.0300e-003**	**3.0300e-003**		**3.0300e-003**	**3.0300e-003**	**0.0000**	**181.5989**	**181.5989**	**0.0308**	**0.0000**	**182.3698**

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	1.9200e-003	0.0800	0.0250	3.7000e-004	0.0118	4.7000e-004	0.0123	3.4200e-003	4.5000e-004	3.8600e-003	0.0000	35.5312	35.5312	7.2000e-004	5.2600e-003	37.1156
Worker	0.0264	0.0180	0.2284	6.9000e-004	0.0814	4.2000e-004	0.0818	0.0217	3.9000e-004	0.0220	0.0000	63.7878	63.7878	1.8300e-003	1.7500e-003	64.3552
Total	**0.0283**	**0.0981**	**0.2535**	**1.0600e-003**	**0.0932**	**8.9000e-004**	**0.0941**	**0.0251**	**8.4000e-004**	**0.0259**	**0.0000**	**99.3190**	**99.3190**	**2.5500e-003**	**7.0100e-003**	**101.4709**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.2200e-003	0.0312	0.0440	7.0000e-005		1.5400e-003	1.5400e-003		1.4200e-003	1.4200e-003	0.0000	5.8862	5.8862	1.8700e-003	0.0000	5.9329
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.2200e-003**	**0.0312**	**0.0440**	**7.0000e-005**		**1.5400e-003**	**1.5400e-003**		**1.4200e-003**	**1.4200e-003**	**0.0000**	**5.8862**	**5.8862**	**1.8700e-003**	**0.0000**	**5.9329**

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	1.7000e-004	1.1000e-004	1.4400e-003	0.0000	5.1000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4025	0.4025	1.0000e-005	1.0000e-005	0.4061
Total	**1.7000e-004**	**1.1000e-004**	**1.4400e-003**	**0.0000**	**5.1000e-004**	**0.0000**	**5.2000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4025**	**0.4025**	**1.0000e-005**	**1.0000e-005**	**0.4061**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.0000e-004	3.4600e-003	0.0493	7.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004	0.0000	5.8862	5.8862	1.8700e-003	0.0000	5.9329
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.0000e-004**	**3.4600e-003**	**0.0493**	**7.0000e-005**		**1.1000e-004**	**1.1000e-004**		**1.1000e-004**	**1.1000e-004**	**0.0000**	**5.8862**	**5.8862**	**1.8700e-003**	**0.0000**	**5.9329**

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	1.7000e-004	1.1000e-004	1.4400e-003	0.0000	5.1000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4025	0.4025	1.0000e-005	1.0000e-005	0.4061
Total	**1.7000e-004**	**1.1000e-004**	**1.4400e-003**	**0.0000**	**5.1000e-004**	**0.0000**	**5.2000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4025**	**0.4025**	**1.0000e-005**	**1.0000e-005**	**0.4061**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5827					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.6000e-004	6.5100e-003	9.0600e-003	1.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004	0.0000	1.2766	1.2766	8.0000e-005	0.0000	1.2785
Total	**0.5837**	**6.5100e-003**	**9.0600e-003**	**1.0000e-005**		**3.5000e-004**	**3.5000e-004**		**3.5000e-004**	**3.5000e-004**	**0.0000**	**1.2766**	**1.2766**	**8.0000e-005**	**0.0000**	**1.2785**

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	2.7000e-004	1.8000e-004	2.3300e-003	1.0000e-005	8.3000e-004	0.0000	8.3000e-004	2.2000e-004	0.0000	2.2000e-004	0.0000	0.6503	0.6503	2.0000e-005	2.0000e-005	0.6561
Total	**2.7000e-004**	**1.8000e-004**	**2.3300e-003**	**1.0000e-005**	**8.3000e-004**	**0.0000**	**8.3000e-004**	**2.2000e-004**	**0.0000**	**2.2000e-004**	**0.0000**	**0.6503**	**0.6503**	**2.0000e-005**	**2.0000e-005**	**0.6561**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5827					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5000e-004	6.4000e-004	9.1600e-003	1.0000e-005		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	1.2766	1.2766	8.0000e-005	0.0000	1.2785
Total	**0.5829**	**6.4000e-004**	**9.1600e-003**	**1.0000e-005**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**1.2766**	**1.2766**	**8.0000e-005**	**0.0000**	**1.2785**

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	2.7000e-004	1.8000e-004	2.3300e-003	1.0000e-005	8.3000e-004	0.0000	8.3000e-004	2.2000e-004	0.0000	2.2000e-004	0.0000	0.6503	0.6503	2.0000e-005	2.0000e-005	0.6561
Total	**2.7000e-004**	**1.8000e-004**	**2.3300e-003**	**1.0000e-005**	**8.3000e-004**	**0.0000**	**8.3000e-004**	**2.2000e-004**	**0.0000**	**2.2000e-004**	**0.0000**	**0.6503**	**0.6503**	**2.0000e-005**	**2.0000e-005**	**0.6561**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2348	0.2634	2.1774	4.4800e-003	0.4801	3.3300e-003	0.4835	0.1283	3.1000e-003	0.1314	0.0000	420.1954	420.1954	0.0279	0.0204	426.9607
Unmitigated	0.2348	0.2634	2.1774	4.4800e-003	0.4801	3.3300e-003	0.4835	0.1283	3.1000e-003	0.1314	0.0000	420.1954	420.1954	0.0279	0.0204	426.9607

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	554.40	501.48	417.06	1,217,671	1,217,671
Enclosed Parking with Elevator	0.00	0.00	0.00		
General Office Building	47.00	10.66	3.38	85,012	85,012
Total	601.40	512.14	420.44	1,302,683	1,302,683

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.553342	0.058522	0.188738	0.121080	0.023016	0.005623	0.010412	0.007562	0.000987	0.000568	0.026444	0.000834	0.002871
Enclosed Parking with Elevator	0.553342	0.058522	0.188738	0.121080	0.023016	0.005623	0.010412	0.007562	0.000987	0.000568	0.026444	0.000834	0.002871
General Office Building	0.553342	0.058522	0.188738	0.121080	0.023016	0.005623	0.010412	0.007562	0.000987	0.000568	0.026444	0.000834	0.002871

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	57.2247	57.2247	9.2600e-003	1.1200e-003	57.7906
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	57.2247	57.2247	9.2600e-003	1.1200e-003	57.7906
NaturalGas Mitigated	5.8700e-003	0.0502	0.0219	3.2000e-004		4.0600e-003	4.0600e-003		4.0600e-003	4.0600e-003	0.0000	58.0979	58.0979	1.1100e-003	1.0700e-003	58.4432
NaturalGas Unmitigated	5.8700e-003	0.0502	0.0219	3.2000e-004		4.0600e-003	4.0600e-003		4.0600e-003	4.0600e-003	0.0000	58.0979	58.0979	1.1100e-003	1.0700e-003	58.4432

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	1.06382e+006	5.7400e-003	0.0490	0.0209	3.1000e-004		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	56.7695	56.7695	1.0900e-003	1.0400e-003	57.1068
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	24895	1.3000e-004	1.2200e-003	1.0300e-003	1.0000e-005		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	1.3285	1.3285	3.0000e-005	2.0000e-005	1.3364
Total		**5.8700e-003**	**0.0502**	**0.0219**	**3.2000e-004**		**4.0500e-003**	**4.0500e-003**		**4.0500e-003**	**4.0500e-003**	**0.0000**	**58.0979**	**58.0979**	**1.1200e-003**	**1.0600e-003**	**58.4432**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	1.06382e+006	5.7400e-003	0.0490	0.0209	3.1000e-004		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	56.7695	56.7695	1.0900e-003	1.0400e-003	57.1068
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	24895	1.3000e-004	1.2200e-003	1.0300e-003	1.0000e-005		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	1.3285	1.3285	3.0000e-005	2.0000e-005	1.3364
Total		**5.8700e-003**	**0.0502**	**0.0219**	**3.2000e-004**		**4.0500e-003**	**4.0500e-003**		**4.0500e-003**	**4.0500e-003**	**0.0000**	**58.0979**	**58.0979**	**1.1200e-003**	**1.0600e-003**	**58.4432**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	489683	45.3073	7.3300e-003	8.9000e-004	45.7553
Enclosed Parking with Elevator	113152	10.4693	1.6900e-003	2.1000e-004	10.5728
General Office Building	15652	1.4482	2.3000e-004	3.0000e-005	1.4625
Total		**57.2247**	**9.2500e-003**	**1.1300e-003**	**57.7906**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	489683	45.3073	7.3300e-003	8.9000e-004	45.7553
Enclosed Parking with Elevator	113152	10.4693	1.6900e-003	2.1000e-004	10.5728
General Office Building	15652	1.4482	2.3000e-004	3.0000e-005	1.4625
Total		**57.2247**	**9.2500e-003**	**1.1300e-003**	**57.7906**

6.0 Area Detail

6.1 Mitigation Measures Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4092	0.0108	0.9356	5.0000e-005		5.1800e-003	5.1800e-003		5.1800e-003	5.1800e-003	0.0000	1.5291	1.5291	1.4700e-003	0.0000	1.5659
Unmitigated	0.4092	0.0108	0.9356	5.0000e-005		5.1800e-003	5.1800e-003		5.1800e-003	5.1800e-003	0.0000	1.5291	1.5291	1.4700e-003	0.0000	1.5659

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	0.0583					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3228					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	0.0282	0.0108	0.9356	5.0000e-005		5.1800e-003	5.1800e-003		5.1800e-003	5.1800e-003	0.0000	1.5291	1.5291	1.4700e-003	0.0000	1.5659
Total	**0.4092**	**0.0108**	**0.9356**	**5.0000e-005**		**5.1800e-003**	**5.1800e-003**		**5.1800e-003**	**5.1800e-003**	**0.0000**	**1.5291**	**1.5291**	**1.4700e-003**	**0.0000**	**1.5659**

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	0.0583					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3228					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	0.0282	0.0108	0.9356	5.0000e-005		5.1800e-003	5.1800e-003		5.1800e-003	5.1800e-003	0.0000	1.5291	1.5291	1.4700e-003	0.0000	1.5659
Total	**0.4092**	**0.0108**	**0.9356**	**5.0000e-005**		**5.1800e-003**	**5.1800e-003**		**5.1800e-003**	**5.1800e-003**	**0.0000**	**1.5291**	**1.5291**	**1.4700e-003**	**0.0000**	**1.5659**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	8.6253	0.2760	6.6100e-003	17.4952
Unmitigated	8.6253	0.2760	6.6100e-003	17.4952

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	8.20941 / 5.1755	8.3905	0.2684	6.4300e-003	17.0176
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	0.231054 / 0.141614	0.2348	7.5600e-003	1.8000e-004	0.4776
Total		**8.6253**	**0.2760**	**6.6100e-003**	**17.4952**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	8.20941 / 5.1755	8.3905	0.2684	6.4300e-003	17.0176
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	0.231054 / 0.141614	0.2348	7.5600e-003	1.8000e-004	0.4776
Total		**8.6253**	**0.2760**	**6.6100e-003**	**17.4952**

