IV. SETTING, IMPACTS, AND MITIGATION MEASURES

This chapter contains an analysis of each potentially significant environmental issue that has been identified for the Sherwin-Williams Development Project (project). Sections A through M of this chapter describe the environmental setting of the project as it relates to each specific environmental topic evaluated in the Draft EIR and the impacts that could potentially result from implementation of the proposed project. Mitigation measures are proposed to reduce potential impacts, where appropriate.

A. DETERMINATION OF SIGNIFICANCE

Under CEQA, a significant effect is defined as a substantial, or potentially substantial, adverse change in the environment.[1] The CEQA Guidelines direct that this determination be based on scientific and factual data. Each impact evaluation in this chapter is prefaced by criteria of significance, which are the thresholds for determining whether an impact is significant.

B. ISSUES ADDRESSED IN THE DRAFT EIR

The following environmental issues are addressed in this chapter:

A. Land Use
B. Population, Housing and Employment
C. Transportation and Circulation
D. Air Quality
E. Greenhouse Gas Emissions
F. Noise
G. Geology, Soils and Seismicity
H. Hydrology and Water Quality
I. Hazards and Hazardous Materials
J. Cultural Resources
K. Public Services and Recreation
L. Utilities and Infrastructure
M. Visual Resources

Preliminary analysis has determined that the proposed project would not result in significant impacts to Agricultural and Forestry Resources, Mineral Resources, Biological Resources and Wind. Consequently, these issues are not examined in a separate chapter of this Draft EIR, but are discussed briefly in Chapter VII, Other CEQA Considerations.

[1] *CEQA Guidelines* Section 21068.

C. ENVIRONMENTAL SETTING

This chapter has been prepared in accordance with CEQA Guidelines Section 15125, which states: "An EIR must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, from both a local and regional perspective. The environmental setting will normally constitute the baseline physical conditions by which a Lead Agency determines whether an impact is significant. The description of the environmental setting shall be no longer than is necessary to an understanding of the physical effects of the proposed project and its alternatives."

The NOP for the proposed project was published on December 15, 2014. Thus every one of the environmental topical sections in this chapter includes a discussion of physical conditions in the vicinity of the site on or around December 2014.

D. FORMAT OF ISSUE SECTIONS

Each environmental topical section comprises two primary parts: (1) Setting, and (2) Impacts and Mitigation Measures. An overview of the general organization and the information provided in the two parts is provided below:

- *Setting*. The Setting section for each environmental topic generally provides a description of the applicable physical setting (e.g., existing land uses, existing soil conditions, existing traffic conditions) for the project area and its surroundings in the City of Emeryville, at the beginning of the environmental review process. An overview of regulatory considerations that are applicable to each specific environmental topic is also provided.
- *Impacts and Mitigation Measures*. The Impacts and Mitigation Measures section for each environmental topic presents a discussion of the impacts that could result from implementation of the proposed project. The section begins with the criteria of significance, which establish the thresholds to determine whether an impact is significant. The latter part of this section presents the impacts from the proposed project and mitigation measures, as appropriate. Impacts are identified as either less-than-significant impacts (which do not require mitigation measures) or significant impacts (which do require mitigation measures).

Impacts are numbered and shown in bold type, and the corresponding mitigation measures are numbered and indented. Impacts and mitigation measures are numbered consecutively within each topical analysis and begin with an acronymic or abbreviated reference to the impact section (e.g., LU for Land Use). The following symbols are used for individual topics:

LU	Land Use
POP	Population, Housing and Employment
TRANS	Transportation and Circulation
AIR	Air Quality
GHG	Greenhouse Gas Emissions
NOI	Noise
GEO	Geology, Soils and Seismicity
HYD	Hydrology and Water Quality

HAZ	Hazards and Hazardous Materials
CULT	Cultural Resources
PS	Public Services and Recreation
UTL	Utilities and Infrastructure
VIS	Visual Resources

Impacts are also categorized by type of impact, as follows: Less-Than-Significant, Significant, and Significant and Unavoidable. The following notations are provided after each identified significant impact and after identification of mitigation measures:

LTS	Less Than Significant
S	Significant
SU	Significant and Unavoidable

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A. LAND USE

This section describes the existing land uses on and around the project site. Potential land use impacts that would result from development of the proposed project are identified, and mitigation measures are recommended, as appropriate. The project's consistency with planning policies is discussed in Chapter V, Planning Policy.

1. Setting

The following subsections provide an overview of the project location, the project site, and adjacent and planned land uses.

a. Overview. Emeryville is approximately 1.2 square miles and is located on the eastern shore of San Francisco Bay in Alameda County. The City is bordered to the north by the City of Berkeley, to the east and south by the City of Oakland, and to the west by the San Francisco Bay. The future site of Horton Landing Park, owned by the City, is located immediately north of the project site, and a Novartis surface parking lot (also called the "Rifkin Lot") is located to the northeast. Temescal Creek runs near the northern boundary of the site.

The 10.05-acre project site is generally bound by Horton Street to the east, Sherwin Avenue to the south, and the Union Pacific Railroad (UPRR) tracks to the west. The project site includes two parcels: one owned by the Sherwin-Williams Company and one owned by the City of Emeryville, identified as the Successor Agency parcel. The Sherwin-Williams parcel (APN 049-1041-26-15) is approximately 8.59 acres and is located at 1450 Sherwin Avenue. The Successor Agency parcel (APN 049-1041-26-16) is approximately 1.46 acres and located in the southwest corner of the project site. A project location map is shown in Figure III-1.

The project site is located within the Park Avenue District (District), historically an industrial neighborhood that grew around the existing rail and regional roadway network. Factories or plants originally located within the District included American Rubber Manufacturing, the California Cracker Company, Peoples Baking, Del Monte and California Packing. Starting in the 1980s, residential and commercial uses began to replace industrial uses in the District. In the mid 2000s, the District developed into a mixed-use neighborhood with artist lofts and cooperatives, retail, and a range of residential uses in addition to remaining industrial and warehouse uses. Like earlier industrial uses, existing uses in the District benefit from the neighborhood's proximity to regional transportation facilities including the Bay Area Rapid Transit (BART) system, AMTRAK, the Bay Bridge, Interstates 80/580, and various local and regional bus routes.

b. Project Site. The following provides a description of the existing land uses within the project site. Figure IV.A-1 provides an aerial map generally depicting land uses on and in the vicinity of the project site

(1) Sherwin-Williams Parcel. The 8.59-acre Sherwin-Williams site was used for the manufacturing of paint and coatings between the early 1900s and early 2000s. The plant was closed in 2006 and only one structure remains on the eastern portion of the project site (Building 1-31, technically two buildings that function as a single building). This three-story brick building fronts Horton Street. All other structures on the project site were demolished as part of remediation

activities. Other than the remaining building, remnants of building pads, and recent remediation activities, the parcel is vacant and not actively used.

(2) Successor Agency Parcel. The Successor Agency parcel (1.46-acres) was used for railroad spurs and a small rail yard from the early 1900s into the late 1980s. Today, this parcel is currently undeveloped. The site contains remnants of a driveway, soil stock piles, and equipment associated with remediation activities and is not actively used.

c. Adjacent Land Uses. The project site is located within an urban area with a mix of land uses include research and development, administrative, retail and residential uses. Commercial uses, including retail and residential uses on Bay Street, are located to the west of the project site and the UPRR tracks. The Novartis Research Center campus is located to the north and residential and commercial uses are located to the east and south. Figure IV.A.-1 illustrates existing land uses surrounding the project site, as follows:

- **North:** The future site of Horton Landing Park, owned by the City, is located immediately north of the project site. This site is currently vacant. In addition, a parking lot that belongs to the Novartis Research Center is located northeast of the project site.
- **East:** The Novartis Research Center and Grifols Diagnostics (research and development facilities) is located northeast of the project site, on the east side of Horton Street. The research center comprises biotech research, development and manufacturing facilities in several warehouse structures and recent constructed buildings. The Novartis campus constitutes a major employment center in Emeryville. In addition, the 45th Street Artist Co-op, Horton Street Lofts and the Artists Co-op Annex are located east of the project site.
- **South:** Hubbard Street includes a range of mixed-use buildings including residential lofts (Emeryville Warehouse Lofts) southeast of the project site and commercial and administrative office space on the western part of Hubbard Street. The residential lofts south of the project site include both converted industrial buildings and new buildings that were designed in a similar architectural style.
- **West:** The project site is bordered by the UPRR tracks and an associated rail yard to the west. Historically, this area has contained storage tracks for idle trains and spurs leading to the project site. IKEA, and the Bay Street Mall are located on the west side of the UPRR Tracks. The Bay Street Mall is an open air, mixed-use shopping center that includes over 380 residential apartment units above the retail shops. The retail establishments within and around the Bay Street Mall comprise a major regional shopping center in the Bay area.

d. Planned Land Uses. Numerous parcels in Emeryville are undergoing redevelopment or are planned for development. As described in the General Plan, by 2030, approximately 3,800 housing units, 640,681 square feet of retail space and 2,372,200 square feet of office and lab space were planned for eventual development.[1] Some projects planned for after 2015 in the City are described below:

[1] Dyett & Bhatia, 2007. *City of Emeryville General Plan*, *Land Use Section.*

LSA

FIGURE IV.A-1

N

Project Site

0 200 400
FEET

Sherwin-Williams Project EIR
Existing Land Uses

SOURCE: GOOGLE EARTH 06/14; LSA ASSOCIATES, INC., 2015.

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- **Hyatt Place Hotel** (Bay Street "Site A" Northeast corner of Christie Avenue and Bay Street). This project includes a new hotel [171 rooms] on an unbuilt portion of Bay Street Site A. The hotel is entitled as part of South Bayfront Retail/Mixed Use Project Planned Unit Development (PUD). This project is southwest of the project site and is currently under construction.
- **Marketplace Redevelopment Park** (Christie Avenue Park Redesign and Expansion). This project would include the redesign and expansion of Christie Avenue Park, as required by conditions of approval of Marketplace Redevelopment Project PUD. This project is northeast of the project site.
- **Marketplace Shellmound Site** (Marketplace Redevelopment Project Parcel A, Shellmound Street at pedestrian bridge over railroad). This project includes the construction of a new mixed-use building with approximately 185 residential units, 15,000 square feet of retail space and 240 residential parking spaces. This project is north of the project site.
- **Marketplace Theater Site** (Marketplace Redevelopment Project Parcel D, southwest of 64th and Shellmound Streets). This project would involve the construction of new residential building with approximately 234 residential units and 305 residential parking spaces. This project is north of the project site.
- **Marketplace Parcels B and C** (Marketplace Redevelopment Project Shellmound Street between Shellmound Way and 64th Street). This project includes the development of: Parcel B to encompass 25,000 square-feet of retail and 540 parking spaces in a garage; and Parcel C to encompass 35,500 square-feet of retail, 75 residential units, and 300 parking spaces in a garage; and realignment of Shellmound Street. This project is located north of the project site.
- **39th and Adeline Residential Project** (East side of Adeline Street between 39th Street and Yerba Buena Avenue, 3900 Adeline). This project would construct a 101-unit rental apartment project on a 1.12 acre site that is partially in Oakland. This project is located southeast of the project site and is currently under construction.
- **Anton Emeryville** ("Nady Site", 6701 Shellmound Street). This project would entail the redevelopment of the former industrial site for approximately 211 rental housing units. This project is located north of the project site.
- **Golden Gate Lock & Key** (3706 San Pablo Avenue). This project would include the redevelopment of former Golden Gate Lock & Key site for City-sponsored affordable housing project with approximately 87 residential units and 6,130 square feet of commercial space. This project is located southeast of the project site.
- **The Intersection/The "Maz"** (3800 San Pablo Avenue). This project would include the renovation of former "Maz" building into a mixed-use development that includes: 17,158 square feet of retail use; 1,048 square feet of live-work space; and construction of a new 75-foot, 5-story, 105-unit residential structure on the east portion of the lot over two levels of parking. This project is located southeast of the project site. The building permit is being processed as of November 2015.

- **Ambassador Housing (3610 Peralta).** This project includes 69 apartment units, of which a portion is considered affordable housing, very extremely low income housing and very low income housing. This project is southeast of the project site.
- **Novartis Campus.** This project includes approximately 788,000 square feet of net-new laboratory/research and development space to the north of the project site. This project was approved in 2005 however; the timing and/or feasibility of construction have not yet been determined.

e. Emeryville General Plan. The Land Use and Urban Design Elements of the General Plan contain policies pertaining to land use and urban design, as listed below:

- Policy LU-P-16: A point-based system will be established for intensity, height and density bonus, as well as review and approval process
- Policy LU-P-18: The reuse of the Sherwin Williams site shall include a mix of residential and nonresidential uses with ample open space, centered on an extension of the Emeryville Greenway connecting Horton Landing Park and the Park Avenue District.
- Policy LU-P-25: If new residential buildings are proposed adjacent to freeways and railroad tracks impacts of these corridors, including noise, vibration, and air pollution, should be considered during site planning.
- Policy LU-P-26: A mix of retail that draws local customers as well as patrons from the greater Bay Area shall be encouraged.
- Policy UD-P-13: The Park Avenue District Plan will continue to guide development in the Park Avenue district, honoring its unique civic, arts, and cultural amenities.
- Policy UD-P-38: New developments should employ changes in height, massing, and/or design character to create careful transitions in scale and density.
- Policy UD-P-40: Neighborhood structure and pedestrian scale development should be prioritized. The scale and character of existing neighborhoods should be maintained to ensure connectivity and continuity of street design within each district.
- Policy UD-P-53: Use of the greenways shall be reinforced by fronting entrances to both commercial and residential development to the public pathway.
    - Encourage open spaces and plazas adjacent to the greenways.
    - Encourage other public-oriented ground level uses such as workshops, lobbies, and common areas.

2. Impacts and Mitigation Measures

The following section provides a discussion of impacts related to land use that could result from development of the proposed project. The section begins with the criteria of significance, establishing the thresholds to determine whether an impact is significant. The latter part of this section describes the land use impacts from the proposed project and recommends mitigation measures, if required. Please note that an evaluation of the proposed project's conformance with the General Plan and other planning documents is included in Chapter V, Planning Policy.

a. Criteria of Significance. Development of the proposed project would result in a significant impact related to land use if it would:

- Physically divide an established community;
- Create land use incompatibilities between proposed development and existing neighborhoods; or
- Conflict with any applicable land use plans, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect.

b. Project Impacts. The following discussion describes the potential impacts related to land use that could result from implementation of the proposed project. The potential impacts and mitigation measures discussed below would apply for both potential development options (Option A and Option B) unless indicated otherwise.

(1) Physically Divide an Established Community. The physical division of an established community typically refers to the construction of a physical feature, such as interstate highway, or the removal of a means of access, such as a local road, that would impair mobility within an existing community or between a community and outlying areas. For example, 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 proposed project is located in an urban area on private property that was formerly used for manufacturing and industrial uses. The neighborhood has changed from an industrial to a mixed-used district with residential, office, light manufacturing and retail land uses. The project proposes to construct a mixed-use development project with a combination of residential, commercial, recreational and open space uses.

Both development options of the proposed project would include the division of the project site into open space, roads and new parcels. Both options would include the renovation of the remaining building on the site, and the construction of five new buildings ranging up to 100 feet in height. The buildout of both options under the proposed development would change the land use within the project site to a mixture of uses, including residential, commercial, and recreational and open space uses. Both options would result in similar land uses that would be comparable to other uses within the vicinity of the project site.

Both options would include the same circulation pattern, which would involve the extension of Hubbard Street and the extension of 46th Street into the project site, to provide circulation and access for vehicular and bicycle movement as well as sidewalks for pedestrian use. The extension of both roads, and the addition of new pathways, would provide linkages within the site and between the site and surrounding neighborhood. Streetscape improvements would enhance the environment for pedestrian and bike use and would encourage the movement of people to and through the project site, which is currently not used and not open to the public. No physical barriers would be developed on the project site that would impede access to and through the site, and no existing access would be removed. Moreover, the north-south expansion of the Emeryville Greenway through the project site, and the future construction of a South Bayfront pedestrian-bicycle bridge over the railroad tracks north of the site at Horton Landing Park, would further integrate the proposed project into the surrounding neighborhood.

The addition of residents to the project site is in keeping with the goals of the Park Avenue District Plan for the area, as well as with the City's General Plan, which envision the incorporation of taller buildings and more intense development uses on specific designated sites, including the Sherwin-Williams site. See Chapter V, Planning Policy, for a thorough discussion of the policy consistency.

Development of the proposed project would result in a less-than-significant land use impact related to the division of an established community.

(2) Land Use Conflicts. Land uses near the project site are characterized as mixed-use with a combination of retail, office and residential uses. The proposed project would introduce a permanent residential population to the project site which would result in the development of land uses that are similar to surrounding uses. In addition, the project includes the development of new east-west and north-south streets, driveways and sidewalks that would break up the superblock that comprises the project site, and would increase pedestrian and bicycle accessibility. The public park and publicly accessible interior courtyard that would be developed as part of the project would provide greenspace and community-gathering places within the District.

Residential, office, biomedical laboratory/research/manufacturing, and live/work uses to the north, east, and south of the project site are compatible with proposed residential, commercial, and open space uses. While railroad tracks are located along the western boundary of the site, the placement of residential and commercial uses next to railroad tracks does not constitute an inherent land use conflict. In the United States, many urban areas - including residential neighborhoods - have been organized or developed around railroad lines.

In the case of Option B of the proposed project, residential and commercial uses would be buffered from the railroad tracks by a City park and the Emeryville Greenway, a planned bicycle and pedestrian path (with associated landscaping) that would extend through Emeryville. Option A of the proposed project would have residential units adjacent to active railroad tracks. Noise and air quality effects associated with placement of a residential population adjacent to active railroad tracks are discussed in Sections IV.D, Air Quality, and IV.F, Noise, of this Draft EIR.

While the proposed project would introduce new land uses into the project site, it would not result in land use conflicts. Impacts associated with land use would be less than significant.

(3) Conflict With Land Use Plans Adopted to Mitigate Adverse Environmental Impacts. As described in detail in Chapter V, Planning Policy, the proposed project would be generally consistent with the City's General Plan and Park Avenue District Plan policies. Per the Park Avenue District Plan, the Sherwin-Williams site is envisioned to be a site with taller building heights and a more intense development program.[2] Furthermore, the proposed project would be consistent with surrounding land uses.

[2] Emeryville, City of. 2006. *Park Avenue District Plan*.

Chapter V, Planning Policy, further discusses the projects conformance with Emeryville's General Plan, Planning Regulations and other applicable plans, none of which would result in physical adverse impacts to the environment. The proposed project would not conflict with any land use plan adopted to mitigate adverse environmental impacts. As such, development of the proposed project would result in less-than-significant impacts with adopted land use plans.

c. Cumulative Impacts. As described in this section, the proposed project would not result in significant land use impacts by physically dividing an established community, or conflicting with surrounding land uses, land use policies, or a conservation plan. With implementation of the requested General Plan Amendment, rezoning PUD/PDP, and building permits, the proposed project would be consistent with the applicable land use regulations for the site. Moreover, the proposed project reflects the development plan for the Sherwin-Williams site as stated in the City of Emeryville's General Plan and Park Avenue District Plan. The proposed project would not make a considerable contribution to a significant cumulative land use and planning impact.

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B. POPULATION, HOUSING AND EMPLOYMENT

This section describes population, housing and employment conditions in the City of Emeryville and Alameda County, and evaluates potential impacts that could result from implementation of the proposed project.

1. Setting

The following section utilizes data from the U.S. Census Bureau (Census), Association of Bay Area Governments (ABAG), and the Emeryville Housing Element 2015-2023.[1]

a. Population. The City of Emeryville is an urban community located on the eastern shore of the San Francisco Bay in Alameda County. Emeryville is bound by the City of Oakland to the south and east, the City of Berkeley to the north, and the San Francisco Bay to the west. Historically, Emeryville has been an industrial community and job center. However, since the mid-1970s the City has focused on redeveloping underutilized and/or vacated industrial sites with new commercial and residential uses. As a result, City population has nearly quadrupled since 1970 with the addition of 8,127 residents between 1970 and 2010.

The City's population was approximately 10,080 in 2010.[2] As shown in Table IV.B-1, between 2000 and 2010, the City population grew 46.4 percent, which is significantly higher than Alameda County's population growth of approximately 4.6 percent. The continual growth in Emeryville during this past decade is likely due to a substantial increase in mixed-use residential development within the City. According to ABAG's projections, Emeryville's population is expected to reach approximately 17,100 residents by 2030.[3]

Table IV.B-1: Population Growth in Emeryville and Alameda County

	2000	2010	Percent Increase
Emeryville	6,882	10,080	46%
Alameda County	1,443,741	1,510,271	5%

Source: *Emeryville Housing Element 2015-2023*, 2014.

b. Housing. This section describes existing housing in Emeryville and Alameda County.

(1) Housing Stock and Tenure. In 2010, Emeryville had approximately 6,646 housing units. Approximately 75.8 percent of the housing stock consists of housing units within multi-family structures of five or more units. Of these multi-family units, approximately 1,827 units were built within the City between 2000 and 2010. As shown in Table IV.B-2, single-family, multi-family units with two to four units, and mobile homes

Table IV.B-2: Housing Units by Structure Type 2010

Structure Type	Number of Units	Percentage
Single-family, attached or detached	821	13%
Multi-family, 2 to 4 units	751	11%
Multi-family, 5 or more units	5,038	77%
Mobile home	36	1%
Total units	**6,646**	**100%[a]**

[a] Numbers may not add to 100 due to rounding.

Source: *Emeryville Housing Element 2015-2023*, 2014.

[1] Emeryville, City of, 2014. *Emeryville Housing Element 2015-2023*.

[2] Ibid.

[3] Ibid.

comprise less than 25 percent of the total housing stock.

In 2010, approximately 65 percent of the City's occupied housing units were renter-occupied and the overall vacancy rate for both owner and renter units was approximately 10 percent.

General Plan buildout describes full development under the policies set within General Plan. Emeryville's 2030 buildout is project to be 9,800 housing units, which includes existing and new construction.[4] Approximately 3,812 new units could be added to the housing stock through 2030 under the General Plan policies.

(2) Regional Housing Needs. As required by State law, the Housing Element of the Emeryville General Plan discusses the County's "fair share allocation" of regional housing need by income group as projected by ABAG. ABAG's determination of the local share of regional housing needs takes into consideration the following factors: market demand for housing; employment opportunities; availability of suitable sites and public facilities; loss of existing affordable units; transportation; and special housing needs. The Emeryville General Plan Housing Element was recently updated and adopted on December 1, 2014.[5]

Table IV.B-3: Emeryville Regional Housing Needs Allocation

Income Category	Number of Units	Percent
Extremely Low	138	9%
Very Low	138	9%
Low	211	14%
Moderate	259	17%
Above Moderate	752	50%
Total	**1,498**	**100%[a]**

[a] Numbers may not add to 100 due to rounding.
Source: *Emeryville Housing Element 2015-2023*, 2014

The ABAG Regional Housing Needs Determination (RHND) for the City of Emeryville for the period of 2014-2022 is shown in Table IV.B-2. The City's allocation for this period is 1,498 additional new housing units. The RHND is allocated by income category: extremely low, very low, low, moderate, and above moderate.

(3) Households. According to the 2010 Census, 5,694 households existed in Emeryville. Households are considered to be occupied housing units. From 2000 to 2010, Emeryville experienced a 43.2 percent increase in households; while Alameda County households grew by 4.2 percent.

Average household size is determined by dividing the total number of occupied housing units by the population. The 2010 average citywide household size was 1.71 residents. Average household size in Emeryville is considerably lower than the county-wide average of 2.71 residents. In 2010, more than half of residents in Emeryville were single-occupant householders while family households with children under 18 comprised 10.8 percent of households.

c. Employment. Two types of employment data are described below: 1) total jobs – which indicate the number of jobs within the community; and 2) employed residents – which indicate the number of residents of working age who actively participate in the civilian labor force. A comparison

[4] Emeryville, City of, 2009. *Emeryville General Plan*

[5] Emeryville, City of, op. cit.

of the data can provide an indication of commute patterns in a community (i.e., whether significant out-commuting or in-commuting occurs).

The civilian labor force includes: 1) those who are employed (except in the armed forces); and 2) those who are unemployed but actively seeking employment. Those who have never held a job, who have stopped looking for work, or who have been unemployed for a long period of time are not considered to be in the labor force. According to the Census, an estimated 7,049 persons in Emeryville (70 percent of the total 2010 City population) were in the labor force between 2009 and 2013.[6]

(1) Total Jobs. In 2010, Emeryville had 16,040 total jobs which comprised approximately 2 percent of County jobs. ABAG projects that the number of jobs in the City will grow 47 percent by 2040, with a total of 7,540 jobs added to the City. By 2040, total jobs in the County are estimated to increase by approximately 36 percent from 2010, an additional 252,820 jobs.

(2) Employed Residents. The Census estimates approximately 6,542 residents in Emeryville were employed between 2009 and 2013. Unemployed residents are not counted as employed residents, even if they are actively seeking employment. Employed residents comprise approximately 94 percent of Emeryville's labor force resulting in an unemployment rate of approximately 6.7 percent.

d. General Plan Policies. The Housing Element of the General Plan includes the following housing-related policies applicable to the proposed project.

- Policy H-7-1: Encourage the remediation of former industrial sites to create safe sites for housing development.
- Policy H-7-2: Encourage housing development that provides clean indoor air, maximizes energy and water efficiency, addresses stormwater treatment, prevents stormwater intrusion, and utilizes high quality, eco-friendly building materials.
- Policy H-7-3: Encourage the development of housing in close proximity to transit, parks, and services, and encourage site and building design that includes social spaces, emphasizes transit access, provides bicycle parking, and features a strong interface with the street.

2. Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to population and housing that could result from implementation of the proposed project. The section begins with the criteria of significance, which establish the thresholds to determine if an impact is significant. The latter part of this section presents the impacts associated with implementation of the proposed project and recommends mitigation measures, if required.

a. Criteria of Significance. Development of the proposed project would result in a significant impact related to population and housing if it would:

[6] U.S. Census Bureau. *2009-2013 5-Year American Community Survey*.

- Displace substantial numbers of existing housing or people, necessitating the construction of replacement housing elsewhere;
- Induce substantial population growth in an area, either directly (for example, by proposing new homes or businesses) or indirectly (for example, through extension of roads or other infrastructure); or

b. Project Impacts. The following discussion describes the potential impacts related to population and housing that could result from implementation of the proposed project. The applicant is proposing two potential development options; however, given that the total housing units remains the same, the analysis for both options would be the same. Therefore, the impacts described in the following section would result from the implementation of either Option A and Option B of the proposed project.

(1) Induce Substantial Population Growth. The proposed project would generate housing-related population growth by adding 540 dwelling units to the City's housing stock. According to the Census, the average household size for the City was 1.71 persons. Based on this average, the 540 units would increase Emeryville's population by 923 additional residents. This increase represents about 9.1 percent of the City's estimated 2010 population of 10,080. ABAG estimates Emeryville population will increase by approximately 7,020 new residents and reach 17,100 by 2035. The anticipated increase in population associated with the proposed project (923 residents) would represent approximately 14 percent of this anticipated growth.

The project site is identified in the General Plan Land Use Element for Mixed Use with Residential Development and Park/Open Space. The General Plan Housing Element identifies housing resources and includes the project site as a potential housing site. The extension of infrastructure onto the project site would only serve the proposed development and would not contribute to or cause additional growth to occur outside of Emeryville or within the vicinity of the project site, as the project site is surrounded by developed land.

The proposed project would not induce substantial unanticipated population growth in the City, and the population increase would fall within the increase identified in the Housing Element. Population growth assumed with implementation of the proposed project would be considered a less-than-significant impact.

(2) Displace Substantial Numbers of Existing Housing or People, Especially Affordable Housing Necessitating the Construction of Replacement Housing Elsewhere. The only structure on the site is the vacant Sherwin-Williams Building 1-31. The building was previously a Sherwin-William's paint and coating manufacturing plant from the early 1900s until all production stopped in 2006. No housing units currently exist on the project site. As a result, the project would not displace existing housing or people, including affordable housing that would require replacement housing elsewhere or result in a housing and population impact.

c. Cumulative Impacts. The proposed project would add a total of 540 new housing units to the existing housing stock in Emeryville and increase population by approximately 923 residents. The General Plan 2030 identifies the addition of 3,812 new housing units by 2030. Since 2008 (the baseline year for the General Plan), the City has issued permits for 809 housing units, approximately 21 percent of identified new housing units.[7] With permitted housing units considered, there are approximately 3,003 remaining housing units anticipated with buildout of the 2030 General Plan. The proposed project would represent approximately 18 percent of the anticipated units to be built by 2030.

Given that the Housing Element identifies the project site as a potential housing site and that the project represents 18 percent of anticipated housing units, the proposed project would not cumulatively exceed the growth projections anticipated by the General Plan. Development of the proposed project, in addition to future project projects currently approved or planned within the City, would not cumulatively exceed the City's General Plan growth projections and this impact would be less than significant.

[7] Includes residential projects that have been approved but not yet built and residential projects that have completed construction.

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C. TRANSPORTATION AND CIRCULATION

This section was prepared based on information contained in the transportation impact assessment prepared by Fehr & Peers and it presents the potential transportation and circulation impacts that may result from construction of the Sherwin-Williams mixed-use residential and commercial project. The evaluation of environmental effects presented in this section focuses on the potential transportation and circulation impacts associated with a full range of transportation concerns, including vehicle traffic circulation, pedestrian and bicycle circulation, public transit use, and parking. Feasible mitigation measures to reduce or eliminate potential significant impacts of the project are identified as well. The Transportation Impact Analysis[1] report prepared for the project is included in Appendix B.

1. Setting

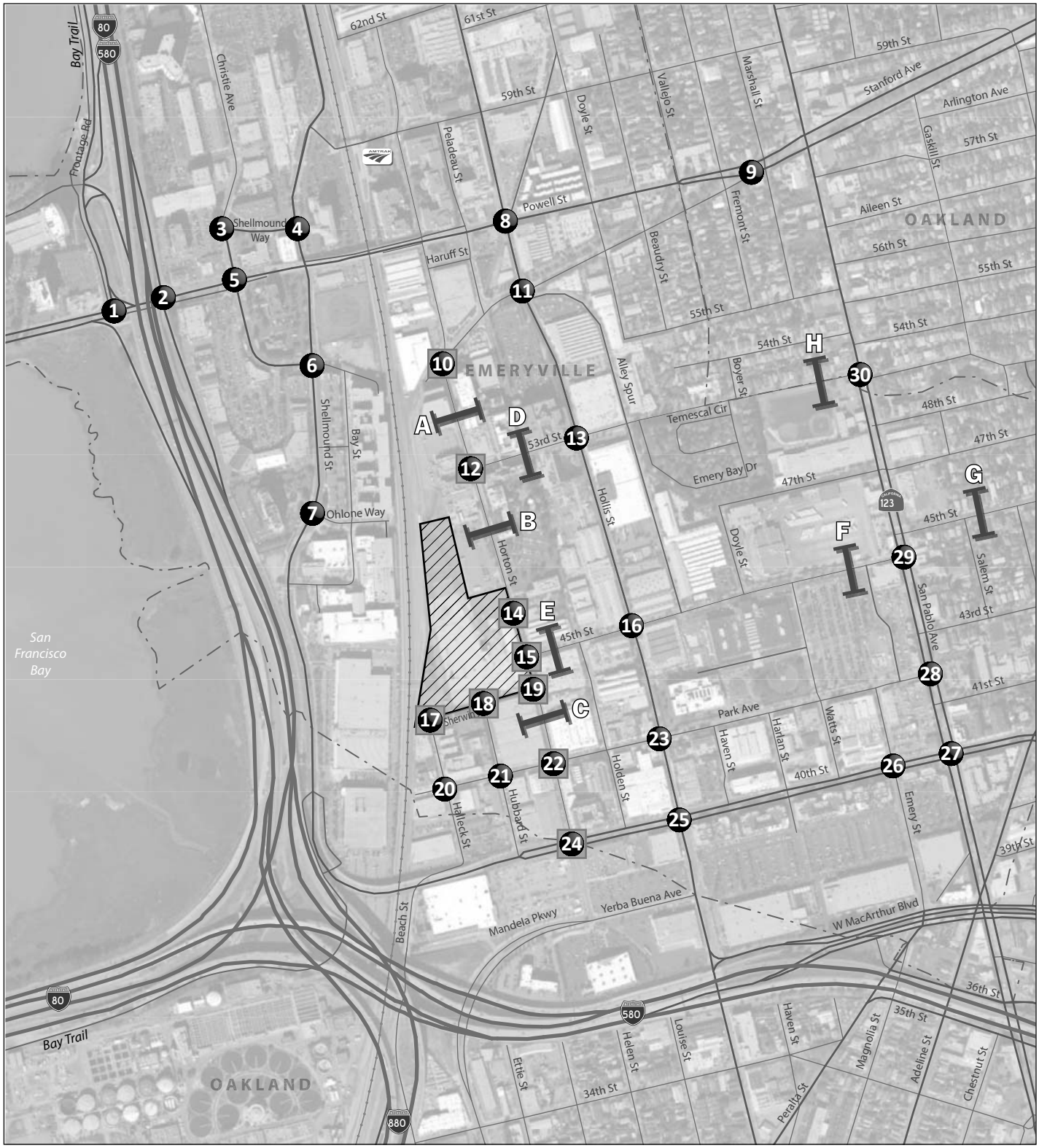
The following section describes the methodology for analysis, the project study area, and existing setting for transportation and circulation.

a. Scope of Study. The following describes the project study area and the transportation scenarios evaluated within this section.

(1) Project Study Area. Project impacts on the study area roadway facilities were determined by measuring the effect project traffic would have on intersections during the weekday evening (4:00 p.m. to 6:00 p.m.) and Saturday afternoon (3:00 p.m. to 5:00 p.m.) peak periods when traffic volumes on the surrounding streets are the highest. A total of 30 intersections, as shown in Figure IV.C-1, were selected as study locations in consultation with the City of Emeryville staff. Weekday morning (7:00 a.m. to 9:00 a.m.) operations were assessed at a subset of intersections closest to the site where project traffic would be concentrated. Study intersections are signalized except for those noted with an asterisk (*). Intersections noted in *italics* were analyzed during the AM peak hour in addition to the weekday PM and Saturday afternoon peak hours.

1. Powell Street/Frontage Road
2. Powell Street/Eastbound I-80 Off-Ramp
3. Shellmound Way/Christie Avenue
4. Shellmound Street/Shellmound Way
5. Powell Street/Christie Avenue
6. Shellmound Street/Christie Avenue
7. Shellmound Street/Ohlone Way
8. Powell Street/Hollis Street
9. Powell Street/Stanford Avenue*
10. *Horton Street/Stanford Avenue**
11. Hollis Street/Stanford Avenue
12. *Horton Street/53rd Street**
13. Hollis Street/53rd Street
14. *Horton Street/Future Project Roadway**
15. *Horton Street/45th Street**
16. Hollis Street/45th Street*
17. *Halleck Street/Sherwin Avenue**
18. *Hubbard Street/Sherwin Avenue/Future Project Roadway**
19. *Horton Street/Sherwin Avenue**
20. Halleck Street/Park Avenue*
21. Hubbard Street/Park Avenue *
22. *Horton Street/Park Avenue**
23. Hollis Street/Park Avenue
24. *Horton Street/40th Street*
25. Hollis Street/40th Street
26. Emery Street/40th Street
27. San Pablo Avenue/40th Street
28. San Pablo Avenue/Park Avenue
29. San Pablo Avenue/45th Street
30. San Pablo Avenue/53rd Street

[1] Fehr & Peers, 2015. *Sherwin-Williams Mixed-Use Development Transportation Impact Analysis*. December.



LSA

LEGEND

- # Weekday PM and Saturday Peak Hour Analysis Study Intersection
- # Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection
- Project Site
- Daily Traffic Analysis Location

NOT TO SCALE

FIGURE IV.C-1

Sherwin-Williams Project EIR

Analysis Locations

SOURCE: FEHR & PEERS, NOVEMBER 2015.

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Roadway segments where project traffic may have impacts on the transportation network were also identified for inclusion in the analysis. Daily roadway segment operations were also assessed on portions of Horton, 53rd and 45th streets, as shown on Figure IV.C-1. The Alameda County Transportation Commission (Alameda CTC) requires the assessment of project-related impacts to regional roadways for projects that generate more than 100 "net new" PM peak hour trips. Designated Metropolitan Transportation System (MTS) roadway segments in the vicinity of the study area include Interstate 80 (I-80), San Pablo Avenue, Stanford Avenue and 40th Street. Weekday PM peak hour operations were evaluated using the Countywide Travel Demand Forecasting Model for 2025 and 2040. An assessment of vehicle miles of travel was also prepared.

(2) Intersection Analysis Scenarios. Intersection analysis was conducted for existing and future scenarios, both without and with Option A and Option B. The future analysis considers vehicle traffic that would be generated by planned and pending development in the vicinity of the project. Peak hour intersection operations were evaluated for the following scenarios:

- **Existing Conditions** – Based on traffic counts collected in 2015.
    - **Existing with Project Option A Conditions** – Existing traffic counts, with traffic generated by project Option A.
    - **Existing with Project Option B Conditions** – Existing traffic counts, with traffic generated by project Option B.
- **Near-term Conditions** – Existing traffic with traffic generated by approved and pending projects in the study area that are expected to be constructed and occupied within the next 5 to 10 years.
    - **Near-term with Project Option A Conditions**– Near-term volumes with traffic generated by project Option A.
    - **Near-term with Project Option B Conditions**– Near-term volumes with traffic generated by project Option B.
- **Cumulative Conditions** – Existing traffic with traffic generated by approved and pending projects in the study area, plus the remaining development potential at the Novartis site.
    - **Cumulative with Project Option A Conditions** – Cumulative conditions with traffic generated by project Option A.
    - **Cumulative with Project Option B Conditions** – Cumulative conditions with traffic generated by project Option B.

b. Methodology. The methods used to evaluate the traffic conditions are described in the following section.

(1) Vehicle Miles of Travel. In response to Senate Bill 743 (SB 743), the Office of Planning and Research (OPR) is updating California Environmental Quality Act (CEQA) guidelines to include new transportation-related evaluation metrics. Draft Guidelines were developed in August 2014 and updated in August 2015. Public comments received on both drafts are being incorporated into the final guidelines, which have not been released as of December 2015. In response to the Draft Guidelines, an assessment of the vehicle miles of travel (VMT) generated by the proposed Sherwin-Williams project was prepared and included in this evaluation.

(2) Level of Services. The operations of roadway facilities are described with the term "level of service" (LOS). LOS is a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom to maneuver. Six levels of service are defined ranging from LOS A (i.e., free flow conditions) to LOS F (over capacity conditions). LOS E corresponds to operations "at capacity." When volumes exceed capacity, stop-and-go conditions result and operations are designated as LOS F. Different methods are used to assess signalized and unsignalized (stop-controlled) intersections. The City of Emeryville does not have a level of service policy for vehicles, but strives to achieve a Quality of Service (per Policy T-P-3). Quality of Service recognizes that people travel by a variety of modes, not just in vehicles, and that the use of an auto-focused level of service standard does not address the mobility needs for non-auto roadway users.

For this assessment, levels of service are provided as information and a "proxy" for evaluating the transportation experience for vehicles, transit, and bicyclists and to guide the development of the transportation system in the project vicinity while balancing the variety of travel modes in the area.

At signalized intersections, the Highway Capacity Manual (HCM) method calculates control delay at an intersection based on average control vehicular delay, using the method described in Chapter 16 of the 2000 HCM. Inputs to the analysis include traffic volumes, lane geometry, signal phasing and timing, pedestrian crossing times, and peak hour factors. Control delay is defined as the delay directly associated with the traffic control device (i.e., a stop sign or a traffic signal) and specifically includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. These delay estimates are considered indicators of driver discomfort and frustration, fuel consumption and lost travel time. The relationship between average control delay and LOS for signalized intersections is summarized in Table IV.C-1.

Table IV.C-1: Signalized Intersection Level of Service Criteria

Level of Service	Description	Delay in Seconds
A	Progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	< 10.0
B	Progression is good, cycle lengths are short, or both. More vehicles stop than with LOS A, causing higher levels of average delay.	> 10.0 to 20.0
C	Higher congestion may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level, though many still pass through the intersection without stopping.	> 20.0 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume to capacity (V/C) ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	> 35.0 to 55.0
E	This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	> 55.0 to 80.0
F	This level is considered unacceptable with oversaturation, which is when arrival flow rates exceed the capacity of the intersection. This level may also occur at high V/C ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to such delay levels.	> 80.0

Source: Highway Capacity Manual (Transportation Research Board, 2000).

Operations of the unsignalized intersections were evaluated using the method contained in Chapter 17 of the 2000 HCM. The LOS rating is based on the weighted average control delay expressed in seconds per vehicle, as shown in Table IV.C-2. At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement, the left-turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane. For all-way stop controlled locations, LOS is computed for the intersection as a whole.

Table IV.C-2: Unsignalized Intersection Level of Service Criteria

Level of Service	Description	Delay in Seconds
A	Little or no delays	≤ 10.0
B	Short traffic delays	> 10.0 to 15.0
C	Average traffic delays	> 15.0 to 25.0
D	Long traffic delays	> 25.0 to 35.0
E	Very long traffic delays	> 35.0 to 50.0
F	Extreme traffic delays with intersection capacity exceeded	> 50.0

Source: Highway Capacity Manual (Transportation Research Board, 2000).

c. Existing Conditions. This section describes transportation facilities in the project study area, including the surrounding roadway network, transit, pedestrian, and bicycle facilities in the vicinity of the project site.

(1) Existing Roadway Network. Regional access to the project site is provided by Interstates (I)-580, I-80, and State Route (SR) 123. Local access to the site is provided by 40th Street, Hollis Street, Stanford Avenue and Powell Street. The project site would be accessed from new roadways connecting to Sherwin Avenue and Horton Street, as well as from driveway(s) on Sherwin Avenue.

The regional and local roadways serving the study area are described below.

- **I-80** is a freeway connecting San Francisco through the northern United States to the East Coast. The freeway is oriented in a northeast/southwest direction to the west of the project site. I-80 provides five lanes in each direction (four mixed-flow lanes and one high–occupancy vehicle lane) through the East Bay.
- **I-580** is an east-west freeway that extends from San Rafael to the San Joaquin Valley located south of the project site. It merges with I-80 west of the project site where it continues as I-80 along the Bay until they separate in the City of Albany. I-580 provides five lanes in each direction south of the project site.
- **San Pablo Avenue (SR 123)** is a major north-south arterial located east of the project site, providing an important inter-city link between Oakland and Richmond. As a designated State route through Emeryville, Caltrans is responsible for roadway maintenance and signal operations. Within the study area, San Pablo Avenue has a median with two vehicular lanes in each direction. The street is a local commercial corridor, and on-street parking is permitted. San Pablo Avenue is also a local truck route. Sidewalks are continuous along San Pablo Avenue and the posted speed limit is 30 miles per hour (mph). San Pablo Avenue is a designated "transit street" in the Emeryville General Plan.

- **40th Street** is located south of the project site and runs east-west through the cities of Emeryville and Oakland. 40th Street provides two vehicle lanes and a bike lane in each direction. It begins at Shellmound Street in Emeryville and continues east ending at Howe Street in Oakland. The speed limit is 30 mph along 40th Street near the project site. 40th Street is a designated transit street. On-street parking is not permitted in the vicinity of the site.
- **Powell Street** is an east-west transit street located north of the project site. Powell Street provides two lanes in each direction with a speed limit of 30 mph. It begins at the Emeryville Marina and continues as Stanford Avenue at San Pablo Avenue.
- **Stanford Avenue** is an east-west oriented roadway north of the project site. Between Horton Street and Hollis Street, it accommodates two-way travel and is a designated transit street. Between Horton Street and Doyle Street, it is also a designated bicycle boulevard. East of Hollis Street, Stanford Avenue provides for eastbound travel only to Powell Street. Stanford Avenue is the continuation of Powell Street with two lanes in each direction until its terminus at Martin Luther King Junior Way in Oakland. On-street parking is permitted east of Doyle Street.
- **Shellmound Street** is a north-south oriented street located west of the project site with two lanes in each direction until Shellmound Way, where it continues with one travel lane in each direction. Shellmound Street is the continuation of 40th Street and extends north into Berkeley where it transitions to an I-80 on-ramp. The speed limit varies between 25 and 30 mph. Shellmound Street is a designated a transit street with Class II and III bicycle facilities.
- **Halleck Street** is a local street that extends for two blocks south of the project site in a north-south orientation. It provides for two-way travel, and accommodates on-street parking and loading for warehouses in the area. Class III Bicycle facilities, connecting to the Bay Trail in the south and the planned South Bayfront pedestrian bridge and Horton Landing Park Paths in the north, are planned on Halleck Street. Existing land uses on Halleck Street often use the travel lane for delivery vehicle loading/unloading, periodically impeding two-way travel.
- **Hubbard Street** is a local street that extends for two blocks south of the project site in a north-south direction. The intersection of Hubbard Street at Sherwin Avenue is anticipated to provide project site access. It provides for two-way travel, and accommodates on-street parking and loading for warehouses in the area. Existing land uses on Hubbard Street often use the travel lane for delivery vehicle loading/unloading, periodically impeding two-way travel.
- **Sherwin Avenue** is an east-west oriented local street that forms the southern boundary of the site. Sherwin Avenue extends two blocks, with one travel lane in each direction from Halleck Street to Horton Street. Project access would be provided from Sherwin Avenue at the intersection of Hubbard Street, as well as from planned driveways. On-street parking is permitted. Class III bicycle facilities are proposed on Sherwin Avenue connecting to the Halleck Street facilities.
- **Horton Street** is a north-south oriented street that begins at Yerba Buena Avenue, south of 40th Street, in the south and continues north to 62nd Street. Horton Street forms the eastern boundary of the project site and provides one travel lane in each direction with a speed limit of 25 mph. Horton Street is a designated a bicycle boulevard, with the portion

between Stanford Avenue and 59th Street also designated as a transit street. On-street parking is allowed south of 53rd Street. Class II bicycle facilities are provided on Horton Street north of 53rd Street.

- **Hollis Street** is a north-south oriented street east of the project site. It typically provides one lane in each direction with a speed limit of 30 mph. Hollis Street begins at Peralta Street in the Oakland and continues north to Folger Avenue in Berkeley. Hollis Street is a designated transit street. On-street parking is allowed on portions of the roadway.
- **53rd Street** extends in an east-west direction from Horton Street to Adeline Street. 53rd Street provides for two-way travel and has a posted speed limit of 25 mph. 53rd Street is a designated a bicycle boulevard. On-street parking is permitted on portions of the street.
- **45th Street** extends in an east-west direction from Horton Street to Broadway in Oakland. 45th Street provides for two-way travel and has a posted speed limit of 25 mph. It is also a designated a bicycle boulevard. On-street parking is permitted on portions of the street.
- **Park Avenue** is an east-west oriented street that begins just west of Halleck Street and terminates at San Pablo Avenue. Park Avenue provides for two-way travel with a speed limit of 25 mph. It is a designated transit street east of Horton Street and a connector street west of Horton Street. On-street parking is generally permitted.

(2) Existing Pedestrian Facilities. Pedestrian facilities are comprised of sidewalks, crosswalks, and off-street paths. Sidewalks are provided along both sides of most streets in the project vicinity, with missing sidewalk locations shown on Figure IV.C-2. There are no sidewalks provided along some streets to the south of the project site. Pedestrian access to the western side of the railroad tracks is provided by a pedestrian bridge at the Amtrak station, approximately half a mile north of the project site, as well as from sidewalks on the 40th Street overcrossing.

Crosswalks are located at all signalized intersections within a half mile of the project site. Marked crosswalks are also provided at most unsignalized intersections in the area, except for some locations south of the project site such as on Sherwin Avenue.

(3) Existing Bicycle Facilities. Bicycle facilities include the following:

- **Bike paths (Class I)** – Paved trails that are separated from roadways.
- **Bike lanes (Class II)** – Lanes on roadways designated for use by bicycles through striping, pavement legends, and signs.
- **Bike routes (Class III)** – Designated roadways for bicycle use by signs only; may or may not include additional pavement width for cyclists.
- **Bicycle boulevards** – Designated low-volume roadways for use by bicycles through signage, pavement markings, intersection crossing treatments, traffic calming, and traffic diversion.

Existing and proposed bicycle facilities within the immediate vicinity (within 0.5 miles) of the project site are displayed on Figure IV.C-3. Horton, 53rd and 45th streets are designated bicycle boulevards. A Class I bicycle path is located just west of San Pablo Avenue between 45th Street and Park Avenue. The Bay Trail is also a Class I bicycle path that begins at the intersection of Powell Street and Christie Avenue and continues north along the Bay to the Berkeley Marina. Class II bicycle lanes

are provided on Adeline Street, 40th Street, portions of Horton Street, and a continuation of the Bay Trail on Shellmound Street. Class III bicycle routes are located on portions of Hollis Street, Yerba Buena Road, Halleck Street and Spur Alley.

A north-south greenway connecting Sherwin Avenue to Stanford Avenue, referred to as the Horton Landing Park Paths or Emeryville Greenway and shown as a Class I facility on Figure IV.C-3, is planned along the western boundary of the project site. It also is proposed to provide connections from the project area to the South Bayfront area via the planned South Bayfront Bridge, a pedestrian and bicycle connection over the railroad tracks.

The level of pedestrian and bicycle activity at each of the intersections was documented as presented on Figures IV.C-4a, IV.C-4b, and IV.C-4c for the PM and Saturday evening peak hours. Pedestrian activity varied by intersection, with the greatest number observed near retail areas (Bay Street Mall and 40th Street), and regional trails (such as the Bay Trail).

Bicycle use is widespread throughout the study area and is consistent with pedestrian activity. In addition to areas of high pedestrian activity, bicyclists were observed along the designated bike facilities such as Horton Street, a designated bicycle boulevard.

On-street parking is permitted on most portions of the streets surrounding the project site. Observations of parking occupancy indicate that the on-street parking supplies are generally fully occupied for the majority of the day in proximity to the project site.

(1) Existing Transit Service. Bus transit service is provided in the study area by AC Transit and Emery-Go-Round. Rail transit is provided by Amtrak and the Bay Area Rapid Transit (BART) system. Figure IV.C-5 shows the existing transit facilities and routes in the study area which include shuttles, buses, rail services, including the location of stops closest to the site. Each transit service is described below.

AC Transit. Several AC Transit Routes serve the area, with stops at the intersection of 40th and Horton Street, an approximately 5-minute walk from the project site. AC Transit connects the study area to neighboring cities in the East Bay as well as the MacArthur BART Station and Downtown Oakland. AC Transit Routes J, F, C, 31 and 26 provide service along 40th Street, south of the project site. AC Transit Routes 802, 72R, 72M, and 72 run along San Pablo Avenue. Table IV.C-3 describes AC Transit service within the project area.

Emery-Go-Round. The Emery-Go-Round system is comprised of four routes, three of which serve the project area, the Hollis South, Hollis and Shellmound/Powell Routes. Buses on the Hollis Routes, which stop at the intersection of Hollis Street/45th Street, operate on 10 minute headways during the peak hours and 15 to 20 minute headways during off-peak hours. Travel time to/from the Hollis Street/45th Street stop to the MacArthur BART station is approximately 5 minutes. The Hollis South Route operates during the morning and evening peak periods on 15-minute headways for a portion of the Hollis Route connecting the MacArthur BART station to the Amtrak station. Stops are provided at the intersection of Hollis Street/45th Street.

Buses on the Shellmound/Powell Route, which stop on 40th Street at Horton Street, operate on 15 minute headways throughout the day. Travel time to/from the 40th Street/Horton Street stop to the MacArthur BART station is approximately 5 minutes.

LSA

FIGURE IV.C-2

N

LEGEND

Project Site

No Sidewalk

NOT TO SCALE

Sherwin-Williams Project EIR

Missing Pedestrian Facilities

SOURCE: FEHR & PEERS, JULY 2015.

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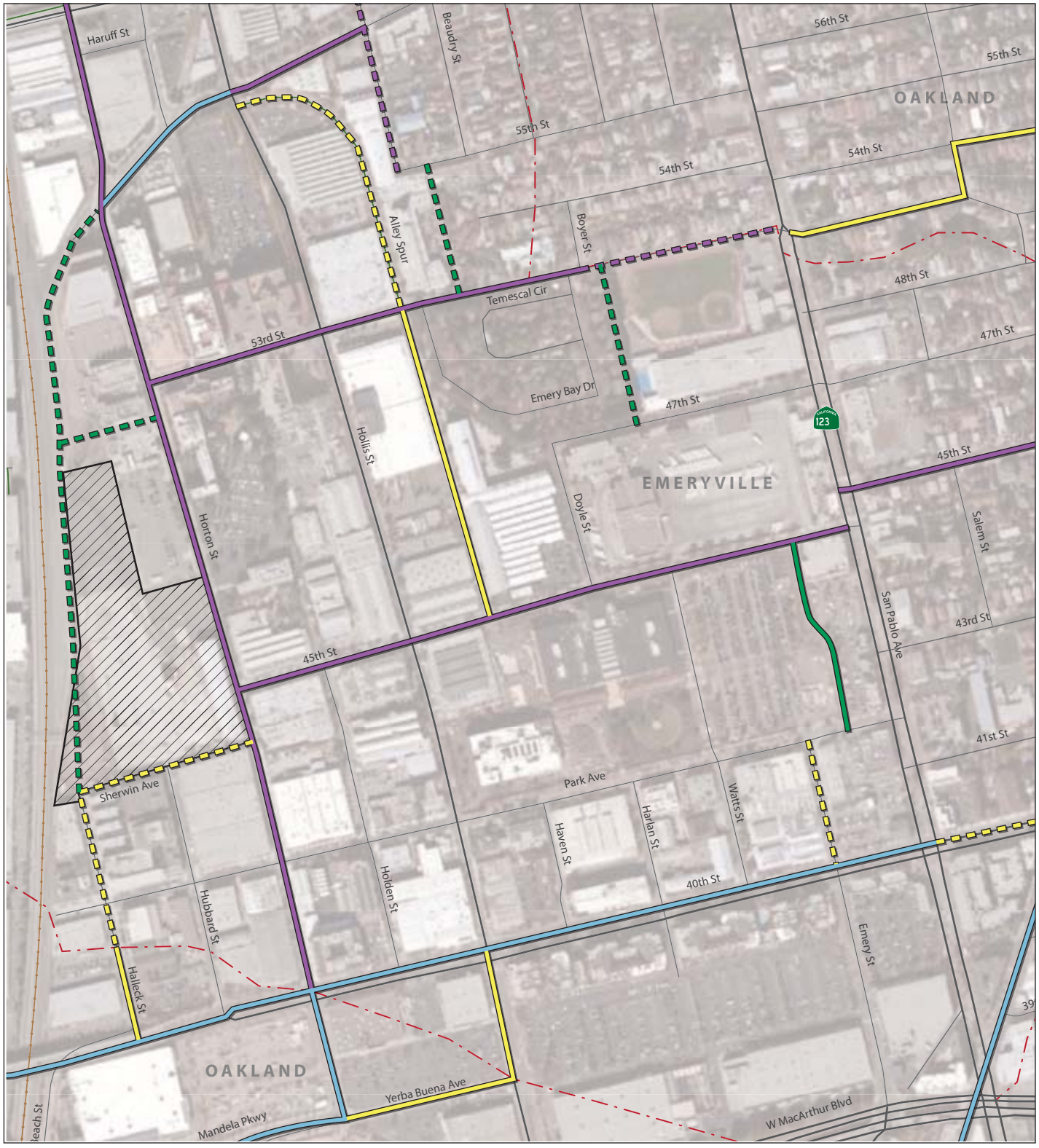

LSA

LEGEND

Existing	*Proposed*	
		Class I
		Class II
		Class III
		Bicycle Boulevard

Project Site

N

NOT TO SCALE

FIGURE IV.C-3

Sherwin-Williams Project EIR

Existing and Planned Bicycle Facilities

SOURCE: FEHR & PEERS, JULY 2015.

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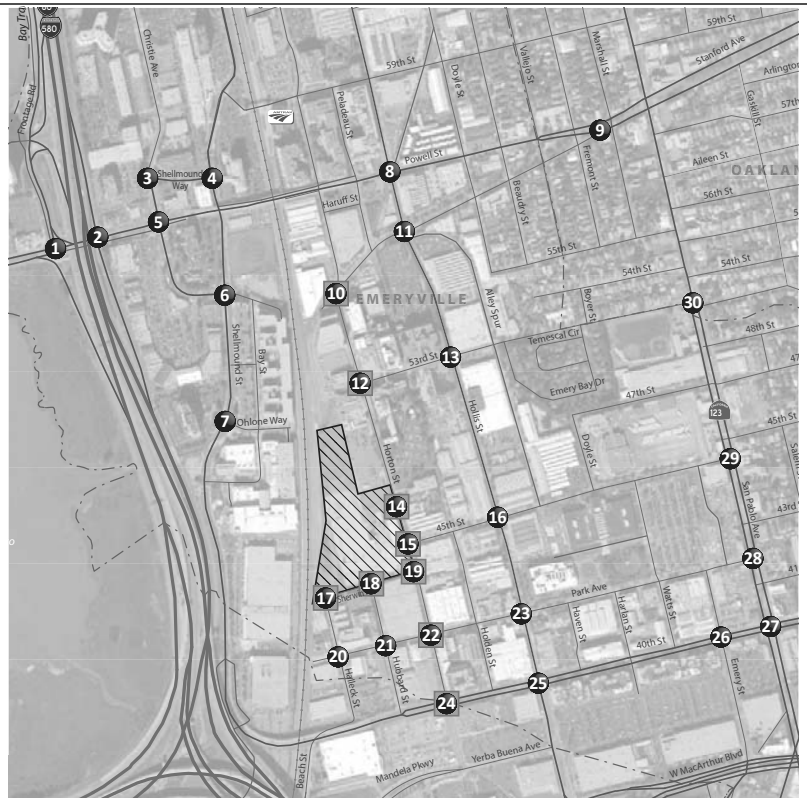
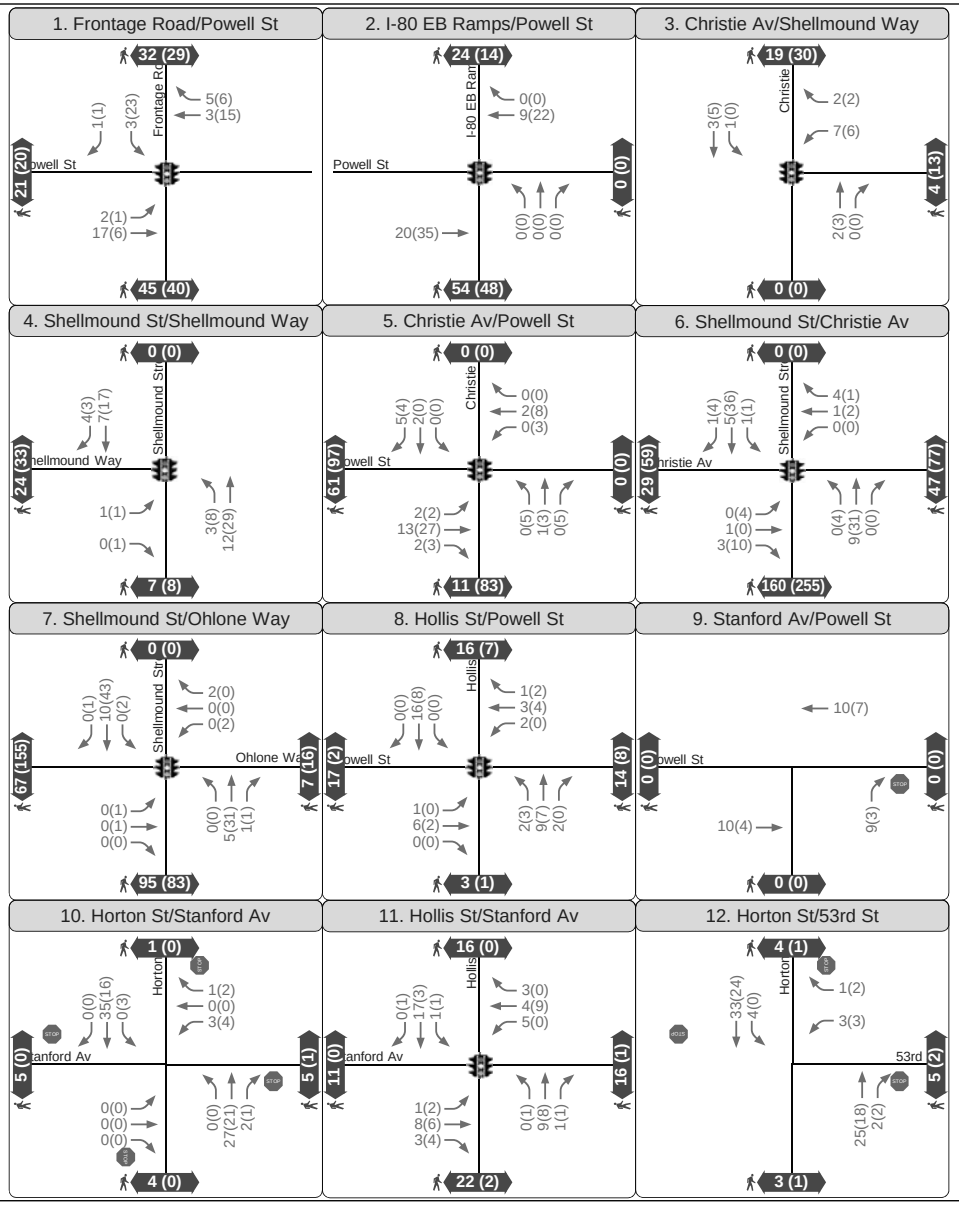


LEGEND

- y(z) — PM (Saturday) Peak Hour Pedestrian Volumes
- y(z) — PM (Saturday) Peak Hour Bicycle Volumes
- # — Weekday PM and Saturday Peak Hour Analysis Study Intersection
- # — Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection
- Project Site
- Signalized Intersection
- Stop Sign



LSA

FIGURE IV.C-4a

NOT TO SCALE

N

Sherwin-Williams Project EIR

Existing Pedestrian and Bicycle Volumes

SOURCE: FEHR & PEERS, JULY 2015.

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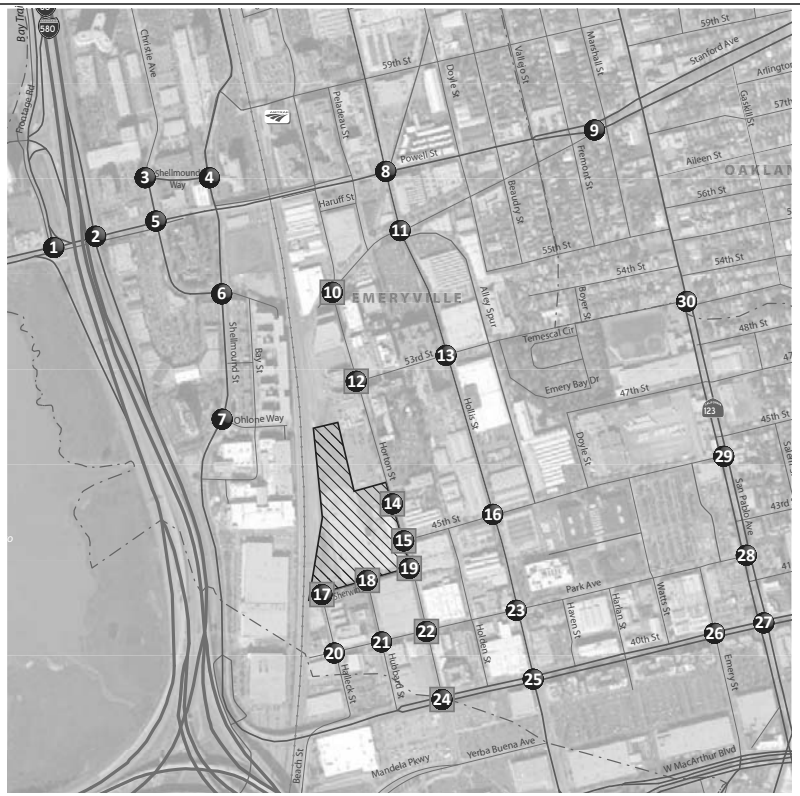
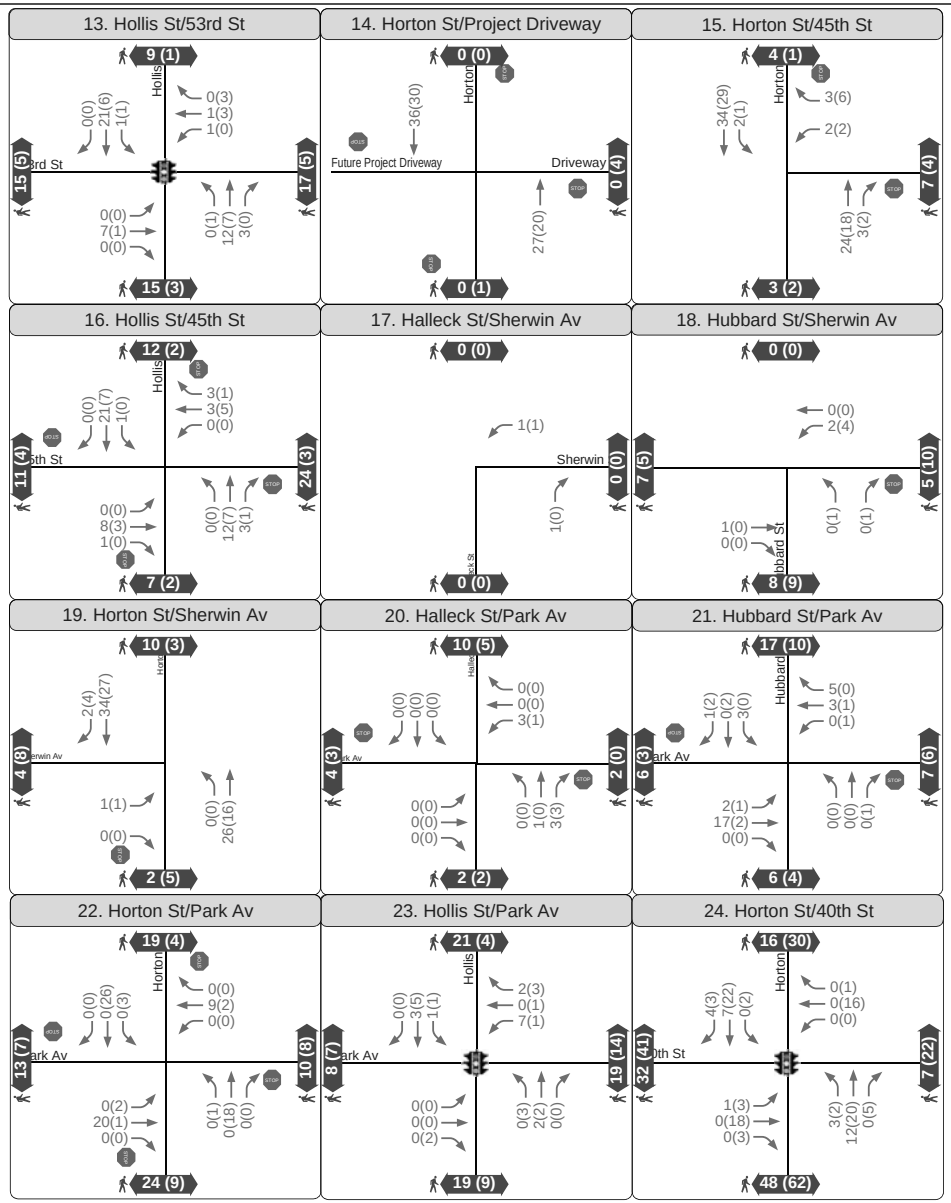


LEGEND

- y(z) — PM (Saturday) Peak Hour Pedestrian Volumes
- Signalized Intersection
- y(z) — PM (Saturday) Peak Hour Bicycle Volumes
- Stop Sign
- # — Weekday PM and Saturday Peak Hour Analysis Study Intersection
- # — Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection
- Project Site



LSA

FIGURE IV.C-4b

NOT TO SCALE

N

Sherwin-Williams Project EIR

Existing Pedestrian and Bicycle Volumes

SOURCE: FEHR & PEERS, JULY 2015.

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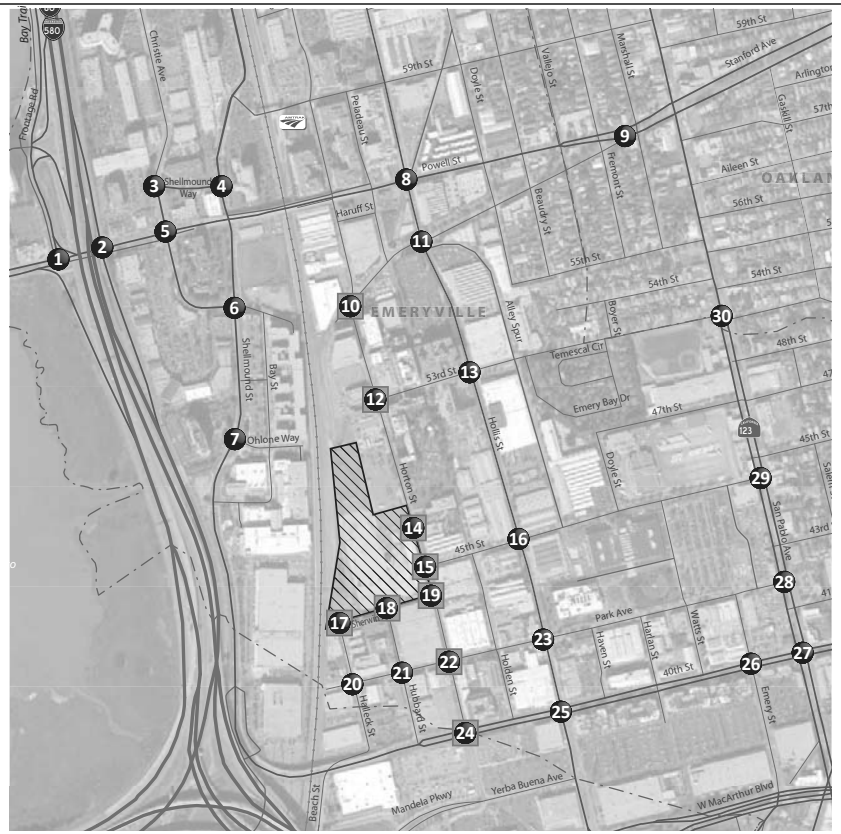

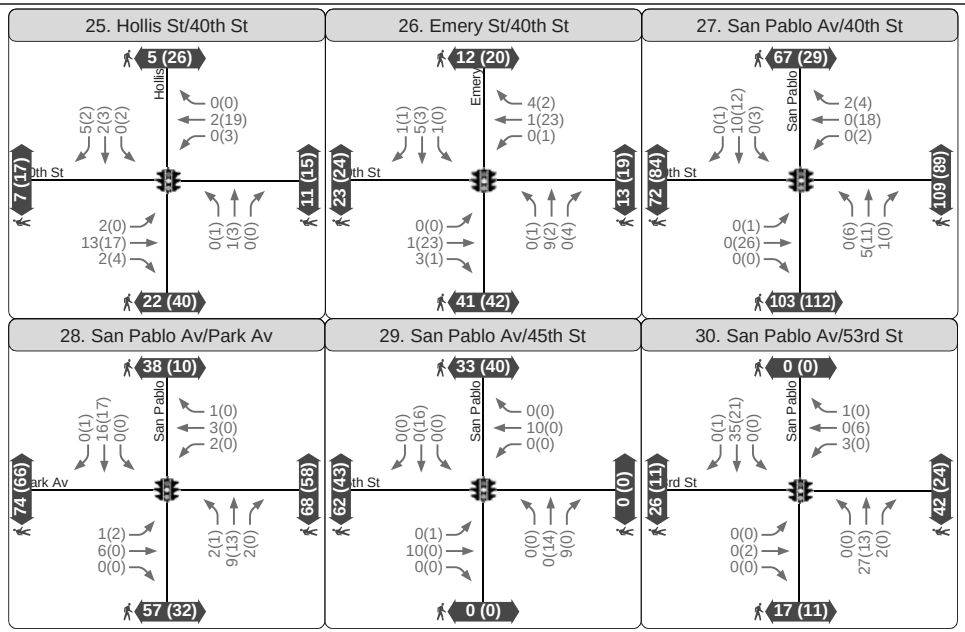

LEGEND

- y(z) — PM (Saturday) Peak Hour Pedestrian Volumes
- Signalized Intersection
- y(z) — PM (Saturday) Peak Hour Bicycle Volumes
- Stop Sign
- # — Weekday PM and Saturday Peak Hour Analysis Study Intersection
- # — Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection
- Project Site

LSA

FIGURE IV.C-4c

NOT TO SCALE

N

Sherwin-Williams Project EIR

Existing Pedestrian and Bicycle Volumes

SOURCE: FEHR & PEERS, JULY 2015.

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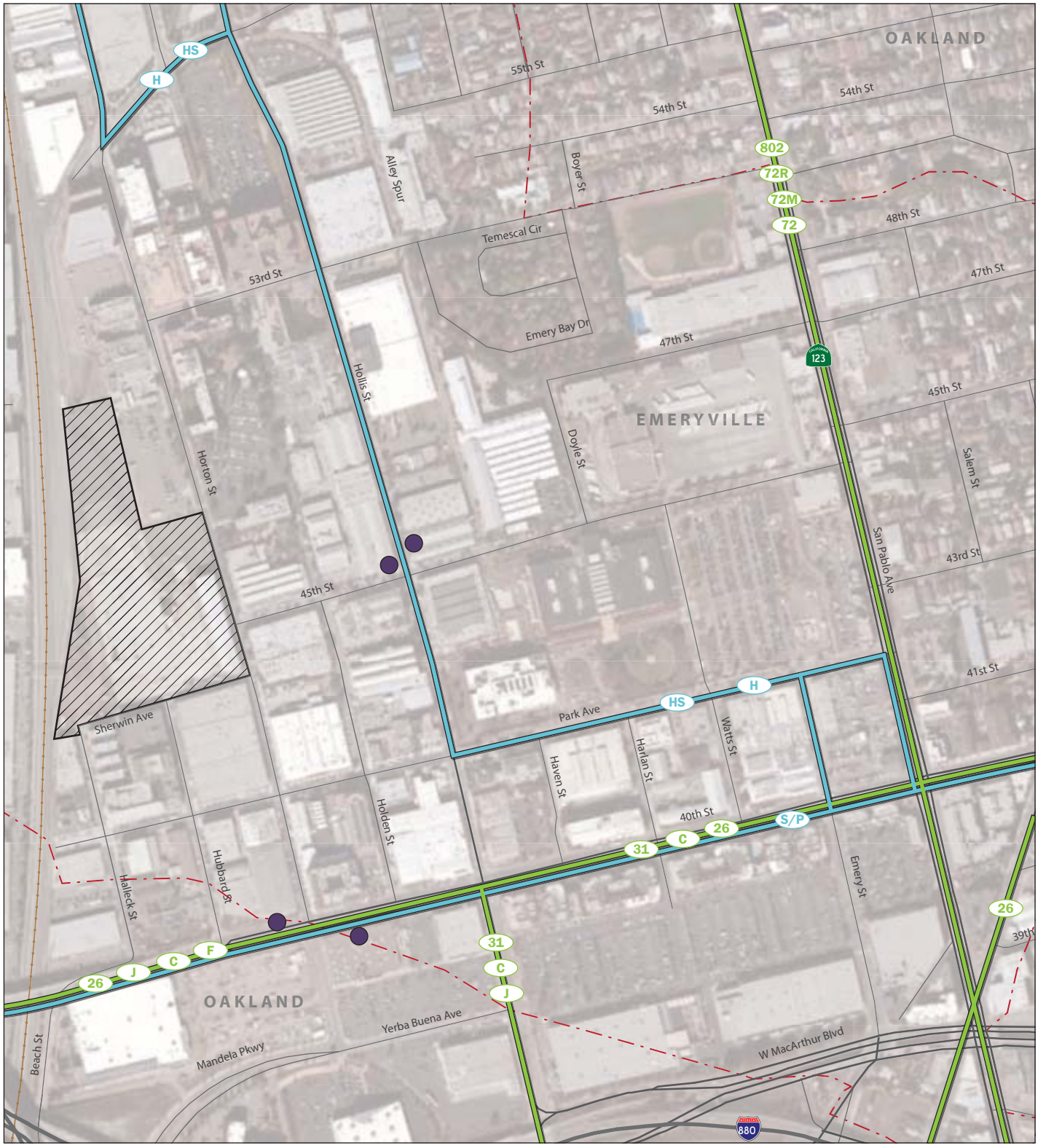

LSA

FIGURE IV.C-5

LEGEND

- #X — AC Transit Routes
- X — Emery-Go-Round Routes
- Closest Bus Stop
- Project Site

N

NOT TO SCALE

SOURCE: FEHR & PEERS, JULY 2015.

Sherwin-Williams Project EIR

Existing Transit Routes

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Table IV.C-3: Existing Weekday AC Transit Service Summary

Route	Description	Nearest Stop	Hours	Frequency
J	Transbay service from Sacramento Street and University Avenue	40th Street/Horton Street	4:45 p.m. to 8:00 p.m.	30 minutes
F	Transbay service from UC Campus	40th Street/Horton Street	6:00 a.m. to 1:00 a.m.	30 minutes
C	Transbay service from Piedmont	40th Street/Horton Street	6:30 a.m. to 8:00 p.m.	90 minutes during am peak; 30 minutes during pm peak
26	To Emeryville Public Market	40th Street/Horton Street	5:40 a.m. to 10:20 p.m.	20 minutes
31	Alameda to MacArthur BART	40th Street/Hollis Street	5:30 a.m. to 10:00 p.m.	30 minutes
802	Oakland Amtrak to Berkeley Amtrak	San Pablo Avenue/40th Street	12:40 a.m. to 5:00 a.m.	60 minutes
72R	Oakland to San Pablo	San Pablo Avenue/40th Street	6:00 a.m. to 8:15 p.m.	12 minutes
72M	Oakland Amtrak to Point Richmond	San Pablo Avenue/40th Street	6:15 a.m. to 12:30 a.m.	30 minutes
72	Oakland Amtrak to San Pablo	San Pablo Avenue/40th Street	5:00 a.m. to 1:00 p.m.	30 minutes

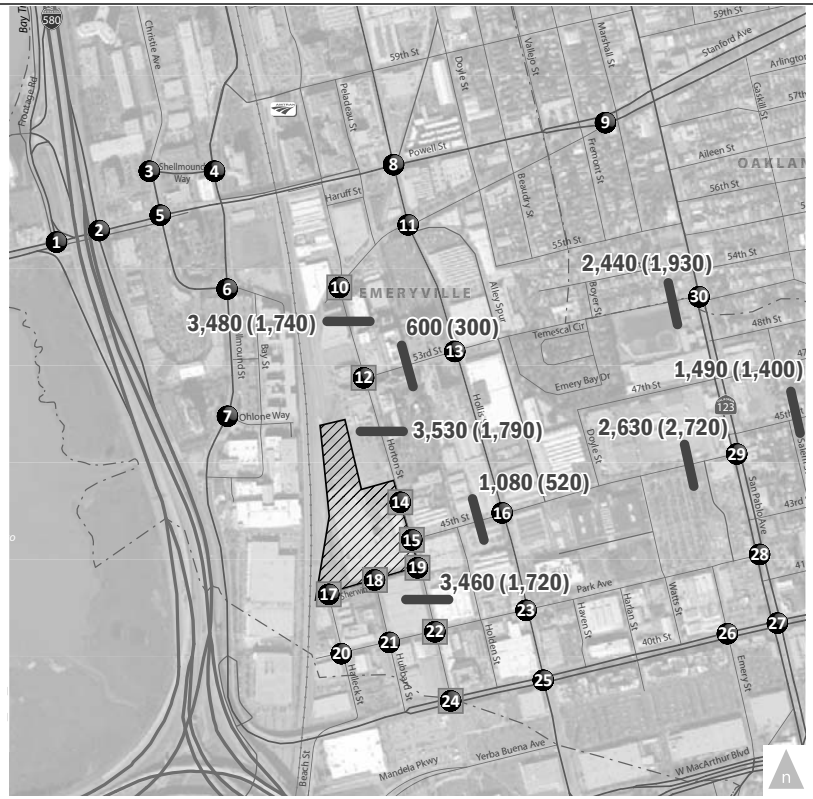
Source: AC Transit, actransit.org, July 2015.

Amtrak. An Amtrak station, providing passenger rail service, is located approximately 0.5 miles to the north of the project site. Service from the Emeryville Amtrak station provides inter-regional travel to Sacramento, the Central Valley, Southern California, and Northern California.

BART. BART system provides regional rail transit service connecting San Francisco, Alameda County, Contra Costa County, and parts of San Mateo County. The nearest BART station to the project site is the MacArthur BART station, which is approximately 1.5 miles to the east. From the MacArthur BART station, direct connections to San Francisco, destinations on the Richmond and Fremont lines, and the Pittsburgh Bay Point Line are provided. All Emery-Go-Round routes connect to the MacArthur BART station. The AC Transit routes that serve the study area on San Pablo Avenue (72, 72M, 72R and 802) do not serve the MacArthur BART station but do serve the 19th Street BART/Uptown Transit center. During the peak periods, trains operate on less than 10 minute headways to/from San Francisco. Trains run to/from San Francisco with 15 to 20 minute headways during the off-peak times.

(2) Existing Roadway Operations. The following section describes the existing roadway operations.

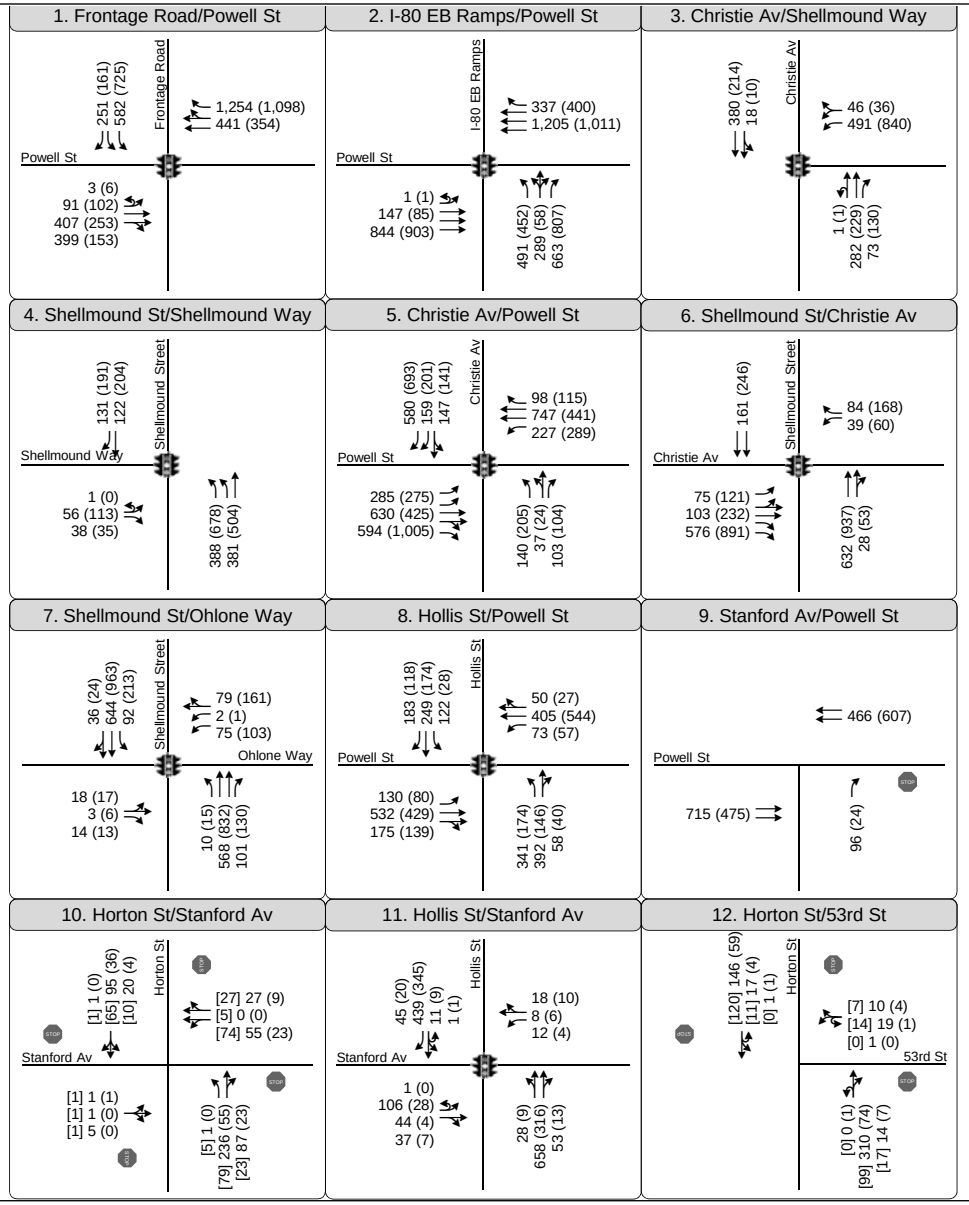
Existing Intersection Volumes and Lane Geometries. AM peak, PM peak, and Saturday (3:00 p.m. to 5:00 p.m.) peak period intersection turning movement counts were conducted at the study intersections in winter 2015 on clear days with area schools in session. For the study intersections, the single hour with the highest traffic volumes during each count period was identified. Existing lane configurations and signal controls were obtained through field observations. The peak hour vehicle volumes are presented in Figures IV.C-6a, IV.C-6b and IV.C-6c along with the existing lane configurations and traffic controls. Detailed traffic count data are contained in Appendix B.



LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

- Signalized Intersection
- Stop Sign
- Weekday (Saturday) Daily Roadway Segment Volumes — X (Y)
- Weekday PM and Saturday Peak Hour Analysis Study Intersection
- Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection
- Project Site



LSA

FIGURE IV.C-6a

NOT TO SCALE

Sherwin-Williams Project EIR

Existing Conditions Peak Hour Volumes, Lane Configure and Traffic Control

SOURCE: FEHR & PEERS, NOVEMBER 2015.

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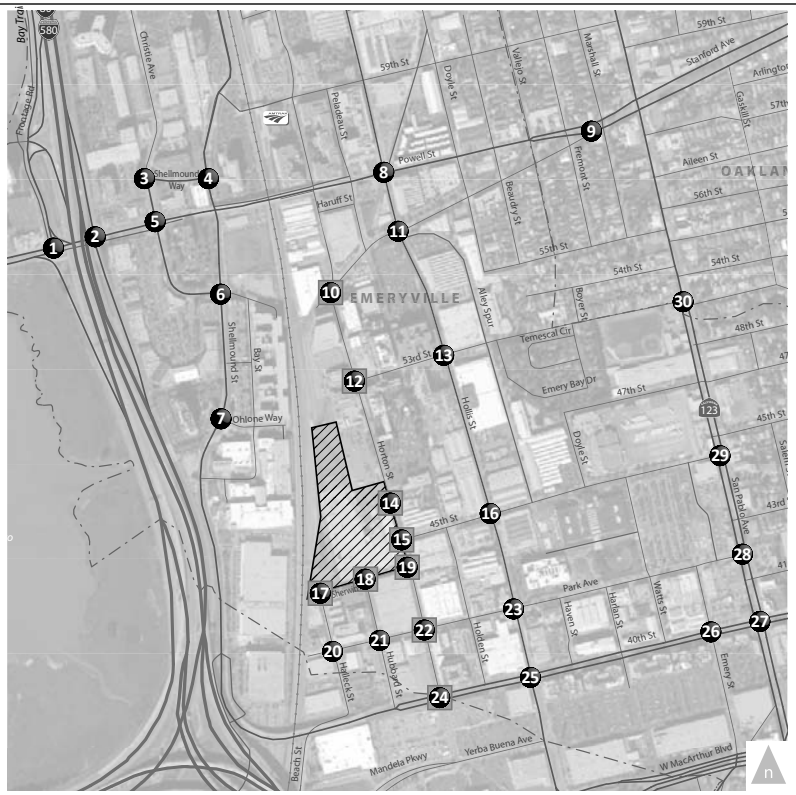


LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

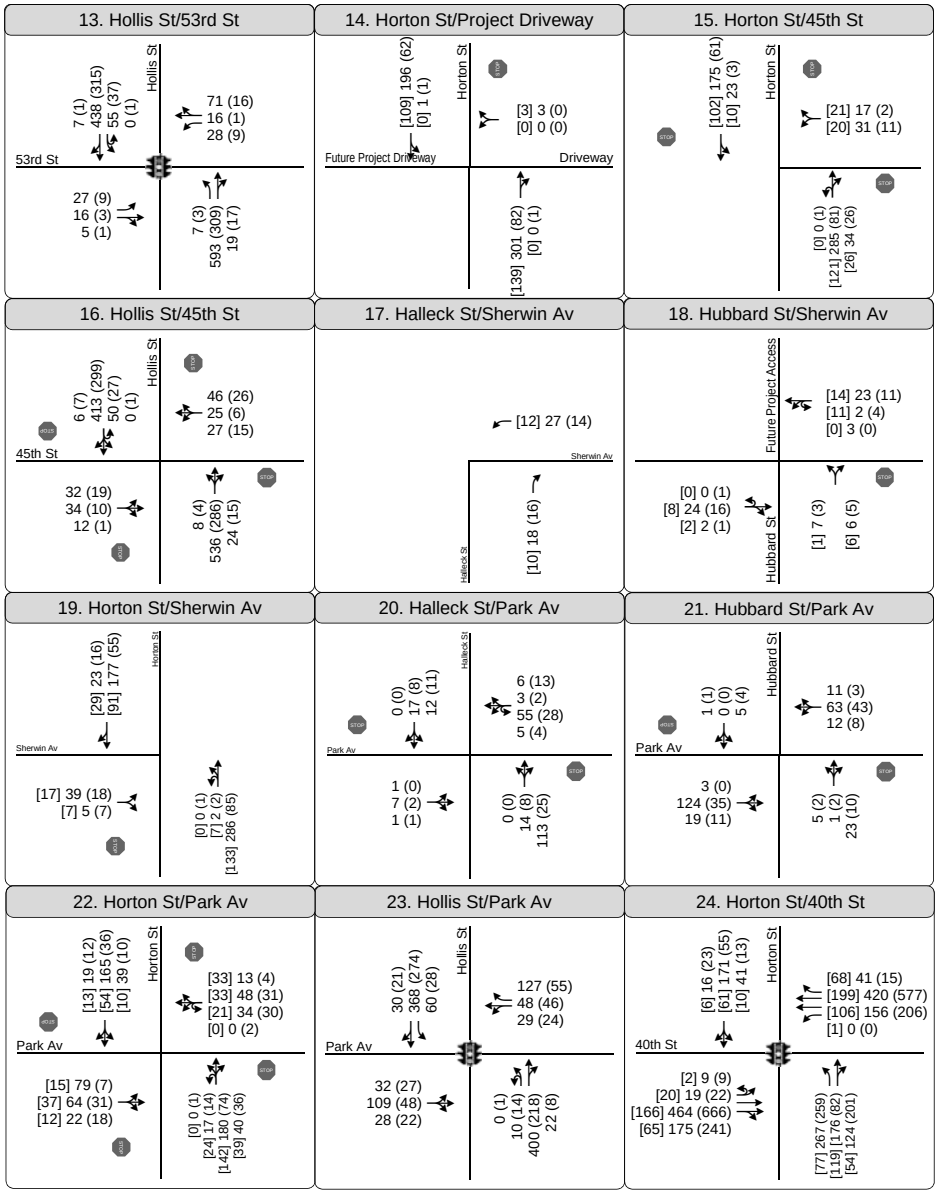
Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site



LSA

FIGURE IV.C-6b

NOT TO SCALE

N

Sherwin-Williams Project EIR

Existing Conditions Peak Hour Volumes, Lane Configure and Traffic Control

SOURCE: FEHR & PEERS, NOVEMBER 2015.