8.0 Waste Detail

8.1 Mitigation Measures Waste

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	12.0110	0.7098	0.0000	29.7567
Unmitigated	12.0110	0.7098	0.0000	29.7567

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	57.96	11.7654	0.6953	0.0000	29.1482
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	1.21	0.2456	0.0145	0.0000	0.6085
Total		**12.0110**	**0.7098**	**0.0000**	**29.7567**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	57.96	11.7654	0.6953	0.0000	29.1482
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	1.21	0.2456	0.0145	0.0000	0.6085
Total		**12.0110**	**0.7098**	**0.0000**	**29.7567**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

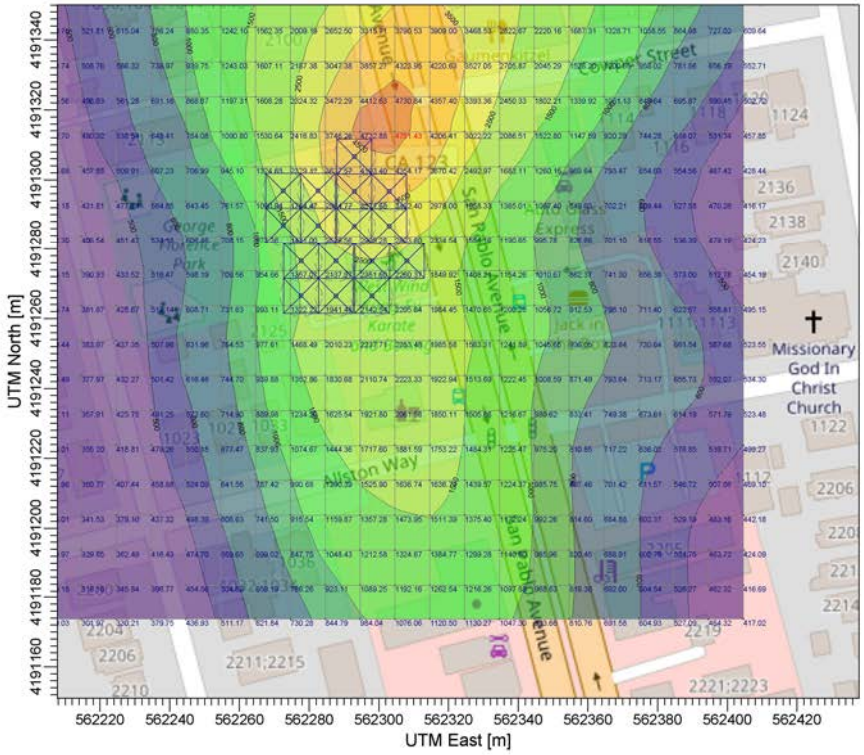
User Defined Equipment

Equipment Type	Number

11.0 Vegetation

PROJECT TITLE:

C:\Users\yilin\Desktop\AERMOD\AERMOD.isc



PLOT FILE OF PERIOD VALUES FOR SOURCE GROUP: ALL

ug/m^3

Max: 4751 [ug/m^3] at (562304.63, 4191313.75)

279 500 600 800 1000 1500 2500 3500 4500 4751

COMMENTS:	SOURCES:	COMPANY NAME:	
	16	**Baseline Environmental Consulting**	
	RECEPTORS:	MODELER:	
	441	**Y.Tian**	
	OUTPUT TYPE:	SCALE: 1:1,447	
	Concentration	0 0.05 km	
	MAX:	DATE:	PROJECT NO.:
	4751 ug/m^3	**3/23/2022**	**21217-00**

Summary of ISCST3 Model Parameters, Assumptions, and Results for DPM and $PM_{2.5}$ Emissions during Construction without COA #49

ISCST3 Model Parameters and Assumptions			
Source Type	**Units**	**Value**	**Notes**
Volume Source: Off-Road Equipment Exhaust			
Hours/Work Day	hours/day	8.83	8 AM to 6 PM Monday through Friday. 9 AM to noon on Saturday
DPM Emission Rate without COA #49	gram/second	0.007182	Exhaust PM_{10} from off-road equipment
Number of Sources	count	16	SMAQMD, 2015
Emission Rate/Source without COA #49	gram/second	0.000449	Scaling factor is (1/Emission Rate) to convert result from ISCST3
Release Height	meters	5.0	SMAQMD, 2015
Length of Side	meters	10.0	SMAQMD, 2015
Initial Lateral Dimension	meters	2.3	ISCST3 Calculator
Initial Vertical Dimension	meters	1.0	SMAQMD, 2015
ISCST3 Model Results			
Emissions Source	**Pollutant**	**Annual Average Concentration**	**Notes**
Construction without COA #49	DPM ($\mu g/m^3$)	0.6073	Nearest residential receptor
	$PM_{2.5}$ ($\mu g/m^3$)	0.5831	Nearest residential receptor

Notes:

DPM = diesel particulate matter

PM_{10} = particulate matter with aerodynamic resistance diameters equal to or less than 10 microns

$PM_{2.5}$ = particulate matter with aerodynamic resistance diameters equal to or less than 2.5 microns

$\mu g/m^3$ = micrograms per cubic meter

Sacramento Metropolitan Air Quality Management District (SMAQMD), 2015. *Guide to Air Quality Assessment in Sacramento County* . June.

Summary of Health Risk Assessment for DPM Emissions during Construction without COA #49

Health Risk Assessment Parameters and Results				
Inhalation Cancer Risk Assessment for DPM	**Units**	**3rd Trimester**	**0-2 Year Infant**	**Notes**
DPM Concentration (C)	$\mu g/m^3$	0.607	0.607	ISCST3 Annual Average
Daily Breathing Rate (DBR)	L/kg-day	361	1090	95th percentile under age of 2 (OEHHA, 2015)
Inhalation absorption factor (A)	unitless	1.0	1.0	OEHHA, 2015
Exposure Frequency (EF)	unitless	0.96	0.96	350 days/365 days in a year (OEHHA, 2015)
Dose Conversion Factor (CF_D)	$mg\text{-}m^3/\mu g\text{-}L$	0.000001	0.000001	Conversion of µg to mg and L to m^3
Dose (D)	mg/kg/day	0.000210	0.000635	$C*DBR*A*EF*CF_D$ (OEHHA, 2015)
Cancer Potency Factor (CPF)	$(mg/kg/day)^{-1}$	1.1	1.1	OEHHA, 2015
Age Sensitivity Factor (ASF)	unitless	10	10	OEHHA, 2015
Annual Exposure Duration (ED)	years	0.25	0.75	Based on total construction period of 12 months
Averaging Time (AT)	years	70	70	70 years for residents (OEHHA, 2015)
Fraction of time at home (FAH)	unitless	0.85	0.85	OEHHA, 2015
Cancer Risk Conversion Factor (CF)	m^3/L	1000000	1000000	Chances per million (OEHHA, 2015)
Cancer Risk at MEIR location	per million	7.0	63.6	D*CPF*ASF*ED/AT*FAH*CF (OEHHA, 2015)
Total Cancer Risk	per million	**70.6**		
Hazard Index for DPM	**Units**	**Value**	**Notes**	
Chronic REL	$\mu g/m^3$	5.0	OEHHA, 2015	
Chronic Hazard Index for DPM	unitless	0.1215	At MEIR location	

Notes:

DPM = diesel particulate matter

REL = reference exposure level

$\mu g/m^3$ = micrograms per cubic meter

L/kg-day = liters per kilogram-day

m^3/L = cubic meters per liter

$(mg/kg/day)^{-1}$ = 1/milligrams per kilograms per day

MEIR = maximum exposed individual resident

Office of Environmental Health Hazard Assessment (OEHHA), 2015. *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. February.*

Summary of ISCST3 Model Parameters, Assumptions, and Results for DPM and $PM_{2.5}$ Emissions during Construction with COA #49

ISCST3 Model Parameters and Assumptions			
Source Type	**Units**	**Value**	**Notes**
Volume Source: Off-Road Equipment Exhaust			
Hours/Work Day	hours/day	8.83	8 AM to 6 PM Monday through Friday. 9 AM to noon on Saturday
DPM Emission Rate with COA #49	gram/second	0.000421	Exhaust PM_{10} from off-road equipment
Number of Sources	count	16	SMAQMD, 2015
Emission Rate/Source with COA #49	gram/second	0.000026	Scaling factor is (1/Emission Rate) to convert result from ISCST3
Release Height	meters	5.0	SMAQMD, 2015
Length of Side	meters	10.0	SMAQMD, 2015
Initial Lateral Dimension	meters	2.3	ISCST3 Calculator
Initial Vertical Dimension	meters	1.0	SMAQMD, 2015
ISCST3 Model Results			
Emissions Source	**Pollutant**	**Annual Average Concentration**	**Notes**
Construction with COA #49	DPM ($\mu g/m^3$)	0.0356	Nearest residential receptor
	$PM_{2.5}$ ($\mu g/m^3$)	0.0352	Nearest residential receptor

Notes:

DPM = diesel particulate matter

PM_{10} = particulate matter with aerodynamic resistance diameters equal to or less than 10 microns

$PM_{2.5}$ = particulate matter with aerodynamic resistance diameters equal to or less than 2.5 microns

$\mu g/m^3$ = micrograms per cubic meter

Sacramento Metropolitan Air Quality Management District (SMAQMD), 2015. *Guide to Air Quality Assessment in Sacramento County* . June.

Summary of ISCST3 Model Parameters, Assumptions, and Results for DPM and $PM_{2.5}$ Emissions during Construction with COA #49

Health Risk Assessment Parameters and Results				
Inhalation Cancer Risk Assessment for DPM	**Units**	**3rd Trimester**	**0-2 Year Infant**	**Notes**
DPM Concentration (C)	$\mu g/m^3$	0.036	0.036	ISCST3 Annual Average
Daily Breathing Rate (DBR)	L/kg-day	361	1090	95th percentile under age of 2 (OEHHA, 2015)
Inhalation absorption factor (A)	unitless	1.0	1.0	OEHHA, 2015
Exposure Frequency (EF)	unitless	0.96	0.96	350 days/365 days in a year (OEHHA, 2015)
Dose Conversion Factor (CF_D)	$mg\text{-}m^3/\mu g\text{-}L$	0.000001	0.000001	Conversion of µg to mg and L to m^3
Dose (D)	mg/kg/day	0.000012	0.000037	$C*DBR*A*EF*CF_D$ (OEHHA, 2015)
Cancer Potency Factor (CPF)	$(mg/kg/day)^{-1}$	1.1	1.1	OEHHA, 2015
Age Sensitivity Factor (ASF)	unitless	10	10	OEHHA, 2015
Annual Exposure Duration (ED)	years	0.25	0.75	Based on total construction period of 12 months
Averaging Time (AT)	years	70	70	70 years for residents (OEHHA, 2015)
Fraction of time at home (FAH)	unitless	0.85	0.85	OEHHA, 2015
Cancer Risk Conversion Factor (CF)	m^3/L	1000000	1000000	Chances per million (OEHHA, 2015)
Cancer Risk at MEIR location	per million	0.4	3.7	D*CPF*ASF*ED/AT*FAH*CF (OEHHA, 2015)
Total Cancer Risk	per million	4.1		
Hazard Index for DPM	**Units**	**Notes**	**Notes**	
Chronic REL	$\mu g/m^3$	5.0	OEHHA, 2015	
Chronic Hazard Index for DPM	unitless	0.0071	At MEIR location	

Notes:

DPM = diesel particulate matter

REL = reference exposure level

$\mu g/m^3$ = micrograms per cubic meter

L/kg-day = liters per kilogram-day

m^3/L = cubic meters per liter

$(mg/kg/day)^{-1}$ = 1/milligrams per kilograms per day

MEIR = maximum exposed individual resident

Office of Environmental Health Hazard Assessment (OEHHA), 2015. *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. February.*

Step 1: Enter Facility Data	
Plant Name	1110 University Avenue
Plant No.	

Step 2: Estimate Distance	
What is the distance (m) from the facility boundary to the MEI?	175

Step 4: Specify Source Type	
Does facility have only diesel backup generators?	yes
Is this analysis for a gas station?	no

Note: Default generic distance multiplier used if source is not a generator or gas station.

Step 5: Read Estimates		
Total Cancer Risk	1.000	per 1,000,000
Total Chronic Hazard	0.000	
Total PM2.5 Concentration	0.000	$\mu g/m^3$

Step 3: Enter Emissions Data

Chemical Name	CAS No. (dashes removed)	Rate (lb/day)	Risk (# / 1,000,000)	Hazard (Index)	Concentration (µg/m3)
Fine Particulate Matter (PM2.5)					
1,1,1-Trichloroethane	71556	0.00E+00			
1,1,2,2-Tetrachloroethane	79345	0.00E+00			
1,1,2-Trichloroethane	79005	0.00E+00			
1,1-Dichloroethane	75343	0.00E+00			
1,1-Dichloroethylene	75354	0.00E+00			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268879	0.00E+00			
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001020	0.00E+00			
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822469	0.00E+00			
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562394	0.00E+00			
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673897	0.00E+00			
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227286	0.00E+00			
1,2,3,4,7,8-Hexachlorodibenzofuran	70648269	0.00E+00			
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653857	0.00E+00			
1,2,3,6,7,8-Hexachlorodibenzofuran	57117449	0.00E+00			
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408743	0.00E+00			
1,2,3,7,8,9-Hexachlorodibenzofuran	72918219	0.00E+00			
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321764	0.00E+00			
1,2,3,7,8-Pentachlorodibenzofuran	57117416	0.00E+00			
1,2-Dibromo-3-chloropropane	96128	0.00E+00			
1,2-Dibromoethane	106934	0.00E+00			
1,2-Dichloroethane	107062	0.00E+00			
1,2-Epoxybutane	106887	0.00E+00			
1,3-Butadiene	106990	0.00E+00			
1,3-Propane sultone	1120714	0.00E+00			
1,4-Dichlorobenzene	106467	0.00E+00			
1,4-Dioxane	123911	0.00E+00			
1,6-Dinitropyrene	42397648	0.00E+00			
1,8-Dinitropyrene	42397659	0.00E+00			
1-Nitropyrene	5522430	0.00E+00			
2',3,4,4',5-PeCB	65510443	0.00E+00			
2,3',4,4',5,5'-HxCB	52663726	0.00E+00			
2,3',4,4',5-PeCB	31508006	0.00E+00			
2,3,3',4,4',5'-HxCB	69782907	0.00E+00			
2,3,3',4,4',5,5'-HpCB	39635319	0.00E+00			
2,3,3',4,4',5-HxCB	38380084	0.00E+00			
2,3,3',4,4'-PeCB	32598144	0.00E+00			
2,3,4,4',5-PeCB	74472370	0.00E+00			
2,3,4,6,7,8-hexachlorodibenzofuran	60851345	0.00E+00			
2,3,4,7,8-Pentachlorodibenzofuran	57117314	0.00E+00			
2,3,7,8-Tetrachlorodibenzo-p-dioxin and related comp	1746016	0.00E+00			
2,3,7,8-Tetrachlorodibenzofuran	51207319	0.00E+00			
2,4,6-Trichlorophenol	88062	0.00E+00			
2,4-Diaminoanisole	615054	0.00E+00			
2,4-Diaminotoluene	95807	0.00E+00			
2,4-Dinitrotoluene	121142	0.00E+00			
2-Aminoanthraquinone	117793	0.00E+00			
2-Nitrofluorene	607578	0.00E+00			
3,3',4,4',5,5'-HxCB	32774166	0.00E+00			
3,3',4,4',5-PeCB	57465288	0.00E+00			
3,3',4,4'-TCB	32598133	0.00E+00			
3,3-Dichlorobenzidine	91941	0.00E+00			
3,4,4'5-TCB	70362504	0.00E+00			
3-Methylcholanthrene	56495	0.00E+00			
4,4-Methylene bis(2-chloroaniline)	101144	0.00E+00			
4,4-Methylenedianiline	101779	0.00E+00			
4-Chloro-ortho-phenylenediamine	95830	0.00E+00			
4-Dimethylaminoazobenzene	60117	0.00E+00			
4-Nitropyrene	57835924	0.00E+00			
5-Methylchrysene	3697243	0.00E+00			
5-Nitroacenaphthene	602879	0.00E+00			
6-Nitrochrysene	7496028	0.00E+00			
7,12-Dimethylbenz(a)anthracene	57976	0.00E+00			
7H-dibenzo(c,g)carbazole	194592	0.00E+00			
Acetaldehyde	75070	0.00E+00			
Acetamide	60355	0.00E+00			
Acrolein	107028	0.00E+00			
Acrylamide	79061	0.00E+00			
Acrylic Acid	79107	0.00E+00			
Acrylonitrile	107131	0.00E+00			
Allyl chloride	107051	0.00E+00			
Ammonia	7664417	0.00E+00			
Aniline	62533	0.00E+00			
Arsenic	7440382	0.00E+00			
Arsine	7784421	0.00E+00			
Asbestos [1/(100 PCM fibers/m^3)]^-1	1332214	0.00E+00			
Benz(a)anthracene	56553	0.00E+00			
Benzene	71432	0.00E+00			
Benzidine	92875	0.00E+00			
Benzo(a)pyrene	50328	0.00E+00			
Benzo(b)fluoranthene	205992	0.00E+00			
Benzo(j)fluoranthene	205823	0.00E+00			
Benzo(k)fluoranthene	207089	0.00E+00			
Benzyl Chloride	100447	0.00E+00			
Beryllium	7440417	0.00E+00			
Bis(2-chloroethyl) Ether	111444	0.00E+00			
Bis(2-chloromethyl) Ether	542881	0.00E+00			
Cadmium	7440439	0.00E+00			
Caprolactam	105602	0.00E+00			
Carbon Disulfide	75150	0.00E+00			
Carbon Monoxide	630080	0.00E+00			
Carbon Tetrachloride	56235	0.00E+00			
Carbonyl Sulfide	463581	0.00E+00			
Chlorinated paraffins (Avg. chain length C12; approx. 6	108171262	0.00E+00			
Chlorine	7782505	0.00E+00			
Chlorine Dioxide	10049044	0.00E+00			
Chlorite	7758192	0.00E+00			
Chlorobenzene	108907	0.00E+00			
Chlorodibromomethane	124481	0.00E+00			
Chloroethane (Ethyl Chloride)	75003	0.00E+00			
Chloroform	67663	0.00E+00			
Chloropicrin	76062	0.00E+00			
Chromic Trioxide	1333820	0.00E+00			
Chromium-hexavalent	18540299	0.00E+00			
Barium chromate2	10294403	0.00E+00			