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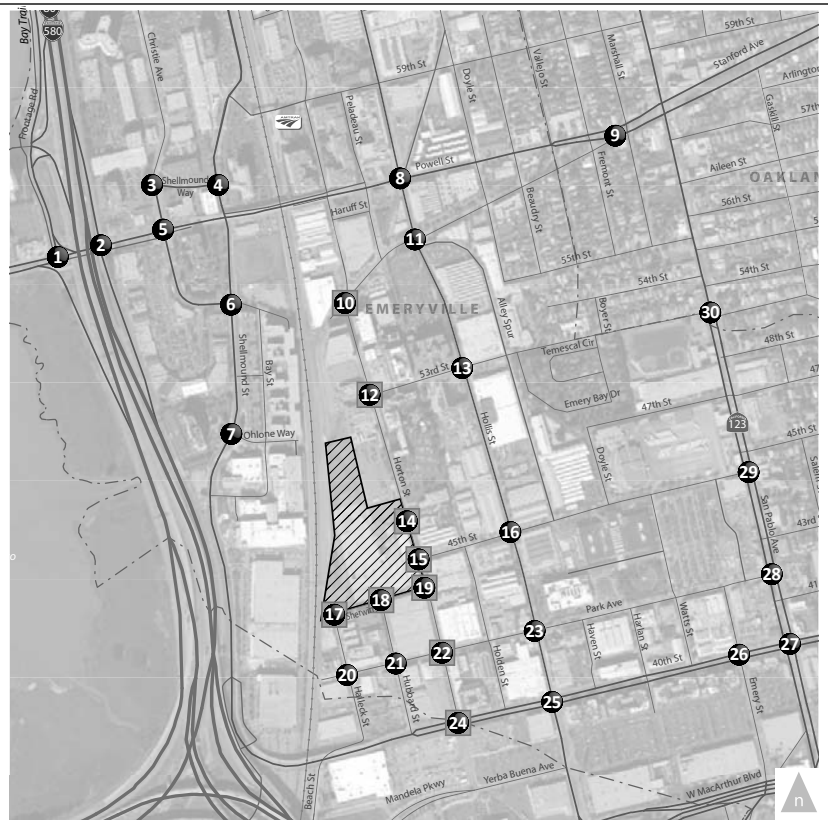

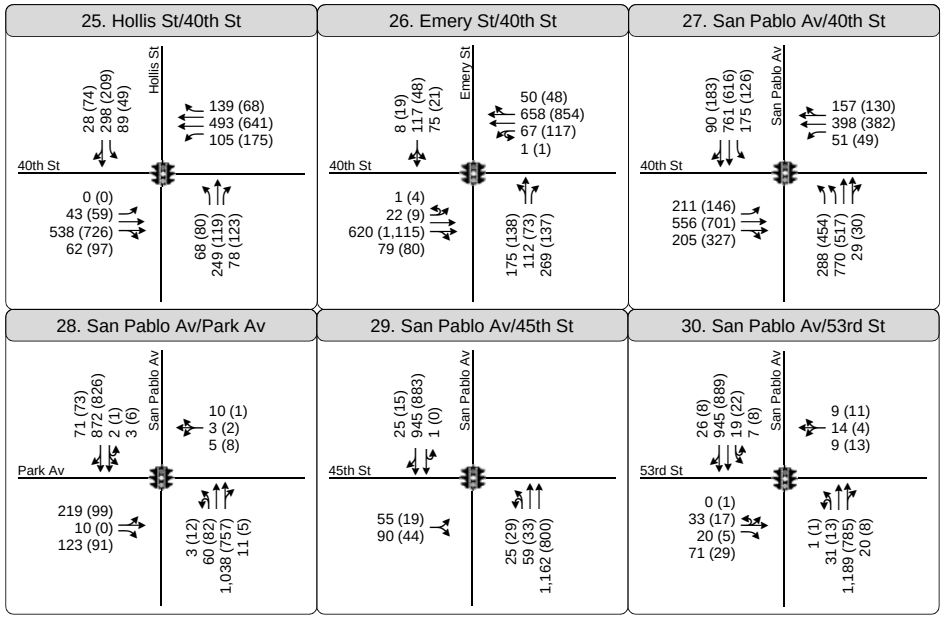

LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site

LSA

FIGURE IV.C-6c

NOT TO SCALE

N

Sherwin-Williams Project EIR

Existing Conditions Peak Hour Volumes, Lane Configure and Traffic Control

SOURCE: FEHR & PEERS, JULY 2015.

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Signal Warrants. Traffic signal warrants were reviewed for the unsignalized study intersections. Peak hour volume and delay signal warrants[2] are not currently satisfied at any of the unsignalized study intersections.

Existing Intersections Level of Service. Existing intersection lane configurations and traffic controls, signal timings, and peak hour turning movement volumes were used to calculate the LOS for the study intersections during each peak hour. The results of the LOS analysis using the Synchro 8 software program for Existing Conditions are presented in Table IV.C-4. Appendix B contains the corresponding LOS calculation sheets.

Table IV.C-4: Existing Conditions Intersections Peak Hour Level of Service

Intersection		Control [a]	Peak Hour [b]	Delay [c]	LOS
1	Powell Street/Frontage Road	Signal	PM SAT	41 45	D D
2	Powell Street/Eastbound I-80 Off-Ramp [d]	Signal	PM SAT	29 27	C C
3	Shellmound Way/Christie Avenue [d]	Signal	PM SAT	11 11	B B
4	Shellmound Street/Shellmound Way [d]	Signal	PM SAT	16 22	B C
5	Powell Street/Christie Avenue [d]	Signal	PM SAT	34 50	C D
6	Shellmound Street/Christie Avenue	Signal	PM SAT	29 27	C C
7	Shellmound Street/Ohlone Way	Signal	PM SAT	17 23	B C
8	Powell Street/Hollis Street	Signal	PM SAT	38 39	D D
9	Powell Street/Stanford Avenue	SSSC	PM SAT	1 (12) 1 (11)	A (B) A (B)
10	Horton Street/Stanford Avenue	AWSC	AM PM SAT	8 10 7	A A A
11	Hollis Street/Stanford Avenue	Signal	PM SAT	7 3	A A
12	Horton Street/53rd Street	AWSC	AM PM SAT	8 10 7	A A A
13	Hollis Street/53rd Street	Signal	PM SAT	8 4	A A
14	Horton Street/46th Street (Future Roadway)	SSSC	AM PM SAT	--	--

[2] Unsignalized intersection warrant analysis is intended to examine the general correlation between existing conditions and the need to install new traffic signals. Existing peak-hour volumes are compared against a subset of the standard traffic signal warrants recommended in the Manual of Uniform Traffic Control Devices (MUTCD) and associated State guidelines. This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated based on field-measured traffic data and a thorough study of traffic and roadway conditions by an experienced engineer. Furthermore, the decision to install a signal should not be based solely on the warrants because the installation of signals can lead to certain types of collisions. The responsible State or local agency should undertake regular monitoring of actual traffic conditions and accident data and conduct a timely re-evaluation of the full set of warrants in order to prioritize and program intersections for signalization.

Table IV.C-4: Existing Conditions Intersections Peak Hour Level of Service

Intersection		Control [a]	Peak Hour [b]	Delay [c]	LOS
15	Horton Street/45th Street	AWSC	AM	8	A
			PM	10	A
			SAT	7	A
16	Hollis Street/45th Street	AWSC	PM	32	D
			SAT	11	B
17	Halleck Street/Sherwin Avenue	Free	AM	0	A
			PM	0	A
			SAT	0	A
18	Hubbard Street/Sherwin Avenue/Future Project Roadway	SSSC	AM	3 (9)	A (A)
			PM	2 (9)	A (A)
			SAT	3 (9)	A (A)
19	Horton Street/Sherwin Avenue	SSSC	AM	1 (11)	A (B)
			PM	1 (13)	A (B)
			SAT	1 (9)	A (A)
20	Halleck Street/Park Avenue	SSSC	PM	8 (11)	A (B)
			SAT	7 (10)	A (A)
21	Hubbard Street/Park Avenue	SSSC	PM	2 (11)	A (B)
			SAT	2 (9)	A (A)
22	Horton Street/Park Avenue	AWSC	AM	9	A
			PM	11	B
			SAT	8	A
23	Hollis Street/Park Avenue	Signal	PM	15	B
			SAT	12	B
24	Horton Street/40th Street	Signal	AM	28	C
			PM	47	D
			SAT	46	D
25	Hollis Street/40th Street [d]	Signal	PM	31	C
			SAT	31	C
26	Emery Street/40th Street [d]	Signal	PM	35	C
			SAT	31	C
27	San Pablo Avenue/40th Street [d]	Signal	PM	37	D
			SAT	40	D
28	San Pablo Avenue/Park Avenue	Signal	PM	19	B
			SAT	8	A
29	San Pablo Avenue/45th Street	Signal	PM	7	A
			SAT	6	A
30	San Pablo Avenue/53rd Street	Signal	PM	13	B
			SAT	8	A

[a] AWSC = all way stop control, SSSC = side street stop control, Signal = signalized

[b] AM = weekday morning peak hour, PM = weekday evening peak hour, SAT = Saturday afternoon Peak Hour

[c] LOS = Level of Service. LOS calculations conducted using the Synchro level of service analysis software package, which applies the method described in the *2000 Highway Capacity Manual*. For side-street stop-controlled intersections, delays for worst approach and average intersection delay are shown: intersection average (worst approach).

[d] Actual delay may be worse than shown here due to the effects of vehicle queue spillback from adjacent intersections and pedestrians impeding turn movements.

Source: Fehr & Peers, 2015. *Sherwin-Williams Mixed-Use Development Transportation Impact Analysis, December.*

Intersections on 40th Street and within the Powell Street/Christie Avenue area experience periodic delays greater than shown in Table IV.C-4 due to pedestrian crossings impeding the ability of right-turning vehicles to complete the movement as well as from vehicle queue spillback. Delay along the Powell Street/Christie Avenue loop area can be greater for some movements than the average delay presented in Table IV.C-4 due to vehicle queues that form at the closely spaced intersections that are not able to clear within a cycle, impeding some vehicle movements.

Bicyclists also experience similar levels of delay as vehicles on these roadway intersections, but since bicyclists can typically maneuver to the front of the intersection on a red light, they can bypass queued vehicles. Pedestrian delay at signalized intersections is a function of when pedestrians arrive at a crossing and the cycle length. Cycle lengths vary from approximately 60 seconds for local street intersections to 120 seconds at regional street intersections that carry through traffic, resulting in average pedestrian delays between 15 and 90 seconds at signalized intersections.

Average and 95th percentile vehicle queues as calculated by Synchro were also reviewed for signalized study intersections. The 95th percentile queues, as detailed in Appendix B, exceeded the available storage for intersections in the Powell Street/Christie Avenue area and along the 40th Street corridor during at least one peak hour. When I-80 in the vicinity of Powell Street is operating at capacity, vehicle queues from the on-ramp spillback to Powell Street affecting the operations of the arterial street system.

Daily Roadway Segment Operation. Automatic machine traffic counts were conducted over a 72-hour period on clear days in January 2015 and June 2015 with area schools in session along Horton Street, 45th Street and 53rd Street, as these roadways are designated bicycle boulevards. The days of data collection included two weekdays and a Saturday. Traffic volumes on the roadways were fairly consistent on both weekdays of data collection, with a variation in daily volume between 1 and 4 percent. The average daily traffic volumes and peak hour traffic flows on these roadways are summarized below in Table IV.C-5.

Horton Street carries approximately 3,500 vehicles on a typical weekday, as shown on Table IV.C-5. The City has established average number of vehicles per day guidelines for bicycle boulevards which are 3,000 vehicles per day for roadways west of Hollis Street and 1,500 vehicles per day for roadways east of Hollis Street. The number of vehicles on Horton Street (analysis segments A, B, and C) exceeds the City's desired level of vehicle traffic (i.e., less than 3,000 vehicles per day) on a bicycle boulevard located west of Hollis Street.

As shown on Table IV.C-5, traffic volumes on 45th Street west of San Pablo (analysis segment F) and 53rd Street west of San Pablo (analysis segment H), also exceed the desired level of vehicle traffic on a bicycle boulevard east of Hollis Street of less than 1,500 vehicles per day on both weekday and Saturday peak conditions.

(1) Near-Term Conditions. Near-Term Conditions are defined as conditions around the time the project is expected to be completed and occupied. Due to the uncertainty of the level and expected time of completion for the Novartis development, adjacent to the project site, a longer-term Cumulative Conditions assessment was also conducted considering conditions with buildout of the Novartis campus, without and with the project.

Table IV.C-5: Existing Conditions Daily Traffic Volumes

	Average Weekday			Saturday	
Roadway	Average Daily Traffic [a]	Peak Hour Traffic [b]	Daily Fluctuation [c]	Daily Traffic	Peak Hour Traffic
A. Horton Street, north of 53rd Street	***3,480***[d]	520	±1%	1,740	70
B. Horton Street, 45th to 53rd Streets[e]	***3,530***	520	±4%	1,790	70
C. Horton Street, south of Sherwin Avenue	***3,460***	480	±1%	1,720	70
D. 53rd Street, east of Horton Street	600	60	±2%	300	20
E. 45th Street, east of Horton Street	1,080	120	±0%	520	30
F. 45th Street, west of San Pablo Ave	***2,630***	250	±4%	***2,720***	270
G. 45th Street, east of San Pablo Ave	1,490	150	±1%	1,400	160
H. 53rd Street, west of San Pablo Ave[f]	***2,440***	200	--	***1,930***	80

[a] Average daily two-way traffic measured over two days (except as noted).
[b] Average peak hour volume from the two weekdays of data collection.
[c] Percent difference between the two days of data collection.
[d] ***Bold and italics*** indicates volumes exceed guidelines established for bicycle boulevards; 3,000 vehicles per day for roadways west of Hollis Street and 1,500 vehicles per day for roadways east of Hollis Street.
[e] The City's Speed Feedback Counts on Horton Street between 45th Street and 53rd Street is approximately 4,100. This count has not been calibrated to other sources of count data along the corridor and may not be accurate as the count could include bicycles. City has no such numbers for any of the other segments analyzed in the above table.
[f] Daily traffic volume estimated based on PM peak hour volumes on the roadway segment, and the ratio of daily to peak hour volumes from parallel roadways.

Source: Fehr & Peers, 2015. *Sherwin-Williams Mixed-Use Development Transportation Impact Analysis, December.*

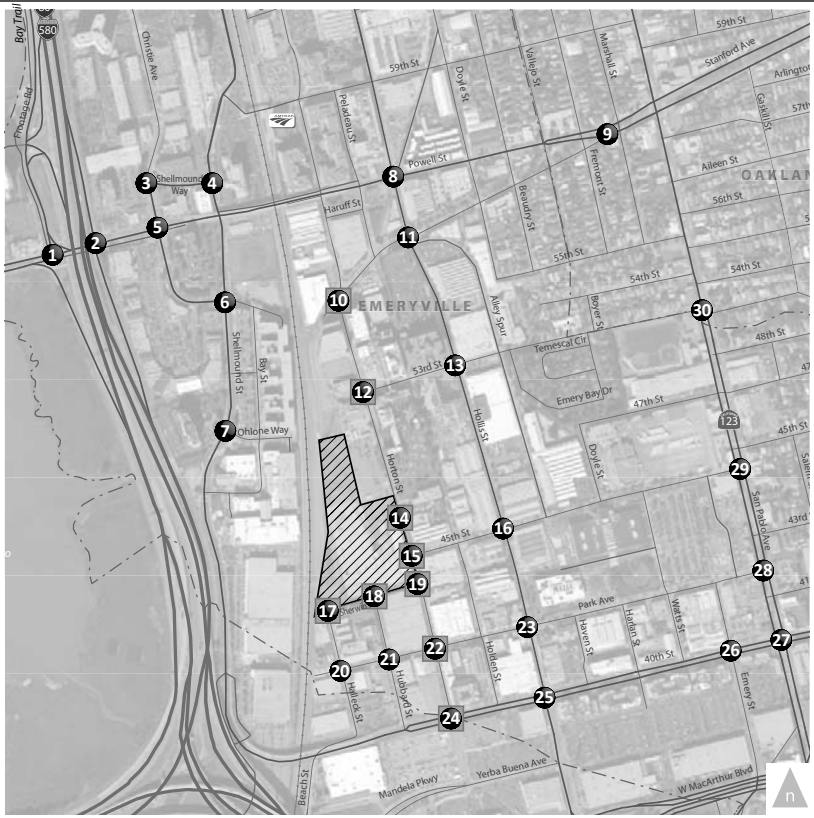
Near-Term Conditions represent existing traffic plus traffic volumes from approved, but not yet constructed and occupied developments in the immediate area that are expected to be operational within the next 5 to 10 years. Table IV.C-6 includes a list of near-term projects included in the analysis, based on the City of Emeryville Community Development Department Status of Major Development Projects, April 2015, and their associated trip generation. The resulting traffic volumes for the Near-Term Conditions are presented in Figures IV.C-7a, IV.C-7b, and IV.C-7c.

(2) Cumulative Conditions. Based on the Novartis Master Plan, approximately 788,000 square feet of net-new laboratory/research and development space could be constructed to the north of the project site, generating almost 5,000 daily vehicle trips, as presented in Table IV.C-6. As the timing of additional development on the Novartis campus to the north of the project site is unknown, the potential level of vehicle trip generation that could be generated was added to the Near-Term Conditions forecasts presented in Figures IV.C-7a, IV.C-7b, and IV.C-7c to develop the Cumulative Conditions forecast as presented in Figures IV.C-8a, IV.C-8b, and IV.C-8c.

Table IV.C-6: Near-Term and Cumulative Projects Trip Generation

	Weekday							Weekend			
		AM Peak Hour			PM Peak Hour				Peak Hour		
Near-Term Project	**Daily**	**Inbound**	**Outbound**	**Total**	**Inbound**	**Outbound**	**Total**	**Daily**	**Inbound**	**Outbound**	**Total**
Marketplace	5,170	85	203	288	257	181	438	5,740	239	229	468
Site A	940	41	30	71	36	39	75	1,200	54	43	97
6701 Shellmound	1,050	15	56	71	55	30	85	1,080	37	35	72
3900 Adeline	500	7	32	39	31	17	48	480	20	19	39
3706 San Pablo	420	7	21	28	24	14	38	430	18	18	36
3800 San Pablo	1,230	19	35	54	53	37	90	1,430	51	47	98
Emeryville Station West	1,890	224	31	255	45	206	251	520	43	37	80
Parc on Powell	1,130	16	54	70	63	40	103	1,150	49	48	97
Pixar Warehouse	100	7	2	9	2	7	9	10	1	1	2
Emeryville Center of Community Life	3,440	398	288	686	126	168	294	2,910	107	142	249
Novartis	4,790	598	123	721	94	539	633	1,130	71	71	142
Total	**20,660**	**1,417**	**875**	**2,292**	**786**	**1,278**	**2,064**	**16,080**	**690**	**690**	**1,380**

Source: Fehr & Peers, 2015. *Sherwin-Williams Mixed-Use Development Transportation Impact Analysis.* December.



LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

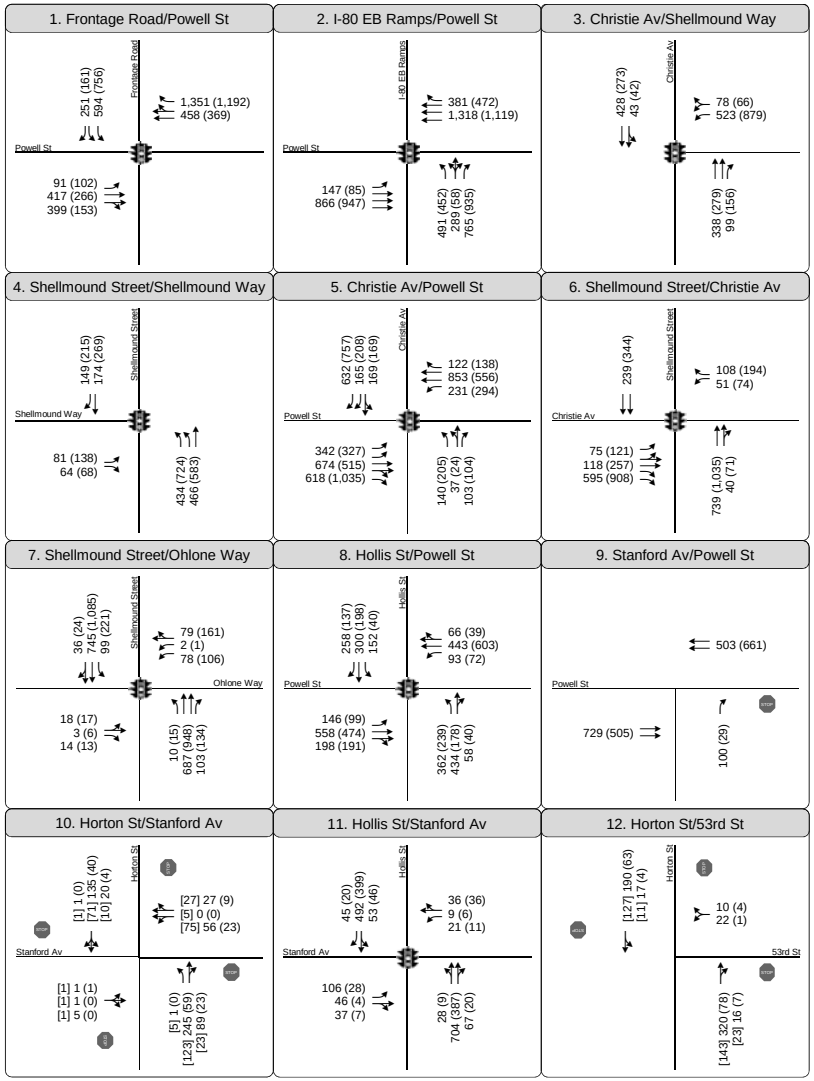
Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site



LSA

FIGURE IV.C-7a

NOT TO SCALE

N

Sherwin-Williams Project EIR

Near-Term Conditions Peak Hour Volumes

SOURCE: FEHR & PEERS, JULY 2015.

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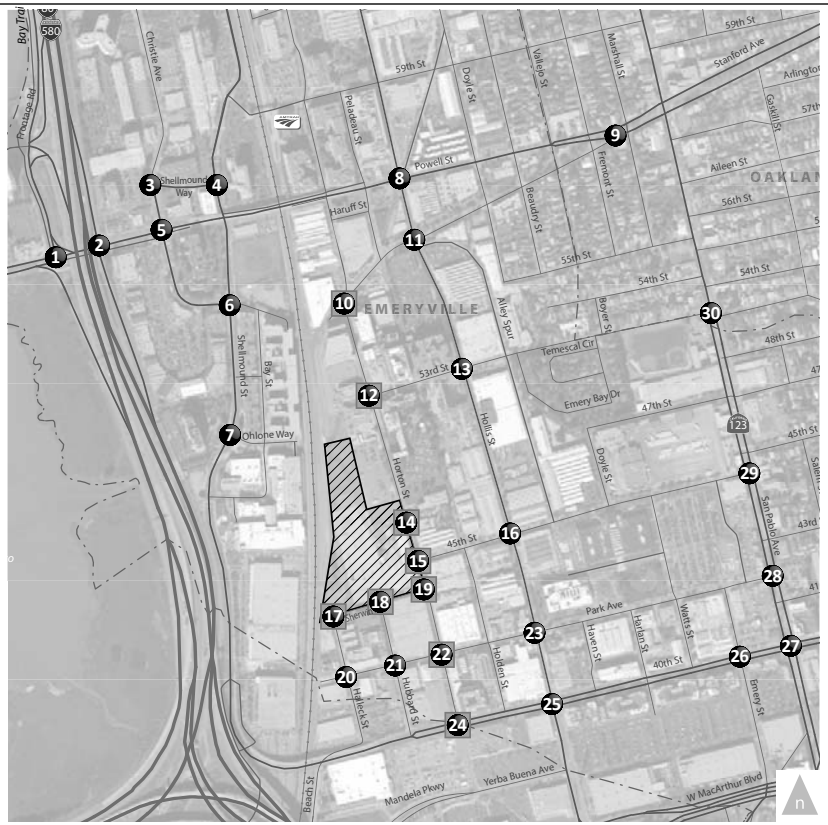

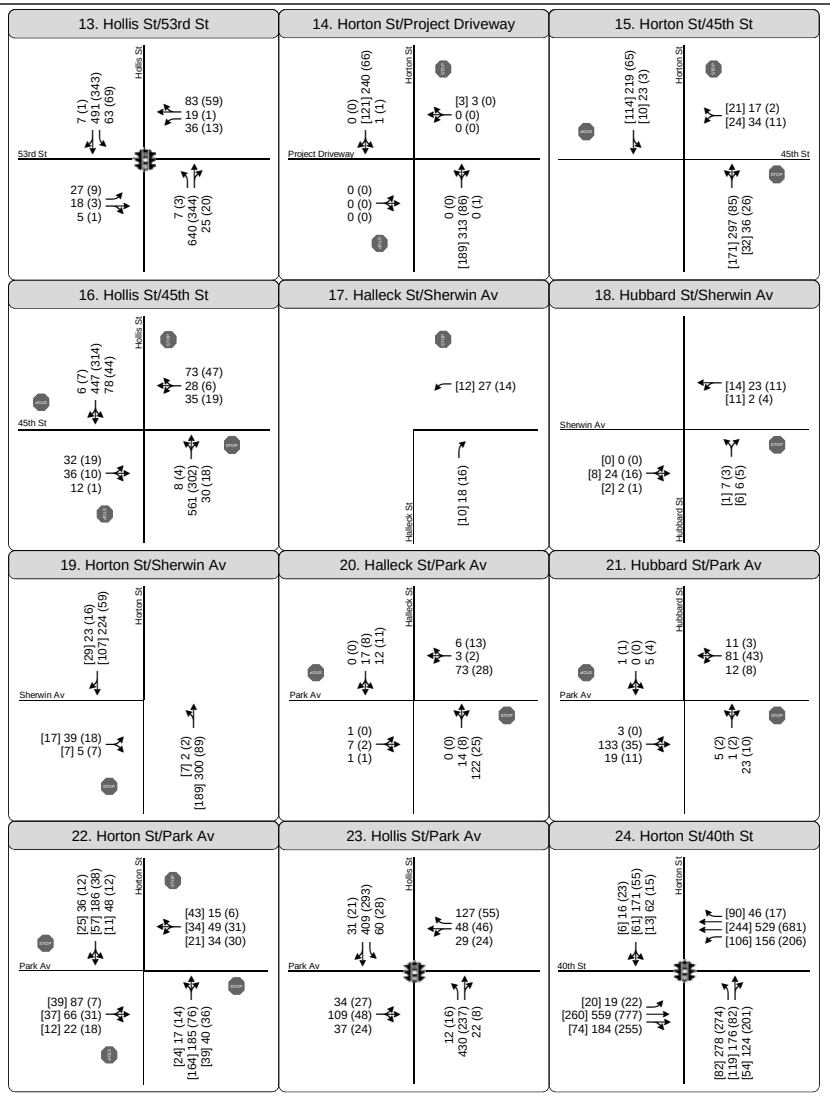

LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site

LSA

FIGURE IV.C-7b

NOT TO SCALE

N

SOURCE: FEHR & PEERS, NOVEMBER 2015.

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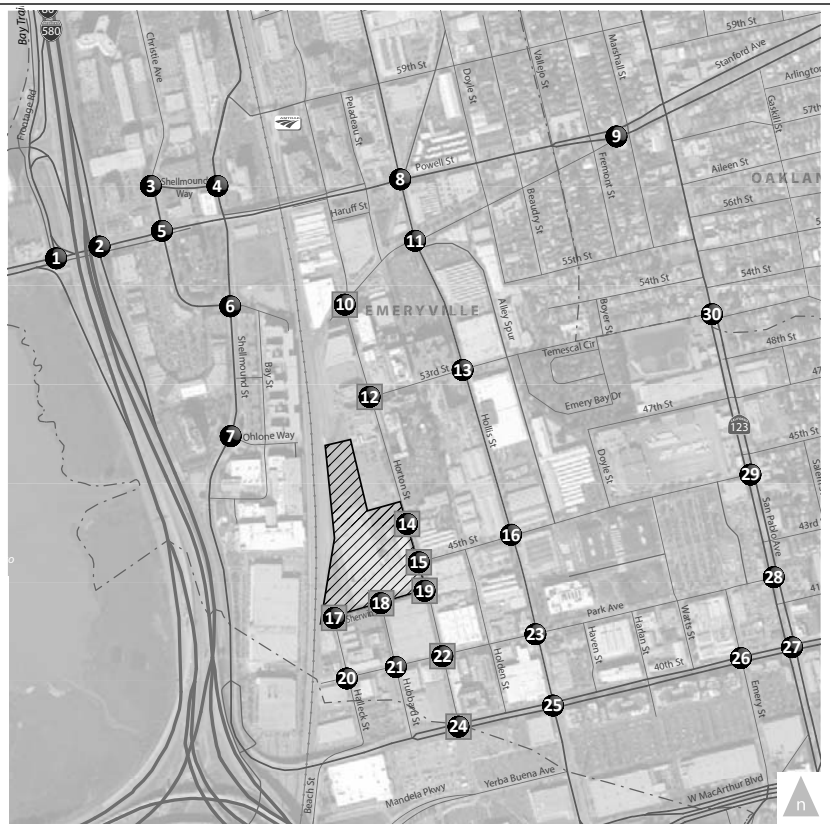
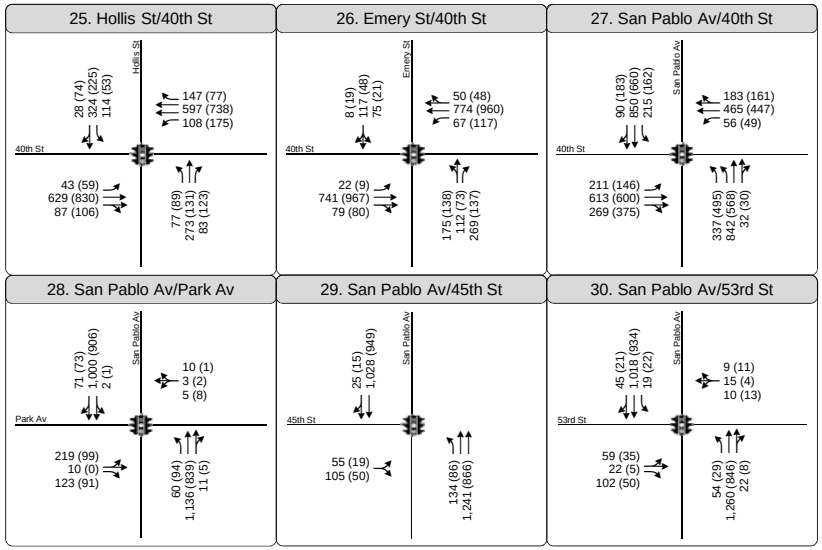
Sherwin-Williams Project EIR

Near-Term Conditions Peak Hour Volumes





LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site

LSA

FIGURE IV.C-7c

NOT TO SCALE

N

SOURCE: FEHR & PEERS, JULY 2015.

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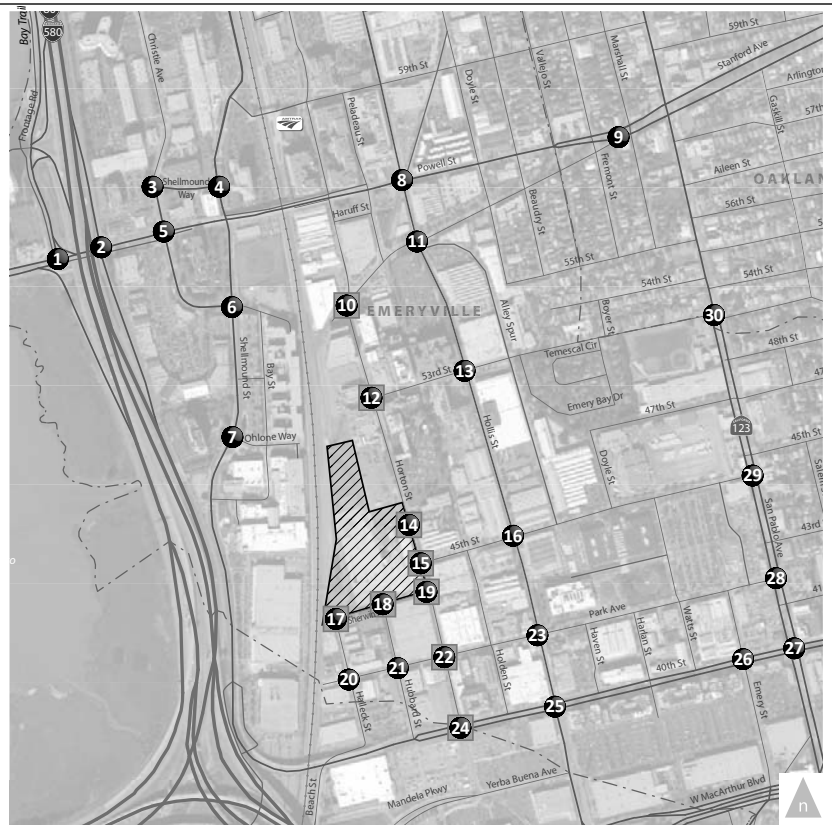
Sherwin-Williams Project EIR

Near-Term Conditions Peak Hour Volumes



LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

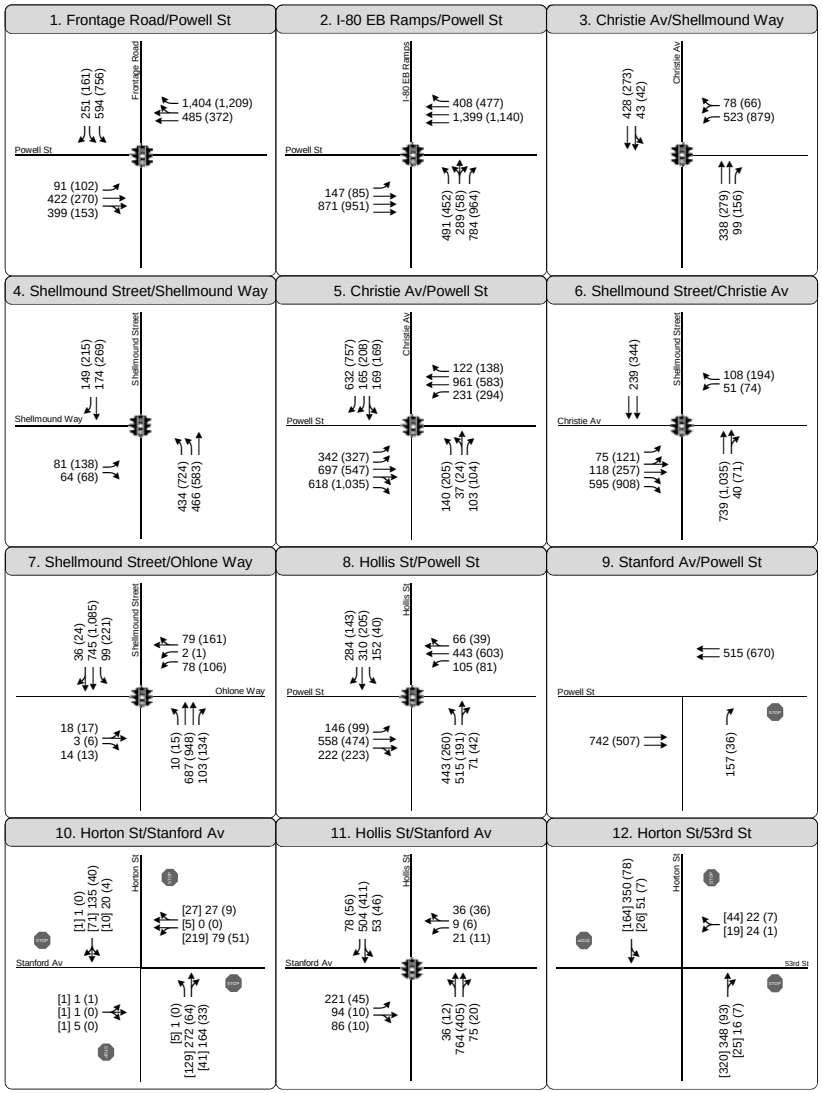
Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site



LSA

FIGURE IV.C-8a

NOT TO SCALE

N

Sherwin-Williams Project EIR

Cumulative Conditions Peak Hour Volumes

SOURCE: FEHR & PEERS, JULY 2015.

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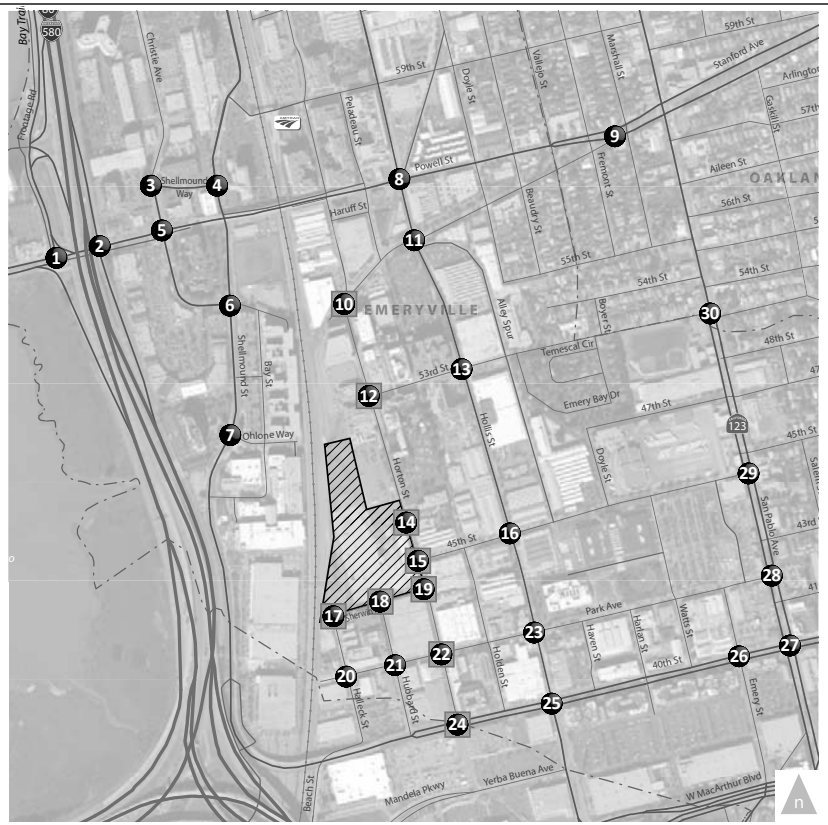

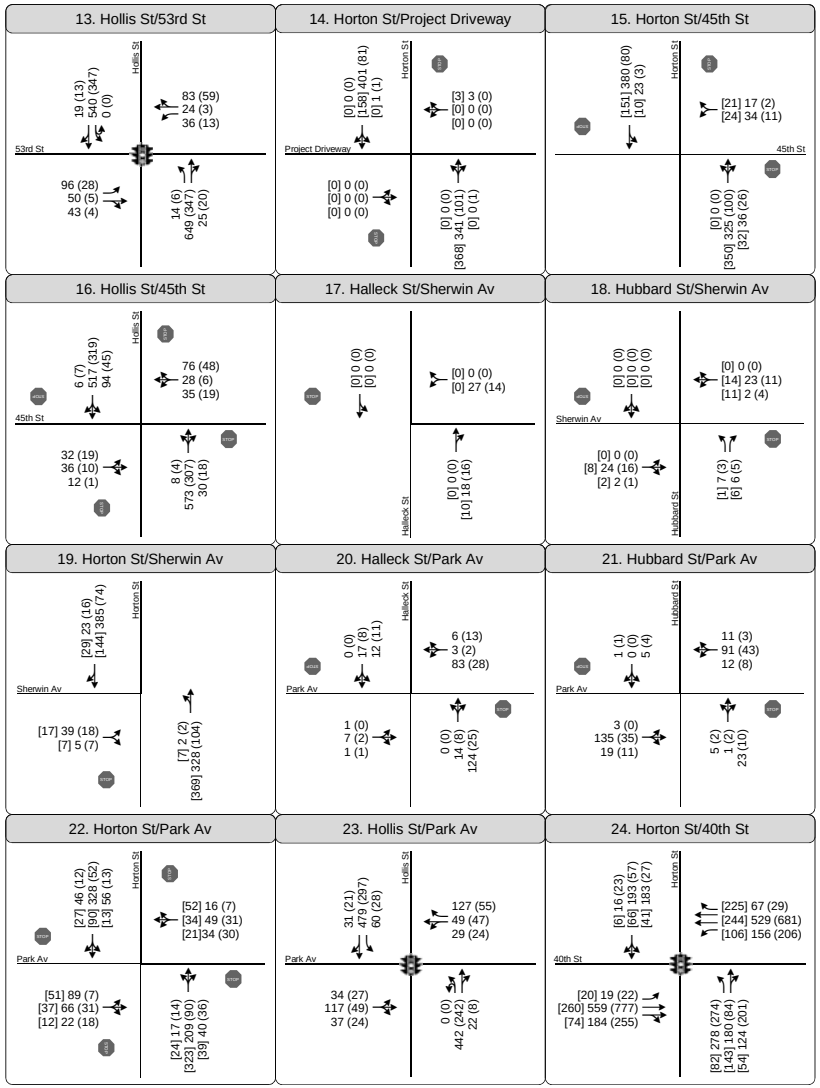

LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site

LSA

FIGURE IV.C-8b

NOT TO SCALE

N

SOURCE: FEHR & PEERS, JULY 2015.

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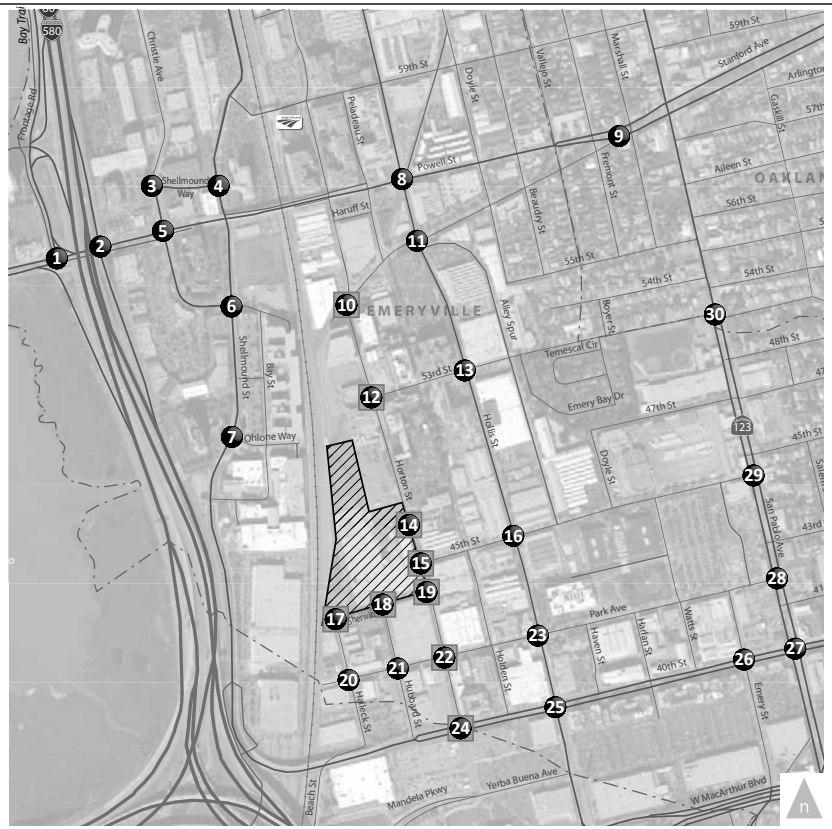
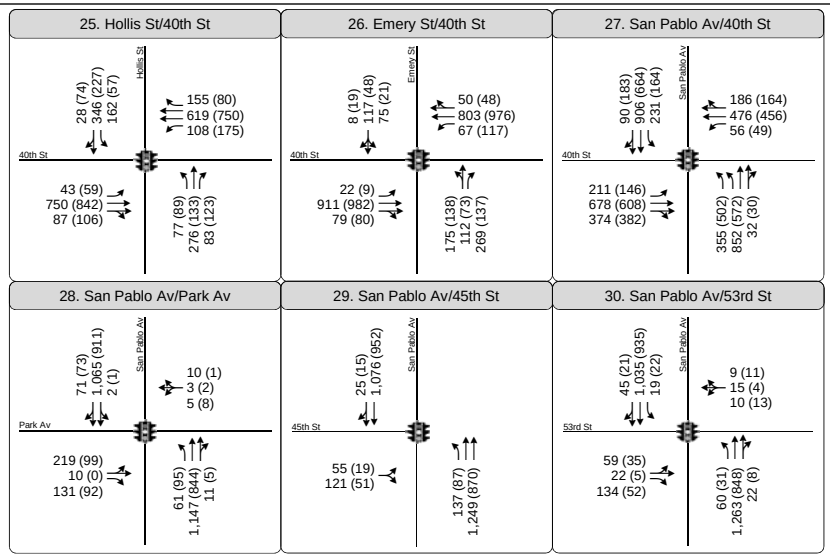
Sherwin-Williams Project EIR

Cumulative Conditions Peak Hour Volumes





LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site

LSA

FIGURE IV.C-8c

NOT TO SCALE

N

Sherwin-Williams Project EIR

Cumulative Conditions Peak Hour Volumes

SOURCE: FEHR & PEERS, JULY 2015.