Calcium chromate2	13765190	0.00E+00		
Lead chromate2	7758976	0.00E+00		
Sodium dichromate2	10588019	0.00E+00		
Strontium chromate2	7789062	0.00E+00		
CHROMIC TRIOXIDE (as chromic acid mist)	1333820	0.00E+00		
Chrysene	218019	0.00E+00		
Copper	7440508	0.00E+00		
Copper and Copper Compounds	7440508	0.00E+00		
Cresol Mixtures	1319773	0.00E+00		
Cupferron	135206	0.00E+00		
Cyanide	57125	0.00E+00		
Di(2-ethylhexyl)phthalate	117817	0.00E+00		
Dibenz(a-h)acridine	226368	0.00E+00		
Dibenz(a-h)anthracene	53703	0.00E+00		
Dibenz(a-j)acridine	224420	0.00E+00		
Dibenzo(a-e)pyrene	192654	0.00E+00		
Dibenzo(a-h)pyrene	189640	0.00E+00		
Dibenzo(a-i)pyrene	189559	0.00E+00		
Dibenzo(a-l)pyrene	191300	0.00E+00		
Diesel Exhaust Particulate	85105	7.11E-03	1.00E+01	2.69E-03
Diethanolamine	111422	0.00E+00		
Dimethylformamide	68122	0.00E+00		
Direct Black 38 (Technical Grade)	1937377	0.00E+00		
Direct Blue 6 (Technical Grade)	2602462	0.00E+00		
Direct Brown 95 (Technical Grade)	16071866	0.00E+00		
Epichlorohydrin	106898	0.00E+00		
Ethylbenzene	100414	0.00E+00		
Ethylene Glycol	107211	0.00E+00		
Ethylene Glycol Monobutyl Ether	111762	0.00E+00		
Ethylene Glycol Monoethyl Ether	110805	0.00E+00		
Ethylene Glycol Monoethyl Ether Acetate	111159	0.00E+00		
Ethylene Glycol Monomethyl Ether	109864	0.00E+00		
Ethylene Glycol Monomethyl Ether Acetate	110496	0.00E+00		
Ethylene Oxide	75218	0.00E+00		
Ethylene Thiourea	96457	0.00E+00		
Fluorides	1101	0.00E+00		
Formaldehyde (gas)	50000	0.00E+00		
Glutaraldehyde	111308	0.00E+00		
Hexachlorobenzene	118741	0.00E+00		
Hexachlorocyclohexane (Technical Grade)	608731	0.00E+00		
Hexachlorocyclohexane- Alpha Isomer	319846	0.00E+00		
Hexachlorocyclohexane- Beta Isomer	319857	0.00E+00		
Hexachlorocyclohexane- Gamma Isomer	58899	0.00E+00		
Hydrazine	302012	0.00E+00		
Hydrogen Chloride	7647010	0.00E+00		
Hydrogen Cyanide	74908	0.00E+00		
Hydrogen Fluoride	7664393	0.00E+00		
Hydrogen Selenide	7783075	0.00E+00		
Hydrogen Sulfide	7783064	0.00E+00		
Indeno(1-2-3-c-d)pyrene	193395	0.00E+00		
Isophorone	78591	0.00E+00		
Isopropyl Alcohol	67630	0.00E+00		
Lead Acetate	301042	0.00E+00		
Lead and Lead Compounds	7439921	0.00E+00		
Lead Phosphate	7446277	0.00E+00		
Lead Subacetate	1335326	0.00E+00		
m-CRESOL	108394	0.00E+00		
m-XYLENE	108383	0.00E+00		
Maleic Anhydride	108316	0.00E+00		
Manganese & Manganese Compounds	7439965	0.00E+00		
Mercury (Inorganic)	7439976	0.00E+00		
Mercuric chloride	7487947	0.00E+00		
Methanol	67561	0.00E+00		
Methyl Bromide	74839	0.00E+00		
Methyl Ethyl Ketone	78933	0.00E+00		
Methyl Isocyanate	624839	0.00E+00		
Methyl Tertiary Butyl Ether	1634044	0.00E+00		
Methylene Chloride (Dichloromethane)	75092	0.00E+00		
Methylene Diphenyl Isocyanate (MDI)	101688	0.00E+00		
Michlers Ketone	90948	0.00E+00		
n-Hexane	110543	0.00E+00		
n-Nitroso-n-methylethylamine	10595956	0.00E+00		
n-Nitrosodi-n-Butylamine	924163	0.00E+00		
n-Nitrosodi-n-Propylamine	621647	0.00E+00		
n-Nitrosodiethylamine	55185	0.00E+00		
n-Nitrosodimethylamine	62759	0.00E+00		
n-Nitrosodiphenylamine	86306	0.00E+00		
n-Nitrosomorpholine	59892	0.00E+00		
n-Nitrosopiperidine	100754	0.00E+00		
n-Nitrosopyrrolidine	930552	0.00E+00		
Naphthalene	91203	0.00E+00		
Nickel and Nickel Compounds	7440020	0.00E+00		
Nickel acetate	373024	0.00E+00		
Nickel carbonate	3333673	0.00E+00		
Nickel carbonyl	13463393	0.00E+00		
Nickel hydroxide	12054487	0.00E+00		
Nickelocene	1271289	0.00E+00		
Nickel Oxide	1313991	0.00E+00		
Nickel Refinery Dust	1146	0.00E+00		
Nickel Subsulfide	12035722	0.00E+00		
Nitric Acid	7697372	0.00E+00		
Nitrogen Dioxide	10102440	0.00E+00		
o-CRESOL	95487	0.00E+00		
o-XYLENE	95476	0.00E+00		
Oleum	8014957	0.00E+00		
Ozone	10028156	0.00E+00		
p-Chloro-o-toluidine	95692	0.00E+00		
p-Cresidine	120718	0.00E+00		
p-CRESOL	106445	0.00E+00		
p-Nitrosodiphenylamine	156105	0.00E+00		
p-XYLENE	106423	0.00E+00		
Pentachlorophenol	87865	0.00E+00		
Perchloroethylene	127184	0.00E+00		
Phenol	108952	0.00E+00		
Phosgene	75445	0.00E+00		
Phosphine	7803512	0.00E+00		
Phosphoric Acid	7664382	0.00E+00		
Phthalic Anhydride	85449	0.00E+00		
Polychlorinated Biphenyls	1336363	0.00E+00		
Potassium Bromate	7758012	0.00E+00		
Propylene	115071	0.00E+00		
Propylene Glycol Monomethyl Ether	107982	0.00E+00		
Propylene oxide	75569	0.00E+00		
Selenium	7782492	0.00E+00		
Selenium sulfide	7446346	0.00E+00		
Silica (crystalline, respirable)	7631869	0.00E+00		
Sodium hydroxide	1310732	0.00E+00		
Styrene	100425	0.00E+00		
Sulfates	9960	0.00E+00		
Sulfur Dioxide	7446095	0.00E+00		
Sulfuric Acid	7664939	0.00E+00		
Sulfur Trioxide	7446719	0.00E+00		

Tertiary-butyl acetate	540885	0.00E+00			
Tetrachloroethylene	127184	0.00E+00			
Thioacetamide	62555	0.00E+00			
Toluene	108883	0.00E+00			
Toluene Diisocyanates	26471625	0.00E+00			
Toluene Diisocyanates (2,4 and 2, 6)	584849	0.00E+00			
Toluene Diisocyanates (2,4 and 2, 6)	91087	0.00E+00			
Trichloroethylene	79016	0.00E+00			
Triethylamine	121448	0.00E+00			
Urethane	51796	0.00E+00			
Vanadium pentoxide	1314621	0.00E+00			
Vinyl acetate	108054	0.00E+00			
Vinyl chloride	75014	0.00E+00			
Xylenes (technical mixture of m, o, p-isomers)	1330207	0.00E+00			
Vanadium	7440622	0.00E+00			
		TOTAL UNADJUSTED Risk Values	**10.000**	**0.003**	**0.000**

Step 1: Enter Facility Data	
Plant Name	2100 San Pablo
Plant No.	

Step 2: Estimate Distance	
What is the distance (m) from the facility boundary to the MEI?	10

Step 4: Specify Source Type	
Does facility have only diesel backup generators?	yes
Is this analysis for a gas station?	no

Note: Default generic distance multiplier used if source is not a generator or gas station.

Step 5: Read Estimates		
Total Cancer Risk	10.000	per 1,000,000
Total Chronic Hazard	0.003	
Total PM2.5 Concentration	0.000	$\mu g/m^3$

Step 3: Enter Emissions Data

Chemical Name	CAS No. (dashes removed)	Rate (lb/day)	Risk (# / 1,000,000)	Hazard (Index)	Concentration (µg/m3)
Fine Particulate Matter (PM2.5)					
1,1,1-Trichloroethane	71556	0.00E+00			
1,1,2,2-Tetrachloroethane	79345	0.00E+00			
1,1,2-Trichloroethane	79005	0.00E+00			
1,1-Dichloroethane	75343	0.00E+00			
1,1-Dichloroethylene	75354	0.00E+00			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268879	0.00E+00			
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001020	0.00E+00			
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822469	0.00E+00			
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562394	0.00E+00			
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673897	0.00E+00			
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227286	0.00E+00			
1,2,3,4,7,8-Hexachlorodibenzofuran	70648269	0.00E+00			
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653857	0.00E+00			
1,2,3,6,7,8-Hexachlorodibenzofuran	57117449	0.00E+00			
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408743	0.00E+00			
1,2,3,7,8,9-Hexachlorodibenzofuran	72918219	0.00E+00			
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321764	0.00E+00			
1,2,3,7,8-Pentachlorodibenzofuran	57117416	0.00E+00			
1,2-Dibromo-3-chloropropane	96128	0.00E+00			
1,2-Dibromoethane	106934	0.00E+00			
1,2-Dichloroethane	107062	0.00E+00			
1,2-Epoxybutane	106887	0.00E+00			
1,3-Butadiene	106990	0.00E+00			
1,3-Propane sultone	1120714	0.00E+00			
1,4-Dichlorobenzene	106467	0.00E+00			
1,4-Dioxane	123911	0.00E+00			
1,6-Dinitropyrene	42397648	0.00E+00			
1,8-Dinitropyrene	42397659	0.00E+00			
1-Nitropyrene	5522430	0.00E+00			
2',3,4,4',5-PeCB	65510443	0.00E+00			
2,3',4,4',5,5'-HxCB	52663726	0.00E+00			
2,3',4,4',5-PeCB	31508006	0.00E+00			
2,3,3',4,4',5'-HxCB	69782907	0.00E+00			
2,3,3',4,4',5,5'-HpCB	39635319	0.00E+00			
2,3,3',4,4',5-HxCB	38380084	0.00E+00			
2,3,3',4,4'-PeCB	32598144	0.00E+00			
2,3,4,4',5-PeCB	74472370	0.00E+00			
2,3,4,6,7,8-hexachlorodibenzofuran	60851345	0.00E+00			
2,3,4,7,8-Pentachlorodibenzofuran	57117314	0.00E+00			
2,3,7,8-Tetrachlorodibenzo-p-dioxin and related comp	1746016	0.00E+00			
2,3,7,8-Tetrachlorodibenzofuran	51207319	0.00E+00			
2,4,6-Trichlorophenol	88062	0.00E+00			
2,4-Diaminoanisole	615054	0.00E+00			
2,4-Diaminotoluene	95807	0.00E+00			
2,4-Dinitrotoluene	121142	0.00E+00			
2-Aminoanthraquinone	117793	0.00E+00			
2-Nitrofluorene	607578	0.00E+00			
3,3',4,4',5,5'-HxCB	32774166	0.00E+00			
3,3',4,4',5-PeCB	57465288	0.00E+00			
3,3',4,4'-TCB	32598133	0.00E+00			
3,3-Dichlorobenzidine	91941	0.00E+00			
3,4,4'5-TCB	70362504	0.00E+00			
3-Methylcholanthrene	56495	0.00E+00			
4,4-Methylene bis(2-chloroaniline)	101144	0.00E+00			
4,4-Methylenedianiline	101779	0.00E+00			
4-Chloro-ortho-phenylenediamine	95830	0.00E+00			
4-Dimethylaminoazobenzene	60117	0.00E+00			
4-Nitropyrene	57835924	0.00E+00			
5-Methylchrysene	3697243	0.00E+00			
5-Nitroacenaphthene	602879	0.00E+00			
6-Nitrochrysene	7496028	0.00E+00			
7,12-Dimethylbenz(a)anthracene	57976	0.00E+00			
7H-dibenzo(c,g)carbazole	194592	0.00E+00			
Acetaldehyde	75070	0.00E+00			
Acetamide	60355	0.00E+00			
Acrolein	107028	0.00E+00			
Acrylamide	79061	0.00E+00			
Acrylic Acid	79107	0.00E+00			
Acrylonitrile	107131	0.00E+00			
Allyl chloride	107051	0.00E+00			
Ammonia	7664417	0.00E+00			
Aniline	62533	0.00E+00			
Arsenic	7440382	0.00E+00			
Arsine	7784421	0.00E+00			
Asbestos [1/(100 PCM fibers/m^3)]^-1	1332214	0.00E+00			
Benz(a)anthracene	56553	0.00E+00			
Benzene	71432	0.00E+00			
Benzidine	92875	0.00E+00			
Benzo(a)pyrene	50328	0.00E+00			
Benzo(b)fluoranthene	205992	0.00E+00			
Benzo(j)fluoranthene	205823	0.00E+00			
Benzo(k)fluoranthene	207089	0.00E+00			
Benzyl Chloride	100447	0.00E+00			
Beryllium	7440417	0.00E+00			
Bis(2-chloroethyl) Ether	111444	0.00E+00			
Bis(2-chloromethyl) Ether	542881	0.00E+00			
Cadmium	7440439	0.00E+00			
Caprolactam	105602	0.00E+00			
Carbon Disulfide	75150	0.00E+00			
Carbon Monoxide	630080	0.00E+00			
Carbon Tetrachloride	56235	0.00E+00			
Carbonyl Sulfide	463581	0.00E+00			
Chlorinated paraffins (Avg. chain length C12; approx. 6	108171262	0.00E+00			
Chlorine	7782505	0.00E+00			
Chlorine Dioxide	10049044	0.00E+00			
Chlorite	7758192	0.00E+00			
Chlorobenzene	108907	0.00E+00			
Chlorodibromomethane	124481	0.00E+00			
Chloroethane (Ethyl Chloride)	75003	0.00E+00			
Chloroform	67663	0.00E+00			
Chloropicrin	76062	0.00E+00			
Chromic Trioxide	1333820	0.00E+00			
Chromium-hexavalent	18540299	0.00E+00			
Barium chromate2	10294403	0.00E+00			

Calcium chromate2	13765190	0.00E+00		
Lead chromate2	7758976	0.00E+00		
Sodium dichromate2	10588019	0.00E+00		
Strontium chromate2	7789062	0.00E+00		
CHROMIC TRIOXIDE (as chromic acid mist)	1333820	0.00E+00		
Chrysene	218019	0.00E+00		
Copper	7440508	0.00E+00		
Copper and Copper Compounds	7440508	0.00E+00		
Cresol Mixtures	1319773	0.00E+00		
Cupferron	135206	0.00E+00		
Cyanide	57125	0.00E+00		
Di(2-ethylhexyl)phthalate	117817	0.00E+00		
Dibenz(a-h)acridine	226368	0.00E+00		
Dibenz(a-h)anthracene	53703	0.00E+00		
Dibenz(a-j)acridine	224420	0.00E+00		
Dibenzo(a-e)pyrene	192654	0.00E+00		
Dibenzo(a-h)pyrene	189640	0.00E+00		
Dibenzo(a-i)pyrene	189559	0.00E+00		
Dibenzo(a-l)pyrene	191300	0.00E+00		
Diesel Exhaust Particulate	85105	7.11E-03	1.00E+01	2.69E-03
Diethanolamine	111422	0.00E+00		
Dimethylformamide	68122	0.00E+00		
Direct Black 38 (Technical Grade)	1937377	0.00E+00		
Direct Blue 6 (Technical Grade)	2602462	0.00E+00		
Direct Brown 95 (Technical Grade)	16071866	0.00E+00		
Epichlorohydrin	106898	0.00E+00		
Ethylbenzene	100414	0.00E+00		
Ethylene Glycol	107211	0.00E+00		
Ethylene Glycol Monobutyl Ether	111762	0.00E+00		
Ethylene Glycol Monoethyl Ether	110805	0.00E+00		
Ethylene Glycol Monoethyl Ether Acetate	111159	0.00E+00		
Ethylene Glycol Monomethyl Ether	109864	0.00E+00		
Ethylene Glycol Monomethyl Ether Acetate	110496	0.00E+00		
Ethylene Oxide	75218	0.00E+00		
Ethylene Thiourea	96457	0.00E+00		
Fluorides	1101	0.00E+00		
Formaldehyde (gas)	50000	0.00E+00		
Glutaraldehyde	111308	0.00E+00		
Hexachlorobenzene	118741	0.00E+00		
Hexachlorocyclohexane (Technical Grade)	608731	0.00E+00		
Hexachlorocyclohexane- Alpha Isomer	319846	0.00E+00		
Hexachlorocyclohexane- Beta Isomer	319857	0.00E+00		
Hexachlorocyclohexane- Gamma Isomer	58899	0.00E+00		
Hydrazine	302012	0.00E+00		
Hydrogen Chloride	7647010	0.00E+00		
Hydrogen Cyanide	74908	0.00E+00		
Hydrogen Fluoride	7664393	0.00E+00		
Hydrogen Selenide	7783075	0.00E+00		
Hydrogen Sulfide	7783064	0.00E+00		
Indeno(1-2-3-c-d)pyrene	193395	0.00E+00		
Isophorone	78591	0.00E+00		
Isopropyl Alcohol	67630	0.00E+00		
Lead Acetate	301042	0.00E+00		
Lead and Lead Compounds	7439921	0.00E+00		
Lead Phosphate	7446277	0.00E+00		
Lead Subacetate	1335326	0.00E+00		
m-CRESOL	108394	0.00E+00		
m-XYLENE	108383	0.00E+00		
Maleic Anhydride	108316	0.00E+00		
Manganese & Manganese Compounds	7439965	0.00E+00		
Mercury (Inorganic)	7439976	0.00E+00		
Mercuric chloride	7487947	0.00E+00		
Methanol	67561	0.00E+00		
Methyl Bromide	74839	0.00E+00		
Methyl Ethyl Ketone	78933	0.00E+00		
Methyl Isocyanate	624839	0.00E+00		
Methyl Tertiary Butyl Ether	1634044	0.00E+00		
Methylene Chloride (Dichloromethane)	75092	0.00E+00		
Methylene Diphenyl Isocyanate (MDI)	101688	0.00E+00		
Michlers Ketone	90948	0.00E+00		
n-Hexane	110543	0.00E+00		
n-Nitroso-n-methylethylamine	10595956	0.00E+00		
n-Nitrosodi-n-Butylamine	924163	0.00E+00		
n-Nitrosodi-n-Propylamine	621647	0.00E+00		
n-Nitrosodiethylamine	55185	0.00E+00		
n-Nitrosodimethylamine	62759	0.00E+00		
n-Nitrosodiphenylamine	86306	0.00E+00		
n-Nitrosomorpholine	59892	0.00E+00		
n-Nitrosopiperidine	100754	0.00E+00		
n-Nitrosopyrrolidine	930552	0.00E+00		
Naphthalene	91203	0.00E+00		
Nickel and Nickel Compounds	7440020	0.00E+00		
Nickel acetate	373024	0.00E+00		
Nickel carbonate	3333673	0.00E+00		
Nickel carbonyl	13463393	0.00E+00		
Nickel hydroxide	12054487	0.00E+00		
Nickelocene	1271289	0.00E+00		
Nickel Oxide	1313991	0.00E+00		
Nickel Refinery Dust	1146	0.00E+00		
Nickel Subsulfide	12035722	0.00E+00		
Nitric Acid	7697372	0.00E+00		
Nitrogen Dioxide	10102440	0.00E+00		
o-CRESOL	95487	0.00E+00		
o-XYLENE	95476	0.00E+00		
Oleum	8014957	0.00E+00		
Ozone	10028156	0.00E+00		
p-Chloro-o-toluidine	95692	0.00E+00		
p-Cresidine	120718	0.00E+00		
p-CRESOL	106445	0.00E+00		
p-Nitrosodiphenylamine	156105	0.00E+00		
p-XYLENE	106423	0.00E+00		
Pentachlorophenol	87865	0.00E+00		
Perchloroethylene	127184	0.00E+00		
Phenol	108952	0.00E+00		
Phosgene	75445	0.00E+00		
Phosphine	7803512	0.00E+00		
Phosphoric Acid	7664382	0.00E+00		
Phthalic Anhydride	85449	0.00E+00		
Polychlorinated Biphenyls	1336363	0.00E+00		
Potassium Bromate	7758012	0.00E+00		
Propylene	115071	0.00E+00		
Propylene Glycol Monomethyl Ether	107982	0.00E+00		
Propylene oxide	75569	0.00E+00		
Selenium	7782492	0.00E+00		
Selenium sulfide	7446346	0.00E+00		
Silica (crystalline, respirable)	7631869	0.00E+00		
Sodium hydroxide	1310732	0.00E+00		
Styrene	100425	0.00E+00		
Sulfates	9960	0.00E+00		
Sulfur Dioxide	7446095	0.00E+00		
Sulfuric Acid	7664939	0.00E+00		
Sulfur Trioxide	7446719	0.00E+00		

Tertiary-butyl acetate	540885	0.00E+00			
Tetrachloroethylene	127184	0.00E+00			
Thioacetamide	62555	0.00E+00			
Toluene	108883	0.00E+00			
Toluene Diisocyanates	26471625	0.00E+00			
Toluene Diisocyanates (2,4 and 2, 6)	584849	0.00E+00			
Toluene Diisocyanates (2,4 and 2, 6)	91087	0.00E+00			
Trichloroethylene	79016	0.00E+00			
Triethylamine	121448	0.00E+00			
Urethane	51796	0.00E+00			
Vanadium pentoxide	1314621	0.00E+00			
Vinyl acetate	108054	0.00E+00			
Vinyl chloride	75014	0.00E+00			
Xylenes (technical mixture of m, o, p-isomers)	1330207	0.00E+00			
Vanadium	7440622	0.00E+00			
		TOTAL UNADJUSTED Risk Values	**10.000**	**0.003**	**0.000**

Step 1: Enter Facility Data	
Plant Name	2147 San Pablo
Plant No.	

Step 4: Specify Source Type	
Does facility have only diesel backup generators?	yes
Is this analysis for a gas station?	no

Note: Default generic distance multiplier used if source is not a generator or gas station.

Step 2: Estimate Distance	
What is the distance (m) from the facility boundary to the MEI?	50

Step 5: Read Estimates		
Total Cancer Risk	5.000	per 1,000,000
Total Chronic Hazard	0.001	
Total PM2.5 Concentration	0.000	$\mu g/m^3$