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d. City of Emeryville General Plan. The Transportation Element of the Emeryville General Plan includes the following policies related to transportation and circulation.[3]

- Policy T-P-2: The design, construction, operation, and maintenance of city streets shall be based on a complete streets" concept that enables safe, comfortable, and attractive access and travel for pedestrians, bicyclists, motorists, and transit users of all ages and abilities.
- Policy T-P-3: A "Quality of Service" standard that seeks to optimize travel by all transportation modes shall be developed and used to measure transportation performance. The City does not recognize "Level of Service" (LOS) as a valid measure of overall transportation operations, and sets no maximum or minimum acceptable LOS levels, with the exception of streets that are part of the regional Congestion Management Agency network. (These streets may change, but as of 2008 include San Pablo Avenue, Frontage Road, and Powell and Adeline streets). LOS shall not be used to measure transportation performance in environmental review documents or for any other purpose unless it is mandated by another agency over which the City has no jurisdiction (such as Caltrans, Berkeley, Oakland, and the Congestion Management Agency), and then it shall only be used for the purposes mandated by that agency.
- Policy T-P-4: Transportation planning shall be coordinated with emergency service providers to ensure continued emergency service operation and service levels.
- Policy T-P-5: The City encourages development that minimizes Vehicle Miles Traveled (VMT).
- Policy T-P-6: To the extent allowed by law, the City's Traffic Impact Fee shall include bicycle, pedestrian, transit, and road improvements so that development pays its fair share toward a circulation system that optimizes travel by all modes.
- Policy T-P-11: Sidewalks shall be provided on both sides of all streets; pedestrian connections between new and existing development is required.
- Policy T-P-16: Safe pedestrian walkways that link to streets and adjacent bus stops will be required of new development.
- Policy T-P-17: The City will require new development to minimize the number and width of curb cuts for vehicle traffic to reduce vehicle conflicts with pedestrians.
- Policy T-P-23: On-street bike routes in the City's Bicycle and Pedestrian Plan shall be designated as either Class II (bike lanes) or Class III (signed routes without lanes), as appropriate. These designations are not part of the General Plan and may be changed as circumstances dictate.
- Policy T-P-25: A numbered bike route system with destination signs, consistent with the regional bike route numbering system shall be developed and implemented with clear signage to bicycle boulevards.
- Policy T-P-36: The City supports Transit-Oriented Development with reduced parking requirements, and amenities to encourage transit use and increase pedestrian comfort around the Major Transit Hubs at the Amtrak station and the 40th Street/San Pablo Avenue intersection.
- Policy T-P-46: Private developments and major public infrastructure projects will provide adequate rights-of-way for all modes of transportation.
- Policy T-P-47: The City supports "traffic calming" and other neighborhood traffic management techniques to enhance the quality of life within existing neighborhoods and to discourage through-traffic on bicycle boulevards and local streets.

[3] Emeryville, City of, 2009. *Emeryville General Plan*. October. Amended April 2, 2013.

- Policy T-P-49: Quality of life and business viability will be promoted by maintaining an adequate supply of parking to serve growing needs, while avoiding excessive supplies that discourage transit ridership and disrupt the urban fabric.
- Policy T-P-65: Employers in large new developments will be required to implement comprehensive TDM programs for their employees and customers.

2. Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to transportation and circulation that could result from implementation of the proposed project. The section begins with the criteria of significance, which establish the thresholds to determine if an impact is significant. The latter part of this section presents the impacts associated with implementation of the proposed project and the recommended mitigation measures, if required.

a. Criteria of Significance. The determination of significance for project impacts is based on applicable policies, regulations, goals, and guidelines defined by the City of Emeryville. Project effects were evaluated by comparing the results of the LOS calculations under Without Project Conditions (existing and future scenarios) to the results With Project Conditions. The detailed impact criteria for this study are presented below, which are based on guidance contained in the Appendix G of the CEQA Guidelines, draft updates as described in SB 743, the City of Emeryville General Plan and recently prepared environmental documents for other projects in the City.

A significant transportation-related impact could occur if:

- The project results in increased VMT per capita, and/or results in an average project trip length greater than the regional average as defined by Alameda CTC.
- The project would conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit. A significant impact would be identified:
    - If the addition of project traffic at a study intersection would result in the 95th percentile vehicle queue exceeding the available storage or would increase 95th percentile queue by more than two vehicles where the queue already exceeds the available storage space; or
    - If the operations of an unsignalized study intersection is projected to decline with the addition of project traffic, and if the installation of a traffic signal based on the Manual on Uniform Traffic Control Devices (MUTCD) Peak Hour Signal Warrant (Warrant 3) would be warranted.
- A bicycle boulevard impact would be considered significant if:
    - The addition of project traffic results in traffic volumes exceeding 1,500 vehicles per day (VPD) for bicycle boulevards east of Hollis Street

  - The addition of project traffic results in traffic volumes exceeding 3,000 vehicles per day for bicycle boulevards west of Hollis Street,[4] or
  - For segments that already exceed the guidance outlined in the City of Emeryville Pedestrian and Bicycle Plan, project traffic increases daily vehicle traffic by 2 or more percent.
- The project would conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards established by the Alameda County Transportation Commission (Alameda CTC) for designated roads and highways if:
  - Project generated traffic, individually or cumulatively, results in an exceedance of the LOS standard established by the Alameda ACTC for designated roads or highways;
  - For a roadway segment of the Alameda CTC Congestion Management Program (CMP) Network, the project would cause (a) the LOS to degrade from LOS E or better to LOS F or (b) the V/C ratio to increase 0.03 or more for a roadway segment that would operate at LOS F without the project; or
  - The project causes congestion of regional significance on a roadway segment on the Metropolitan Transportation System (MTS) evaluated per the requirements of the Land Use Analysis Program of the CMP.[5]
- The project results in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks.
- The project substantially increases traffic hazards due to a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses.
- The project results in inadequate emergency access.
- The project conflicts with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.
  - A pedestrian or bicycle impact is considered significant if it would:
    - Disrupt existing facilities;
    - Interfere with planned facilities;
    - Create inconsistencies with adopted system plans, guidelines, policies, or standards; or
    - Not provide secure and safe bicycle parking in adequate proportion to anticipated demand.
  - A transit impact is considered significant if it would result in development that is inaccessible to transit riders.

[4] Based on Guidelines provided in the *City of Emeryville Pedestrian and Bicycle Plan*. Higher volumes can be permitted for short segments with additional treatments.

[5] The Alameda County Transportation Commission (ACTC) requires the assessment of development-driven impacts to regional roadways of projects that generate more than 100 "net new" PM peak-hour trips.

Although automobile level of service is not assessed as a CEQA metric in this study, intersection levels of service were evaluated to determine if there are recommended improvements to the transportation system that would enhance mobility for vehicle traffic, including transit vehicles, which would not result in secondary impacts to other modes of travel. Intersection improvements may be identified under the following circumstances:

- If a signalized intersection is projected to operate within delay ranges associated with less-than-capacity conditions (i.e., LOS D or better with an average control delay of equal to or less than 55 seconds per vehicle) without the project and the project is expected to cause the facility to operate at a LOS E or F; or
- If an intersection is projected to operate at or over capacity (i.e., LOS E or F) without the project, and the project is expected to increase the average control delay by more than 5 seconds.

For intersections that meet the above criteria, capacity enhancing measures that do not degrade other modes of travel will be considered, including upgrading or installing signal equipment, extending left-turn pocket storage, providing non-motorized facilities to reduce vehicular demand, enhancing capacity on a parallel route and/or enhancing transit access to a site.

Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on State Highway facilities (*Guide for the Preparation of Traffic Studies*, Caltrans, December 2002); however, Caltrans recognizes that achieving LOS C/LOS D may not always be feasible. A standard of LOS E or better on a peak hour basis was used as the planning objective for the evaluation of potential impacts to Caltrans facilities for this project (Powell Street/I-80 Ramps and intersections along San Pablo Avenue) as that is the standard set for Caltrans facilities in the study area by the Alameda CTC. The following criteria were used to evaluate potential impacts to Caltrans facilities:

- If a Caltrans facility is projected to operate at LOS E or better without the project and the project is expected to cause the facility to operate at LOS F, the impact may be considered significant.
- If a Caltrans facility is projected to operate at LOS F without the project and the project is expected to increase delay, the impact may be considered significant.

b. Impact Analysis. The following describes impacts of the proposed project on transportation and circulation.

(1) Project Trip Estimates. This section provides an overview of the proposed land use components within the project and describes the expected trip generation, distribution, and assignment characteristics, allowing for an evaluation of the impacts of development on the surrounding roadway network. The amount of traffic associated with the project was estimated using a three-step process:

- **Trip Generation** – The *amount* of vehicle traffic entering/exiting the project site was estimated.
- **Trip Distribution** – The *direction* trips would use to approach and depart the site was projected.
- **Trip Assignment** – Trips were then *assigned* to specific roadway segments and intersection turning movements.

Trip Generation. Trip generation refers to the process of estimating the amount of vehicular traffic a project might add to the local roadway network. In addition to estimates of daily traffic, estimates were also created for the peak one-hour periods during the morning (AM) and evening (PM) commute hours, when traffic volumes on adjacent streets are typically at their highest. For this project, estimates for peak Saturday conditions were also prepared since traffic volumes in the area are higher on Saturdays than weekdays due to the retail centers on Shellmound Street and 40th Street.

The traditional methods commonly used by traffic engineers to calculate the trip generating potential of developments in urban areas with a variety of travel options can overestimate their impacts because the methods do not accurately reflect the amount of trips made by transit, biking, and/or walking. This results in increased development costs due to oversized infrastructure, and skewed public perception of the likely impacts of development.

The most common method used by traffic engineers is outlined in the Institute of Transportation Engineers (ITE) Trip Generation Manual (9th Edition). This method contains data primarily collected at suburban, single-use, freestanding sites. Use of this method limits the applicability of the data to urban areas, such as the project, which is located in a dense, walkable, urban setting with a mix of land uses, and with nearby local and regional transit service. This method also does not adequately account for key variables that influence travel such as development density and scale, location efficiency, land use mix in close proximity to the site, urban design and transit orientation.

Two significant new research studies provide the opportunity to improve the state of practice. One study sponsored by the US EPA[6] and another by the Transportation Research Board[7] have developed means to improve trip generation estimation for mixed-use developments (MXDs) and those located in urban areas. The two studies examined over 260 MXD sites throughout the U.S. and, using different approaches, developed new quantification methods. Fehr & Peers has reviewed the two methods, including the basis, capabilities, and appropriate uses of each, to produce a new method (MXD+) that combines the strengths of the two individual methods. MXD+ recognizes that traffic generation by mixed-use and other forms of sustainable development relate closely to the density, diversity, design, destination accessibility, transit proximity, and scale of development. MXD+ improves the accuracy of vehicle trip estimation and gives planners a tool to balance land use mix and to incorporate urban design, context compatibility, and transit orientation to create lower impact development.

The MXD+ methodology starts with ITE trip generation estimates but then adjusts those estimates to account for the mix of uses and environment characteristics. Use of the MXD+ methodology requires more input data than a traditional trip generation application. Data detailing the geographic layout of the site, land use in the surrounding area, including retail and employment opportunities, and socioeconomic data of both the site and the surrounding area were collected to inform the MXD+ methodology. Sources used to collect this data include the Metropolitan Transportation Commission (MTC) travel demand model, Census and American Community Survey (ACS), the Bay Area Travel Survey (BATS), and the project site plan.

[6] Ewing, et al., 2011. *Traffic Generated by Mixed-Use Developments—A Six-Region Study Using Consistent Built Environmental Measures* (ASCE UP0146) September.

[7] Bochner, et al., 2011. *National Cooperative Highway Research Program Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments.* March.

The MXD+ model has been approved for use by the US EPA.[8] It has also been peer-reviewed in the ASCE Journal of Urban Planning and Development,[9] peer-reviewed in a 2012 TRB paper evaluating various smart growth trip generation methodologies,[10] recommended by San Diego Association of Governments (SANDAG) for use on mixed-use smart growth developments,[11] and has been used successfully in multiple certified CEQA documents in California.

For 27 mixed-use sites that were surveyed in California and across the country, the ITE method overestimated daily traffic generation by 24 percent and peak hour traffic by 35 percent to 37 percent. The MXD+ method explains 97 percent of the variation in trip generation among MXDs, compared to 65 percent for the methods previously recommended by ITE. While remaining slightly (2 percent to 4 percent) conservative to avoid systematically understating impacts, MXD+ substantially reduces the 35 percent - 37 percent average overestimate of traffic generation produced by conventional ITE methods. The MXD+ method has been locally validated for dozens of transit oriented development (TOD) sites in the Bay Area and across the country. Outputs of this tool include external vehicle trip generation, internal trips, and external walking/bicycling/transit trips. This tool has been used to refine trip generation estimates for recently approved projects in Emeryville, including Marketplace and Site A projects.

Table IV.C-7 shows the estimated trip generation for the project. In terms of ITE trip generation, which represents the total trip generation of the project for all travel modes, the project is expected to generate approximately 5,540 weekday daily trips, including about 460 morning peak hour and 540 evening peak hour trips. On a typical Saturday, the project would generate approximately 4,940 trips, including 430 during the peak hour. However, there are a number of factors that would reduce the overall number of trips made by a vehicle to/from this site, including a number of trips expected to be internal to Emeryville as walk/bike trips, or transit trips.

Based on the MXD+ model, it is expected that on a typical weekday, approximately 10 percent of trips would remain internal to the development. It is expected that approximately 15 percent of trips would arrive at/depart the site by walking or biking as the primary mode of travel, with 15 percent of weekday peak hour (10 percent of weekday daily) and 10 percent of weekend trips via transit. The remaining trips would occur via an automobile. Although some trips to the retail component could be pass-by trips, which are trips that make an interim stop on an already planned trip, route deviation from 40th Street or San Pablo Avenue would result in new traffic in the immediate vicinity of the project site. Therefore, no pass-by reduction was taken for this analysis. When considering the MXD+ reductions described above, the project is expected to generate approximately 3,600 daily vehicle trips, including approximately 280 AM peak hour and 320 PM peak hour trips to the regional roadway network. On a Saturday, the project could generate up to 3,220 vehicle trips, including 280 peak hour trips.

[8] U.S. Environmental Protection Agency, 2012. Trip Generation Tool for Mixed-Use Developments. Website: www.epa.gov/dced/mxd_tripgeneration.html (accessed November, 2015).

[9] Ewing, et al., 2011. "Traffic Generated by Mixed-Use Developments—Six-Region Study Using Consistent Built Environmental Measures." In *Journal of Urban Planning and Development*, 137(3), 248–261.

[10] Shafizadeh, Kevan, and Richard Lee, et al., 2012. "Evaluation of the Operation and Accuracy of Available Smart Growth Trip Generation Methodologies for Use in California." Presented at 91st Annual Meeting of the Transportation Research Board, Washington, D.C.

[11] San Diego Association of Governments, 2010. *Smart Growth Trip Generation and Parking Study*. Website: www.sandag.org/index.asp?projectid=378&fuseaction=projects.detail (accessed July 31, 2015). June.

Table IV.C-7: Trip Generation Estimates

Use	Size	Weekday							Saturday			
			AM Peak Hour			PM Peak Hour				Peak Hour		
		Daily	In	Out	Total	In	Out	Total	Daily	In	Out	Total
Retail[1]	10,000 square feet (sf)	430	6	4	10	18	19	37	500	25	23	48
Restaurant[2]	5,000 sf	640	30	24	54	29	20	49	790	37	33	70
Office[3]	79,600sf	880	109	15	124	20	99	119	200	18	16	34
	Total Commercial Trips	1,950	145	43	188	67	138	205	1,490	80	72	152
Residential[4]	540 Units	3,590	55	220	275	218	117	335	3,450	141	140	281
	Total Trip Generation	5,540	200	263	463	285	255	540	4,940	221	212	433
	Less Trip Reductions											
	Internal Trips[5]	-550	-20	-26	-46	-29	-26	-55	-490	-22	-21	-43
	External Walk/Bike Trips[6]	-830	-30	-39	-69	-43	-38	-81	-740	-33	-32	-65
	External Transit Trips[7]	-550	-30	-39	-69	-43	-38	-81	-490	-22	-21	-43
Net New Vehicle Trips to Network[8]		**3,610**	**120**	**159**	**279**	**170**	**153**	**323**	**3,220**	**144**	**138**	**282**

[a] Based on Trip Generation (9th Edition) trip generation rates for land use 820, General Retail.
[b] Based on Trip Generation (9th Edition) trip generation rates for land use 932, High-turnover sit-down Restaurant assuming Breakfast service.
[c] Based on Trip Generation (9th Edition) trip generation rates for land use 710, Non-medical office.
[d] Based on Trip Generation (9th Edition) trip generation rates for land use 220, Apartment.
[e] It is estimated that approximately 10 percent of trips would remain internal to the development.
[f] 15 percent of trips are expected to be external walk/bike trips.
[g] 10 percent of weekday daily, 15 percent of weekday peak hour trips and 10 percent of weekend trips are expected to be transit trips to/from the site.
[h] The net vehicle trip estimates using the MXD+ method in conjunction with ITE trip generation rates represents a 30-40% reduction compared to using the ITE methodology alone.

Source: Fehr & Peers, 2015. *Sherwin-Williams Mixed-Use Development Transportation Impact Analysis*. December.

Project Trip Distribution and Assignment. Trip distribution is defined as the direction of approach and departure that vehicles would use to arrive at and depart from the site. The trip distribution estimates were developed based on the locations of complementary land uses and existing travel patterns in the area. Project trip distribution percentages are shown in Figure IV.C-9.

The project trips were assigned to the roadway system based on the directions of approach and departure discussed above. Figures IV.C-10a, IV.C-10b, and IV.C-10c show the net new project trips assigned to each turning movement by intersection for Option A and Figures IV.C-11a, IV.C-11b, and IV.C-11c depict the project trip assignment under Option B. Although total vehicle trip generation is the same, the vehicle routing under each option is different as there are different driveway locations.

(2) Vehicle Miles of Travel. In response to Senate Bill 743 (SB 743), the Office of Planning and Research (OPR) is updating the CEQA Guidelines to include new transportation-related evaluation metrics. Draft guidelines were developed in August 2014, with updated draft guidelines prepared August 2015. New guidelines have not yet been adopted and the final guidelines may change based on the comments received.

Proposed changes to Appendix G of the CEQA guidelines, as presented in Proposed Updates to the CEQA Guidelines Preliminary Discussion Draft *(*August 2015, 2013) provides the potential basis for the evaluation of vehicle miles of travel generated by a project.[12]

The following provides a brief project description, language of the draft CEQA Guidelines related to VMT, and results of the VMT assessment for the Sherwin-Williams project. Thresholds of significance are also presented.

Text of Proposed Amendment to CEQA Guidelines. The following *double underlined and italicized* text is proposed to amend Appendix G of the CEQA Guidelines as presented in the Proposed Updates to the CEQA Guidelines Preliminary Discussion Draft.

b) Cause *substantial additional* vehicle miles traveled (per capita, per service population, or other appropriate measure). ~~that exceeds the regional average for that land use~~?

c) Substantially induce additional automobile travel by increasing physical roadway capacity in congested areas (i.e., by adding new mixed-flow lanes or by adding new roadways to the network)?

As the proposed project would not construct mixed-flow lanes, nor would it add additional roadways to the network beyond those needed for project site access and circulation, this chapter focuses on the potential VMT impact of the project.

Significance Criteria. Based on the information provided in the draft update to the CEQA Guidelines, a new significance threshold was developed for the purposes of evaluating the VMT impact of the Sherwin-Williams project.

[12] Governor's Office of Planning & Research, 2015. *Proposed Updates to the CEQA Guidelines*. Available online at: www.opr.ca.gov/docs/Preliminary_Discussion_Draft_Package_of_Amendments_to_the_CEQA_Guidelines_Aug_11_2015.pdf.

- The project would have a significant impact if it would result in increased VMT per capita, and/or result in an average project trip length greater than the regional average as defined by Alameda County Transportation Commission (Alameda CTC).

As the Alameda CTC has not yet set regional average trip lengths for various land uses, an impact would be assessed if the project results in increased VMT per capita as compared to the Existing Conditions.

Analysis Methods. To estimate VMT within the City of Emeryville, both without and with the project, Fehr & Peers used the Alameda CTC travel demand model. The first step in the process was to review the land use and roadway network assumptions within the base year model, reflective of 2010 conditions, and future conditions, reflective of 2040. These are the most current base year and future year models that are available.

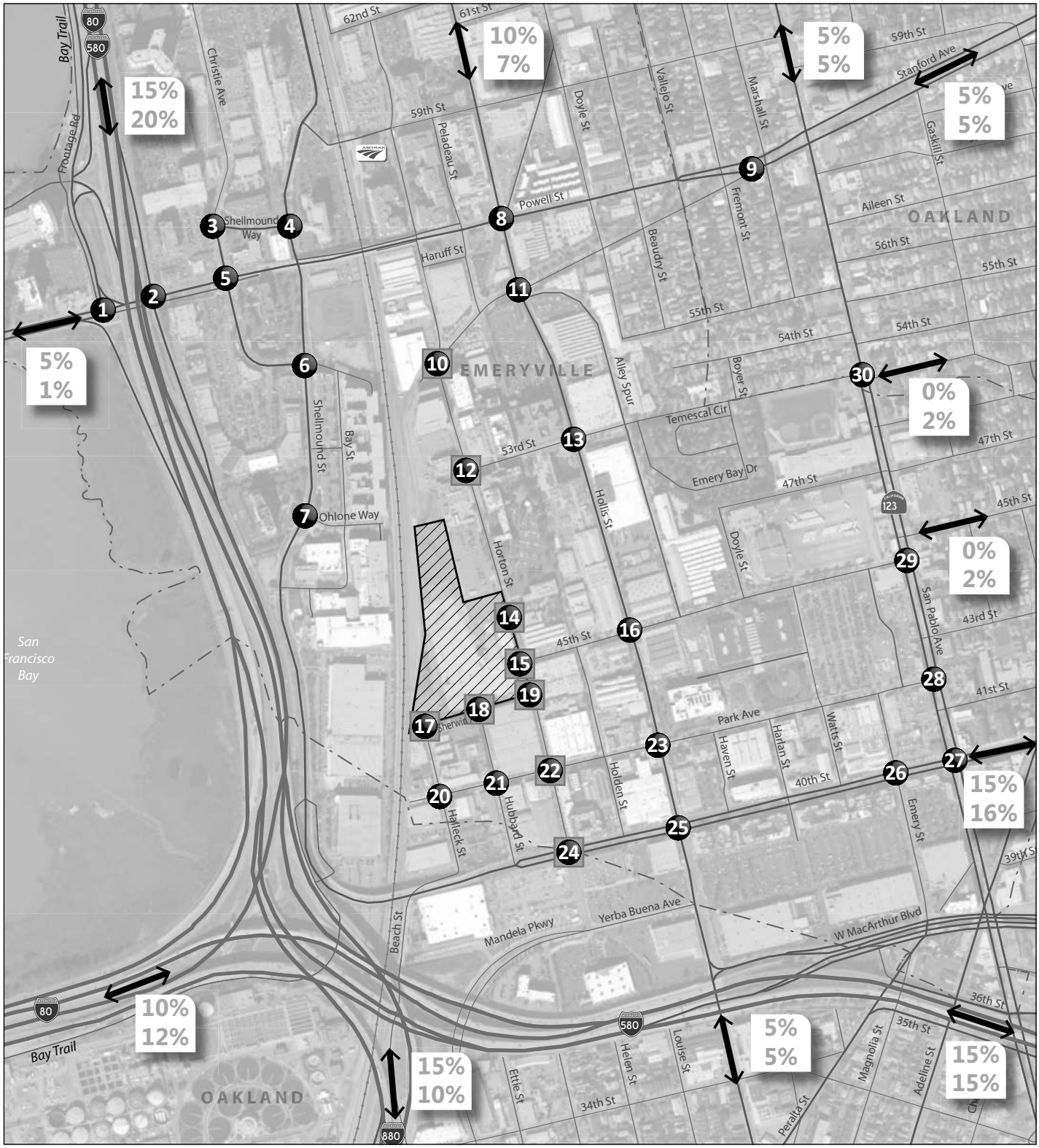
The model is a representation of the transportation networks and land uses that comprise the Bay area region and contains approximately 2,700 travel analysis zones (TAZs) which represent the land uses within Alameda County and neighboring counties. Additional details regarding the model can be found on the Alameda CTC website.[13] Of the total TAZs, 17 represent the City of Emeryville, with the project site represented by TAZ 1427, which also includes the land uses associated with neighboring development. The non-residential project uses (see Chapter III, Project Description) were then converted to total employment using the following factors:

- Office – one employee per each 250 square feet (characterized as other employment in the model), equating to 318 employees in 79,600 square feet;
- Retail – one employee per each 500 square feet (characterized as retail employment in the model), equating to 20 employees in 10,000 square feet;
- Restaurant – one employee per each 250 square feet (characterized as service employment in the model), equating to 20 employees in 5,000 square feet.

Residential and employment totals for the City of Emeryville and the project zone are shown in Table IV.C-8 for the base year and Table IV.C-9 for the future year.

As shown in Table IV.C-8, the City of Emeryville is represented in the base year model with 5,700 residential units, correlating to a population of approximately 10,000. The model also includes approximately 16,640 jobs in Emeryville. Based on a review of the land use assumptions for the TAZ that contains the project site, it does not appear that proposed project uses are reflected in the Existing Conditions model. By 2040, Emeryville is expected to have 11,635 households, equating to a population of around 21,000. The number of jobs is also expected to increase to approximately 24,100.

[13] Alameda County Transportation Commission, 2015. Countywide Travel Demand Model. Website: www.alamedactc.org/app_pages/view/8079 (accessed July 30, 2015).



LSA

LEGEND

- (#) Weekday PM and Saturday Peak Hour Analysis Study Intersection
- (#) Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection
- Project Site
- X% / Y% — Residential Project Trip Distribution / Commercial Project Trip Distribution

NOT TO SCALE

FIGURE IV.C-9

Sherwin-Williams Project EIR

Project Trip Distribution

SOURCE: FEHR & PEERS, JULY 2015.

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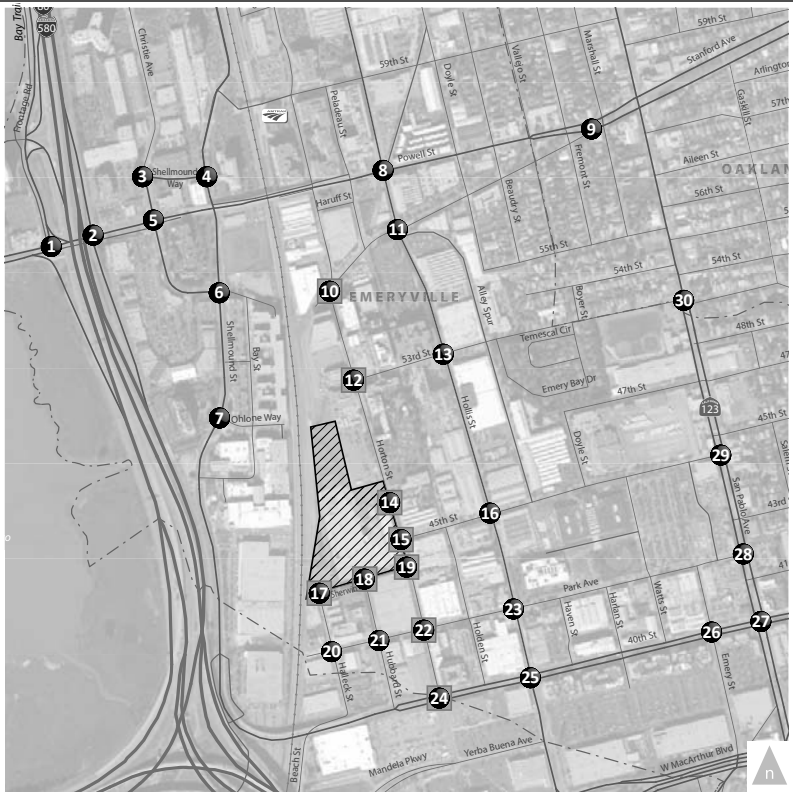


LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

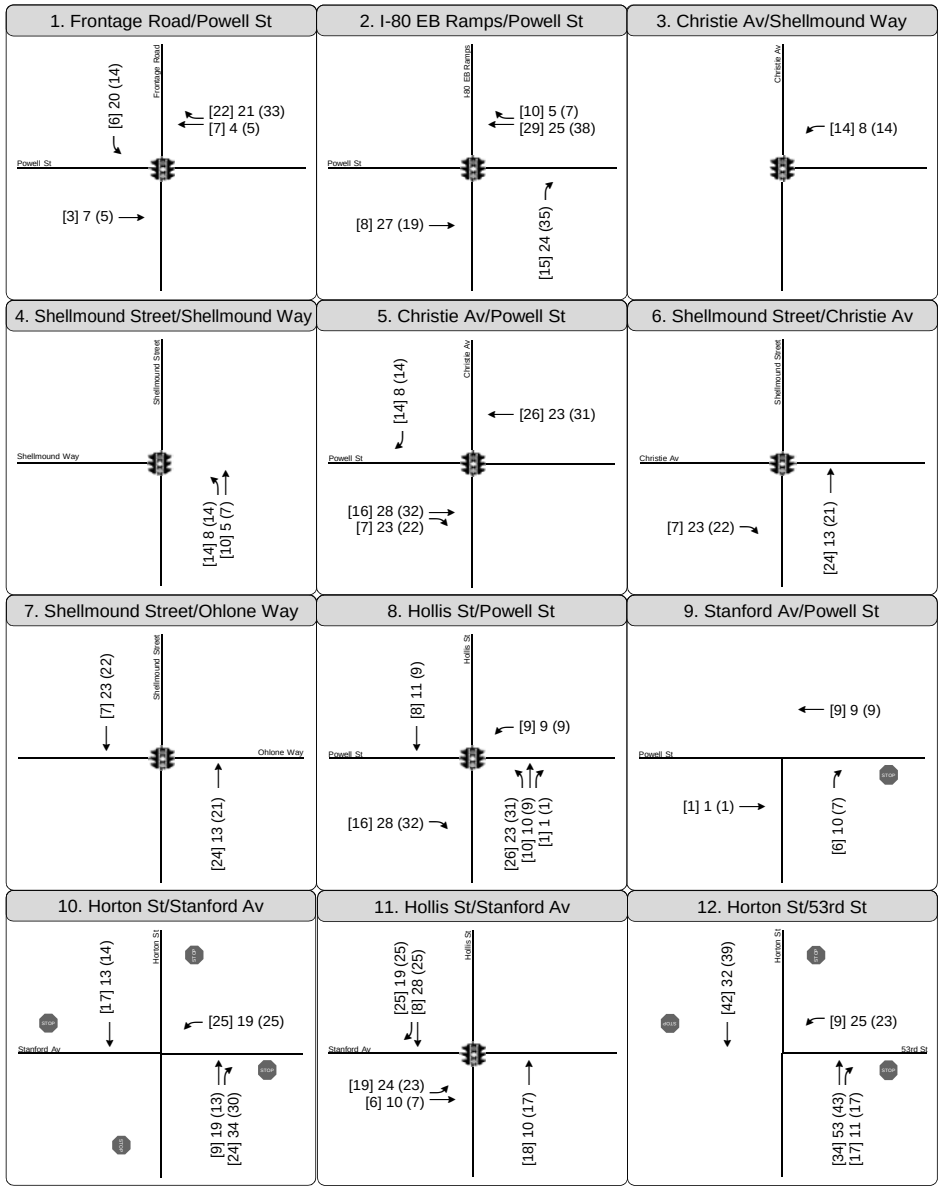
Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site



LSA

FIGURE IV.C-10a

NOT TO SCALE

N

SOURCE: FEHR & PEERS, JULY 2015.

Sherwin-Williams Project EIR

Project Option A Trip Assignment

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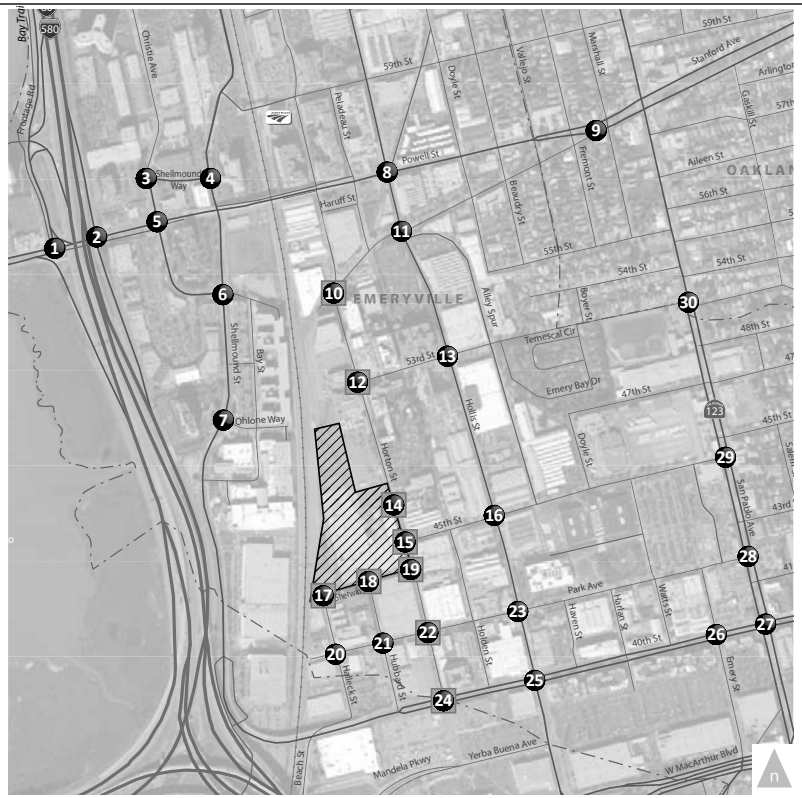


LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

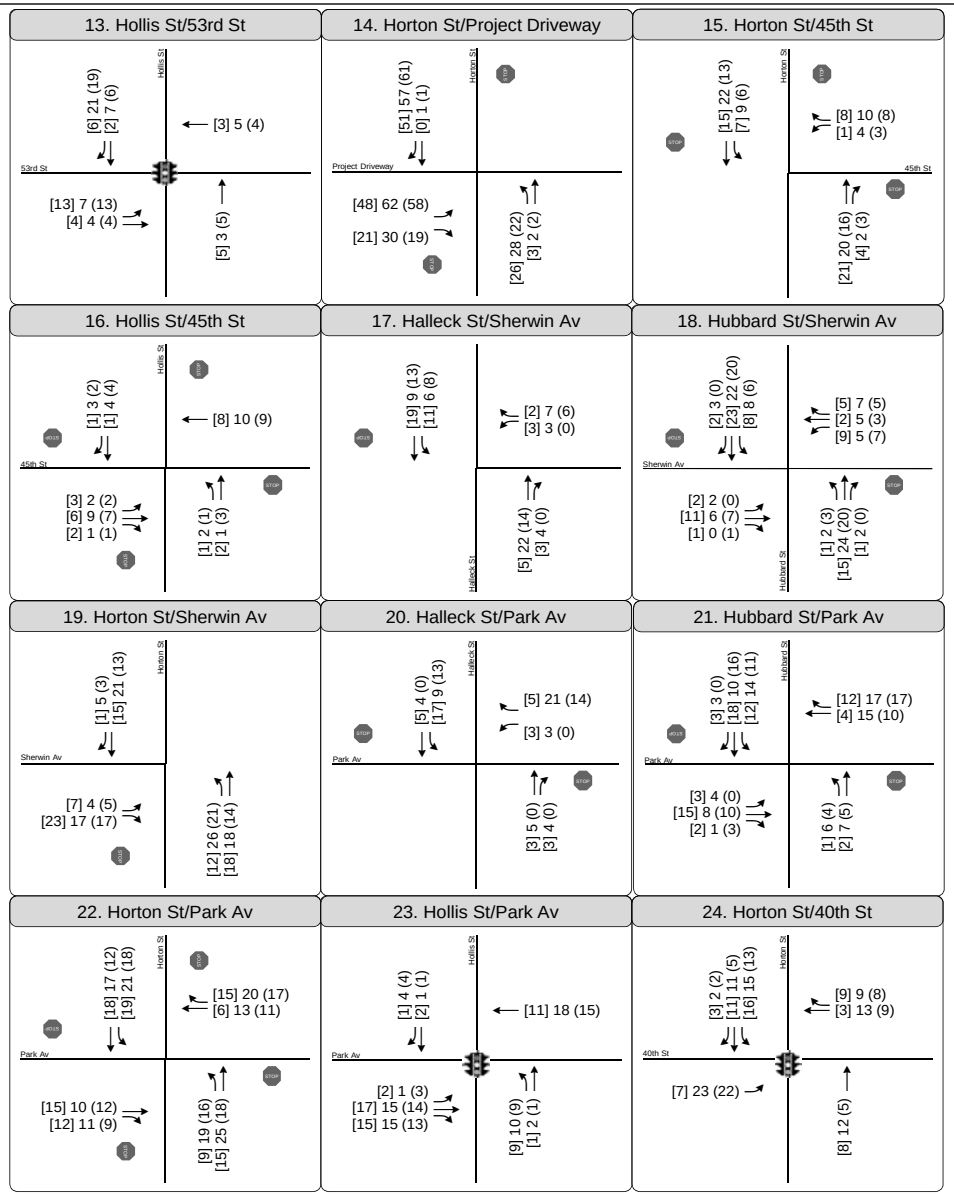
Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site



LSA

FIGURE IV.C-10b

NOT TO SCALE

N

Sherwin-Williams Project EIR

Project Option A Trip Assignment

SOURCE: FEHR & PEERS, JULY 2015.

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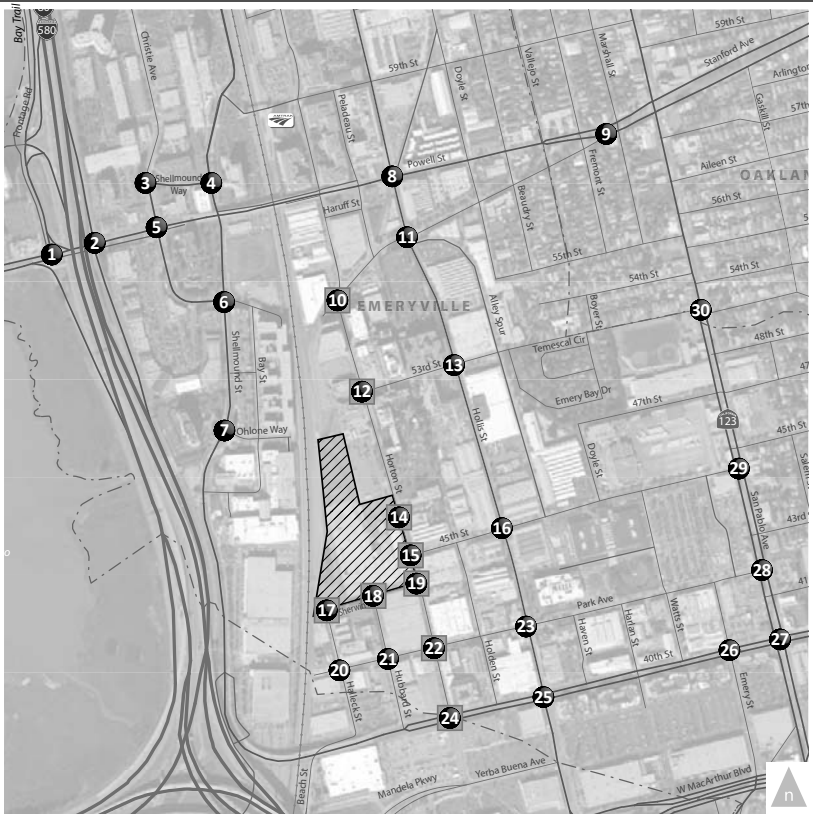

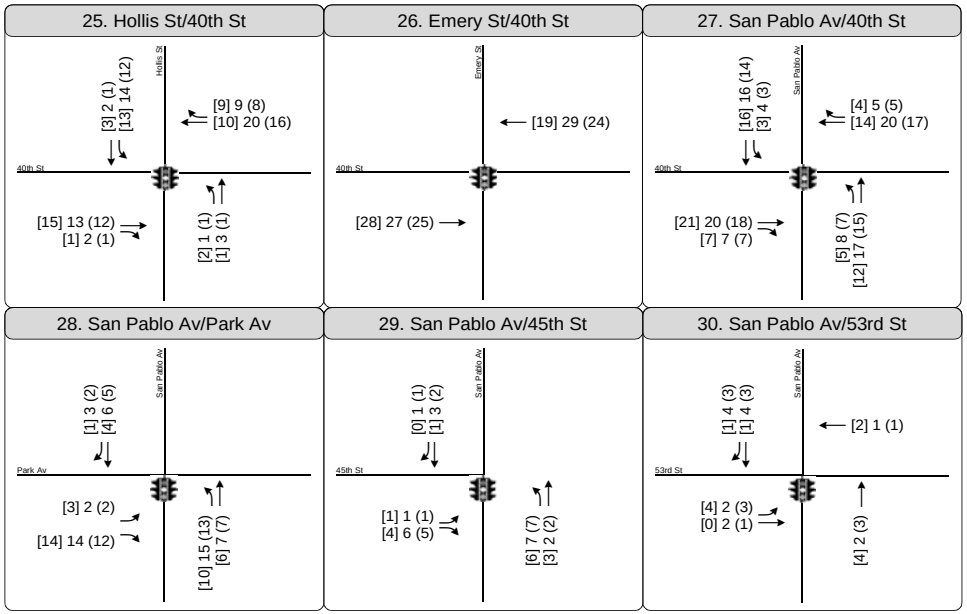

LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site

LSA

FIGURE IV.C-10c

NOT TO SCALE

SOURCE: FEHR & PEERS, NOVEMBER 2015.

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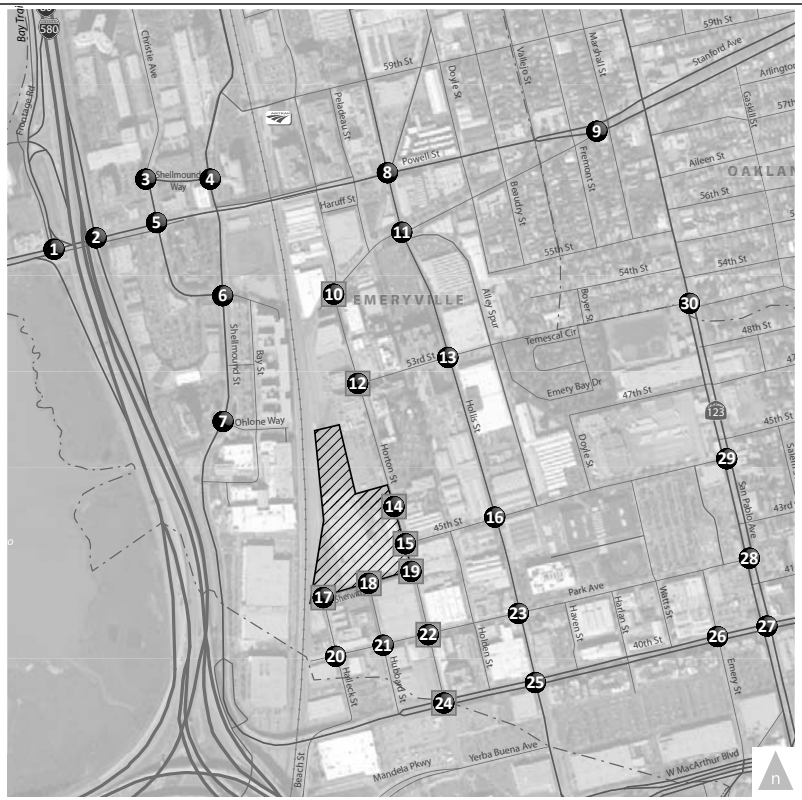
Sherwin-Williams Project EIR

Project Option A Trip Assignment



LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

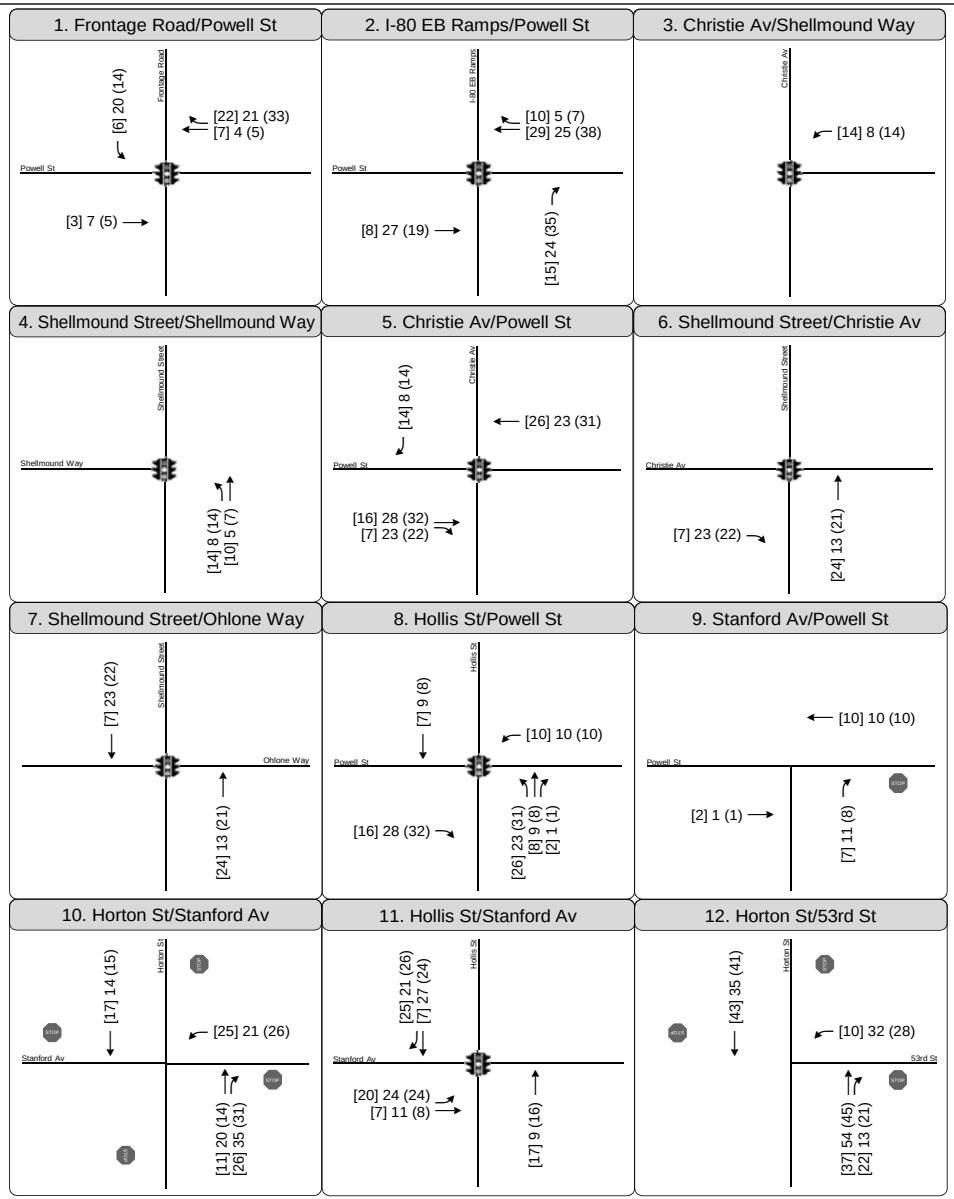
Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site



LSA

FIGURE IV.C-11a

NOT TO SCALE

N

Sherwin-Williams Project EIR

Project Option B Trip Assignment

SOURCE: FEHR & PEERS, JULY 2015.

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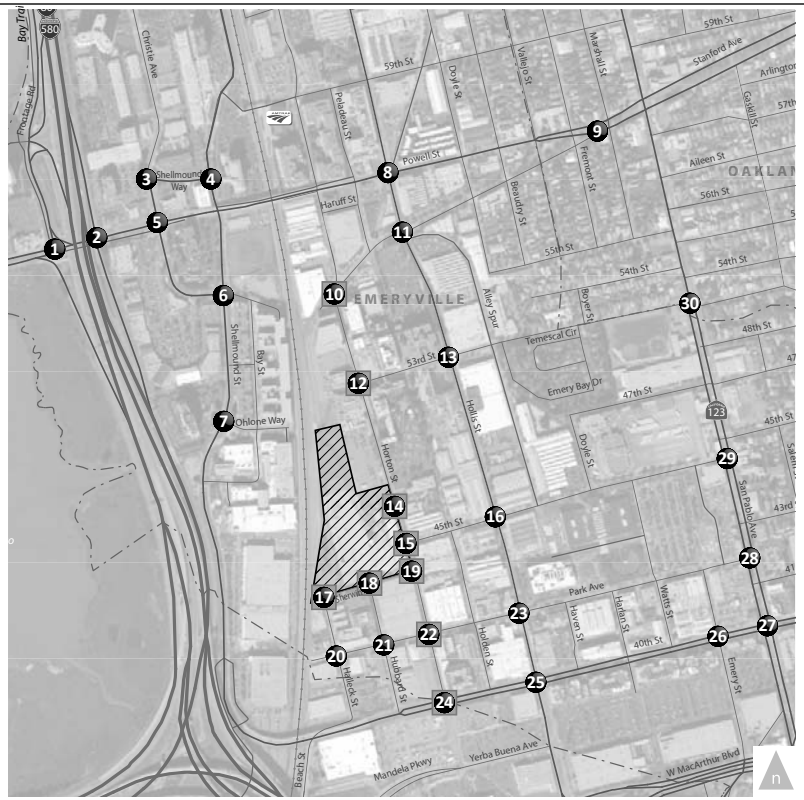


LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

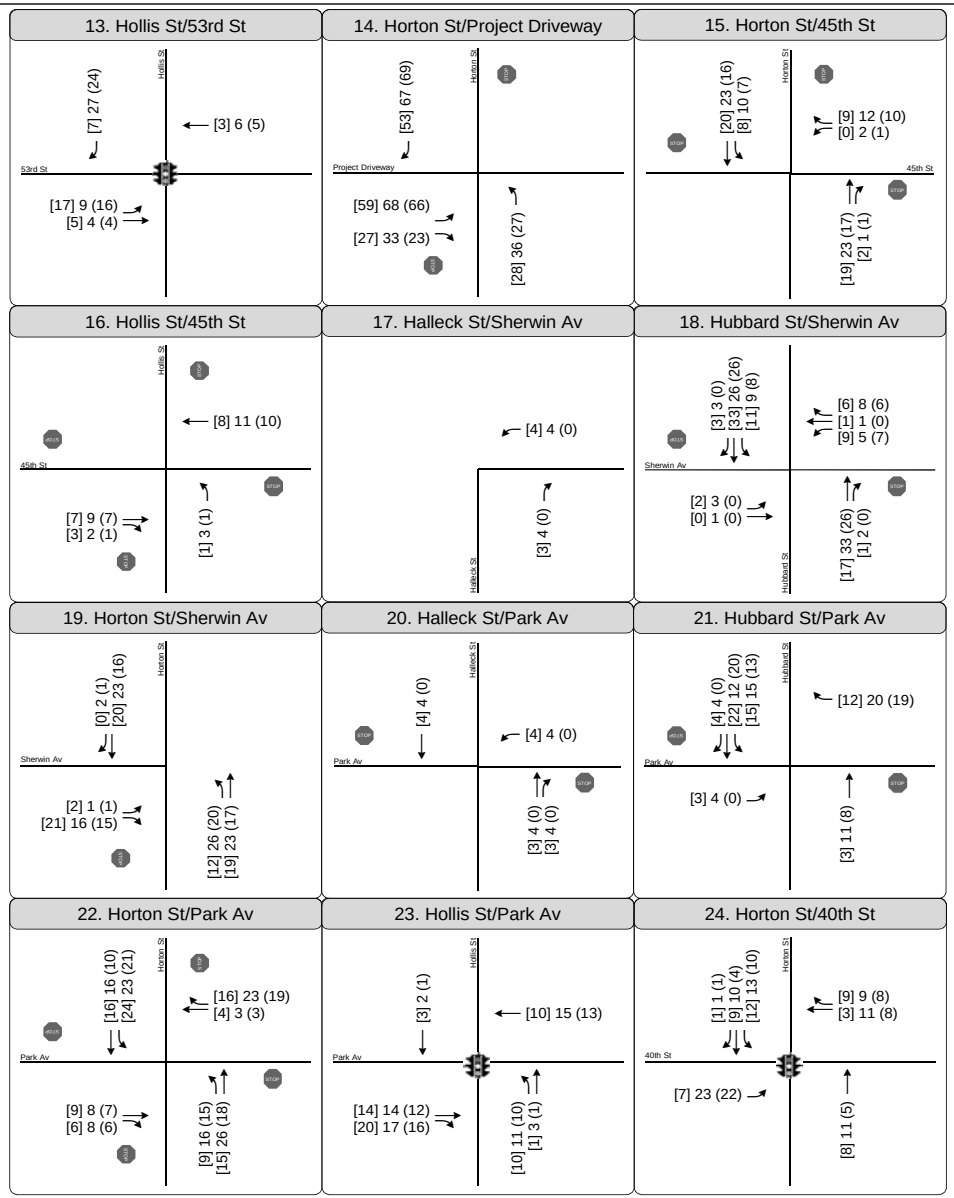
Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site



LSA

FIGURE IV.C-11b

NOT TO SCALE

N

Sherwin-Williams Project EIR

Project Option B Trip Assignment

SOURCE: FEHR & PEERS, JULY 2015.

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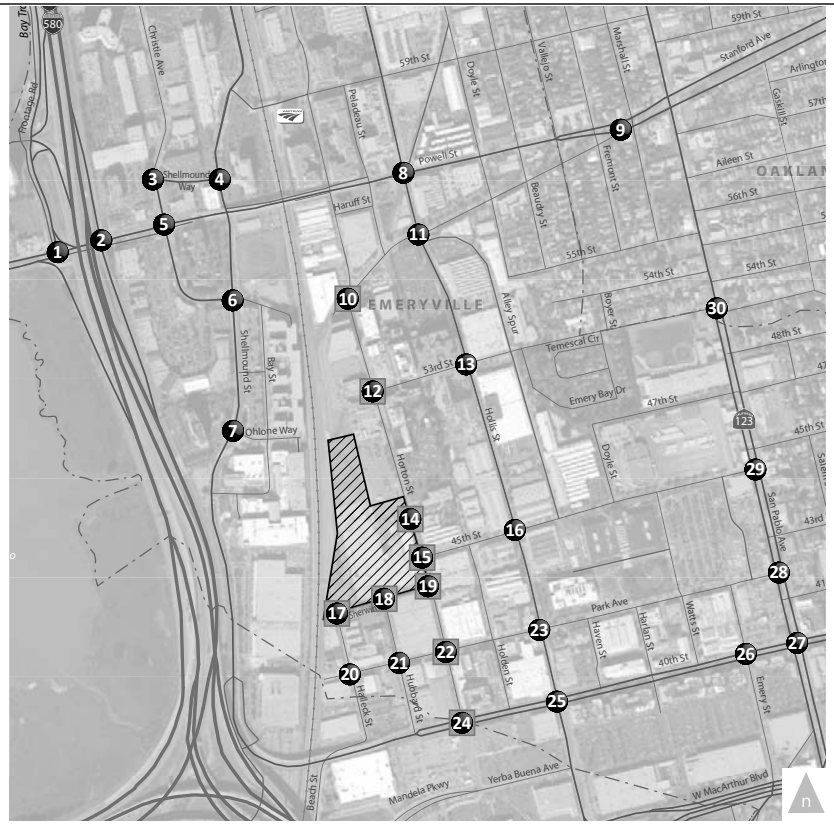


LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

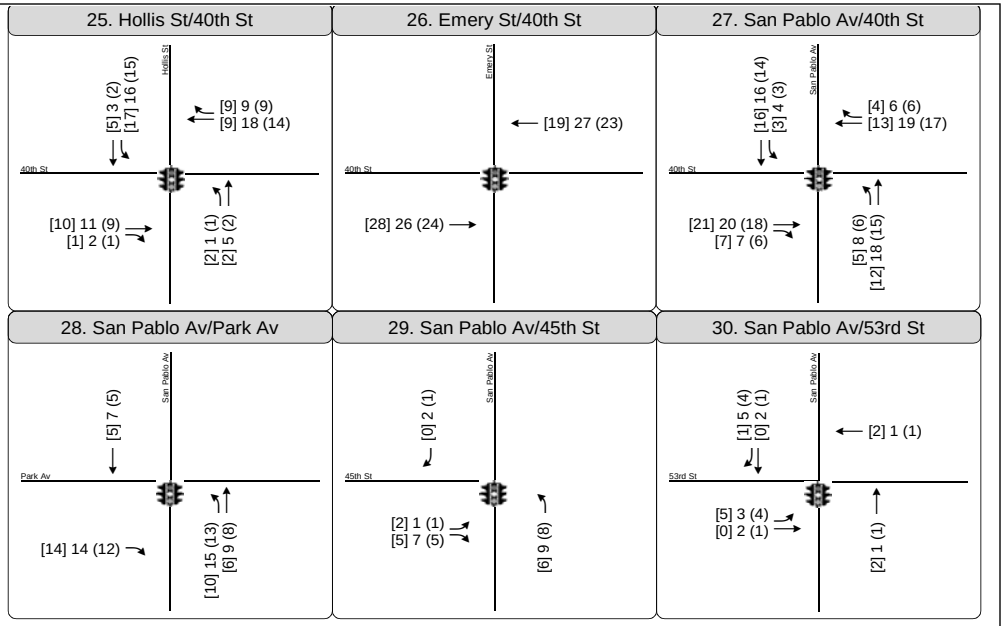
Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site



LSA

FIGURE IV.C-11c

NOT TO SCALE

N

SOURCE: FEHR & PEERS, JULY 2015.

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Sherwin-Williams Project EIR

Project Option B Trip Assignment

Table IV.C-8: Alameda CTC Travel Demand Model Base Year 2010 City of Emeryville and Project Site Land Uses

	Residential				Employment			
Model Data	Single-Family Households	Multi-Family Households	Total Households	Population	Retail	Service	Other	Total
City of Emeryville Existing Totals (A)	862	4,842	5,704	10,024	2,623	9,481	4,540	16,644
TAZ 1427 Without Project included in City Total (Project Zone from Model) (B)	0	87	87	154	24	135	703	862
Sherwin-Williams (C)	0	540	540	946	20	20	318	358
Project Area Totals (TAZ 1427 Data Plus Project) (D)	0	627	627	1,100	44	155	1,021	1,210
City of Emeryville Total With Project (A+C)	862	5,382	6,244	10,970	2,643	9,501	4,858	17,002

Source: Alameda CTC Model; City of Emeryville based on ABAG P13 Model.

Table IV.C-9: Alameda CTC Travel Demand Model Base Year 2040 City of Emeryville and Project Site Land Uses

	Residential				Employment			
Model Data	Single-Family Households	Multi-Family Households	Total Households	Population	Retail	Service	Other	Total
City of Emeryville Existing Totals (A)	905	10,730	11,635	21,077	3,669	14,154	6,305	24,128
TAZ 1427 Without Project included in City Total (Project Zone from Model) (B)	0	483	483	875	60	398	860	1,318
Sherwin-Williams (C)	0	540	540	946	20	20	318	358
Project Area Totals (TAZ 1427 Data Plus Project) (D)	0	1,023	1,023	1,821	80	418	1,178	1,666
City of Emeryville Total With Project (A+C)	905	11,270	12,175	22,023	3,689	14,174	6,623	24,486

Source: Alameda CTC Model; City of Emeryville based on ABAG P13 Model.

For the purposes of this assessment, project land use was assumed in addition to the growth already assumed in the model. With the project, the population in Emeryville is expected to increase by approximately 950 people, and the number of jobs would increase by approximately 360.

Modeling Approach. To assess the VMT generated by the project, three methods were used. The City of Emeryville is measured as a whole to understand the project's influence on overall city-wide travel behavior. As opposed to analyzing project trips, analyzing project VMT requires the context of understanding how the proposed project will interact with the outside world, as adding housing to a jobs-rich area could reduce average vehicle trip length on a per capita basis, while adding jobs to an area with limited residential population could increase average trip length.

The first method tracks all vehicular trips generated by the City of Emeryville across the entire regional network and assigns a portion of the trip length for trips with an origin or destination outside Emeryville to the total (Origin-Destination Method – Shared Accounting). The second method captures only vehicle trips made within the City of Emeryville boundaries, regardless of their origin or destination (boundary method). The third method is the sum of the length of all trips generated by the project (Origin-Destination Method – Total Accounting). Each method is discussed in more detail below.

The resulting metrics for each accounting method are the total VMT, and a summary of the average VMT per household and service population (residents and workers) for without and with project conditions. This allows for a calculation of the net-change in VMT with the project. All methodologies were implemented within the Alameda CTC travel demand model, where the number of trips on a roadway link are multiplied by the link distance and then summed according to the accounting methods described below.

Origin-Destination Method – Shared Accounting. An origin-destination (OD) method tracks all vehicular trips generated by the City of Emeryville (including the proposed project) across the entire regional network. Four types of trips are isolated, which shares the responsibility of trips with other jurisdictions:

- Internal-Internal (II) trips: Include all trips that begin and end within the City of Emeryville.
- Internal-External (IX) trips: Include one-half of all trips that begin within City limits and end outside City limits. The City of Emeryville assumes half the responsibility of these kinds of trips.
- External-Internal (XI) trips: Include one-half of all trips that begin outside City limits and end inside City limits. The City of Emeryville assumes half the responsibility of these kinds of trips.
- External-External (XX) trips: Trips that begin and end outside the City of Emeryville are not included. The City of Emeryville assumes no responsibility for External-External trip VMTs.

To estimate VMT per service population, trips are multiplied by the trip distance for all trip types to estimate VMT and then divided by the sum of residential and working population of the City of Emeryville.

Boundary Method. A boundary-based estimate captures all the VMT on a roadway network within a specified geographic area such as the City limits. A limitation of this method is that it does not capture trips that extend beyond a jurisdictions boundary and does include through traffic on regional roadway facilities. However, this information can be useful in estimating total greenhouse gas emissions within a specified geographic area.

Origin-Destination Method – Total Accounting. The Origin-Destination Method –Total Accounting is similar to the Shared Accounting method except that the full trip length of trips outside the jurisdictional boundaries is captured, as opposed to only half of the entire trip. The model is used to trace each trip from its origin/destination and is more accurate than applying a regional average trip

length to the vehicle trip generation. External-external trips are still not included in this accounting system.

Analysis Results. The base and future year Alameda CTC Models were executed for the without and with project scenarios. Results are shown in Table IV.C-10 and Table IV.C-11 for the Origin-Destination Method – Shared Accounting method, Table IV.C-12 and Table IV.C-13 for the Boundary Method and Table IV.C-14 and Table IV.C-15 for the Origin-Destination Method – Total Accounting.

Table IV.C-10: Base Year Origin-Destination Method – Shared Accounting

Scenario	Households	Population	Employment	Daily VMT	VMT/HH	VMT per Service Population
Year 2010	5,704	10,024	16,644	374,273	65.62	14.03
Year 2010 with Project	6,244	10,970	17,002	387,657	62.06	13.88
Project Increment	540	946	358	13,384	-3.56	-0.15

Note: Annualized VMT is typically 354 times the daily VMT to account for less vehicle miles of travel on weekends, holidays and summer periods.

Source: Alameda CTC Model; City of Emeryville based on ABAG P13 Model, Fehr & Peers, 2015.

Table IV.C-11: Future Year Origin-Destination Method – Shared Accounting

Scenario	Households	Population	Employment	Daily VMT	VMT/HH	VMT per Service Population
Year 2010	11,635	21,077	24,128	553,102	47.54	12.24
Year 2010 with Project	12,175	22,023	24,486	570,228	46.84	12.26
Project Increment	540	946	358	17,126	-0.70	0.02

Source: Alameda CTC Model; City of Emeryville based on ABAG P13 Model, Fehr & Peers, 2015.

Table IV.C-12: Base Year Boundary Method

Scenario	Households	Population	Employment	Daily VMT	VMT/HH	VMT per Service Population
Year 2010	5,704	10,024	16,644	285,198	50.00	10.69
Year 2010 with Project	6,244	10,970	17,002	288,060	46.12	10.30
Project Increment	540	946	358	2,862	-3.88	-0.39

Source: Alameda CTC Model; City of Emeryville based on ABAG P13 Model, Fehr & Peers, 2015.

Table IV.C-13: Future Year Boundary Method

Scenario	Households	Population	Employment	Daily VMT	VMT/HH	VMT per Service Population
Year 2010	11,635	21,077	24,128	357,300	30.71	7.90
Year 2010 with Project	12,175	22,023	24,486	360,400	29.60	7.75
Project Increment	540	946	358	3,100	-1.10	-0.15

Source: Alameda CTC Model; City of Emeryville based on ABAG P13 Model, Fehr & Peers, 2015.

Table IV.C-14: Base Year Origin-Destination Method – Total Accounting

Scenario	Households	Population	Employment	Daily VMT	VMT/HH	VMT per Service Population
Year 2010	5,704	10,024	16,644	742,583	130.19	27.85
Year 2010 with Project	6,244	10,970	17,002	768,744	123.12	27.48
Project Increment	540	946	358	26,161	-7.07	-0.37

Source: Alameda CTC Model; City of Emeryville based on ABAG P13 Model, Fehr & Peers, 2015.

Table IV.C-15: Future Year Origin-Destination Method – Total Accounting

Scenario	Households	Population	Employment	Daily VMT	VMT/HH	VMT per Service Population
Year 2010	11,635	21,077	24,128	1,096,043	94.20	24.25
Year 2010 with Project	12,175	22,023	24,486	1,129,342	92.76	24.28
Project Increment	540	946	358	33,299	-1.44	0.03

Source: Alameda CTC Model; City of Emeryville based on ABAG P13 Model, Fehr & Peers, 2015.

Origin-Destination Method – Shared Accounting. As shown in Table IV.C-10, based on the Shared Accounting method, the existing VMT per household in Emeryville is approximately 65 miles, which captures trips made to and from a place of residence, and also includes other types of trips such as work, shopping, or social/recreational trips. On a per capita basis for the service population (residents and workers), approximately 14 VMT per day are generated. The addition of project land uses would increase total VMT, but would reduce VMT on a per household and per capita basis as it would add housing to an area that is well served by transit, and close to jobs and other services.

In the future, VMT per household in Emeryville is expected to decrease to approximately 47 miles per household and 12 miles per service population, as shown in Table IV.C-11. The project would result in a slight decrease in VMT per household and a slight increase in VMT per service population in the future condition.

Boundary Method. As shown in Table IV.C-12, based on the Boundary method, the existing VMT on all roads within Emeryville is approximately 285,000 miles, with VMT per household of approximately 50 miles. On a per service population basis, approximately 10.7 VMT per day are

generated. The addition of project land uses would increase total VMT within the City of Emeryville boundaries by approximately 2,800 miles, with the remainder of the trip length occurring outside the City boundaries. The addition of project land uses would increase total VMT under this accounting method, but would also reduce VMT on a per household and service population basis.

In the future per Table IV.C-13, VMT on Emeryville's roadways is expected to increase to approximately 357,000 miles per day, with an average of 31 miles of travel per household. The project would contribute to a slight increase in VMT for population and employment in 2040 under this method, but it would be less than the base year condition.

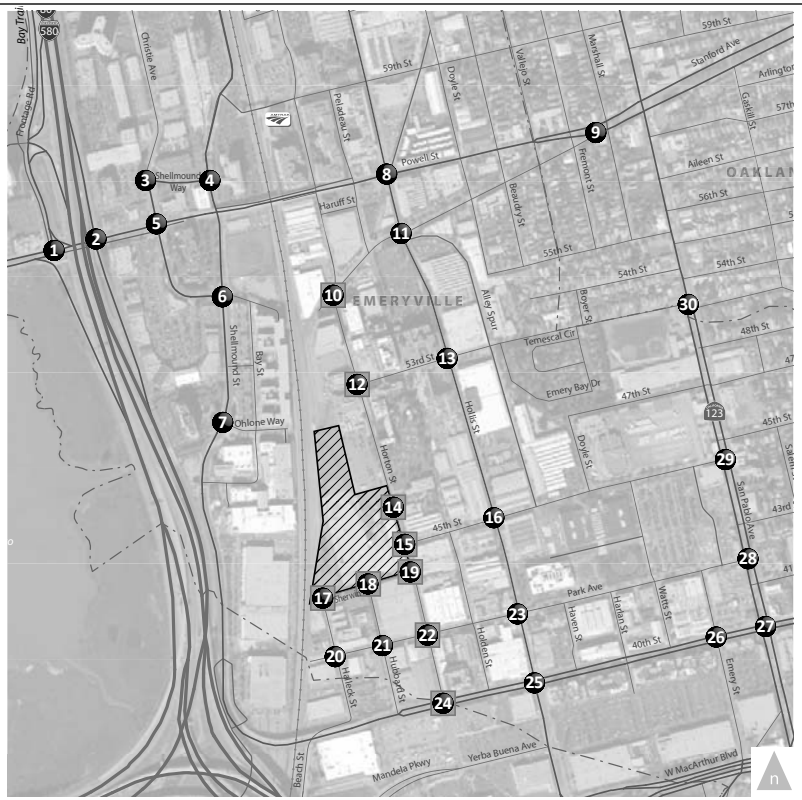
Origin-Destination Method – Total Accounting. As shown in Table IV.C-14 based on the Total Accounting method, land uses in Emeryville generate approximately 742,000 VMT per day, accounting for the entire trip length with VMT per service population, of approximately 27.85 miles of travel per day. The addition of project land uses would increase total VMT generated by City of Emeryville land uses by approximately 26,000 miles. However, the project would decrease VMT per household and per service population.

In 2040, total VMT generated by land uses in Emeryville would increase to approximately 1,100,000 miles, see Table IV.C-15. The project would contribute to increased VMT, but would reduce VMT per household. VMT per capita would increase slightly under this method in 2040, but it would be less than the base year condition.

VMT Conclusions. All three vehicle trip accounting methods indicate that while the project would contribute to increased VMT, it would cause VMT per household to decrease in both the base year and future year. VMT per service population would decrease with the project in the near-term, but could increase as compared to the future without project scenario. However, future VMT per service population would be less than the base year VMT per service population. As the Alameda CTC has not yet set thresholds for average trip lengths, and the project is expected to assist in decreasing VMT per household and per service population as compared to the Base Year in the Existing Conditions, the VMT impact of the proposed Sherwin-Williams project is less-than-significant based on the proposed significance criteria.

(3) Existing With Project Conditions. The project traffic volumes from Figures IV.C-10a, IV.C-10b, and IV.C-10c and Figures IV.C-11a, IV.C-11b, and IV.C-11c were added to the existing traffic volumes from Figures IV.C-6a, IV.C-6b and IV.C-6c to estimate the Existing with Project Conditions traffic volumes, as shown on Figures IV.C-12a, IV.C-12b, and IV.C-12c for Option A and Figures IV.C-13a, IV.C-13b, and IV.C-13c for Option B. No intersection improvements were assumed at any of the study intersections, except for the new project connections to Sherwin Avenue and Horton Street.

The Existing with Project Conditions analysis results are presented in Table IV.C-16 based on the traffic volumes presented in Figures IV.C-12a, IV.C-12b, and IV.C-12c for Option A and Figures IV.C-13a, IV.C-13b, and IV.C-13c for Option B. Signal timings remained unchanged from the analysis of Existing Conditions. The corresponding LOS calculation sheets are included in Appendix B.



LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

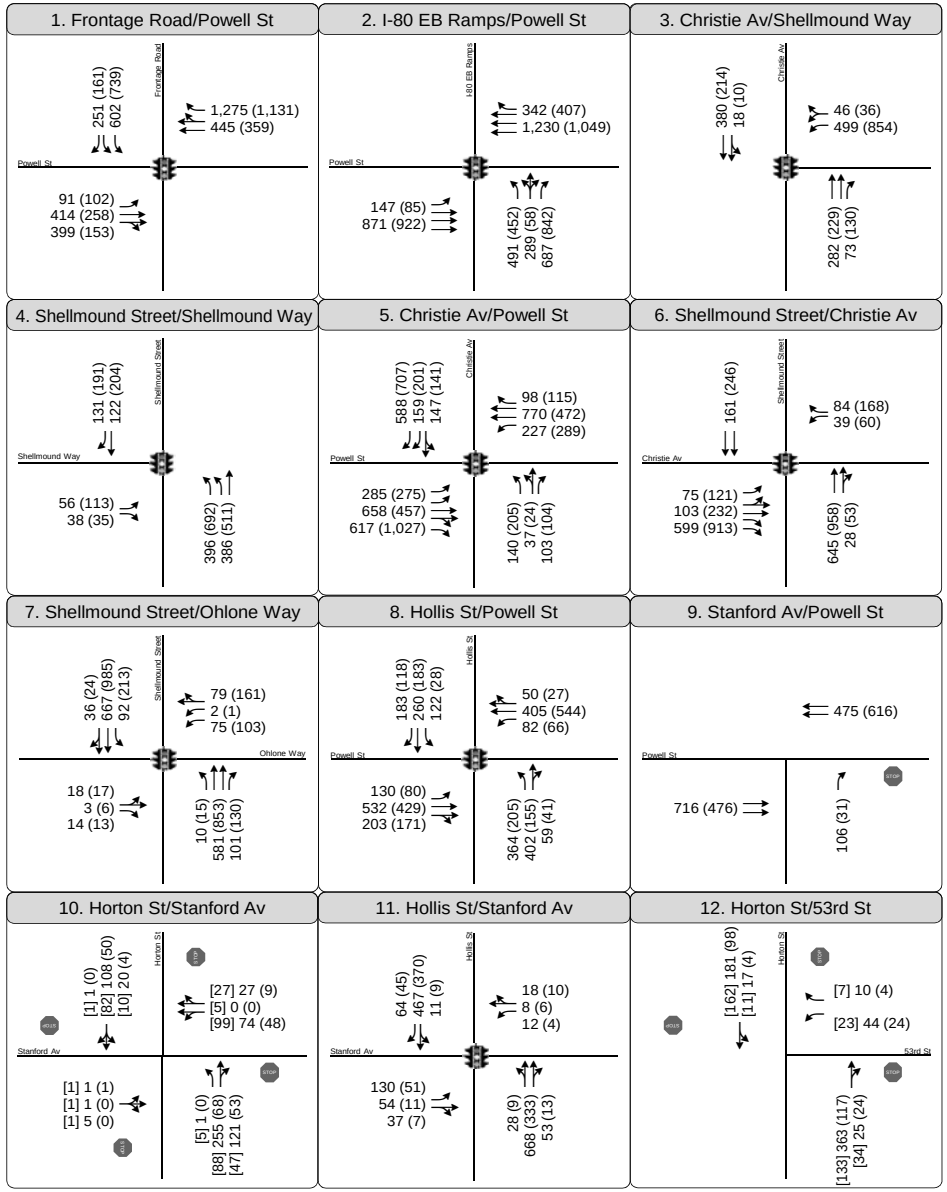
Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site



LSA

FIGURE IV.C-12a

NOT TO SCALE

N

Sherwin-Williams Project EIR

Existing with Project Option A Conditions Peak Hour Volumes

SOURCE: FEHR & PEERS, NOVEMBER 2015.

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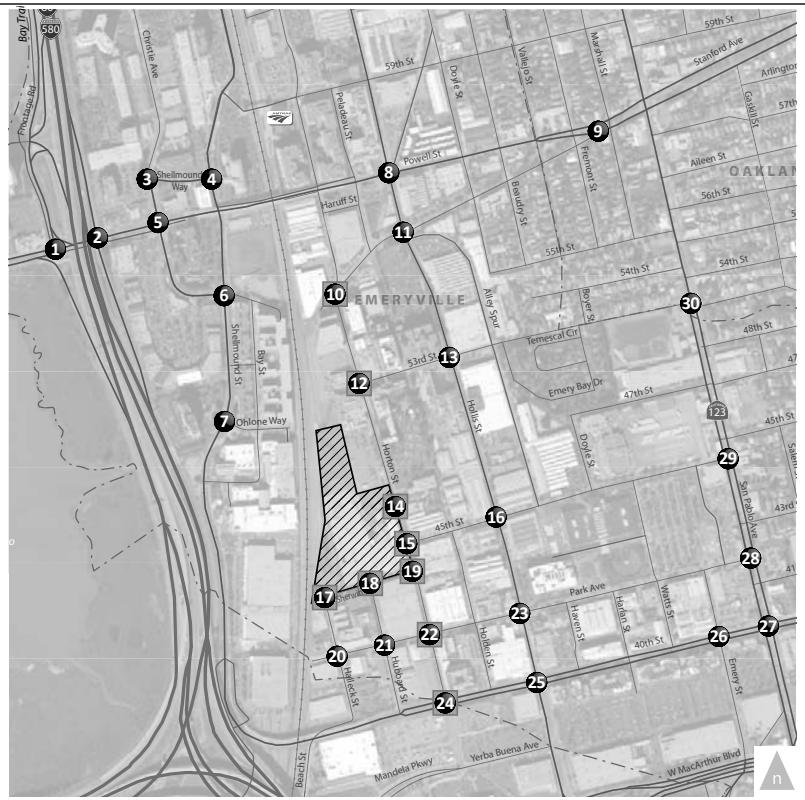


LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

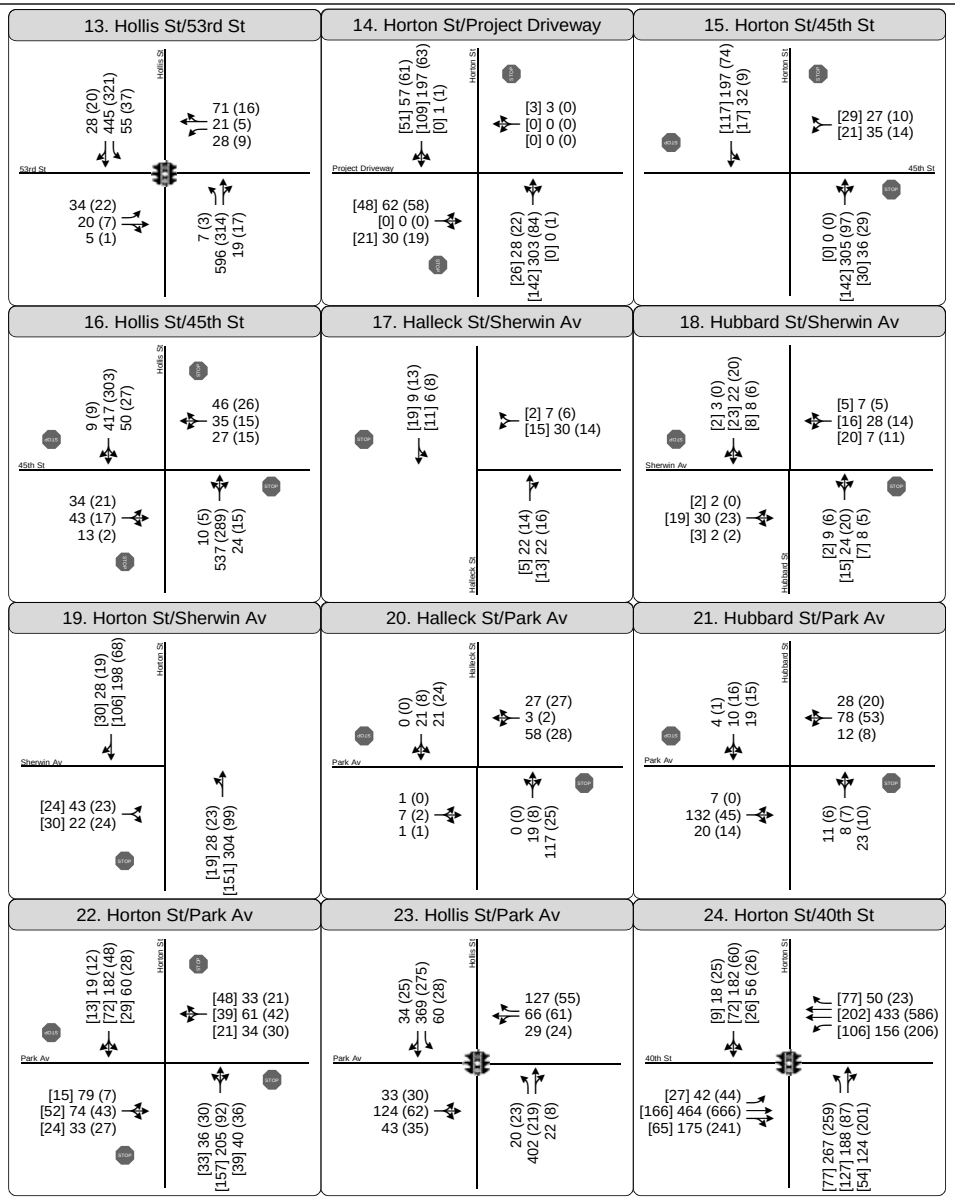
Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site



LSA

FIGURE IV.C-12b

NOT TO SCALE

N

Sherwin-Williams Project EIR

Existing with Project Option A Conditions Peak Hour Volumes

SOURCE: FEHR & PEERS, JULY 2015.

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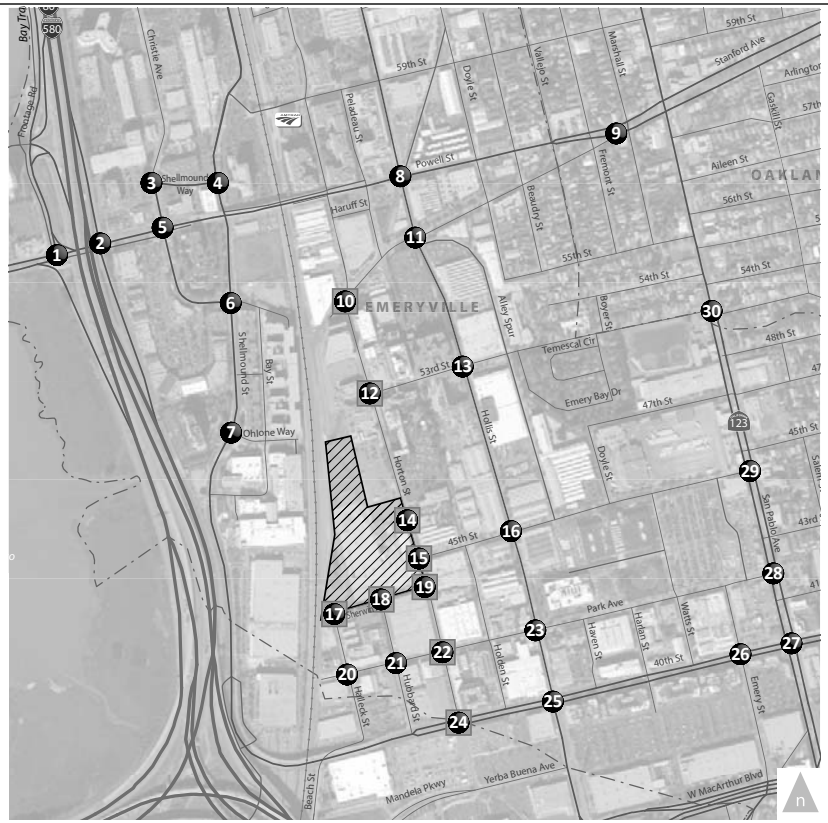

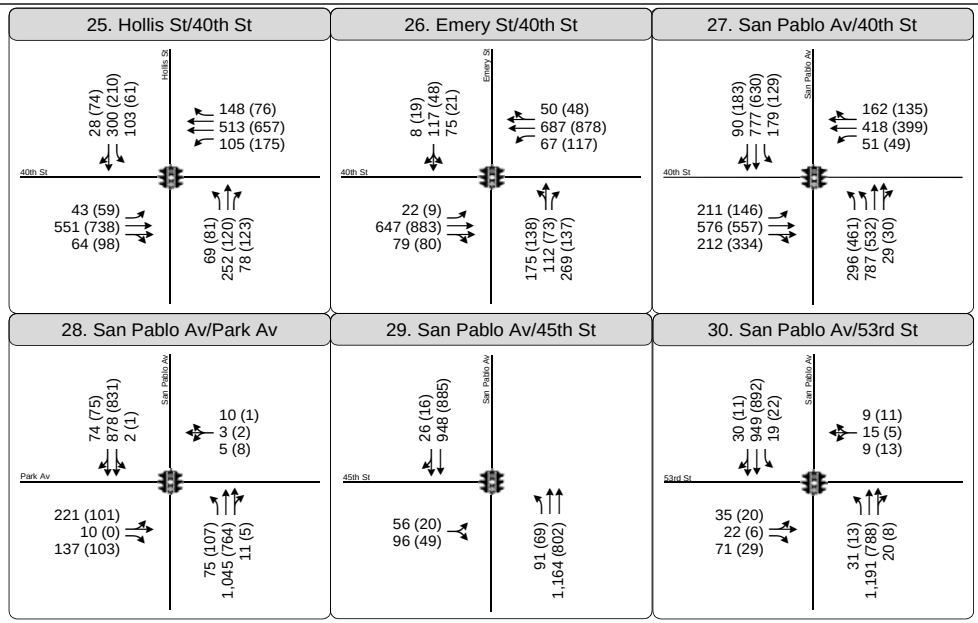

LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site

LSA

FIGURE IV.C-12c

NOT TO SCALE

N

SOURCE: FEHR & PEERS, JULY 2015.

Sherwin-Williams Project EIR

Existing with Project Option A Conditions Peak Hour Volumes

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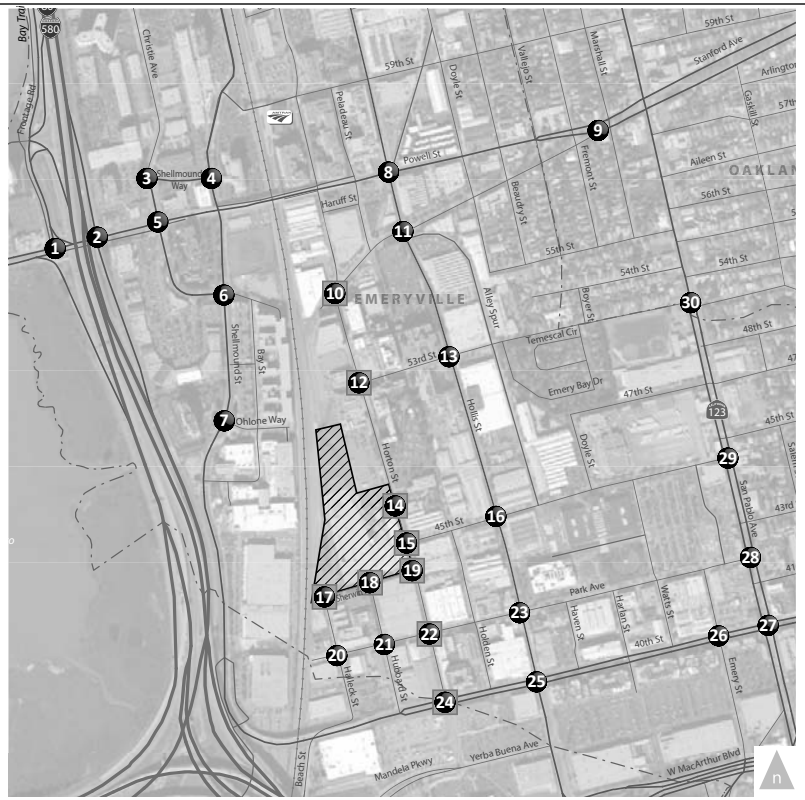


LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

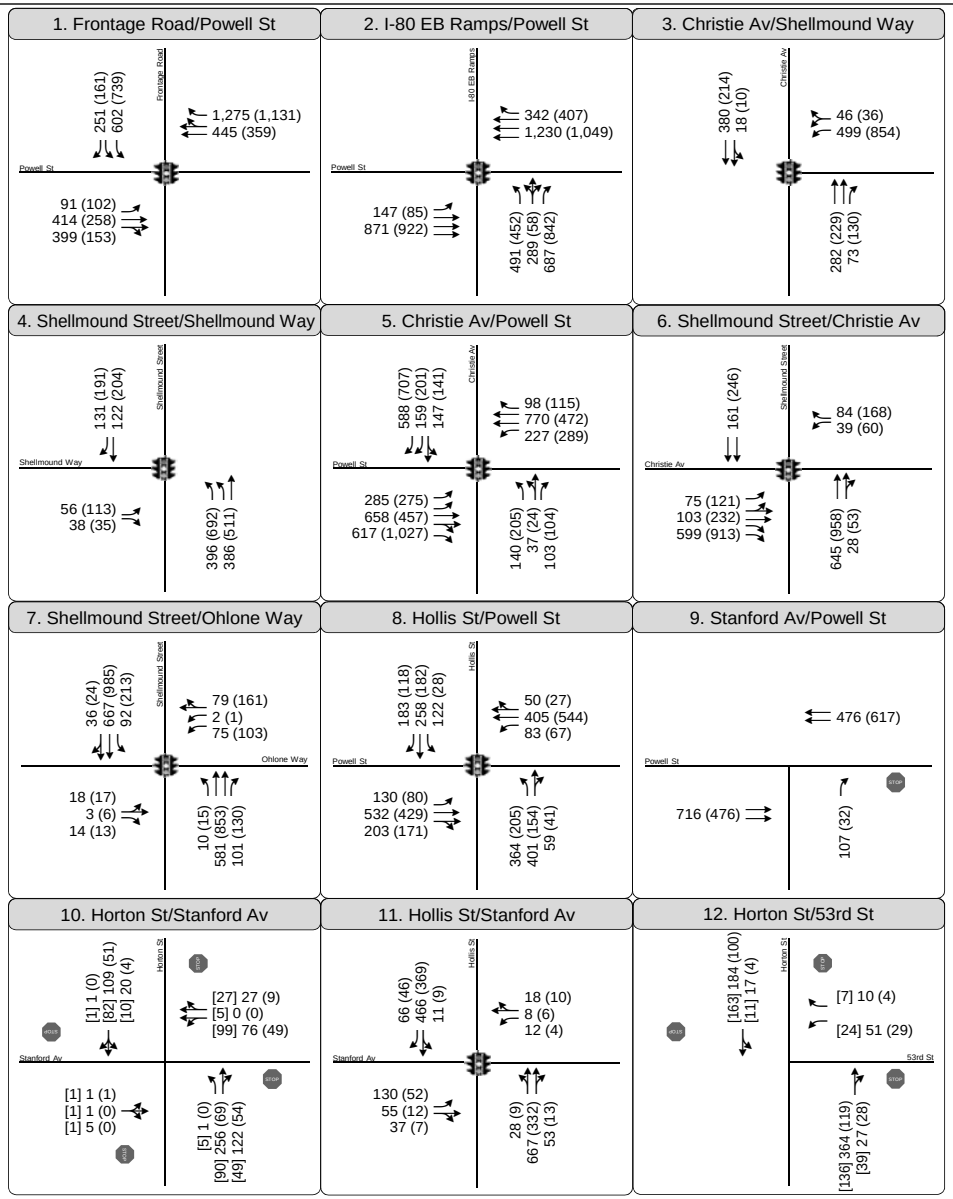
Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site



LSA

FIGURE IV.C-13a

NOT TO SCALE

N

Sherwin-Williams Project EIR

Existing with Project Option B Conditions Peak Hour Volumes

SOURCE: FEHR & PEERS, NOVEMBER 2015.