Step 3: Enter Emissions Data

Chemical Name	CAS No. (dashes removed)	Rate (lb/day)	Risk (# / 1,000,000)	Hazard (Index)	Concentration (µg/m3)
Fine Particulate Matter (PM2.5)					
1,1,1-Trichloroethane	71556	0.00E+00			
1,1,2,2-Tetrachloroethane	79345	0.00E+00			
1,1,2-Trichloroethane	79005	0.00E+00			
1,1-Dichloroethane	75343	0.00E+00			
1,1-Dichloroethylene	75354	0.00E+00			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268879	0.00E+00			
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001020	0.00E+00			
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822469	0.00E+00			
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562394	0.00E+00			
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673897	0.00E+00			
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227286	0.00E+00			
1,2,3,4,7,8-Hexachlorodibenzofuran	70648269	0.00E+00			
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653857	0.00E+00			
1,2,3,6,7,8-Hexachlorodibenzofuran	57117449	0.00E+00			
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408743	0.00E+00			
1,2,3,7,8,9-Hexachlorodibenzofuran	72918219	0.00E+00			
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321764	0.00E+00			
1,2,3,7,8-Pentachlorodibenzofuran	57117416	0.00E+00			
1,2-Dibromo-3-chloropropane	96128	0.00E+00			
1,2-Dibromoethane	106934	0.00E+00			
1,2-Dichloroethane	107062	0.00E+00			
1,2-Epoxybutane	106887	0.00E+00			
1,3-Butadiene	106990	0.00E+00			
1,3-Propane sultone	1120714	0.00E+00			
1,4-Dichlorobenzene	106467	0.00E+00			
1,4-Dioxane	123911	0.00E+00			
1,6-Dinitropyrene	42397648	0.00E+00			
1,8-Dinitropyrene	42397659	0.00E+00			
1-Nitropyrene	5522430	0.00E+00			
2',3,4,4',5-PeCB	65510443	0.00E+00			
2,3',4,4',5,5'-HxCB	52663726	0.00E+00			
2,3',4,4',5-PeCB	31508006	0.00E+00			
2,3,3',4,4',5'-HxCB	69782907	0.00E+00			
2,3,3',4,4',5,5'-HpCB	39635319	0.00E+00			
2,3,3',4,4',5-HxCB	38380084	0.00E+00			
2,3,3',4,4'-PeCB	32598144	0.00E+00			
2,3,4,4',5-PeCB	74472370	0.00E+00			
2,3,4,6,7,8-hexachlorodibenzofuran	60851345	0.00E+00			
2,3,4,7,8-Pentachlorodibenzofuran	57117314	0.00E+00			
2,3,7,8-Tetrachlorodibenzo-p-dioxin and related comp	1746016	0.00E+00			
2,3,7,8-Tetrachlorodibenzofuran	51207319	0.00E+00			
2,4,6-Trichlorophenol	88062	0.00E+00			
2,4-Diaminoanisole	615054	0.00E+00			
2,4-Diaminotoluene	95807	0.00E+00			
2,4-Dinitrotoluene	121142	0.00E+00			
2-Aminoanthraquinone	117793	0.00E+00			
2-Nitrofluorene	607578	0.00E+00			
3,3',4,4',5,5'-HxCB	32774166	0.00E+00			
3,3',4,4',5-PeCB	57465288	0.00E+00			
3,3',4,4'-TCB	32598133	0.00E+00			
3,3-Dichlorobenzidine	91941	0.00E+00			
3,4,4'5-TCB	70362504	0.00E+00			
3-Methylcholanthrene	56495	0.00E+00			
4,4-Methylene bis(2-chloroaniline)	101144	0.00E+00			
4,4-Methylenedianiline	101779	0.00E+00			
4-Chloro-ortho-phenylenediamine	95830	0.00E+00			
4-Dimethylaminoazobenzene	60117	0.00E+00			
4-Nitropyrene	57835924	0.00E+00			
5-Methylchrysene	3697243	0.00E+00			
5-Nitroacenaphthene	602879	0.00E+00			
6-Nitrochrysene	7496028	0.00E+00			
7,12-Dimethylbenz(a)anthracene	57976	0.00E+00			
7H-dibenzo(c,g)carbazole	194592	0.00E+00			
Acetaldehyde	75070	0.00E+00			
Acetamide	60355	0.00E+00			
Acrolein	107028	0.00E+00			
Acrylamide	79061	0.00E+00			
Acrylic Acid	79107	0.00E+00			
Acrylonitrile	107131	0.00E+00			
Allyl chloride	107051	0.00E+00			
Ammonia	7664417	0.00E+00			
Aniline	62533	0.00E+00			
Arsenic	7440382	0.00E+00			
Arsine	7784421	0.00E+00			
Asbestos [1/(100 PCM fibers/m^3)]^-1	1332214	0.00E+00			
Benz(a)anthracene	56553	0.00E+00			
Benzene	71432	0.00E+00			
Benzidine	92875	0.00E+00			
Benzo(a)pyrene	50328	0.00E+00			
Benzo(b)fluoranthene	205992	0.00E+00			
Benzo(j)fluoranthene	205823	0.00E+00			
Benzo(k)fluoranthene	207089	0.00E+00			
Benzyl Chloride	100447	0.00E+00			
Beryllium	7440417	0.00E+00			
Bis(2-chloroethyl) Ether	111444	0.00E+00			
Bis(2-chloromethyl) Ether	542881	0.00E+00			
Cadmium	7440439	0.00E+00			
Caprolactam	105602	0.00E+00			
Carbon Disulfide	75150	0.00E+00			
Carbon Monoxide	630080	0.00E+00			
Carbon Tetrachloride	56235	0.00E+00			
Carbonyl Sulfide	463581	0.00E+00			
Chlorinated paraffins (Avg. chain length C12; approx. 6	108171262	0.00E+00			
Chlorine	7782505	0.00E+00			
Chlorine Dioxide	10049044	0.00E+00			
Chlorite	7758192	0.00E+00			
Chlorobenzene	108907	0.00E+00			
Chlorodibromomethane	124481	0.00E+00			
Chloroethane (Ethyl Chloride)	75003	0.00E+00			
Chloroform	67663	0.00E+00			
Chloropicrin	76062	0.00E+00			
Chromic Trioxide	1333820	0.00E+00			
Chromium-hexavalent	18540299	0.00E+00			
Barium chromate2	10294403	0.00E+00			

Calcium chromate2	13765190	0.00E+00		
Lead chromate2	7758976	0.00E+00		
Sodium dichromate2	10588019	0.00E+00		
Strontium chromate2	7789062	0.00E+00		
CHROMIC TRIOXIDE (as chromic acid mist)	1333820	0.00E+00		
Chrysene	218019	0.00E+00		
Copper	7440508	0.00E+00		
Copper and Copper Compounds	7440508	0.00E+00		
Cresol Mixtures	1319773	0.00E+00		
Cupferron	135206	0.00E+00		
Cyanide	57125	0.00E+00		
Di(2-ethylhexyl)phthalate	117817	0.00E+00		
Dibenz(a-h)acridine	226368	0.00E+00		
Dibenz(a-h)anthracene	53703	0.00E+00		
Dibenz(a-j)acridine	224420	0.00E+00		
Dibenzo(a-e)pyrene	192654	0.00E+00		
Dibenzo(a-h)pyrene	189640	0.00E+00		
Dibenzo(a-i)pyrene	189559	0.00E+00		
Dibenzo(a-l)pyrene	191300	0.00E+00		
Diesel Exhaust Particulate	85105	7.11E-03	1.00E+01	2.69E-03
Diethanolamine	111422	0.00E+00		
Dimethylformamide	68122	0.00E+00		
Direct Black 38 (Technical Grade)	1937377	0.00E+00		
Direct Blue 6 (Technical Grade)	2602462	0.00E+00		
Direct Brown 95 (Technical Grade)	16071866	0.00E+00		
Epichlorohydrin	106898	0.00E+00		
Ethylbenzene	100414	0.00E+00		
Ethylene Glycol	107211	0.00E+00		
Ethylene Glycol Monobutyl Ether	111762	0.00E+00		
Ethylene Glycol Monoethyl Ether	110805	0.00E+00		
Ethylene Glycol Monoethyl Ether Acetate	111159	0.00E+00		
Ethylene Glycol Monomethyl Ether	109864	0.00E+00		
Ethylene Glycol Monomethyl Ether Acetate	110496	0.00E+00		
Ethylene Oxide	75218	0.00E+00		
Ethylene Thiourea	96457	0.00E+00		
Fluorides	1101	0.00E+00		
Formaldehyde (gas)	50000	0.00E+00		
Glutaraldehyde	111308	0.00E+00		
Hexachlorobenzene	118741	0.00E+00		
Hexachlorocyclohexane (Technical Grade)	608731	0.00E+00		
Hexachlorocyclohexane- Alpha Isomer	319846	0.00E+00		
Hexachlorocyclohexane- Beta Isomer	319857	0.00E+00		
Hexachlorocyclohexane- Gamma Isomer	58899	0.00E+00		
Hydrazine	302012	0.00E+00		
Hydrogen Chloride	7647010	0.00E+00		
Hydrogen Cyanide	74908	0.00E+00		
Hydrogen Fluoride	7664393	0.00E+00		
Hydrogen Selenide	7783075	0.00E+00		
Hydrogen Sulfide	7783064	0.00E+00		
Indeno(1-2-3-c-d)pyrene	193395	0.00E+00		
Isophorone	78591	0.00E+00		
Isopropyl Alcohol	67630	0.00E+00		
Lead Acetate	301042	0.00E+00		
Lead and Lead Compounds	7439921	0.00E+00		
Lead Phosphate	7446277	0.00E+00		
Lead Subacetate	1335326	0.00E+00		
m-CRESOL	108394	0.00E+00		
m-XYLENE	108383	0.00E+00		
Maleic Anhydride	108316	0.00E+00		
Manganese & Manganese Compounds	7439965	0.00E+00		
Mercury (Inorganic)	7439976	0.00E+00		
Mercuric chloride	7487947	0.00E+00		
Methanol	67561	0.00E+00		
Methyl Bromide	74839	0.00E+00		
Methyl Ethyl Ketone	78933	0.00E+00		
Methyl Isocyanate	624839	0.00E+00		
Methyl Tertiary Butyl Ether	1634044	0.00E+00		
Methylene Chloride (Dichloromethane)	75092	0.00E+00		
Methylene Diphenyl Isocyanate (MDI)	101688	0.00E+00		
Michlers Ketone	90948	0.00E+00		
n-Hexane	110543	0.00E+00		
n-Nitroso-n-methylethylamine	10595956	0.00E+00		
n-Nitrosodi-n-Butylamine	924163	0.00E+00		
n-Nitrosodi-n-Propylamine	621647	0.00E+00		
n-Nitrosodiethylamine	55185	0.00E+00		
n-Nitrosodimethylamine	62759	0.00E+00		
n-Nitrosodiphenylamine	86306	0.00E+00		
n-Nitrosomorpholine	59892	0.00E+00		
n-Nitrosopiperidine	100754	0.00E+00		
n-Nitrosopyrrolidine	930552	0.00E+00		
Naphthalene	91203	0.00E+00		
Nickel and Nickel Compounds	7440020	0.00E+00		
Nickel acetate	373024	0.00E+00		
Nickel carbonate	3333673	0.00E+00		
Nickel carbonyl	13463393	0.00E+00		
Nickel hydroxide	12054487	0.00E+00		
Nickelocene	1271289	0.00E+00		
Nickel Oxide	1313991	0.00E+00		
Nickel Refinery Dust	1146	0.00E+00		
Nickel Subsulfide	12035722	0.00E+00		
Nitric Acid	7697372	0.00E+00		
Nitrogen Dioxide	10102440	0.00E+00		
o-CRESOL	95487	0.00E+00		
o-XYLENE	95476	0.00E+00		
Oleum	8014957	0.00E+00		
Ozone	10028156	0.00E+00		
p-Chloro-o-toluidine	95692	0.00E+00		
p-Cresidine	120718	0.00E+00		
p-CRESOL	106445	0.00E+00		
p-Nitrosodiphenylamine	156105	0.00E+00		
p-XYLENE	106423	0.00E+00		
Pentachlorophenol	87865	0.00E+00		
Perchloroethylene	127184	0.00E+00		
Phenol	108952	0.00E+00		
Phosgene	75445	0.00E+00		
Phosphine	7803512	0.00E+00		
Phosphoric Acid	7664382	0.00E+00		
Phthalic Anhydride	85449	0.00E+00		
Polychlorinated Biphenyls	1336363	0.00E+00		
Potassium Bromate	7758012	0.00E+00		
Propylene	115071	0.00E+00		
Propylene Glycol Monomethyl Ether	107982	0.00E+00		
Propylene oxide	75569	0.00E+00		
Selenium	7782492	0.00E+00		
Selenium sulfide	7446346	0.00E+00		
Silica (crystalline, respirable)	7631869	0.00E+00		
Sodium hydroxide	1310732	0.00E+00		
Styrene	100425	0.00E+00		
Sulfates	9960	0.00E+00		
Sulfur Dioxide	7446095	0.00E+00		
Sulfuric Acid	7664939	0.00E+00		
Sulfur Trioxide	7446719	0.00E+00		