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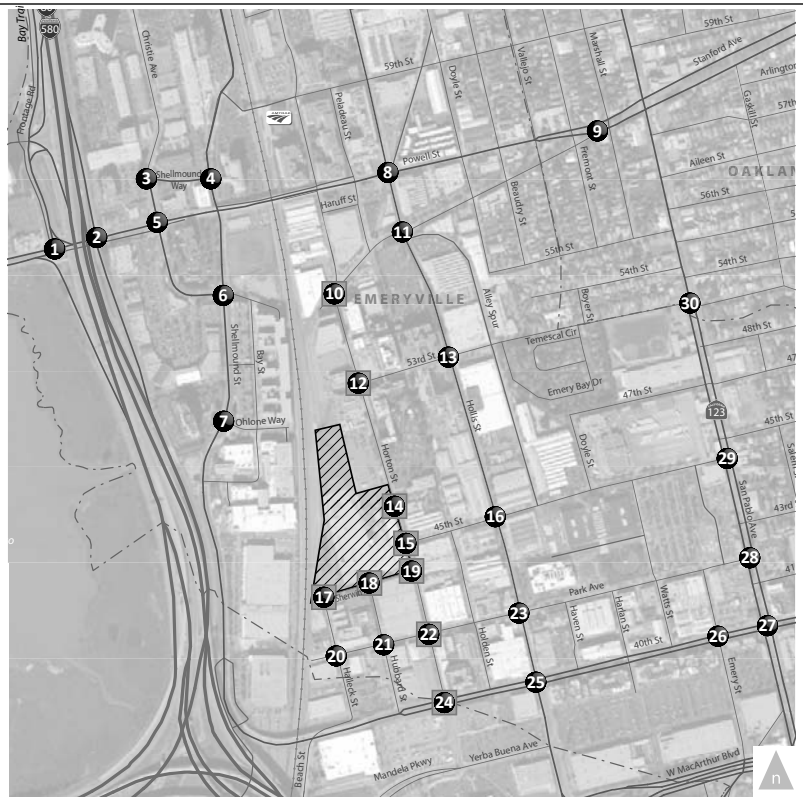


LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

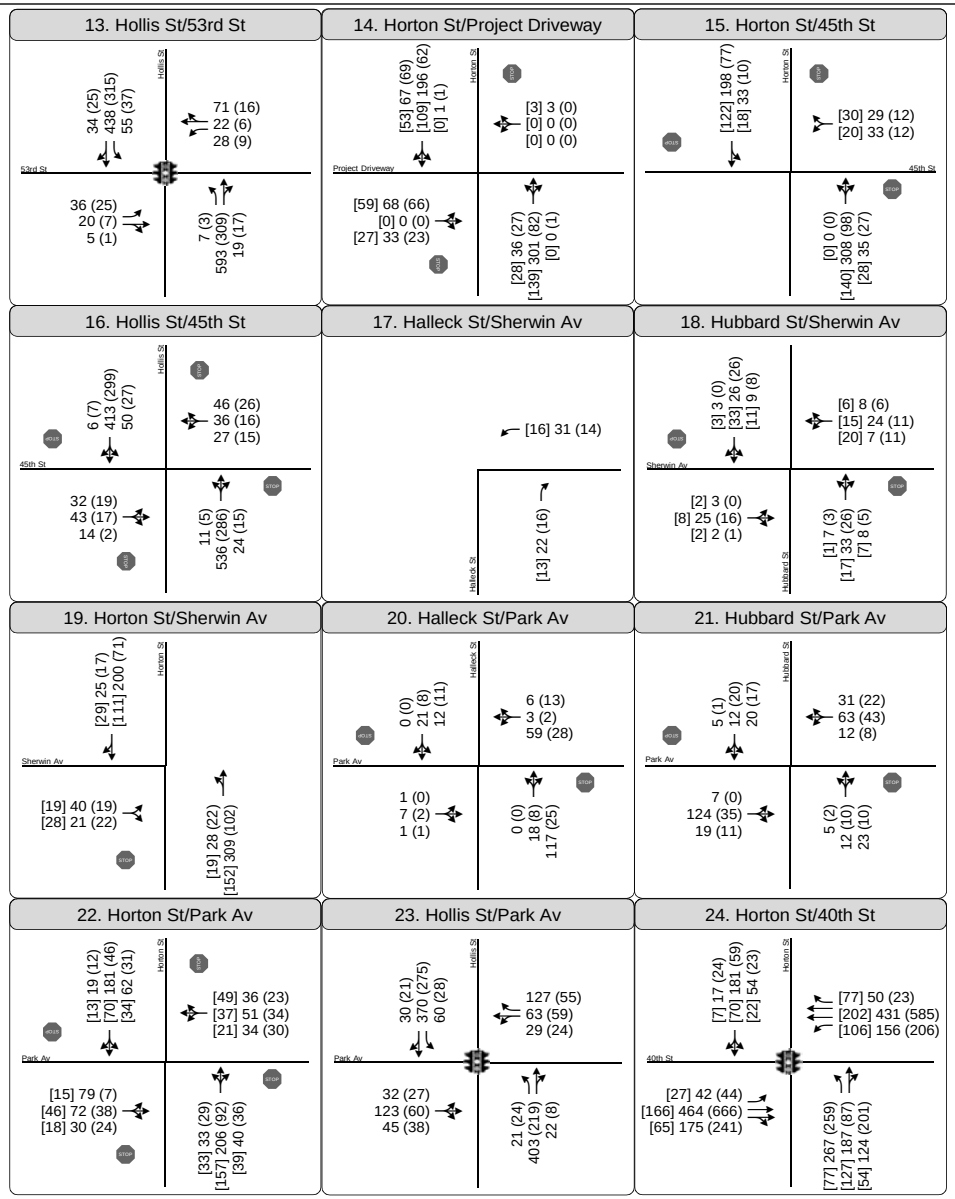
Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site



LSA

FIGURE IV.C-13b

NOT TO SCALE

N

Sherwin-Williams Project EIR

Existing with Project Option B Conditions Peak Hour Volumes

SOURCE: FEHR & PEERS, NOVEMBER 2015.

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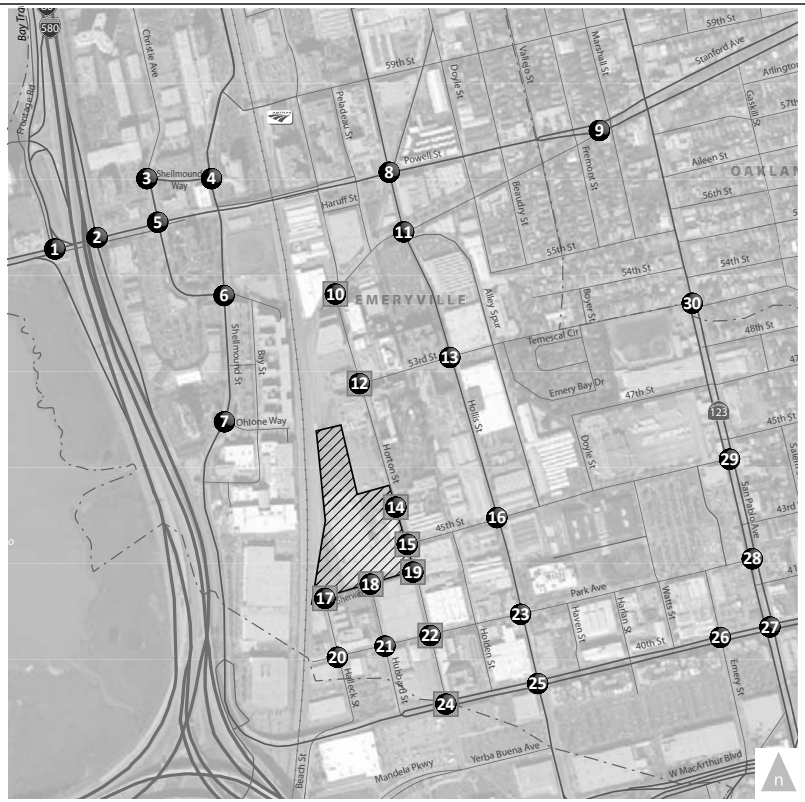

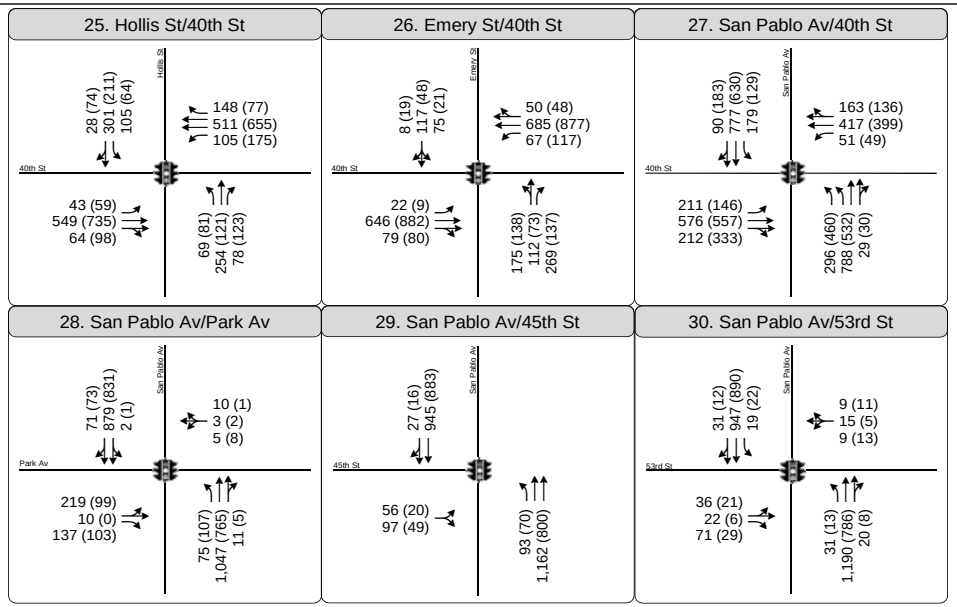

LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site

LSA

FIGURE IV.C-13c

NOT TO SCALE

N

Sherwin-Williams Project EIR

Existing with Project Option B Conditions Peak Hour Volumes

SOURCE: FEHR & PEERS, JULY 2015.

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The addition of project traffic would increase average delay slightly at the study intersections, but would not appreciably change operations from the Existing Condition. At the Hollis Street/45th Street intersection, the addition of project traffic would increase delay resulting in LOS E operations. As peak hour signal warrants would not be satisfied, this change in operations is considered less-than-significant.

The change in 95th percentile vehicle queues was reviewed for the signalized study intersections (detailed table provided in Appendix B). The addition of project traffic would not result in new locations where vehicle queues would extend beyond the available storage, nor would it increase the 95th percentile vehicle queue at locations where it already exceeds the available storage by more than 50 feet. Therefore, the queue impact is considered less-than-significant.

Peak hour volume and delay warrants were reviewed for the unsignalized study intersection with the addition of project traffic. The addition of project traffic would not result in signal warrants being satisfied in the Existing with Project Condition.

The amount of project traffic that is expected to travel on Horton Street (segments A, B, C), 45th Street (segments E, F, G) and 53rd Street (segments D and H) on a weekday when traffic volumes are the highest was estimated based on the project trip generation and trip distribution, with resulting volumes shown in Table IV.C-17. The project is expected to increase traffic volumes on Horton Street between 300 and 1,400 vehicles per day, further potentially increasing bicycle/vehicle conflicts on a bicycle boulevard. On 53rd and 45th Streets east of Hollis Street, existing traffic volumes currently exceed the desired range for a bicycle boulevard, and the project would increase vehicle traffic.

Table IV.C-16: Existing with Project Conditions Intersection Level of Service

Intersection	Control [a]	Peak Hour [b]	Existing		Existing with Option A		Existing with Option B	
			Delay [c]	LOS [d]	Delay [c]	LOS [d]	Delay [c]	LOS [d]
1. Powell Street/ Frontage Road	Signal	PM	41	D	44	D	44	D
		SAT	45	D	46	D	46	D
2. Powell Street/Eastbound I-80 Off-Ramp [d]	Signal	PM	29	C	30	C	30	C
		SAT	27	C	27	C	27	C
3. Shellmound Way/ Christie Avenue [d]	Signal	PM	11	B	11	B	11	B
		SAT	11	B	11	B	11	B
4. Shellmound Street/ Shellmound Way [d]	Signal	PM	16	B	16	B	16	B
		SAT	22	C	21	C	21	C
5. Powell Street/ Christie Avenue [d]	Signal	PM	34	C	36	D	36	D
		SAT	50	D	51	D	51	D
6. Shellmound Street/ Christie Avenue	Signal	PM	29	C	29	C	29	C
		SAT	27	C	27	C	27	C
7. Shellmound Street/ Ohlone Way	Signal	PM	17	B	17	B	17	B
		SAT	23	C	23	C	23	C
8. Powell Street/ Hollis Street	Signal	PM	38	D	40	D	40	D
		SAT	39	D	39	D	39	D
9. Powell Street/ Stanford Avenue	SSSC	PM	1 (12)	A (B)	1 (12)	A (B)	1 (12)	A (B)
		SAT	1 (11)	A (B)	1 (10)	A (B)	1 (10)	A (B)
10. Horton Street/ Stanford Avenue	AWSC	AM	8	A	8	A	8	A
		PM	10	A	11	B	11	B
		SAT	7	A	8	A	8	A
11. Hollis Street/ Stanford Avenue	Signal	PM	7	A	7	A	7	A
		SAT	3	A	4	A	5	A
12. Horton Street/ 53rd Street	AWSC	AM	8	A	8	A	8	A
		PM	10	A	11	B	11	B

Table IV.C-16: Existing with Project Conditions Intersection Level of Service

Intersection	Control [a]	Peak Hour [b]	Existing		Existing with Option A		Existing with Option B	
			Delay [c]	LOS [d]	Delay [c]	LOS [d]	Delay [c]	LOS [d]
		SAT	7	A	8	A	8	A
13. Hollis Street/ 53rd Street	Signal	PM	8	A	8	A	8	A
		SAT	4	A	5	A	5	A
14. Horton Street/46th Street (Future Roadway)	SSSC	AM	–	–	3 (11)	A (B)	3 (11)	A (B)
		PM			3 (15)	A (B)	3 (16)	A (C)
		SAT			3 (10)	A (A)	3 (11)	A (B)
15. Horton Street/ 45th Street	AWSC	AM	8	A	8	A	8	A
		PM	10	A	10	A	10	A
		SAT	7	A	8	A	8	A
16. Hollis Street/ 45th Street	AWSC	PM	32	D	37	E	36	E
		SAT	11	B	11	B	11	B
17. Halleck Street/ Sherwin Avenue	Free/ SSSC	AM	No Conflicting Movements		4 (9)	A (A)	No Conflicting Movements	
		PM			4 (9)	A (A)		
		SAT			4 (9)	A (A)		
18. Hubbard Street/Sherwin Avenue/Future Project Roadway	SSSC	AM	3 (9)	A (A)	6 (10)	A (A)	7 (10)	A (A)
		PM	2 (9)	A (A)	5 (10)	A (A)	6 (10)	A (A)
		SAT	3 (9)	A (A)	6 (10)	A (A)	7 (10)	A (A)
19. Horton Street/ Sherwin Avenue	SSSC	AM	1 (11)	A (B)	2 (10)	A (A)	2 (10)	A (A)
		PM	1 (13)	A (B)	2 (13)	A (B)	2 (13)	A (B)
		SAT	1 (9)	A (A)	3 (10)	A (A)	2 (10)	A (A)
20. Halleck Street/ Park Avenue	SSSC	PM	8 (11)	A (B)	8 (12)	A (B)	8 (11)	A (B)
		SAT	7 (10)	A (A)	7 (10)	A (A)	7 (10)	A (A)
21. Hubbard Street/ Park Avenue	SSSC	PM	2 (11)	A (B)	3 (12)	A (B)	3 (11)	A (B)
		SAT	2 (9)	A (A)	3 (11)	A (B)	4 (11)	A (B)
22. Horton Street/ Park Avenue	AWSC	AM	9	A	9	A	9	A
		PM	11	B	12	B	12	B
		SAT	8	A	8	A	8	A
23. Hollis Street/ Park Avenue	Signal	PM	15	B	16	B	16	B
		SAT	12	B	13	B	13	B
24. Horton Street/ 40th Street	Signal	AM	28	C	30	C	30	C
		PM	47	D	49	D	49	D
		SAT	46	D	47	D	47	D
25. Hollis Street/ 40th Street [d]	Signal	PM	31	C	31	C	31	C
		SAT	31	C	31	C	31	C
26. Emery Street/ 40th Street [d]	Signal	PM	35	C	35	C	35	C
		SAT	31	C	31	C	31	C
27. San Pablo Avenue/ 40th Street [d]	Signal	PM	37	D	39	D	39	D
		SAT	40	D	42	D	42	D
28. San Pablo Avenue/ Park Avenue	Signal	PM	19	B	19	B	19	B
		SAT	8	A	8	A	8	A
29. San Pablo Avenue/ 45th Street	Signal	PM	7	A	7	A	7	A
		SAT	6	A	6	A	6	A
30. San Pablo Avenue/ 53rd Street	Signal	PM	13	B	13	B	13	B
		SAT	8	A	7	A	7	A

[a] AWSC = all way stop control, SSSC = side street stop control, Signal = signalized

[b] AM = weekday morning peak hour, PM = weekday evening peak hour, SAT = Saturday afternoon Peak Hour

[c] LOS = Level of Service. LOS calculations conducted using the Synchro level of service analysis software package, which applies the method described in the *2000 Highway Capacity Manual*. For side-street stop-controlled intersections, delays for worst approach and average intersection delay are shown: intersection average (worst approach).

[d] Actual delay may be worse than shown here due to the effects of vehicle queue spillback from adjacent intersections and pedestrians impeding turn movements.

Source: Fehr & Peers, 2015. *Sherwin-Williams Mixed-Use Development Transportation Impact Analysis*. December.

Table IV.C-17: Existing with Project Conditions Daily Traffic Volumes

Roadway	Existing Average Daily Traffic	Percent Daily Fluctuation	Project Daily Added Traffic [a]	Total Daily Traffic With Project	Percent Increase
A. Horton Street, north of 53rd Street	***3,480***	±1%	960	***4,440***	28%
B. Horton Street, between 45th and 53rd Street	***3,530***	±1%	1,370	***4,900***	39%
C. Horton Street, south of Sherwin Avenue	***3,460***	±1%	940	***4,400***	27%
D. 53rd Street, east of Horton Street	600	±2%	410	1,010	68%
E. 45th Street, east of Horton Street	1,080	±0%	280	1,360	26%
F. 45th Street, west of San Pablo Ave	***2,630***	±4%	140	***2,770***	5%
G. 45th Street, east of San Pablo Ave	1,490	±1%	10	1,500	< 1%
H. 53rd Street, west of San Pablo Ave	***2,440***	--	100	***2,540***	4%

[a] Based on weekday daily Project trip generation and distribution percentages.

Note: ***Bold and Italics*** indicates volumes exceed guidelines established for bicycle boulevards; 3,000 vehicles per day for roadways west of Hollis Street and 1,500 vehicles per day for roadways east of Hollis Street.

Source: Fehr & Peers, 2015. *Sherwin-Williams Mixed-Use Development Transportation Impact Analysis*. December.

(4) Existing With Project Conditions Impacts. For the Existing with Project Conditions, two levels of transportation deficiencies were considered – those that are potentially significant impacts based on the significance criteria and those that are not, such as vehicle level of service. For locations where vehicle level of service would degrade based on the criteria outlined previously, potential improvements are discussed, but are not required to mitigate a significant impact.

In regards to level of service deficiencies, although the addition of vehicle traffic to the roadway system would not appreciably change delay at intersections experienced by bicyclists, transit vehicles or passenger vehicles, it would contribute to the need to develop a multi-modal transportation system that serves all modes of travel. The project applicant would be required to pay the City's Transportation Impact Fee that would fund multi-modal improvements to the transportation system. Based on the level of service analysis for the Existing with Project condition, there are no project specific recommendations for intersection improvements.

The following discusses potentially significant impacts based on the significance criteria.

Horton Street Traffic. The City of Emeryville Pedestrian and Bicycle Plan designates Horton Street as a bicycle boulevard. Existing weekday daily traffic volumes on Horton Street are approximately 3,500 vehicles per day (VPD) from south of Sherwin Avenue to north of 53rd Street, exceeding the desired level for a bicycle boulevard west of Hollis Street. With either Project Option A or Option B, traffic volumes on Horton Street are expected to increase by approximately 300 to 1,400 VPD, increasing daily traffic volumes by more than 2 percent (analysis segments A, B and C in Table IV.C-17).

Impact TRANS-1a: The addition of project traffic to Horton Street north of 53rd Street (analysis segment A), a designated bicycle boulevard, could increase traffic volumes by more than 2 percent contributing to an exceedance of the volume threshold for a bicycle boulevard. This impact would occur with either Option A or Option B and is considered a significant impact. (S)

Impact TRANS-1b: The addition of project traffic to Horton Street between 45th and 53rd streets (analysis segment B), a designated bicycle boulevard, could increase traffic volumes by more than 2 percent contributing to an exceedance of the volume threshold for a bicycle boulevard. This impact would occur with either Option A or Option B and is considered a significant impact. (S)

Impact TRANS-1c: The addition of project traffic to Horton Street south of Sherwin Avenue, a designated bicycle boulevard (analysis segment C), could increase traffic volumes by more than 2 percent contributing to an exceedance of the volume threshold for a bicycle boulevard. This impact would occur with either Option A or Option B and is considered a significant impact. (S)

Improving the functionality of the Horton Street Bicycle Boulevard is identified in the City's Pedestrian and Bicycle Plan as well as the Transportation Impact Fee. Potential measures include the addition of Level 4 and Level 5 treatments as follows:

- Vertical speed control (such as speed humps) (Level 4);
- Horizontal speed control (such as curb extensions) (Level 4);
- Narrowings (such as chokers, center island) (Level 4);
- Intersection turn-restrictions (Level 5);
- Partial or full street closures (Level 5); and/or
- Diagonal diverters (Level 5).

The City is undertaking an experiment to evaluate the effectiveness of different Level 4 traffic calming devices along Horton Street between 45th and 53rd Streets and plans to install temporary measures for a period of at least one year. As these measures could be installed along the project frontage, the project applicant should work with the City so that the final project design does not preclude the installation of desired traffic calming measures. Installation of traffic calming measures on Horton Street that reduces existing traffic volumes in combination with project volumes below the volume threshold would be required to reduce the impact to a less-than-significant level.

An assessment of the effect of restricting turn movements at several locations along the Horton Street corridor was conducted, and is detailed in Appendix B.[14] As detailed in the assessment, restricting northbound travel at the intersection of 40th Street at Horton Street, and southbound travel at the intersection of 53rd Street at Horton Street, is projected to shift sufficient vehicle traffic from the Horton Street corridor such that the resulting volumes, considering the addition of project traffic, fall within the volume guidelines specified in the Pedestrian and Bicycle Plan.

[14] Tellez, Kathrin, 2015. Written correspondence to Judy Malamut at LSA Associates, Inc. Sherwin-Williams Horton Street Turn Restriction Assessment Memorandum. Appendix E of the TIA. December 14.

As part of the project, a Class I bicycle facility would be constructed on the west side of the project site, connecting to other planned bicycle facilities and providing an alternative north-south bicycle route through this portion of Emeryville.

The following Mitigation Measures have been identified and are expected to reduce project-related impacts to Horton Street to a less-than-significant level as shown in Table IV.C-18.

Mitigation Measure TRANS-1a: The project applicant shall undertake the following measures to reduce the level of traffic on Horton Street north of 53rd Street (analysis segment A):

- Pay the Transportation Impact Fee;
- Work with the City so that the final project design does not preclude the installation of desired traffic calming measures along the Horton Street corridor, as identified by the City; and
- Pay for the installation of permanent Level 4 traffic calming measures and traffic restriction (diversion) measures on Horton Street (Level 5) per the Sherwin Williams – Horton Street Turn Restriction Assessment Memorandum (see Appendix B) that would result in the reduction of existing with project daily volumes to a level below 3,000 vehicles per day. (LTS)

Mitigation Measure TRANS-1b: Implement TRANS-1a to reduce the level of traffic on Horton Street between 45th and 53rd streets (analysis segment B). (LTS)

Mitigation Measure TRANS-1c: Implement TRANS-1a to reduce the level of traffic on Horton Street south of Sherwin Avenue (analysis segment C). (LTS)

Table IV.C-18: Existing with Project With Mitigation Conditions Daily Traffic Volumes

Roadway	Existing Average Daily Traffic Without Turn Restrictions [a]	Estimated Traffic Diversion [b]	Estimated Average Daily Traffic with Turn Restrictions	Project Daily Added Traffic [c]	Estimated Daily Traffic With Project With Turn Restrictions
A. Horton Street, north of 53rd Street	***3,480***	-1,540	1,940	530	2,470
B. Horton Street, between 45th and 53rd Street	***3,530***	-2,050	1,480	840	2,320
C. Horton Street, south of Sherwin Avenue	***3,460***	-1,930	1,530	740	2,270

[a] Based on traffic counts as documented in the December 2015 TIA.
[b] Based on existing turning movements along the Horton Street corridor, likely diversion of through traffic to parallel routes, and changes to travel patterns for trips with an origin or destination along the corridor.
[c] Based on weekday daily project trip generation and distribution percentages considering turn restrictions at 40th Street for northbound traffic and 53rd Street for southbound traffic.
Note: ***Bold and Italics*** indicates volumes exceed guidelines established for bicycle boulevards; 3,000 vehicles per day for roadways west of Hollis Street and 1,500 vehicles per day for roadways east of Hollis Street.
Source: Fehr & Peers, 2015. *Sherwin-Williams Mixed-Use Development Transportation Impact Analysis*. December.

Impact TRANS-1d: Implementation of Mitigation Measure TRANS-1a would result in operations of the Hollis Street at 45th Street intersection (#16) to degrade with vehicles and transit vehicles experiencing significant levels of delay. Peak hour traffic signal warrants would also be met. The addition of traffic from either project Option A or Option B would further degrade operations. Based on the significance criteria, this would result in a significant secondary impact. (S)

> Mitigation Measure TRANS-1d: The applicant shall pay for the installation of a traffic signal at the Hollis Street/45th Street (#16) intersection, with necessary improvements for transit, bicycle and pedestrian infrastructure at the intersection, including directional curb ramps, bicycle detection, and transit priority; and a hard wired signal interconnect to the traffic signal at Park Avenue and Hollis Street. (LTS)

45th Street Impacts. The City of Emeryville Pedestrian and Bicycle Plan designates 45th Street, west of San Pablo Avenue (analysis segment F in Table IV.C-17) as a bicycle boulevard. Existing weekday daily traffic volumes on this portion of 45th Street are approximately 2,600 VPD, exceeding the desired level for a bicycle boulevard east of Hollis Street. With either project Option A or Option B, traffic volumes on 45th Street are expected to increase by approximately 140 VPD, increasing daily traffic volumes by more than 2 percent.

Impact TRANS-2: The addition of project traffic to 45th Street, west of San Pablo Avenue (analysis segment F), a designated bicycle boulevard, could increase traffic volumes by more than 2 percent, contributing to an exceedance of the volume threshold for a bicycle boulevard. This impact would occur with either Option A or Option B and is a significant impact. (S)

Improving the functionality of the 45th Street Bicycle Boulevard is identified as an objective in the City's Pedestrian and Bicycle Plan as well as in the Transportation Impact Fee. Potential measures include:

- Installation of signage and pavement markings (completed);
- Installation of vertical and horizontal speed control;
- Construction of parallel and complementary bicycle facilities to provide alternative routes; and/or
- Installation of a traffic signal at 45th Street and Hollis Street to provide a protected crossing for bicyclists and pedestrians.

The project would contribute to the implementation of projects identified in the City's Pedestrian and Bicycle Plan through the payment of the Transportation Impact Fee. Although implementation of the above measures is not expected to reduce vehicle traffic on this segment of 45th Street to less than 1,500 vehicles per day, higher traffic volumes are permitted for short roadway segments if additional treatments to reduce traffic are provided. The following mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-2: The project applicant shall undertake the following measures:

- Pay the Transportation Impact Fee;
- Work with City Staff to identify additional bicycle boulevard treatments that could be installed along the 45th Street corridor, including horizontal and vertical speed control; and
- Pay for the installation of a traffic signal at the Hollis Street/45th Street (#16) intersection, with necessary improvements for transit, bicycle and pedestrian infrastructure at the intersection, including directional curb ramps, bicycle detection, and transit priority; and a hard-wired signal interconnect to the traffic signal at Park Avenue and Hollis Street (same as Mitigation Measure TRANS-1d). (LTS)

53rd Street Impacts. The City of Emeryville Pedestrian and Bicycle Plan designates 53rd Street, west of San Pablo Avenue (analysis segment H in Table IV.C-17) as a bicycle boulevard. Existing weekday daily traffic volumes on this portion of 53rd Street are approximately 2,400 VPD, exceeding the desired level for a bicycle boulevard east of Hollis Street. With either Project Option A or Option B Project, traffic volumes on 53rd Street are expected to increase by approximately 100 VPD, increasing daily traffic volumes by more than 2 percent.

Impact TRANS-3: The addition of project traffic to 53rd Street, west of San Pablo Avenue (analysis segment H), a designated bicycle boulevard, could increase traffic volumes by more than 2 percent contributing to an exceedance of the volume threshold for a bicycle boulevard. This impact would occur with either Option A or Option B and is considered a significant impact. (S)

Improving the functionality of the 53rd Street Bicycle Boulevard is identified as an objective in the City's Pedestrian and Bicycle Plan as well as the Transportation Impact Fee. Potential measures include:

- Installation of signage and pavement markings (partially completed);
- Installation of green street treatments;
- Construction of parallel and complementary bicycle facilities to provide alternative routes; and/or
- Modifications to the San Pablo Avenue/53rd Street (#30) intersection to better accommodate bicyclists.

The project would contribute to the implementation of projects identified in the City's Pedestrian and Bicycle Plan through the payment of the Transportation Impact Fee. Additionally, this street borders the Emery Center of Community Life (ECCL) Campus which will construct improvements along this segment of 53rd Street to accommodate use of the street-frontage as a drop-off/pick-up zone.

Proposed improvements include widening the sidewalk and installation of traffic calming along the 53rd Street corridor. Although implementation of the above measures is not expected to reduce vehicle traffic on this segment of 53rd Street to less than 1,500 vehicles per day, the City allows higher traffic volumes for short roadway segments on bicycle boulevards if additional treatments are provided.

Mitigation Measure TRANS-3: The project applicant shall undertake the following measures:

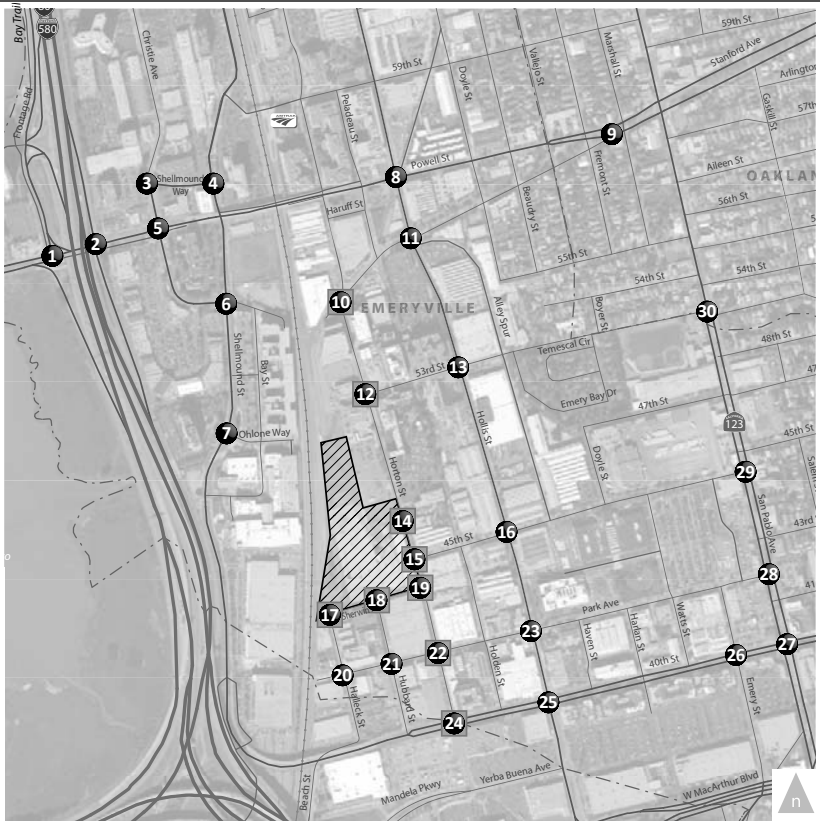
- Pay the Transportation Impact Fee; and
- Work with City Staff to identify additional Level 4 bicycle boulevard treatments that could be installed along the 53rd Street corridor beyond those being installed as part of the ECCL project. (LTS)

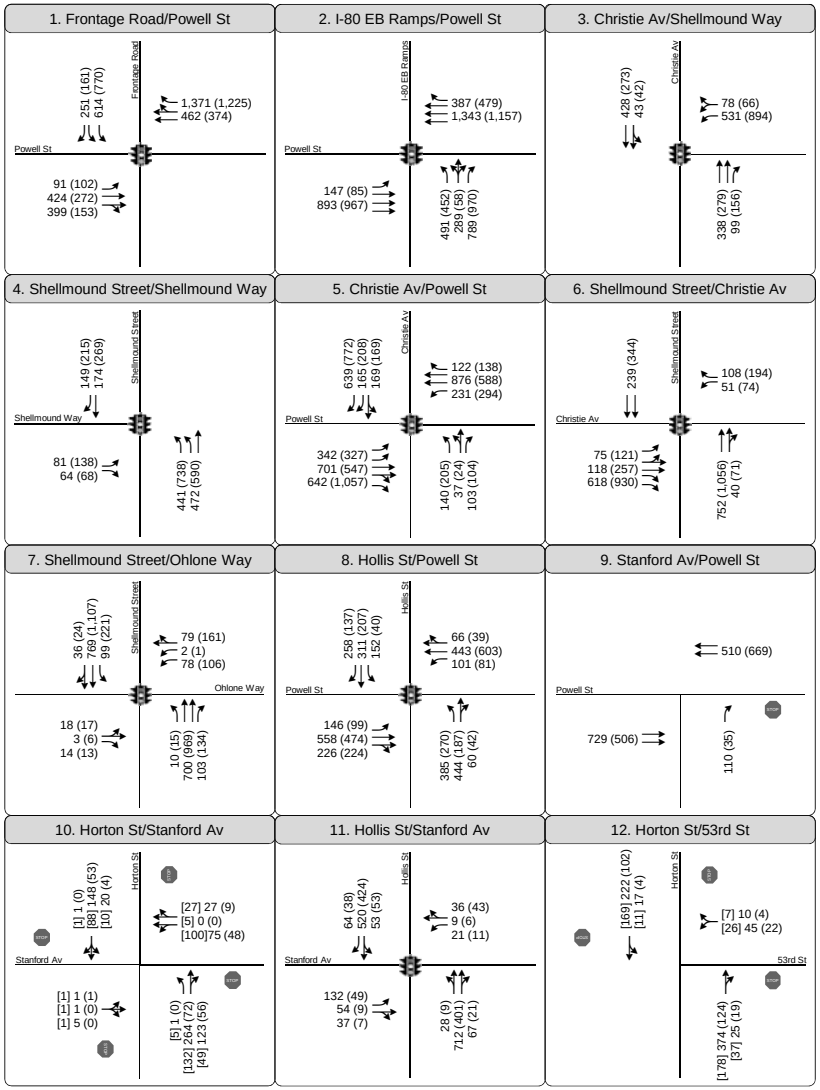
(5) Near-Term with Project Conditions. Net new project trips for Options A and B were added to the Near-Term Conditions to develop traffic volumes for Near-Term with Project Conditions. The resulting volumes are shown on Figures IV.C-14a, IV.C-14b, and IV.C-14c and Figures IV.C-15a, IV.C-15b, and IV.C-15c for Near-Term with Project Option A Conditions and Project Option B Conditions, respectively. The results of the LOS analysis are summarized in Table IV.C-18 for Near-Term Condition. See Appendix B for the corresponding LOS calculation sheets.

In the Near-Term Condition, traffic growth from the construction and occupation of approved projects would increase delay experienced at some intersections for bicyclists, transit vehicles and passenger vehicles. Operations would approach (LOS D or E) or exceed (LOS F) capacity for vehicles at the following intersections, with the addition of project traffic worsening operations, as shown in Table IV.C-19:

- (#1) Powell Street/Frontage Road (LOS D in PM and Saturday peak hour, worsening to LOS E during PM peak hour with either project option)
- (#5) Powell Street/Christie Avenue (LOS D in PM and Saturday peak hour, worsening to LOS E during Saturday peak hour with either project option)
- (#8) Powell Street/Hollis Street (LOS D in PM and Saturday peak hour; no LOS change with either project option)
- (#16) Hollis Street/45th Street (LOS F in PM peak hour; worsening delay with either project option)
- (#24) Horton Street/40th Street (LOS D in PM and LOS E in Saturday peak hour; no LOS change with either project option)
- (#27) San Pablo Avenue/40th Street (LOS D in PM and Saturday peak hour; no LOS change with either project option)

Daily roadway segment volumes were forecast for the Near-Term with Project Condition, as presented in Table IV.C-20. In the Near-Term Condition, the addition of traffic from approved and pending projects would increase vehicle traffic on streets in the study area and would result in traffic volumes on 45th Street, east of San Pablo Avenue (segment G) exceeding the desired level of traffic for a bicycle boulevard. However, the project would increase vehicle traffic on this roadway segment by less than 2 percent on a daily basis and would be considered a less-than-significant impact. The project would further exacerbate already deficient conditions for a bicycle boulevard on Horton Street (segments A, B, C), and portions of 45th Street (segment F) and 53rd Street (segment H), west of San Pablo Avenue, by increasing daily traffic by more than 2 percent.





LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site

LSA

FIGURE IV.C-14a

NOT TO SCALE

N

Sherwin-Williams Project EIR

Near-Term with Project Option A Conditions Peak Hour Volumes

SOURCE: FEHR & PEERS, NOVEMBER 2015.

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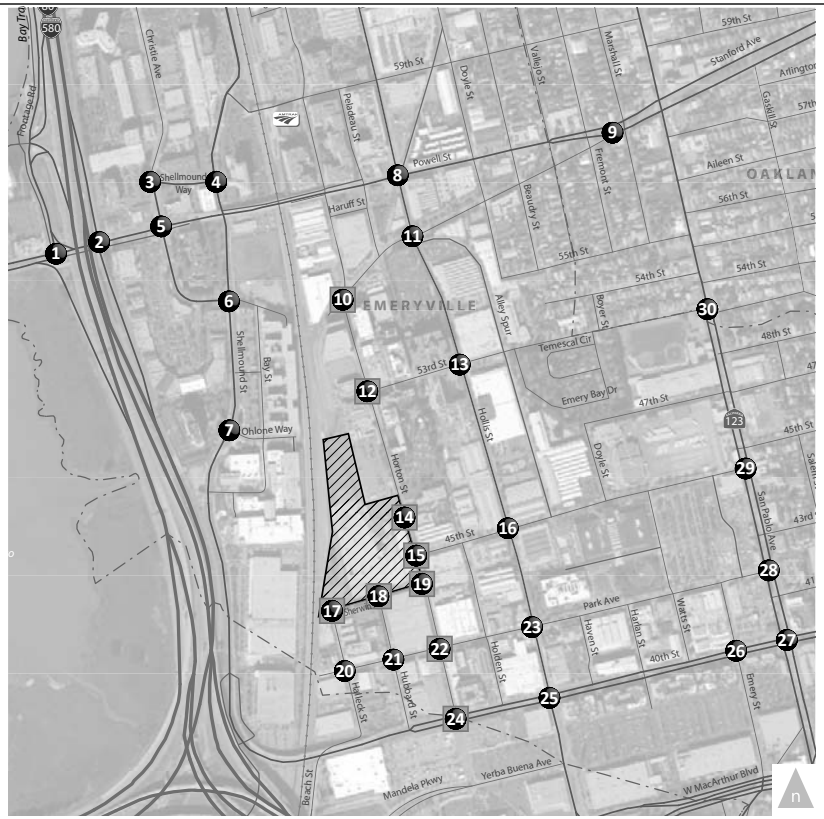


LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

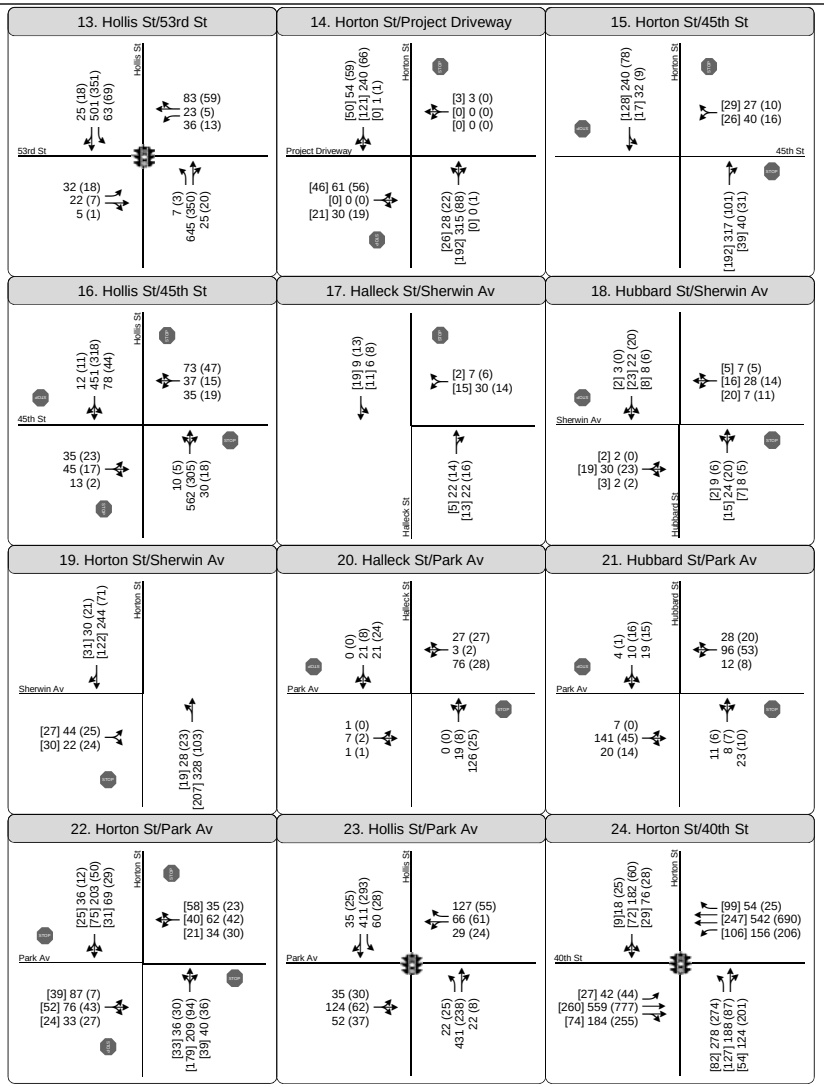
Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site



LSA

FIGURE IV.C-14b

NOT TO SCALE

N

Sherwin-Williams Project EIR

Near-Term with Project Option A Conditions Peak Hour Volumes

SOURCE: FEHR & PEERS, NOVEMBER 2015.

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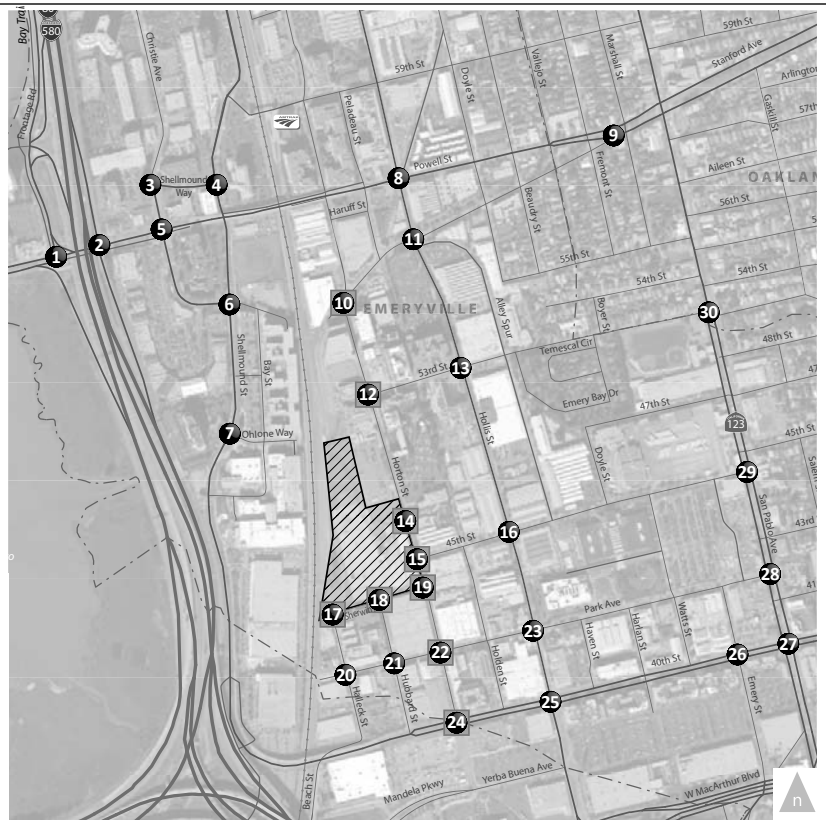

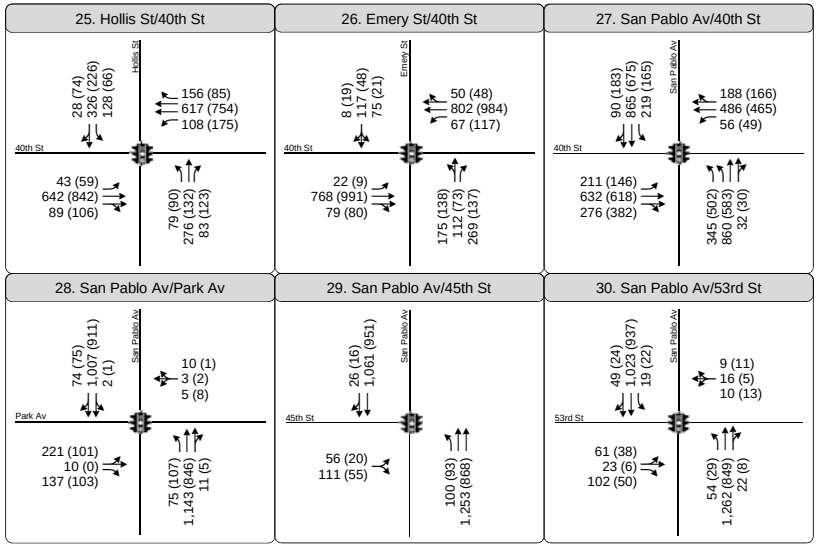

LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site

LSA

FIGURE IV.C-14c

NOT TO SCALE

N

Sherwin-Williams Project EIR

Near-Term with Project Option A Conditions Peak Hour Volumes

SOURCE: FEHR & PEERS, NOVEMBER 2015.

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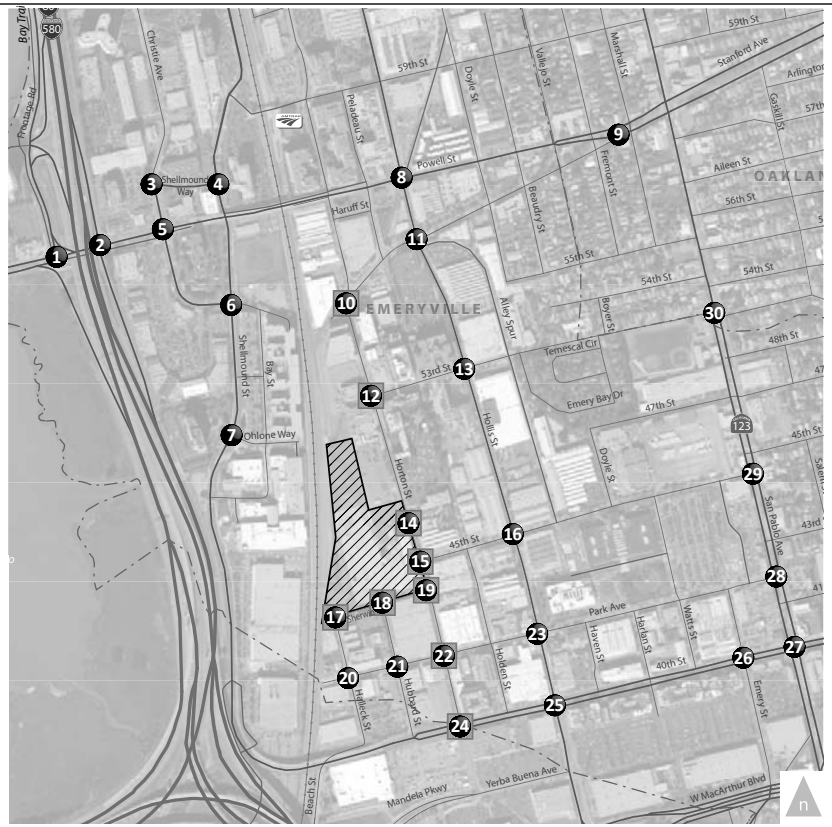


LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

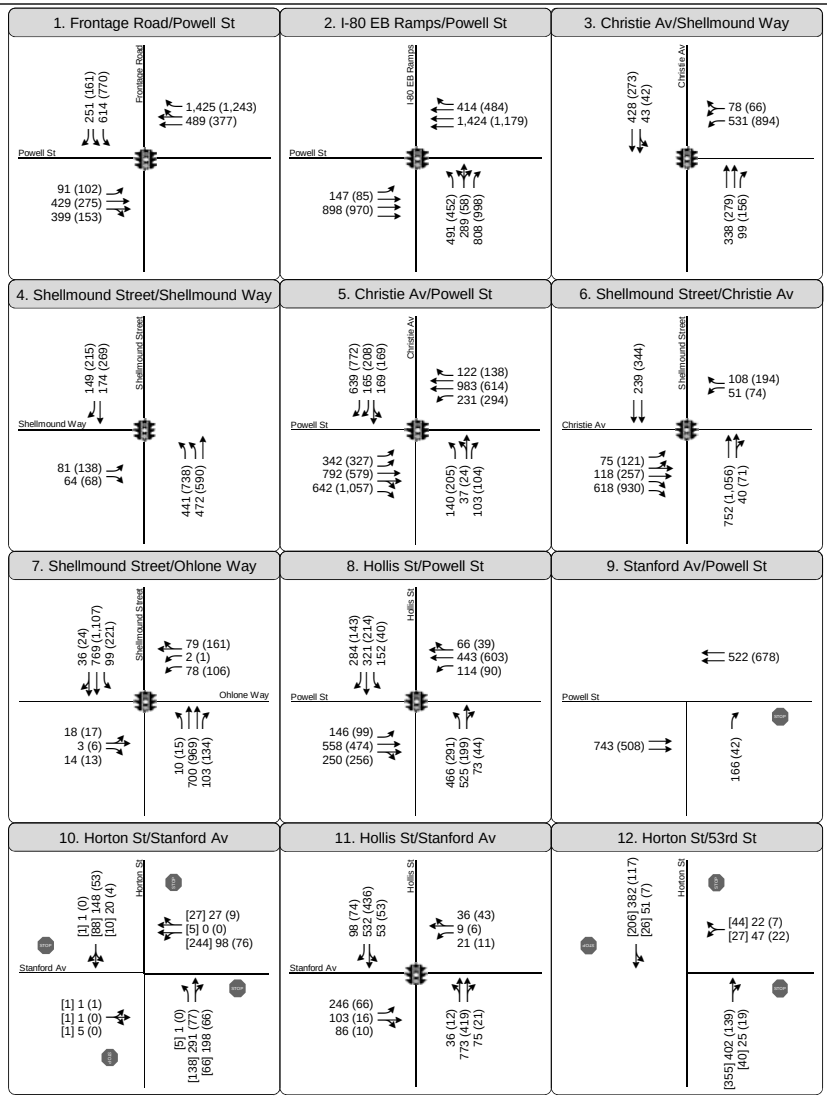
Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site



LSA

FIGURE IV.C-15a

NOT TO SCALE

N

Sherwin-Williams Project EIR

Near-Term with Project Option B Conditions Peak Hour Volumes

SOURCE: FEHR & PEERS, NOVEMBER 2015.

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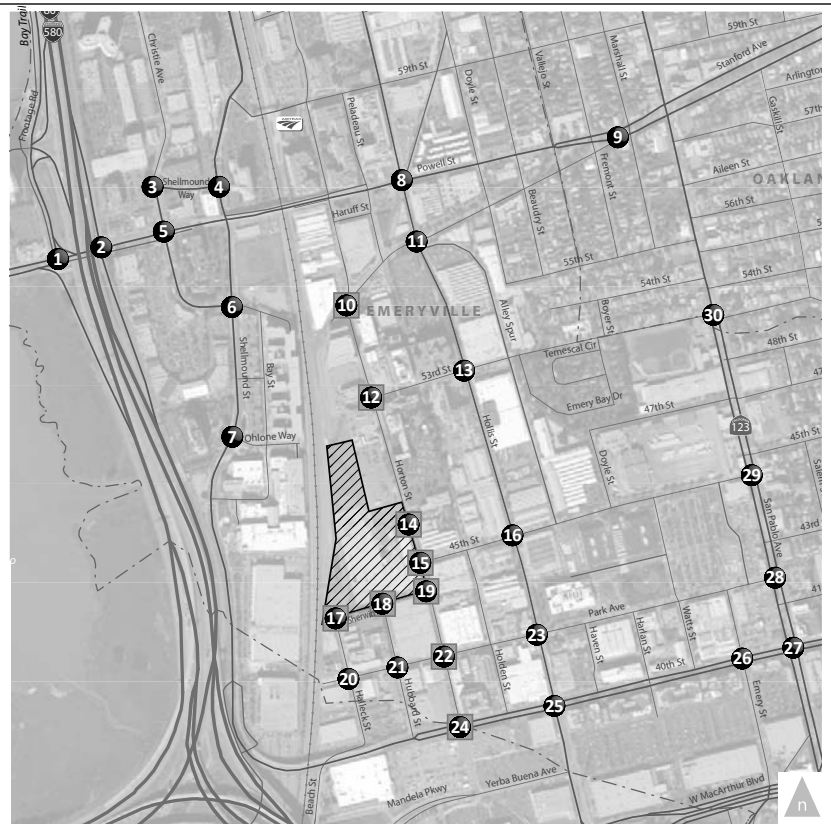


LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

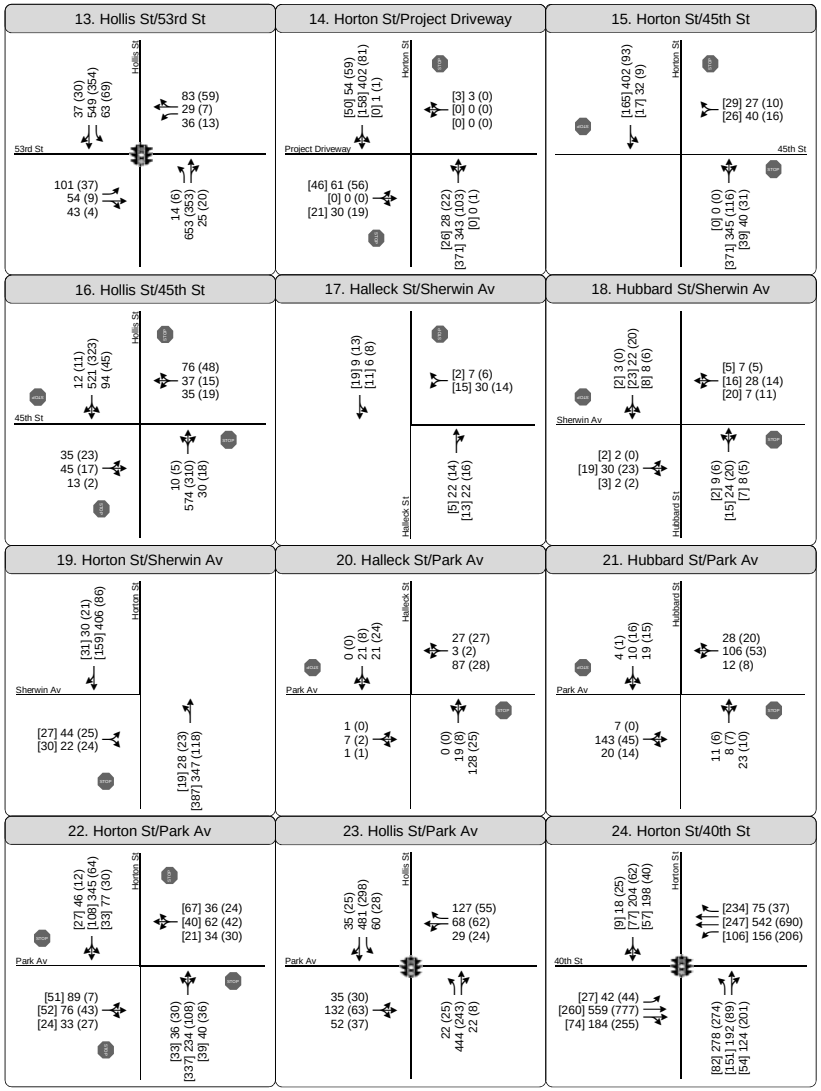
Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site



LSA

FIGURE IV.C-15b

NOT TO SCALE

N

SOURCE: FEHR & PEERS, NOVEMBER 2015.

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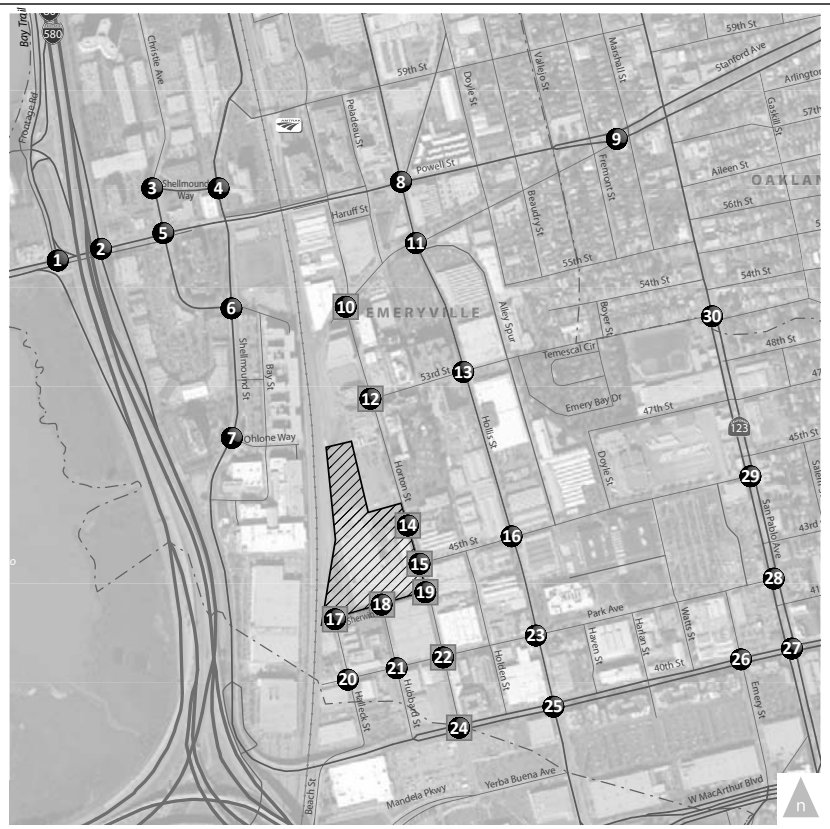
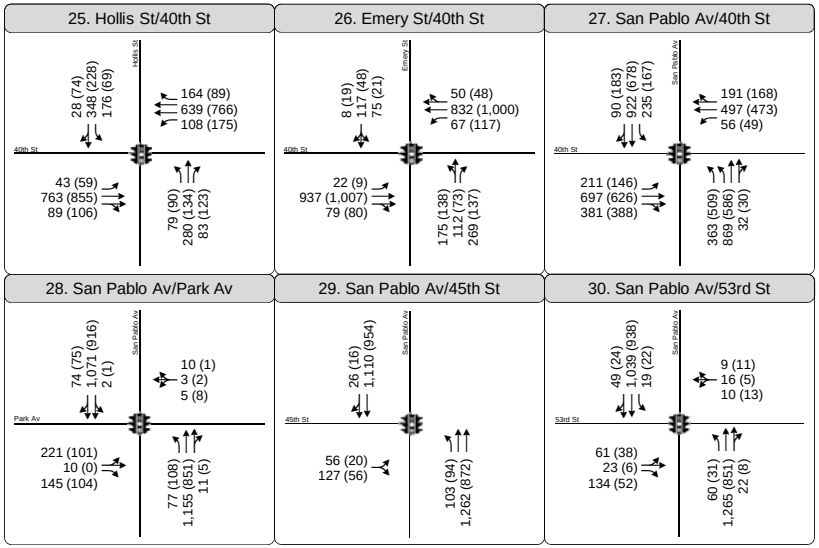
Sherwin-Williams Project EIR

Near-Term with Project Option B Conditions Peak Hour Volumes





LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site

LSA

FIGURE IV.C-15c

NOT TO SCALE

N

Sherwin-Williams Project EIR

Near-Term with Project Option B Conditions Peak Hour Volumes

SOURCE: FEHR & PEERS, NOVEMBER 2015.

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Table IV.C-19: Near-Term with Project Conditions Intersection Level of Service

Intersection	Control [a]	Peak Hour [b]	Near-Term		Near-Term with Option A		Near-Term with Option B	
			Delay [c]	LOS [d]	Delay [c]	LOS [d]	Delay [c]	LOS [d]
1. Powell Street/ Frontage Road	Signal	PM	52	D	56	E	56	E
		SAT	50	D	51	D	51	D
2. Powell Street/Eastbound I-80 Off-Ramp [d]	Signal	PM	33	C	33	C	33	C
		SAT	28	C	30	C	30	C
3. Shellmound Way/ Christie Avenue [d]	Signal	PM	11	B	11	B	11	B
		SAT	10	A	10	A	10	A
4. Shellmound Street/ Shellmound Way [d]	Signal	PM	18	B	18	B	18	B
		SAT	23	C	23	C	23	C
5. Powell Street/ Christie Avenue [d]	Signal	PM	39	D	42	D	42	D
		SAT	53	D	56	E	56	E
6. Shellmound Street/ Christie Avenue	Signal	PM	29	C	29	C	29	C
		SAT	27	C	27	C	27	C
7. Shellmound Street/ Ohlone Way	Signal	PM	17	B	17	B	17	B
		SAT	24	C	24	C	24	C
8. Powell Street/ Hollis Street	Signal	PM	42	D	44	D	44	D
		SAT	39	D	40	D	40	D
9. Powell Street/ Stanford Avenue	SSSC	PM	1 (12)	A (B)	2 (12)	A (B)	1 (12)	A (B)
		SAT	1 (10)	A (B)	1 (10)	A (B)	1 (10)	A (B)
10. Horton Street/ Stanford Avenue	AWSC	AM	8	A	9	A	9	A
		PM	10	B	12	B	12	B
		SAT	7	A	8	A	8	A
11. Hollis Street/ Stanford Avenue	Signal	PM	7	A	8	A	8	A
		SAT	4	A	5	A	5	A
12. Horton Street/ 53rd Street	AWSC	AM	8	A	9	A	9	A
		PM	10	A	11	B	11	B
		SAT	7	A	8	A	8	A
13. Hollis Street/ 53rd Street	Signal	PM	8	A	8	A	8	A
		SAT	5	A	6	A	6	A
14. Horton Street/46th Street (Future Roadway)	SSSC	AM	--	--	2 (12)	A (B)	3 (12)	A (B)
		PM			3 (16)	A (C)	3 (17)	A (C)
		SAT			3 (10)	A (B)	3 (11)	A (B)
15. Horton Street/ 45th Street	AWSC	AM	8	A	9	A	9	A
		PM	10	B	11	B	11	B
		SAT	8	A	8	A	8	A
16. Hollis Street/ 45th Street	AWSC	PM	54	F	63	F	62	F
		SAT	12	B	12	B	12	B
17. Halleck Street/ Sherwin Avenue	Free/ SSSC	AM	No Conflicting Movements		4 (9)	A (A)	No Conflicting Movements	
		PM			4 (9)	A (A)		
		SAT			3 (9)	A (A)		
18. Hubbard Street/Sherwin Avenue/Future Project Roadway	SSSC	AM	3 (9)	A (A)	6 (10)	A (A)	7 (10)	A (A)
		PM	2 (9)	A (A)	5 (10)	A (A)	6 (10)	A (A)
		SAT	3 (9)	A (A)	6 (10)	A (A)	7 (10)	A (A)
19. Horton Street/ Sherwin Avenue	SSSC	AM	1 (11)	A (B)	2 (11)	A (B)	2 (11)	A (B)
		PM	1 (13)	A (B)	2 (14)	A (B)	2 (14)	A (B)
		SAT	1 (9)	A (A)	3 (10)	A (A)	2 (10)	A (A)
20. Halleck Street/ Park Avenue	SSSC	PM	8 (12)	A (B)	8 (12)	A (B)	9 (12)	A (B)
		SAT	7 (10)	A (A)	7 (10)	A (A)	7 (10)	A (A)
21. Hubbard Street/ Park Avenue	SSSC	PM	2 (11)	A (B)	3 (12)	A (B)	3 (12)	A (B)
		SAT	2 (9)	A (A)	3 (10)	A (B)	4 (10)	A (A)
22. Horton Street/ Park Avenue	AWSC	AM	9	A	10	A	10	A
		PM	11	B	13	B	13	B
		SAT	8	A	8	A	8	A
23. Hollis Street/ Park Avenue	Signal	PM	15	B	17	B	17	B
		SAT	12	B	13	B	13	B

Table IV.C-19: Near-Term with Project Conditions Intersection Level of Service

Intersection	Control [a]	Peak Hour [b]	Near-Term		Near-Term with Option A		Near-Term with Option B	
			Delay [c]	LOS [d]	Delay [c]	LOS [d]	Delay [c]	LOS [d]
24. Horton Street/ 40th Street	Signal	AM	27	C	28	C	28	C
		PM	47	D	50	D	50	D
		SAT	59	E	61	E	60	E
25. Hollis Street/ 40th Street [d]	Signal	PM	32	C	32	C	32	C
		SAT	31	C	31	C	31	C
26. Emery Street/ 40th Street [d]	Signal	PM	34	C	34	C	34	C
		SAT	31	C	31	C	31	C
27. San Pablo Avenue/ 40th Street [d]	Signal	PM	46	D	49	D	49	D
		SAT	48	D	50	D	50	D
28. San Pablo Avenue/ Park Avenue	Signal	PM	18	B	19	B	18	B
		SAT	7	A	8	A	7	A
29. San Pablo Avenue/ 45th Street	Signal	PM	7	A	7	A	7	A
		SAT	7	A	7	A	6	A
30. San Pablo Avenue/ 53rd Street	Signal	PM	14	B	15	B	15	B
		SAT	9	A	9	A	9	A

[a] AWSC = all way stop control, SSSC = side street stop control, Signal = signalized

[b] AM = weekday morning peak hour, PM = weekday evening peak hour, SAT = Saturday afternoon Peak Hour

[c] LOS = Level of Service. LOS calculations conducted using the Synchro level of service analysis software package, which applies the method described in the *2000 Highway Capacity Manual*. For side-street stop-controlled intersections, delays for worst approach and average intersection delay are shown: intersection average (worst approach).

[d] Actual delay may be worse than shown here due to the effects of vehicle queue spillback from adjacent intersections and pedestrians impeding turn movements.

Source: Fehr & Peers, 2015. *Sherwin-Williams Mixed-Use Development Transportation Impact Analysis*. December.

Table IV.C-20: Near-Term with Project Conditions Daily Traffic Volumes

Roadway	Existing Average Daily Traffic	Added Traffic from Near-Term Projects	Near-Term Without Project Volume	Project Daily Added Traffic[a]	Total Daily Near-Term Traffic With Project	Percent Increase With Project
A. Horton Street, north of 53rd Street	***3,480***	510	***3,990***	960	***4,950***	24%
B. Horton Street, between 45th and 53rd Street	***3,530***	560	***4,090***	1,370	***5,460***	33%
C. Horton Street, south of Sherwin Avenue	***3,460***	610	***4,070***	940	***5,010***	23%
D. 53rd Street, east of Horton Street	600	50	650	410	1,060	63%
E. 45th Street, east of Horton Street	1,080	50	1,130	280	1,410	25%
F. 45th Street, west of San Pablo Ave	***2,630***	230	***2,860***	140	***3,000***	5%
G. 45th Street, east of San Pablo Ave	1,490	60	***1,550***	10	***1,560***	< 1%
H. 53rd Street, west of San Pablo Ave	***2,440***	1,300	***3,740***	100	***3,840***	3%

[a] Based on weekday daily project trip generation and distribution percentages.

Note: ***Bold and Italics*** indicates volumes exceed guidelines established for bicycle boulevards; 3,000 vehicles per day for roadways west of Hollis Street and 1,500 vehicles per day for roadways east of Hollis Street.

Source: Fehr & Peers, 2015. *Sherwin-Williams Mixed-Use Development Transportation Impact Analysis.* December.

(6) Cumulative with Project Conditions. Net new project trips for options A and B were added to the Cumulative Conditions to develop traffic volumes for Cumulative with Project Conditions, as shown in Figures IV.C-16a, IV.C-16b, and IV.C-16c and Figures IV.C-17a, IV.C-17b, and IV.C-17c for Option A and Option B, respectively.

LOS calculations were conducted to evaluate intersection operations under Cumulative Conditions (both without and with the project). The results of the LOS analysis are summarized in Table IV.C-21 and the corresponding LOS calculation sheets are included in Appendix B**.**

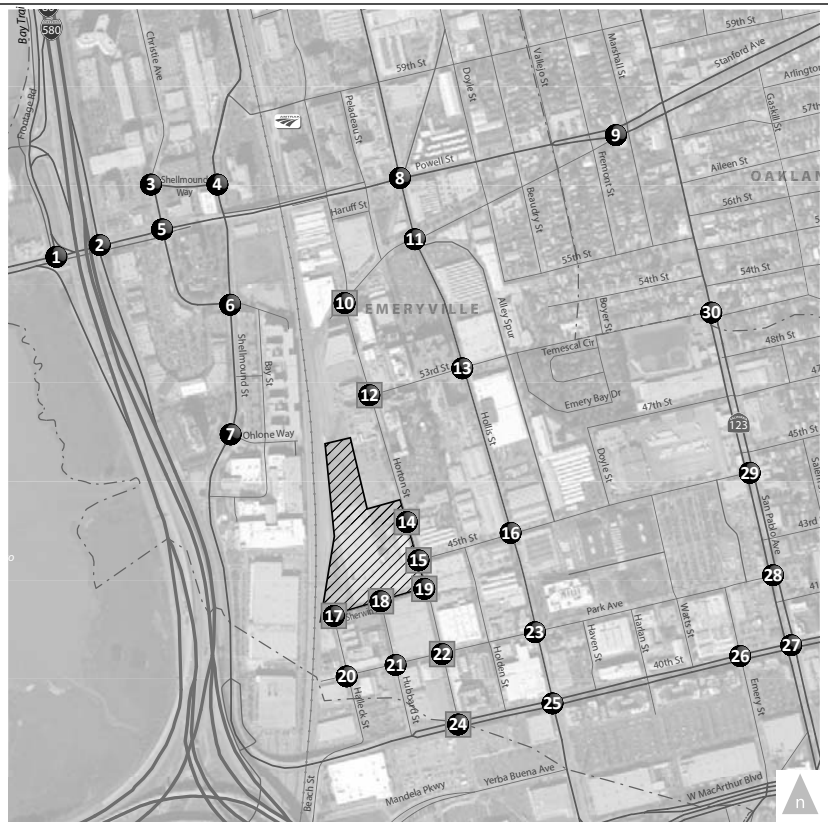
Traffic growth from the construction and occupation of approved projects would increase delay experienced at some intersections listed below for bicyclists, transit vehicles and passenger vehicles. In the Cumulative Condition, delay for vehicles at intersections would further degrade.

- (#1) Powell Street/Frontage Road (LOS E in PM and LOS D Saturday peak hour; no LOS change with either project option)
- (#5) Powell Street/Christie Avenue (LOS D in PM and Saturday peak hour, worsening to LOS E during Saturday peak hour with either project option)
- (#8) Powell Street/Hollis Street (LOS D in PM and Saturday peak hour, worsening to LOS E during PM peak hour with either project option)
- (#16) Hollis Street/45th Street (LOS F in PM peak hour; worsening delay with either project option)
- (#24) Horton Street/40th Street (LOS E in PM and Saturday peak hour; no LOS change with either project option)
- (#26) Emery Street/40th Street (LOS D in PM peak hour; no LOS change with either project option)
- (#27) San Pablo Avenue/40th Street (LOS E in PM and Saturday peak hour; no LOS change with either project option)

Peak hour volume and delay warrants were reviewed for the unsignalized study intersections in the Near-Term and Cumulative Conditions, without and with project traffic. Signal warrants would be satisfied at the Hollis Street/45th Street study intersection (#16) in the Near-Term Condition prior to the addition of project traffic, and the addition of project traffic would exacerbate the need for signalization.

The change in 95th percentile vehicle queues was reviewed for the signalized study intersections (a detailed table is provided in Appendix B). In the Near-Term Condition, there are numerous locations where the 95th percentile vehicle queue is expected to extend beyond the available storage periodically during the PM peak hour, and the addition of project traffic would further exacerbate vehicle queue spillback. Project traffic is expected to increase the 95th percentile vehicle queue by more than 50 feet at the following intersection:

- (#27) San Pablo Avenue at 40th Street – southbound left-turn movement



LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

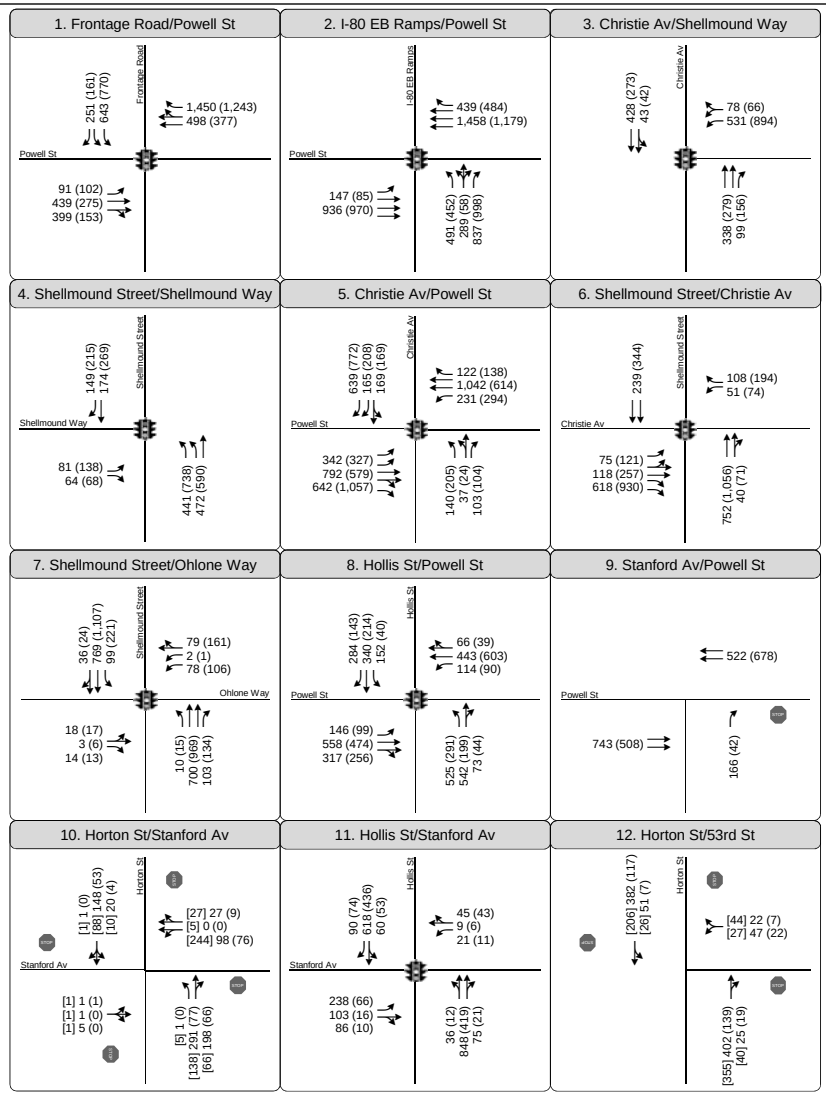
Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site



LSA

FIGURE IV.C-16a

NOT TO SCALE

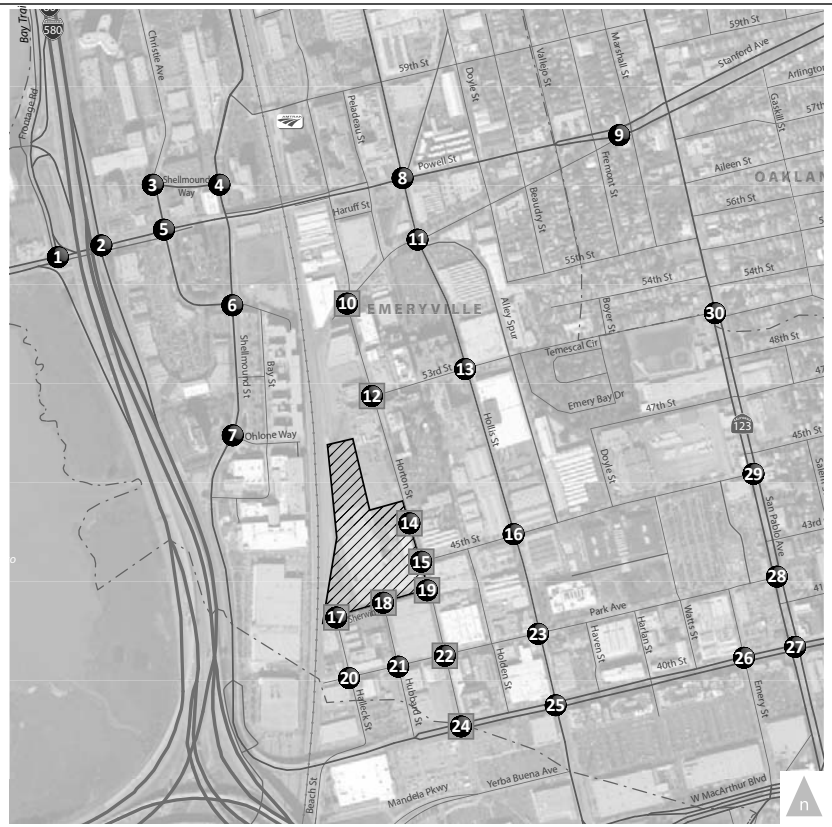
N

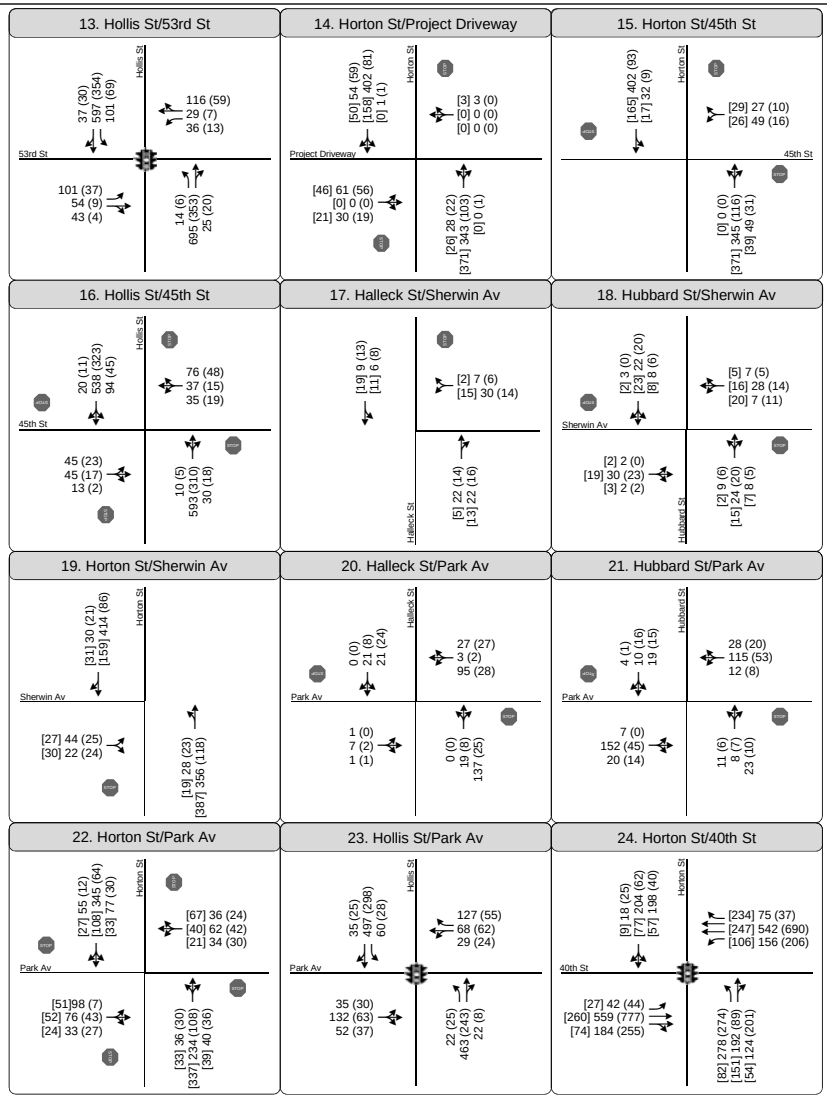
Sherwin-Williams Project EIR

Cumulative with Project Option A Conditions Peak Hour Volumes

SOURCE: FEHR & PEERS, JULY 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVC16a.ai (7/27/15)





LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site

LSA

FIGURE IV.C-16b

NOT TO SCALE

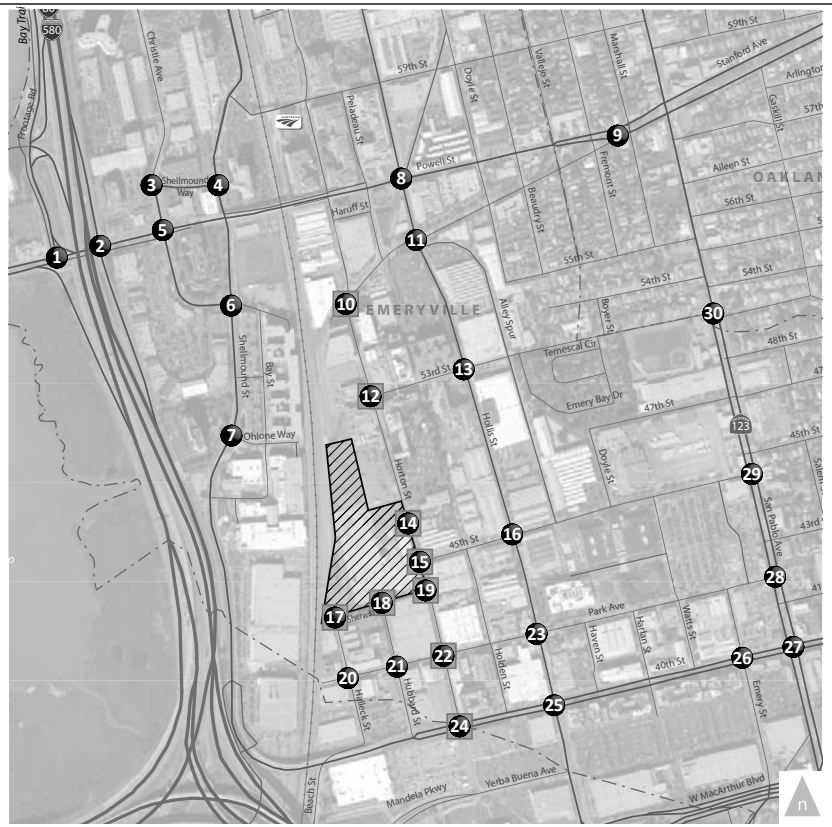
N

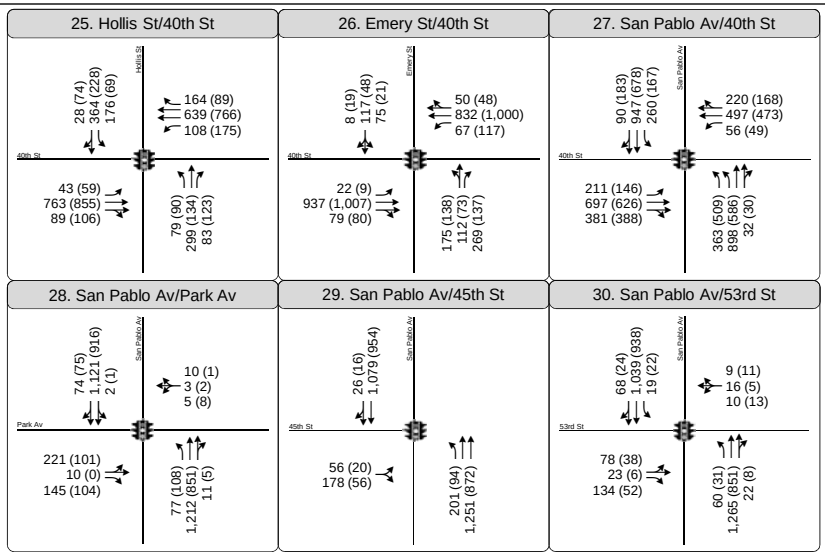
Sherwin-Williams Project EIR

Cumulative with Project Option A Conditions Peak Hour Volumes

SOURCE: FEHR & PEERS, JULY 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVC16b.ai (7/27/15)





LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site

LSA

FIGURE IV.C-16c

NOT TO SCALE

N

Sherwin-Williams Project EIR

Cumulative with Project Option A Conditions Peak Hour Volumes

SOURCE: FEHR & PEERS, JULY 2015.