Tertiary-butyl acetate	540885	0.00E+00			
Tetrachloroethylene	127184	0.00E+00			
Thioacetamide	62555	0.00E+00			
Toluene	108883	0.00E+00			
Toluene Diisocyanates	26471625	0.00E+00			
Toluene Diisocyanates (2,4 and 2, 6)	584849	0.00E+00			
Toluene Diisocyanates (2,4 and 2, 6)	91087	0.00E+00			
Trichloroethylene	79016	0.00E+00			
Triethylamine	121448	0.00E+00			
Urethane	51796	0.00E+00			
Vanadium pentoxide	1314621	0.00E+00			
Vinyl acetate	108054	0.00E+00			
Vinyl chloride	75014	0.00E+00			
Xylenes (technical mixture of m, o, p-isomers)	1330207	0.00E+00			
Vanadium	7440622	0.00E+00			
		TOTAL UNADJUSTED Risk Values	**10.000**	**0.003**	**0.000**

Step 1: Enter Facility Data	
Plant Name	2198 San Pablo
Plant No.	

Step 2: Estimate Distance	
What is the distance (m) from the facility boundary to the MEI?	25

Step 4: Specify Source Type	
Does facility have only diesel backup generators?	yes
Is this analysis for a gas station?	no

Note: Default generic distance multiplier used if source is not a generator or gas station.

Step 5: Read Estimates		
Total Cancer Risk	8.500	per 1,000,000
Total Chronic Hazard	0.002	
Total PM2.5 Concentration	0.000	$\mu g/m^3$

Step 3: Enter Emissions Data

Chemical Name	CAS No. (dashes removed)	Rate (lb/day)	Risk (# / 1,000,000)	Hazard (Index)	Concentration (µg/m3)
Fine Particulate Matter (PM2.5)					
1,1,1-Trichloroethane	71556	0.00E+00			
1,1,2,2-Tetrachloroethane	79345	0.00E+00			
1,1,2-Trichloroethane	79005	0.00E+00			
1,1-Dichloroethane	75343	0.00E+00			
1,1-Dichloroethylene	75354	0.00E+00			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268879	0.00E+00			
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001020	0.00E+00			
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822469	0.00E+00			
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562394	0.00E+00			
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673897	0.00E+00			
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227286	0.00E+00			
1,2,3,4,7,8-Hexachlorodibenzofuran	70648269	0.00E+00			
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653857	0.00E+00			
1,2,3,6,7,8-Hexachlorodibenzofuran	57117449	0.00E+00			
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408743	0.00E+00			
1,2,3,7,8,9-Hexachlorodibenzofuran	72918219	0.00E+00			
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321764	0.00E+00			
1,2,3,7,8-Pentachlorodibenzofuran	57117416	0.00E+00			
1,2-Dibromo-3-chloropropane	96128	0.00E+00			
1,2-Dibromoethane	106934	0.00E+00			
1,2-Dichloroethane	107062	0.00E+00			
1,2-Epoxybutane	106887	0.00E+00			
1,3-Butadiene	106990	0.00E+00			
1,3-Propane sultone	1120714	0.00E+00			
1,4-Dichlorobenzene	106467	0.00E+00			
1,4-Dioxane	123911	0.00E+00			
1,6-Dinitropyrene	42397648	0.00E+00			
1,8-Dinitropyrene	42397659	0.00E+00			
1-Nitropyrene	5522430	0.00E+00			
2',3,4,4',5-PeCB	65510443	0.00E+00			
2,3',4,4',5,5'-HxCB	52663726	0.00E+00			
2,3',4,4',5-PeCB	31508006	0.00E+00			
2,3,3',4,4',5'-HxCB	69782907	0.00E+00			
2,3,3',4,4',5,5'-HpCB	39635319	0.00E+00			
2,3,3',4,4',5-HxCB	38380084	0.00E+00			
2,3,3',4,4'-PeCB	32598144	0.00E+00			
2,3,4,4',5-PeCB	74472370	0.00E+00			
2,3,4,6,7,8-hexachlorodibenzofuran	60851345	0.00E+00			
2,3,4,7,8-Pentachlorodibenzofuran	57117314	0.00E+00			
2,3,7,8-Tetrachlorodibenzo-p-dioxin and related comp	1746016	0.00E+00			
2,3,7,8-Tetrachlorodibenzofuran	51207319	0.00E+00			
2,4,6-Trichlorophenol	88062	0.00E+00			
2,4-Diaminoanisole	615054	0.00E+00			
2,4-Diaminotoluene	95807	0.00E+00			
2,4-Dinitrotoluene	121142	0.00E+00			
2-Aminoanthraquinone	117793	0.00E+00			
2-Nitrofluorene	607578	0.00E+00			
3,3',4,4',5,5'-HxCB	32774166	0.00E+00			
3,3',4,4',5-PeCB	57465288	0.00E+00			
3,3',4,4'-TCB	32598133	0.00E+00			
3,3-Dichlorobenzidine	91941	0.00E+00			
3,4,4'5-TCB	70362504	0.00E+00			
3-Methylcholanthrene	56495	0.00E+00			
4,4-Methylene bis(2-chloroaniline)	101144	0.00E+00			
4,4-Methylenedianiline	101779	0.00E+00			
4-Chloro-ortho-phenylenediamine	95830	0.00E+00			
4-Dimethylaminoazobenzene	60117	0.00E+00			
4-Nitropyrene	57835924	0.00E+00			
5-Methylchrysene	3697243	0.00E+00			
5-Nitroacenaphthene	602879	0.00E+00			
6-Nitrochrysene	7496028	0.00E+00			
7,12-Dimethylbenz(a)anthracene	57976	0.00E+00			
7H-dibenzo(c,g)carbazole	194592	0.00E+00			
Acetaldehyde	75070	0.00E+00			
Acetamide	60355	0.00E+00			
Acrolein	107028	0.00E+00			
Acrylamide	79061	0.00E+00			
Acrylic Acid	79107	0.00E+00			
Acrylonitrile	107131	0.00E+00			
Allyl chloride	107051	0.00E+00			
Ammonia	7664417	0.00E+00			
Aniline	62533	0.00E+00			
Arsenic	7440382	0.00E+00			
Arsine	7784421	0.00E+00			
Asbestos [1/(100 PCM fibers/m^3)]^-1	1332214	0.00E+00			
Benz(a)anthracene	56553	0.00E+00			
Benzene	71432	0.00E+00			
Benzidine	92875	0.00E+00			
Benzo(a)pyrene	50328	0.00E+00			
Benzo(b)fluoranthene	205992	0.00E+00			
Benzo(j)fluoranthene	205823	0.00E+00			
Benzo(k)fluoranthene	207089	0.00E+00			
Benzyl Chloride	100447	0.00E+00			
Beryllium	7440417	0.00E+00			
Bis(2-chloroethyl) Ether	111444	0.00E+00			
Bis(2-chloromethyl) Ether	542881	0.00E+00			
Cadmium	7440439	0.00E+00			
Caprolactam	105602	0.00E+00			
Carbon Disulfide	75150	0.00E+00			
Carbon Monoxide	630080	0.00E+00			
Carbon Tetrachloride	56235	0.00E+00			
Carbonyl Sulfide	463581	0.00E+00			
Chlorinated paraffins (Avg. chain length C12; approx. 6	108171262	0.00E+00			
Chlorine	7782505	0.00E+00			
Chlorine Dioxide	10049044	0.00E+00			
Chlorite	7758192	0.00E+00			
Chlorobenzene	108907	0.00E+00			
Chlorodibromomethane	124481	0.00E+00			
Chloroethane (Ethyl Chloride)	75003	0.00E+00			
Chloroform	67663	0.00E+00			
Chloropicrin	76062	0.00E+00			
Chromic Trioxide	1333820	0.00E+00			
Chromium-hexavalent	18540299	0.00E+00			
Barium chromate2	10294403	0.00E+00			

Calcium chromate2	13765190	0.00E+00		
Lead chromate2	7758976	0.00E+00		
Sodium dichromate2	10588019	0.00E+00		
Strontium chromate2	7789062	0.00E+00		
CHROMIC TRIOXIDE (as chromic acid mist)	1333820	0.00E+00		
Chrysene	218019	0.00E+00		
Copper	7440508	0.00E+00		
Copper and Copper Compounds	7440508	0.00E+00		
Cresol Mixtures	1319773	0.00E+00		
Cupferron	135206	0.00E+00		
Cyanide	57125	0.00E+00		
Di(2-ethylhexyl)phthalate	117817	0.00E+00		
Dibenz(a-h)acridine	226368	0.00E+00		
Dibenz(a-h)anthracene	53703	0.00E+00		
Dibenz(a-j)acridine	224420	0.00E+00		
Dibenzo(a-e)pyrene	192654	0.00E+00		
Dibenzo(a-h)pyrene	189640	0.00E+00		
Dibenzo(a-i)pyrene	189559	0.00E+00		
Dibenzo(a-l)pyrene	191300	0.00E+00		
Diesel Exhaust Particulate	85105	7.11E-03	1.00E+01	2.69E-03
Diethanolamine	111422	0.00E+00		
Dimethylformamide	68122	0.00E+00		
Direct Black 38 (Technical Grade)	1937377	0.00E+00		
Direct Blue 6 (Technical Grade)	2602462	0.00E+00		
Direct Brown 95 (Technical Grade)	16071866	0.00E+00		
Epichlorohydrin	106898	0.00E+00		
Ethylbenzene	100414	0.00E+00		
Ethylene Glycol	107211	0.00E+00		
Ethylene Glycol Monobutyl Ether	111762	0.00E+00		
Ethylene Glycol Monoethyl Ether	110805	0.00E+00		
Ethylene Glycol Monoethyl Ether Acetate	111159	0.00E+00		
Ethylene Glycol Monomethyl Ether	109864	0.00E+00		
Ethylene Glycol Monomethyl Ether Acetate	110496	0.00E+00		
Ethylene Oxide	75218	0.00E+00		
Ethylene Thiourea	96457	0.00E+00		
Fluorides	1101	0.00E+00		
Formaldehyde (gas)	50000	0.00E+00		
Glutaraldehyde	111308	0.00E+00		
Hexachlorobenzene	118741	0.00E+00		
Hexachlorocyclohexane (Technical Grade)	608731	0.00E+00		
Hexachlorocyclohexane- Alpha Isomer	319846	0.00E+00		
Hexachlorocyclohexane- Beta Isomer	319857	0.00E+00		
Hexachlorocyclohexane- Gamma Isomer	58899	0.00E+00		
Hydrazine	302012	0.00E+00		
Hydrogen Chloride	7647010	0.00E+00		
Hydrogen Cyanide	74908	0.00E+00		
Hydrogen Fluoride	7664393	0.00E+00		
Hydrogen Selenide	7783075	0.00E+00		
Hydrogen Sulfide	7783064	0.00E+00		
Indeno(1-2-3-c-d)pyrene	193395	0.00E+00		
Isophorone	78591	0.00E+00		
Isopropyl Alcohol	67630	0.00E+00		
Lead Acetate	301042	0.00E+00		
Lead and Lead Compounds	7439921	0.00E+00		
Lead Phosphate	7446277	0.00E+00		
Lead Subacetate	1335326	0.00E+00		
m-CRESOL	108394	0.00E+00		
m-XYLENE	108383	0.00E+00		
Maleic Anhydride	108316	0.00E+00		
Manganese & Manganese Compounds	7439965	0.00E+00		
Mercury (Inorganic)	7439976	0.00E+00		
Mercuric chloride	7487947	0.00E+00		
Methanol	67561	0.00E+00		
Methyl Bromide	74839	0.00E+00		
Methyl Ethyl Ketone	78933	0.00E+00		
Methyl Isocyanate	624839	0.00E+00		
Methyl Tertiary Butyl Ether	1634044	0.00E+00		
Methylene Chloride (Dichloromethane)	75092	0.00E+00		
Methylene Diphenyl Isocyanate (MDI)	101688	0.00E+00		
Michlers Ketone	90948	0.00E+00		
n-Hexane	110543	0.00E+00		
n-Nitroso-n-methylethylamine	10595956	0.00E+00		
n-Nitrosodi-n-Butylamine	924163	0.00E+00		
n-Nitrosodi-n-Propylamine	621647	0.00E+00		
n-Nitrosodiethylamine	55185	0.00E+00		
n-Nitrosodimethylamine	62759	0.00E+00		
n-Nitrosodiphenylamine	86306	0.00E+00		
n-Nitrosomorpholine	59892	0.00E+00		
n-Nitrosopiperidine	100754	0.00E+00		
n-Nitrosopyrrolidine	930552	0.00E+00		
Naphthalene	91203	0.00E+00		
Nickel and Nickel Compounds	7440020	0.00E+00		
Nickel acetate	373024	0.00E+00		
Nickel carbonate	3333673	0.00E+00		
Nickel carbonyl	13463393	0.00E+00		
Nickel hydroxide	12054487	0.00E+00		
Nickelocene	1271289	0.00E+00		
Nickel Oxide	1313991	0.00E+00		
Nickel Refinery Dust	1146	0.00E+00		
Nickel Subsulfide	12035722	0.00E+00		
Nitric Acid	7697372	0.00E+00		
Nitrogen Dioxide	10102440	0.00E+00		
o-CRESOL	95487	0.00E+00		
o-XYLENE	95476	0.00E+00		
Oleum	8014957	0.00E+00		
Ozone	10028156	0.00E+00		
p-Chloro-o-toluidine	95692	0.00E+00		
p-Cresidine	120718	0.00E+00		
p-CRESOL	106445	0.00E+00		
p-Nitrosodiphenylamine	156105	0.00E+00		
p-XYLENE	106423	0.00E+00		
Pentachlorophenol	87865	0.00E+00		
Perchloroethylene	127184	0.00E+00		
Phenol	108952	0.00E+00		
Phosgene	75445	0.00E+00		
Phosphine	7803512	0.00E+00		
Phosphoric Acid	7664382	0.00E+00		
Phthalic Anhydride	85449	0.00E+00		
Polychlorinated Biphenyls	1336363	0.00E+00		
Potassium Bromate	7758012	0.00E+00		
Propylene	115071	0.00E+00		
Propylene Glycol Monomethyl Ether	107982	0.00E+00		
Propylene oxide	75569	0.00E+00		
Selenium	7782492	0.00E+00		
Selenium sulfide	7446346	0.00E+00		
Silica (crystalline, respirable)	7631869	0.00E+00		
Sodium hydroxide	1310732	0.00E+00		
Styrene	100425	0.00E+00		
Sulfates	9960	0.00E+00		
Sulfur Dioxide	7446095	0.00E+00		
Sulfuric Acid	7664939	0.00E+00		
Sulfur Trioxide	7446719	0.00E+00		

Tertiary-butyl acetate	540885	0.00E+00			
Tetrachloroethylene	127184	0.00E+00			
Thioacetamide	62555	0.00E+00			
Toluene	108883	0.00E+00			
Toluene Diisocyanates	26471625	0.00E+00			
Toluene Diisocyanates (2,4 and 2, 6)	584849	0.00E+00			
Toluene Diisocyanates (2,4 and 2, 6)	91087	0.00E+00			
Trichloroethylene	79016	0.00E+00			
Triethylamine	121448	0.00E+00			
Urethane	51796	0.00E+00			
Vanadium pentoxide	1314621	0.00E+00			
Vinyl acetate	108054	0.00E+00			
Vinyl chloride	75014	0.00E+00			
Xylenes (technical mixture of m, o, p-isomers)	1330207	0.00E+00			
Vanadium	7440622	0.00E+00			
		TOTAL UNADJUSTED Risk Values	**10.000**	**0.003**	**0.000**

APPENDIX B: CONSTRUCTION NOISE CALCULATIONS

Construction Noise Calculations

Construction Phase	Equipment[1]	No. Equipment[1]	Usage Factor[2]	Maximum Noise Level @ 50 feet (Lmax)[3]	Typical Noise Level @ 50 feet (dBA_1)	Reference Distance (D_1)	Distance to Receptor (D_2)	Ground Absorption Constant (G)	Noise Level at Receptor (dBA_2)	Two Noisiest Equipment
		Unit	%	dBA Lmax	dBA Leq	feet	feet	unitless	dBA Leq	dBA Leq
Demolition	Concrete/Industrial Saws	1	20	90	83	50	21	0.5	92	95
	Rubber Tired Dozers	1	40	85	81	50	21	0.5	90	
	Tractors/Loaders/Backhoes	3	40	80	76	50	21	0.5	85	
Site preparation	Graders	1	40	85	81	50	21	0.5	90	93
	Rubber Tired Dozers	1	40	85	81	50	21	0.5	90	
	Tractors/Loaders/Backhoes	1	40	80	76	50	21	0.5	85	
Grading	Graders	1	40	85	81	50	21	0.5	90	93
	Rubber Tired Dozers	1	40	85	81	50	21	0.5	90	
	Tractors/Loaders/Backhoes	2	40	80	76	50	21	0.5	85	
Building Construction	Cranes	1	16	88	80	50	21	0.5	89	92
	Forklifts	1	--	--	--	50	21	0.5	--	
	Generator Sets	1	50	82	79	50	21	0.5	88	
	Tractors/Loaders/Backhoes	1	40	80	76	50	21	0.5	85	
	Welders	3	40	--	--	50	21	0.5	--	
Paving	Cement and Mortar Mixers	1	20	76	69	50	21	0.5	78	94
	Pavers	1	50	85	82	50	21	0.5	91	
	Paving Equipment	1	50	85	82	50	21	0.5	91	
	Rollers	1	20	85	78	50	21	0.5	87	
	Tractors/Loaders/Backhoes	1	40	80	76	50	21	0.5	85	
Architectural Coating	Air Compressors	1	40	80	76	50	21	0.5	85	85

Notes:

-- = value not reported

Noise level at the receptor calculated based on the following equation:[4]

$dBA_2 = dBA_1 + 10 * \log_{10}(D_1/D_2)^{2+G}$

Where:

dBA_2 = Noise level at receptor

dBA_1 = Noise level at reference distance

D_1 = Reference distance

D_2 = Receptor distance

G = Ground absorption constant (0 for hard surface, 0.5 for soft surface)

Combined noise levels at receptor calculated for two noisiest equipment using decibel addition:

$L = 10 * \log_{10} (10^{(L_1/10)}+10^{(L_2/10)})$

L = Combined noise level

L_1 = Noise level for first noisiest piece of equipment

L_2 = Noise level for second noisiest piece of equipment

[1] The type and number of construction equipment based on the default equipment list from the California Emissions Estimator Model.

[2] U.S. Department of Transportation, 2006. FHWA Highway Construction Noise Handbook, Table 9.1. August.

[3] Federal Transit Administration, 2018. Transit Noise and Vibration Impact Assessment Manual, Table 7-1. September.

[4] California Department of Transportation, 1998. Technical Noise Supplement (TeNS). Equation N-2141.2. October.

Construction Vibration Calculations for Potential Building Damage

Equipment	Typical Vibration Level @ 25 Feet[1] (PPV_1)	Building Damage Vibration Threshold (PPV_2)	Reference Distance (D_1)	Buffer Distance to Damage Threshold (D_2)
Unit	in/sec	in/sec	feet	feet
Vibratory Roller	0.210	0.2	25	26
Large bulldozer	0.089	0.2	25	15
Loaded trucks	0.076	0.2	25	13
Small bulldozer	0.003	0.2	25	2

Notes:

Buffer distance to vibration threshold for building damage calculated based on the following equation:[2]

$D_2 = (PPV_1 / PPV_2)$^ (1 / 1.5) * D_1

Where:

PPV_1 = Vibration level at reference distance

PPV_2 = Vibration threshold for building damage

D_1 = Reference distance

D_2 = Buffer distance to vibration threshold for building damage

Construction Vibration Calculations for Potential Annoyance

Equipment	Typical Vibration Level @ 25 Feet[1] (RMS_1)	Annoyance Vibration Threshold (RMS_2)	Reference Distance (D_1)	Buffer Distance to Annoyance Threshold (D_2)
Unit	VdB	VdB	feet	feet
Vibratory Roller	94	80.0	25	73
Large bulldozer	87	80.0	25	43
Loaded trucks	86	80.0	25	40
Small bulldozer	58	80.0	25	5

Notes:

Buffer distance to vibration threshold for human annoyance calculated based on the following equation:[2]

$D_2 = D_1$ * 10^ ((RMS_1 - RMS_2) / 30)

Where:

RMS_1 = Vibration level at reference distance

RMS_2 = Vibration threshold for human annoyance

D_1 = Reference distance

D_2 = Buffer distance to vibration threshold for human annoyance

[1] Federal Transit Administration, 2018. Transit Noise and Vibration Impact Assessment Manual, Table 7-4. September.

[2] Federal Transit Administration, 2018. Transit Noise and Vibration Impact Assessment Manual, Equations 7-2 and 7-3. September.