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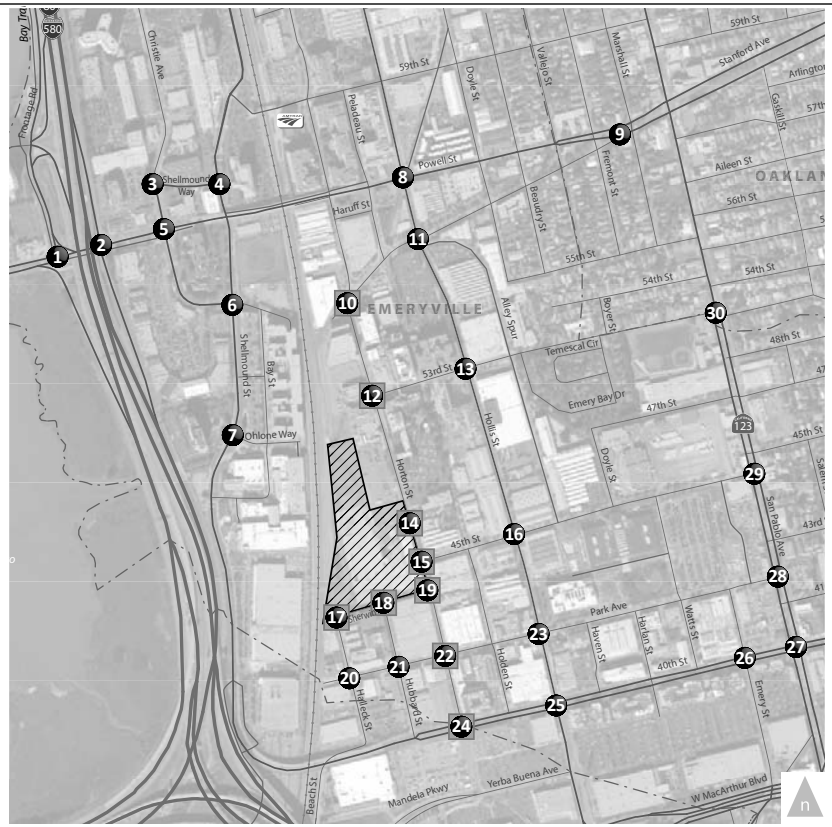

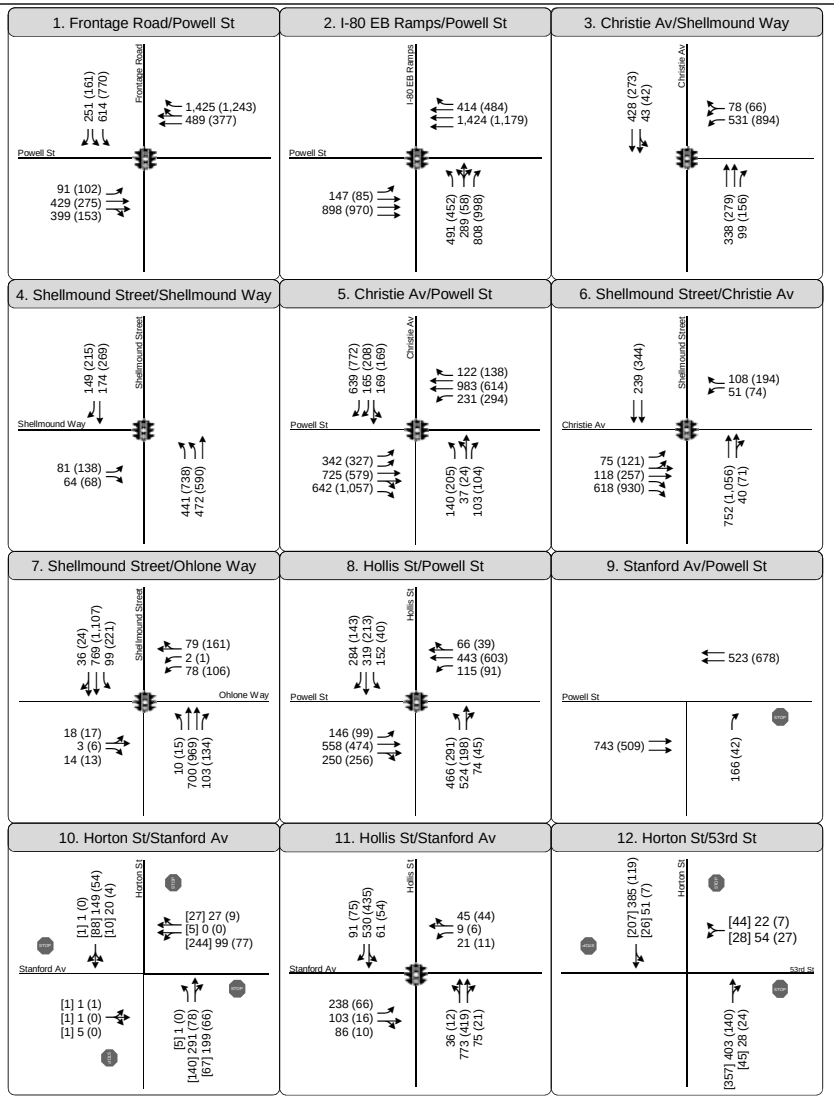

LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site

LSA

FIGURE IV.C-17a

NOT TO SCALE

N

Sherwin-Williams Project EIR

Cumulative with Project Option B Conditions Peak Hour Volumes

SOURCE: FEHR & PEERS, JULY 2015.

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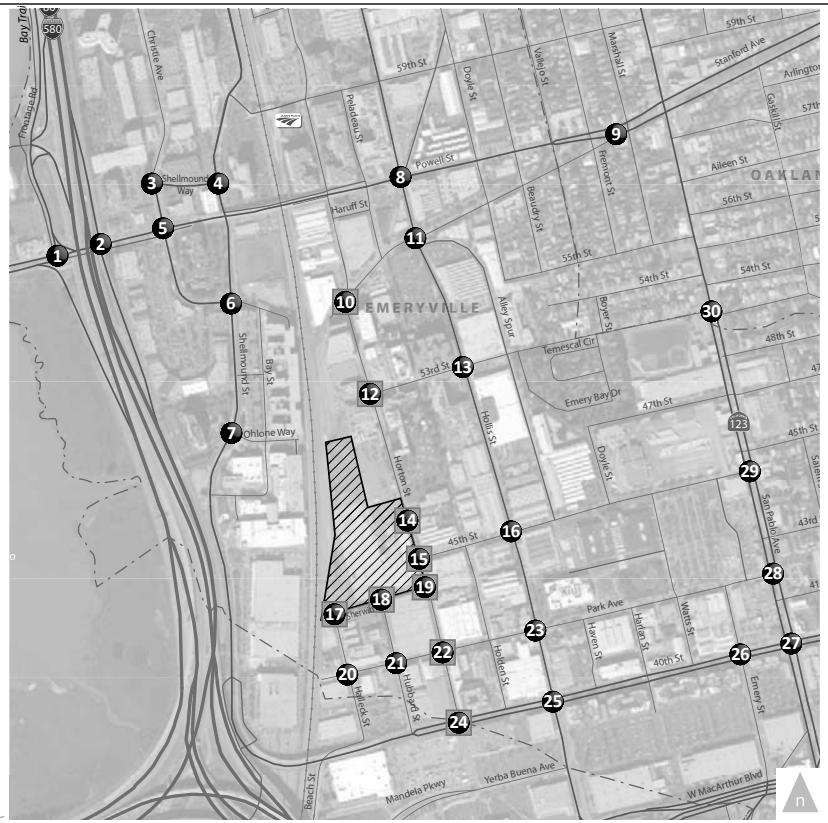

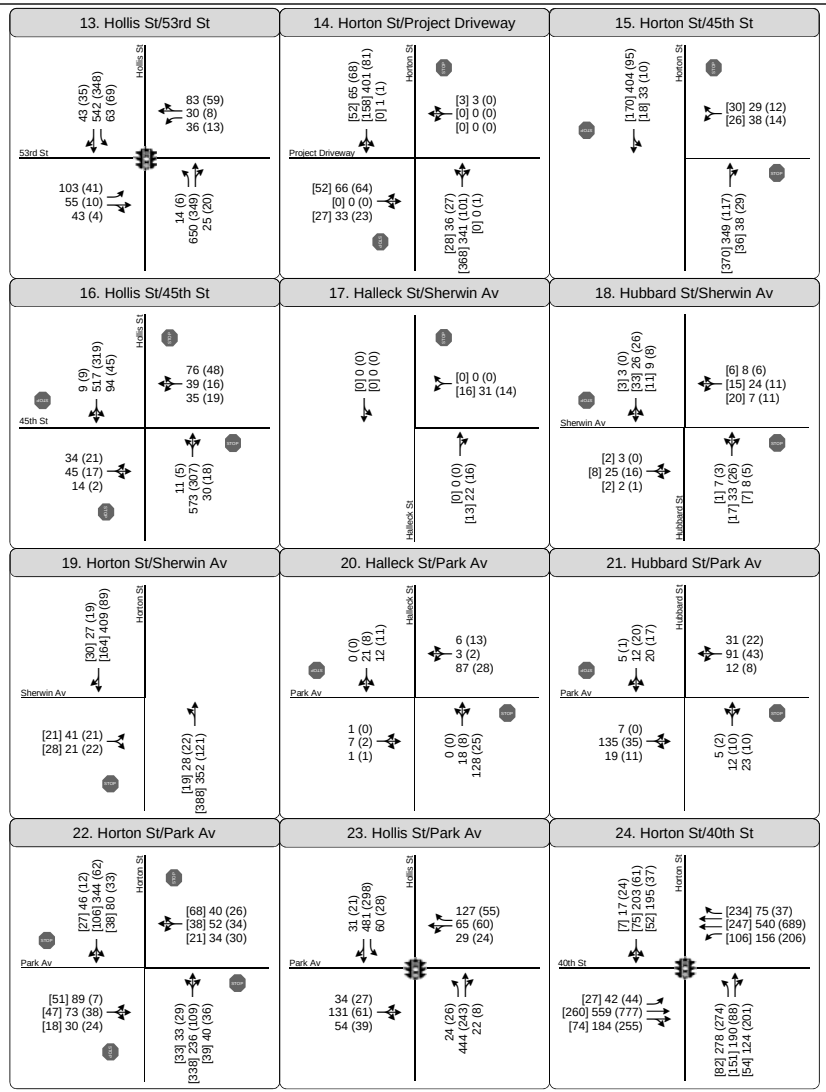

LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site

LSA

FIGURE IV.C-17b

NOT TO SCALE

N

SOURCE: FEHR & PEERS, JULY 2015.

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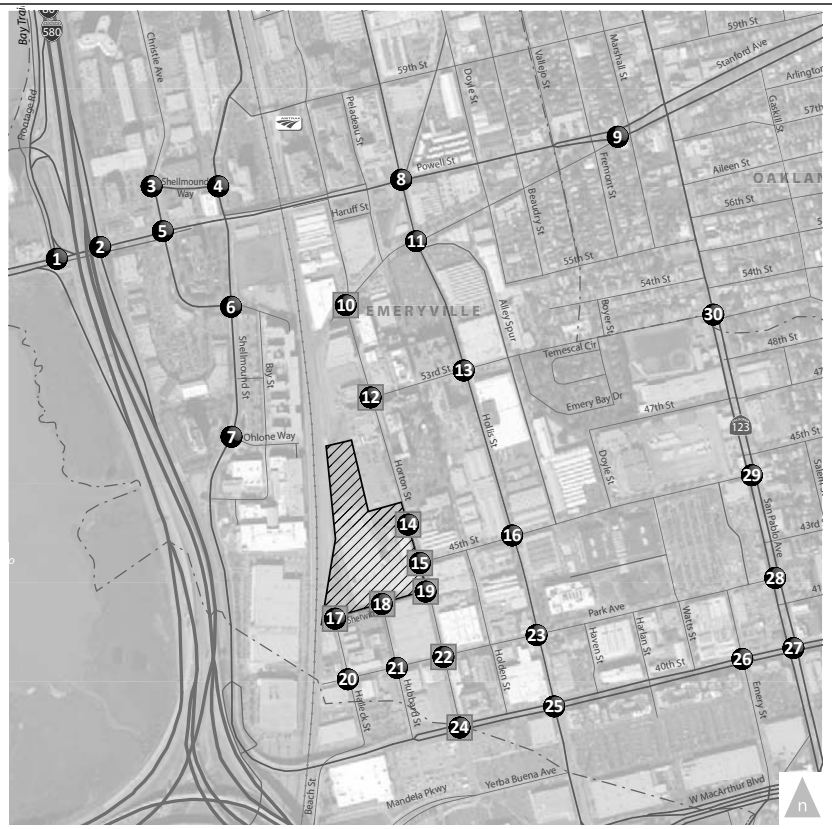
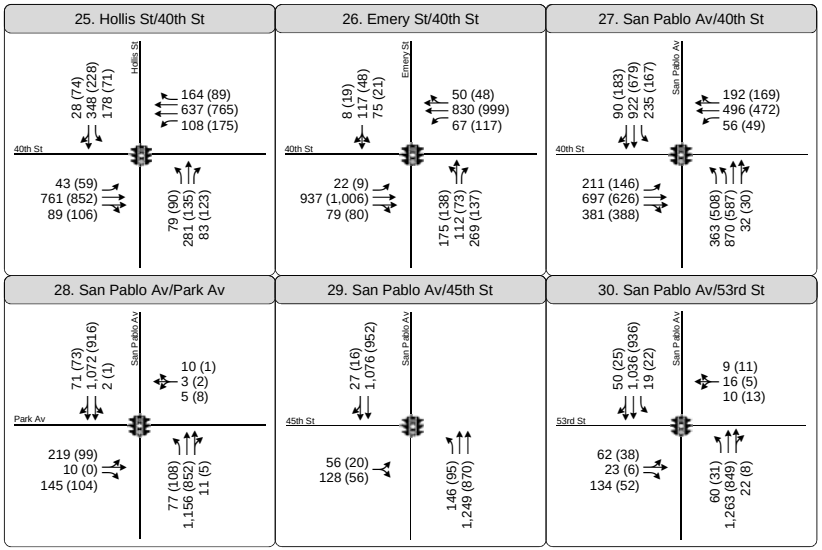
Sherwin-Williams Project EIR

Cumulative with Project Option B Conditions Peak Hour Volumes





LEGEND

[XX] YY (ZZ) [AM] PM (Saturday) Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Weekday PM and Saturday Peak Hour Analysis Study Intersection

Weekday AM, PM, and Saturday Peak Hour Analysis Study Intersection

Project Site

LSA

FIGURE IV.C-17c

NOT TO SCALE

N

Sherwin-Williams Project EIR

Cumulative with Project Option B Conditions Peak Hour Volumes

SOURCE: FEHR & PEERS, JULY 2015.

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Daily roadway segment volumes were forecast for the Cumulative Condition, as presented in Table IV.C-22. In the Cumulative Condition, the addition of traffic from approved and pending projects would increase vehicle traffic on streets in the study area and would result in traffic volumes on 45th Street, east of San Pablo Avenue exceeding the desired level of traffic for a bicycle boulevard (analysis segment G in Table IV.C-21). However, the project would increase vehicle traffic on this roadway segment by less than 2 percent on a daily basis resulting in a less-than-significant impact. The project would further exacerbate already deficient conditions for a bicycle boulevard on Horton Street (analysis segments A, B, and C) and portions of 45th (analysis segments F and G) and 53rd streets, west of San Pablo Avenue (analysis segment H), by increasing daily traffic by more than 2 percent.

Impacts associated with the Near-Term with Project Condition are described with impacts associated with the Cumulative with Project Condition below.

Table IV.C-21: Cumulative with Project Conditions Intersection Level of Service

Intersection	Control [a]	Peak Hour [b]	Cumulative		Cumulative with Option A		Cumulative with Option B	
			Delay [c]	LOS [d]	Delay [c]	LOS [d]	Delay [c]	LOS [d]
1. Powell Street/ Frontage Road	Signal	PM	59	E	63	E	63	E
		SAT	50	D	51	D	51	D
2. Powell Street/Eastbound I-80 Off-Ramp [d]	Signal	PM	33	C	34	C	34	C
		SAT	30	C	32	C	32	C
3. Shellmound Way/ Christie Avenue [d]	Signal	PM	11	B	12	B	12	B
		SAT	10	A	10	A	10	A
4. Shellmound Street/ Shellmound Way [d]	Signal	PM	18	B	18	B	18	B
		SAT	23	C	23	C	23	C
5. Powell Street/ Christie Avenue [d]	Signal	PM	42	D	45	D	45	D
		SAT	54	D	56	E	56	E
6. Shellmound Street/ Christie Avenue	Signal	PM	29	C	29	C	29	C
		SAT	27	C	27	C	27	C
7. Shellmound Street/ Ohlone Way	Signal	PM	17	B	17	B	17	B
		SAT	24	C	24	C	24	C
8. Powell Street/ Hollis Street	Signal	PM	51	D	56	E	56	E
		SAT	39	D	42	D	42	D
9. Powell Street/ Stanford Avenue	SSSC	PM	2 (13)	A (B)	2 (14)	A (B)	2 (14)	A (B)
		SAT	1 (11)	A (B)	1 (11)	A (B)	1 (11)	A (B)
10. Horton Street/ Stanford Avenue	AWSC	AM	10	A	11	B	11	B
		PM	13	B	16	C	16	C
		SAT	8	A	8	A	8	A
11. Hollis Street/ Stanford Avenue	Signal	PM	11	B	12	B	12	B
		SAT	5	A	5	A	5	A
12. Horton Street/ 53rd Street	AWSC	AM	10	A	11	B	11	B
		PM	12	B	15	B	15	B
		SAT	8	A	8	A	8	A
13. Hollis Street/ 53rd Street	Signal	PM	11	B	11	B	11	B
		SAT	6	A	6	A	6	A
14. Horton Street/46th Street (Future Roadway)	SSSC	AM			2 (15)	A (B)	2 (15)	A (C)
		PM	--	--	3 (22)	A (C)	3 (24)	A (C)
		SAT			3 (11)	A (B)	3 (11)	A (B)
15. Horton Street/ 45th Street	AWSC	AM	11	B	11	B	11	B
		PM	12	B	14	B	14	B
		SAT	8	A	8	A	8	A
16. Hollis Street/ 45th Street	AWSC	PM	75	F	85	F	84	F
		SAT	12	B	12	B	12	B

Table IV.C-21: Cumulative with Project Conditions Intersection Level of Service

Intersection	Control [a]	Peak Hour [b]	Cumulative		Cumulative with Option A		Cumulative with Option B	
			Delay [c]	LOS [d]	Delay [c]	LOS [d]	Delay [c]	LOS [d]
17. Halleck Street/ Sherwin Avenue	Free/ SSSC	AM	No Conflicting Movements		4 (9)	A (A)	No Conflicting Movements	
		PM			4 (9)	A (A)		
		SAT			3 (9)	A (A)		
18. Hubbard Street/Sherwin Avenue/Future Project Roadway	SSSC	AM	3 (9)	A (A)	6 (9)	A (A)	7 (10)	A (A)
		PM	2 (9)	A (A)	5 (10)	A (A)	6 (10)	A (A)
		SAT	3 (9)	A (A)	6 (9)	A (A)	7 (10)	A (A)
19. Horton Street/ Sherwin Avenue	SSSC	AM	1 (12)	A (B)	1 (12)	A (B)	1 (12)	A (B)
		PM	1 (16)	A (C)	2 (18)	A (C)	2 (18)	A (C)
		SAT	1 (10)	A (A)	2 (10)	A (A)	2 (10)	A (A)
20. Halleck Street/ Park Avenue	SSSC	PM	8 (12)	A (B)	8 (12)	A (B)	9 (12)	A (B)
		SAT	7 (10)	A (A)	7 (10)	A (A)	7 (10)	A (A)
21. Hubbard Street/ Park Avenue	SSSC	PM	2 (11)	A (B)	3 (12)	A (B)	3 (12)	A (B)
		SAT	2 (9)	A (A)	3 (10)	A (B)	4 (10)	A (A)
22. Horton Street/ Park Avenue	AWSC	AM	11	B	13	B	13	B
		PM	16	C	22	C	21	C
		SAT	8	A	9	A	8	A
23. Hollis Street/ Park Avenue	Signal	PM	15	B	17	B	17	B
		SAT	12	B	13	B	13	B
24. Horton Street/ 40th Street	Signal	AM	28	C	29	C	29	C
		PM	61	E	66	E	65	E
		SAT	60	E	61	E	61	E
25. Hollis Street/ 40th Street [d]	Signal	PM	34	C	34	D	34	C
		SAT	31	C	32	C	32	C
26. Emery Street/ 40th Street [d]	Signal	PM	36	D	36	D	36	D
		SAT	31	C	31	C	31	C
27. San Pablo Avenue/ 40th Street [d]	Signal	PM	56	E	61	E	61	E
		SAT	49	D	52	D	52	D
28. San Pablo Avenue/ Park Avenue	Signal	PM	19	B	19	B	19	B
		SAT	7	A	8	A	7	A
29. San Pablo Avenue/ 45th Street	Signal	PM	8	A	8	A	8	A
		SAT	7	A	7	A	7	A
30. San Pablo Avenue/ 53rd Street	Signal	PM	15	B	15	B	15	B
		SAT	9	A	10	A	10	A

[a] AWSC = all way stop control, SSSC = side street stop control, Signal = signalized

[b] AM = weekday morning peak hour, PM = weekday evening peak hour, SAT = Saturday afternoon Peak Hour

[c] LOS = Level of Service. LOS calculations conducted using the Synchro level of service analysis software package, which applies the method described in the *2000 Highway Capacity Manual*. For side-street stop-controlled intersections, delays for worst approach and average intersection delay are shown: intersection average (worst approach).

[d] Actual delay may be worse than shown here due to the effects of vehicle queue spillback from adjacent intersections and pedestrians impeding turn movements.

Source: Fehr & Peers, 2015. *Sherwin-Williams Mixed-Use Development Transportation Impact Analysis*, December.

Table IV.C-22: Cumulative with Project Conditions Daily Traffic Volumes

Roadway	Existing Average Daily Traffic	Added Traffic from Cumulative Projects	Cumulative Without Project Volume	Project Daily Added Traffic[a]	Total Daily Cumulative Traffic With Project	Percent Increase With Project
A. Horton Street, north of 53rd Street	***3,480***	2,850	***6,330***	960	***7,290***	15%
B. Horton Street, between 45th and 53rd Street	***3,530***	2,450	***5,980***	1,370	***7,350***	23%
C. Horton Street, south of Sherwin Avenue	***3,460***	2,500	***5,960***	940	***6,900***	16%
D. 53rd Street, east of Horton Street	600	1680	2,280	410	2,690	18%
E. 45th Street, east of Horton Street	1,080	50	1,130	280	1,410	25%
F. 45th Street, west of San Pablo Ave	***2,630***	420	***3,050***	140	***3,190***	5%
G. 45th Street, east of San Pablo Ave	1,490	60	***1,550***	10	***1,560***	< 1%
H. 53rd Street, west of San Pablo Ave	***2,440***	1,750	***4,190***	100	***4,290***	2%

[a] Based on weekday daily project trip generation and distribution percentages.

Note: ***Bold and Italics*** indicates volumes exceed guidelines established for bicycle boulevards; 3,000 vehicles per day for roadways west of Hollis Street and 1,500 vehicles per day for roadways east of Hollis Street.

Source: Fehr & Peers, 2015. *Sherwin-Williams Mixed-Use Development Transportation Impact Analysis*, December.

(7) Near-Term with Project and Cumulative with Project Transportation Impacts.

The following discusses potentially significant impacts based on the significance criteria for the Near-Term and Cumulative with Project Conditions.

Daily roadway segment volumes were forecasts for the Near-Term and Cumulative with Project Conditions, as presented in Table IV.C-20 and Table IV.C-22, respectively. In Near-Term and Cumulative Conditions, the addition of traffic from approved and pending projects would increase vehicle traffic on streets in the study area and would result in traffic volumes on 45th Street, east of San Pablo Avenue (analysis segment G) exceeding the desired level of traffic for a bicycle boulevard. The project would further exacerbate already deficient conditions for a bicycle boulevard on Horton Street (analysis segments A, B, and C) and portions of 45th (analysis segments F and G) and 53rd streets, west of San Pablo Avenue (analysis segment H), by increasing daily traffic by more than 2 percent.

Bicycle Boulevard Traffic Impacts. The City of Emeryville Pedestrian and Bicycle Plan designates 45th Street, east of San Pablo Avenue as a bicycle boulevard. Traffic volumes on 45th Street, east of San Pablo Avenue, are projected to exceed the desired level for a bicycle boulevard based on guidance provided in the City's Pedestrian and Bicycle Plan with the addition of traffic from approved and pending projects in the Near-Term and Cumulative Conditions. The project is expected to increase daily traffic on this roadway by approximately 10 vehicle trips per day, or a less than 1 percent increase. Improvements identified in the City's Pedestrian and Bicycle Plan have been implemented along the corridor as of November 2015. As the project would increase traffic volumes on this street by less than 2 percent, the impact is considered less than significant.

Horton Street Impacts. The City of Emeryville Pedestrian and Bicycle Plan designates Horton Street as a bicycle boulevard. Existing weekday daily traffic volumes on Horton Street are approximately 3,500 vehicles per day (VPD) from south of Sherwin Avenue to north of 53rd Street. In the Near-Term and Cumulative Conditions, traffic volumes would increase as compared to the existing condition, with the project further increasing travel demand, resulting in a significant impact.

Impact TRANS-4a: The addition of project traffic to Horton Street north of 53rd Street (analysis segment A), a designated bicycle boulevard, under Near-Term and Cumulative Conditions could increase traffic volumes by more than 2 percent on a roadway where volumes already exceed the volume threshold for a bicycle boulevard. This impact would occur with either Option A or Option B and is considered a significant impact. (S)

Impact TRANS-4b: The addition of project traffic to Horton Street between 45th and 53rd streets (analysis segment B), a designated bicycle boulevard, under Near-Term and Cumulative Conditions could increase traffic volumes by more than 2 percent on a roadway where volumes already exceed the volume threshold for a bicycle boulevard. This impact would occur with either Option A or Option B and is considered a significant impact. (S)

Impact TRANS-4c: The addition of project traffic to Horton Street south of Sherwin Avenue (analysis segment C), a designated bicycle boulevard, under Near-Term and Cumulative Conditions could increase traffic volumes by more than 2 percent on a roadway where volumes already exceed the volume threshold for a bicycle boulevard. This impact would occur with either Option A or Option B and is considered a significant impact. (S)

Implementation of Mitigation Measure TRANS-1a (install traffic calming and traffic diversion measures) would reduce the project impact to a less-than-significant level in the Near-Term with Project Condition for analysis segments A, B and C as shown in Table IV.C-23, and in the Cumulative with Project Condition for analysis segments B and C, as shown in Table IV.C-24. However, traffic volumes on Horton Street north of 53rd Street, analysis segment A, would exceed 3,000 vehicles per day, even with turn restrictions along the corridor, primarily due to the potential traffic that could be generated with buildout of the Novartis campus. As it is uncertain when or if the Novartis project would move forward, there are potential opportunities through the design of the Novartis site and project (when or if it is built) to orient traffic to 53rd Street and Hollis Street, reducing the level of traffic on Horton Street north of 53rd Street. However, whether these opportunities would be agreed to or undertaken by Novartis is speculative as of January 2016.

Additionally, there are dedicated bicycle lanes on Horton Street, north of 53rd Street providing bicyclists with dedicated right-of way. Redesignating this portion of Horton Street from a bicycle boulevard to a Class II bicycle facility also could be considered by the City should traffic levels increase as projected due to construction of the Novartis project in the Cumulative Condition. Additionally, as part of the project, a Class I bicycle facility would be constructed on the west side of the project site, connecting to other planned bicycle facilities and providing an alternative north-south bicycle route through this portion of Emeryville. However, based on current guidelines provided in the City of Emeryville Pedestrian and Bicycle Plan, the cumulative impact to the Horton Street between 53rd Street and Stanford Avenue Bicycle Boulevard would remain significant and unavoidable.

Mitigation Measure TRANS-4a: Implement Mitigation Measure TRANS-1a to reduce the level of traffic on Horton Street north of 53rd Street (analysis segment A). Implementation of this measure would reduce the impact to Horton Street north of 53rd Street to a less-than-significant level in the Near-Term Condition. In the Cumulative Condition, the impact to Horton Street north of 53rd Street would remain significant and unavoidable. (LTS in the Near-Term Condition) (SU in the Cumulative Condition)

Mitigation Measure TRANS-4b: Implement Mitigation Measure TRANS-1a to reduce the level of traffic on Horton Street between 45th and 53rd streets (analysis segment B). Implementation of this measure would reduce the traffic volume on Horton Street between 45th Street and 53rd Street to a level considered acceptable for a bicycle boulevard for the Near-Term Condition and the Cumulative Condition. (LTS)

Mitigation Measure TRANS-4c: Implement Mitigation Measure TRANS-1a to reduce the level of traffic on Horton Street south of Sherwin Avenue (analysis segment C). Implementation of this measure would reduce the traffic volume on Horton Street south of Sherwin Avenue to a level considered acceptable for a bicycle boulevard for the Near-Term Condition and for the Cumulative Condition. (LTS)

Table IV.C-23: Near-Term with Project with Mitigation Conditions Daily Traffic Volumes

Roadway	Existing Average Daily Traffic With Turn Restrictions [a]	Added Traffic From Near-Term Projects [b]	Near-term Without Project With Turn Restrictions	Project Daily Added Traffic [c]	Total Daily Traffic Near-Term With Project with Turn Restrictions
A. Horton Street, north of 53rd Street	1,940	60	2,000	530	2,530
B. Horton Street, between 45th and 53rd Street	1,480	100	1,580	840	2,420
C. Horton Street, south of Sherwin Avenue	1,530	190	1,720	740	2,460

[a] See Table IV.C-18.
[b] Reflects potential routing of new trips to the transportation system considering turn restrictions on Horton Street. .
[c] Based on weekday daily project trip generation and distribution percentages considering turn restrictions at 40th Street for northbound traffic and 53rd Street for southbound traffic.
Note: ***Bold and Italics*** indicates volumes exceed guidelines established for bicycle boulevards; 3,000 vehicles per day for roadways west of Hollis Street and 1,500 vehicles per day for roadways east of Hollis Street.
Source: Fehr & Peers, 2015. *Sherwin-Williams Mixed-Use Development Transportation Impact Analysis*. December.

Impact TRANS-4d: Implementation of Mitigation Measure TRANS-1a would result in operations of the Hollis Street at 45th Street intersection (#16) to degrade with vehicles and transit vehicles experiencing significant levels of delay in both the Near-Term and Cumulative Conditions. Peak hour traffic signal warrants would also be met. The addition of traffic from either project Option A or Option B would further degrade operations. Based on the significance criteria, this would result in a significant secondary impact. (S)

Mitigation Measure TRANS-4d: Implement Mitigation Measure TRANS-1d**.** (LTS)

Table IV.C-24: Cumulative with Project with Mitigation Conditions Daily Traffic Volumes

Roadway	Existing Average Daily Traffic With Turn Restrictions [a]	Added Traffic From Near-Term Projects [b]	Near-term Without Project With Turn Restrictions	Project Daily Added Traffic [c]	Total Daily Traffic Near-Term With Project with Turn Restrictions
A. Horton Street, north of 53rd Street	1,940	1,460	***3,400***	530	***3,930***
B. Horton Street, between 45th and 53rd Street	1,480	190	1,670	840	2,510
C. Horton Street, south of Sherwin Avenue	1,530	190	1,720	740	2,460

[a] See Table IV.C-18.
[b] Reflects potential routing of new trips to the transportation system considering turn restrictions on Horton Street.
[c] Based on weekday daily project trip generation and distribution percentages considering turn restrictions at 40th Street for northbound traffic and 53rd Street for southbound traffic.

Note: ***Bold and Italics*** indicates volumes exceed guidelines established for bicycle boulevards; 3,000 vehicles per day for roadways west of Hollis Street and 1,500 vehicles per day for roadways east of Hollis Street.

Source: Fehr & Peers, 2015. *Sherwin-Williams Mixed-Use Development Transportation Impact Analysis*. December.

Impact TRANS-4e: Implementation of Mitigation Measure TRANS-1a would result in vehicle queues at the Hollis Street at 40th Street intersection (#25) to extend beyond the available storage for the southbound and eastbound left-turn movements in the Cumulative Condition, and the addition of traffic from either project Option A or Option B would exacerbate the vehicle queue spillback. Based on the significance criteria, this would result in a significant secondary impact. (S)

Mitigation Measure TRANS-4e: Along with implementation of TRANS-1a, the applicant shall coordinate with the City to extend the eastbound left-turn pocket on 40th Street at Hollis Street to provide at least 200 feet of vehicle storage and adjust the traffic signal timings to accommodate changed travel patterns in the Cumulative Condition. (LTS)

45th Street Impacts. The City of Emeryville Pedestrian and Bicycle Plan designates 45th Street, west of San Pablo Avenue (analysis segment F), as a bicycle boulevard. Traffic volumes on 45th Street, west of San Pablo Avenue, currently exceed the desired level for a bicycle boulevard based on guidance provided in the City's Pedestrian and Bicycle Plan. Near-Term and Cumulative Condition development is projected to further increase traffic, in addition to traffic from the project. This is considered a significant impact.

Impact TRANS-5: The addition of project traffic to 45th Street, west of San Pablo Avenue (analysis segment F), a designated bicycle boulevard, under Near-Term and Cumulative Conditions could increase traffic volumes by more than 2 percent on a roadway where volumes already exceed the volume threshold for a bicycle boulevard. This impact would occur with either Option A or Option B and is considered a significant impact. (S)

Mitigation Measure TRANS-5: Implement Mitigation Measure TRANS-2 to reduce this impact to 45th Street, west of San Pablo Avenue, in the Near-Term and Cumulative Conditions to a less-than-significant level. (LTS)

53rd Street Impacts. The City of Emeryville Pedestrian and Bicycle Plan designates 53rd Street, west of San Pablo Avenue (analysis segment H), as a bicycle boulevard. Traffic volumes on 53rd Street, west of San Pablo Avenue, exceed the desired level for a bicycle boulevard based on guidance provided in the City's Pedestrian and Bicycle Plan. Under Near-Term and Cumulative with Project Conditions, future traffic from new development (especially buildout of the Novartis campus) in conjunction with traffic from the project would increase traffic on this corridor exceeding desired levels for a bicycle boulevard. This is considered a significant impact.

Impact TRANS-6: The addition of project traffic to 53rd Street, west of San Pablo Avenue (analysis segment H), a designated bicycle boulevard, under Near-Term and Cumulative Conditions could increase traffic volumes by more than 2 percent on a roadway where volumes already exceed the volume threshold for a bicycle boulevard. This impact would occur with either Option A or Option B and is considered a significant impact. (S)

> Mitigation Measure TRANS-6: Implement Mitigation Measure TRANS-3 to reduce this impact to 53rd Street, west of San Pablo Avenue, under Near-Term and Cumulative with Project Conditions to a less-than-significant level. (LTS)

With implementation of TRANS-1 (install traffic calming and traffic diversion measures on Horton Street), the level of project traffic diverted to 53rd Street west of San Pablo Avenue would increase by less than 2 percent in the Near-Term and Cumulative with Project Conditions, resulting in a less-than-significant impact.

Intersection Impacts. Impacts associated with impacts to intersections in the Near-Term and Cumulative with Project Conditions are described below.

Impact TRANS-7: The Hollis Street/45th Street intersection (#16) is projected to operate at LOS F during the weekday PM peak hour in the Near-Term and Cumulative Conditions and peak hour signal warrants would be satisfied. The addition of project traffic would exacerbate this deficiency, resulting in a significant impact in the Near-Term and Cumulative Condition. The addition of diverted traffic from Mitigation Measure TRANS-1 would also increase vehicle delay and queue spillback at the on Hollis Street/45th Street intersection (#16), and the changed area travel patterns would increase conflicts for bicyclists and pedestrians on the 45th Street bicycle boulevard (analysis segments E, F, and G). (S)

> Mitigation Measure TRANS-7: The project applicant shall install a traffic signal at the Hollis Street/45th Street intersection (#16), including hard-wired signal interconnect to the traffic signal at Park Avenue and Hollis Street, and necessary improvements for transit, bicycle and pedestrian infrastructure at the intersection, including directional curb ramps, bicycle detection, and transit priority (included as part of Mitigation Measures TRANS-1d and TRANS-2). Installation of a traffic signal would reduce this impact to a less-than-significant level and with incorporation of pedestrian, bicycle and transit improvements, would not result in secondary impacts to other travel modes. (LTS)

Impact TRANS-8: At the San Pablo Avenue/40th Street intersection (#27), vehicle queues for some movements are projected to exceed the available storage in the Cumulative with Project Condition. For the southbound left-turn movement, the addition of project traffic to multiple movements at the intersection results in an increase of the southbound left-turn vehicle queue

by more than 50 feet. As this queue is projected to exceed the available capacity prior to the addition of project traffic, this is considered a significant impact. (S)

Mitigation Measure TRANS-8: The City of Emeryville does not have plans to increase the vehicular capacity of the San Pablo Avenue/40th Street intersection (#27). Extending the southbound left-turn pocket vehicle storage was reviewed, but an extension of the southbound left-turn pocket would require the removal or relocation of an existing mid-block pedestrian crossing, which is not recommended. To reduce the impact, there are transit, pedestrian, and bicycle improvements planned in the area that would provide increased travel options through the area, also the project would contribute their fair share to these improvements through the payment of the Transportation Impact Fee, and the City undergoes a regular process of updating traffic signal timings to accommodate changing travel patterns and minimize vehicle queue spillback. However, there is no assurance that the impact would be mitigated to a less-than-significant level. Therefore, this impact is considered significant and unavoidable. (SU)

In the Near-Term and Cumulative Conditions, the addition of project-generated vehicle traffic would further degrade operations of some intersections. Although there is no set level of service policy for vehicles, the City strives to maintain mobility. The project applicant would be required to pay the City's Transportation Impact Fee that would fund multi-modal improvements to the transportation system.

(8) Construction. The assessment of construction activity considered two aspects:

- If construction vehicles (including vehicles removing or delivering fill material, bulldozers, and other heavy machinery) associated with site construction would generate any additional project impacts; and
- If workers required for the construction of the new facilities would generate additional traffic-related impacts.

A construction-related impact could occur if:

- The number of construction vehicles required to prepare the site would equal or exceed the number of automobile trips generated by the project at buildout.
- Construction activity substantially increases hazards or congestion due to a design feature (e.g., sharp curves) or incompatible uses (e.g., farm equipment or construction vehicles).
- The number of workers employed on-site would generate more peak hour trips than those associated with the project.

Based on information received from the project applicant, project construction would occur in four phases, each with different transportation profile, as described below.

Demolition. This phase would occur at the start of the project and is expected to last approximately 15 days with an average of 10 workers per day. Types of equipment that would be present during this phase include approximately four excavators, two loaders and one other miscellaneous vehicle. The daily and peak hour trip generation during this phase is expected to be significantly less than at project buildout. Some of the equipment used in this phase would remain on-site for the next phase, but some would be removed at the end of the phase.

Grading. This phase would occur subsequent to the demolition phase and is expected to last approximately 30 days with an average of 15 workers per day. Approximately 16 large machines would be on site during this phase, with some remaining from the prior phase. It is expected that equipment would be brought to the site at the beginning of the phase and would remain on-site until no longer needed. During this phase, it is expected that approximately 7,000 cubic yards of fill would be imported to the site. This level of material equates to between 350 and 440 roundtrip truck trips during the grading phase. Based on the current construction schedule, the grading phase is expected to occur over a four week period, but with the import of material occurring over a portion of that time. If all import of fill was condensed to a five-working-day period, this would equate to between 70 to 90 inbound and 70 to 90 outbound truck trips. Considering the passenger car equivalency,[15] this equates to 350 to 450 total truck trips a day for a week of the grading phase. This level of truck traffic in combination with potential worker traffic is less than the project at buildout.

Services Installation. This phase would occur subsequent to the grading phase and is expected to last approximately 40 days with an average of 14 workers per day. Four pieces of heavy equipment are expected during this phase. The daily and peak hour trip generation during this phase is expected to be significantly less than at project buildout.

Building. The building phase of the project is expected to last approximately 520 days with an average of 175 workers on-site on a typical day. Sixteen pieces of heavy equipment are expected during this phase, with most arriving at the beginning of the phase and remaining on-site until no longer needed. In addition to the trips made by workers on the site, there is expected activity related to material deliveries, inspections and other activities. The daily and peak hour trip generation during the building phase is expected to be less than at project buildout considering worker trips and other activities.

Although the level of vehicle trip generation on a daily and peak hour basis, when considering truck trips in passenger-car-equivalents, during the construction phase is expected to be less than the project at buildout, slow moving construction vehicles could impede through traffic on roadways that connect to the site and construction workers could park on the street where there is limited parking availability.

Potential transportation system impacts during the construction phase of the proposed project include the potential to disrupt traffic flows on area roadways. Additional impacts may result during the construction phase of the proposed project, when there are heavy-duty construction vehicles sharing the roadway with normal vehicle traffic, creating potential conflicts between incompatible uses. Construction impacts would be temporary in nature; however, this impact is considered potentially significant.

Impact TRANS-9: Construction activities associated with the proposed project will have temporary adverse impacts on vehicular, bicycle, and pedestrian circulation and access. (S)

[15] Converting truck-trips to passenger-car-equivalents accounts for the slow moving nature of trucks, including the additional acceleration and deceleration time and additional physical space a large truck occupies as compared to a passenger car. For this analysis, each truck trip was assumed to be 2.5 passenger vehicle trips.

Mitigation Measures TRANS-9: Although construction impacts are expected to be temporary, development of a construction management plan would reduce the potential for construction vehicle conflicts with other roadway users. The plan should include:

- Project staging plan to maximize on-site storage of materials and equipment;
- A set of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak hours; lane closure schedule and process; signs, cones, and other warning devices for drivers; and designation of construction access routes;
- Permitted construction hours;
- Location of construction staging;
- Identification of parking areas for construction employees, site visitors, and inspectors, including on-site locations and along the project frontage on Sherwin Avenue and Horton Street;
- Provisions for street sweeping to remove construction related debris on public streets; and
- Provisions for pavement maintenance where increased heavy vehicle traffic has the potential to degrade the pavement. (LTS)

Implementation of the construction management plan would reduce temporary construction impacts to a less-than-significant level.

(9) Bicycle and Pedestrian Facility Impacts. Although the addition of vehicle traffic to the roadway system would not appreciably change delay at intersections experienced by bicyclists, transit vehicles or passenger vehicles, it would contribute to the need to develop a multi-modal transportation system that serves all modes of travel. The project applicant would be required to pay the City's Transportation Impact Fee that would fund multi-modal improvements to the transportation system. However, the fee program does not fully cover the cost of improvements identified in the City of Emeryville Pedestrian and Bicycle Plan and additional improvements may be necessary to mitigate project specific impacts as described below.

Potential project impacts to designated bicycle boulevards previously in this section were identified and discussed for the Existing with Project, Near-Term with Project, and Cumulative with Project Conditions. No other impacts to bicycle and pedestrian facilities associated with the project have been identified.

(10) Alameda County Transportation Commission Roadway Analysis. A separate analysis of regional roadways is required to comply with requirements of the Alameda County Transportation Commission (Alameda CTC). The Alameda CTC requires the analysis of project impacts to Metropolitan Transportation System (MTS) roadways identified in the Congestion Management Plan (CMP) for development projects that would generate more than 100 PM peak hour trips. As shown in Table IV.C-7, the proposed project would generate more than 100 PM peak hour trips.

Alameda CTC Roadway Analysis Study Area. Freeway and surface street segments in Emeryville that were analyzed include:

- I-80 (2 segments)
- 40th Street (4 segments)

- San Pablo Avenue (SR-123) (4 segments)
- Stanford Avenue/Powell Street (5 segments)

Traffic Forecasts. Fehr & Peers used the Alameda Countywide Travel Demand Model to forecast 2025 and 2040 traffic volumes on the MTS roadway system. The forecasts for the MTS system differ from the intersection forecasts previously discussed in the following aspects:

- The regional model does not include some minor streets in Emeryville, potentially overstating traffic volumes on the roadways included in the model.
- The MTS roadway analysis reports the outputs of the Alameda CTC model directly on a roadway segment level.

The results of the Alameda CTC model were used to forecast the future conditions for 2025 and 2040. To identify potential impacts associated with the project, project trips were distributed to the MTS roadway segments (including freeways and surface streets) identified above using the project trip distribution described above. The distribution of project trips onto the MTS segments results in the project volumes for 2025 and 2040 shown in Tables IV.C-25 and IV.C-26, respectively.

Analysis Method. Operations of the MTS freeway and surface street segments were assessed based on volume-to-capacity (V/C) ratios. For freeway segments, a per-lane capacity of 2,000 vehicles per hour was used. For surface streets, a per-lane capacity of 800 vehicles per hour was used. These capacities do not reflect additional capacity provided at intersections through turn pockets. Roadway segments with a V/C ratio greater than 1.0 are assigned LOS F.

Analysis Results. The MTS PM Peak hour roadway segment analyses are provided in Table IV.C-25 for the 2025 condition and Table IV.C-26 for the 2040 condition. Results of the analysis indicate that the proposed project would not result in or worsen deficient operations on the MTS roadway segments included in this assessment. Therefore, the impact to the MTS roadway system is less-than-significant.

(11) Site Access, Circulation, and Parking. This section reviews the site design elements for vehicles, pedestrians, bicycles, and emergency vehicles based on the site plans including in Chapter III, Project Description. There are many similarities in design elements between Option A and Option B. Unless otherwise specified, the following discussion applies to both options. Recommendations for circulation and parking revisions are shown in Figure IV.C-18. Project elements were compared to design guidance provided in the Park Avenue District Plan (August 2006), Citywide Design Guidelines (December 2010), and the Pedestrian and Bicycle Plan (May 2012).

Table IV.C-25: 2025 PM Peak Hour CMP Roadway Segment Analysis

Link Location at Segment Limits		# Lanes	No Project Volume	With Project Volume	Percent Increase	V/C Ratio No Project	V/C Ratio With Project	No Project LOS	With Project LOS	Change from LOS E or better to LOS F	LOS F and Change in V/C
Freeway Segments											
I-80 Northbound											
I-580	Powell Street	5	5,413	5,437	0%	0.54	0.54	B	B	-	No
Powell Street	Ashby Street	4	8,861	8,881	0%	1.11	1.11	F	F	-	No
I-80 Southbound											
Ashby Street	Powell Street	4	7,462	7,467	0%	0.93	0.93	E	E	-	No
Powell Street	I-580	3	3,235	3,256	1%	0.54	0.54	B	B	-	No
Arterials											
40th Street Eastbound											
Ohlone Way	Shellmound Street	2	114	137	20%	0.07	0.09	A	A	No	-
Shellmound Street	Horton Street	2	278	301	8%	0.17	0.19	A	A	No	-
Horton Street	Hollis Street	2	227	250	10%	0.14	0.16	A	A	No	-
Hollis Street	San Pablo Avenue	2	1,095	1,122	2%	0.68	0.70	C	C	No	-
40th Street Westbound											
San Pablo Avenue	Hollis Street	2	454	483	6%	0.28	0.30	A	A	No	-
Hollis Street	Horton Street	2	371	386	4%	0.23	0.24	A	A	No	-
Horton Street	Shellmound Street	2	114	127	11%	0.07	0.08	A	A	No	-
Shellmound Street	Ohlone Way	2	278	291	5%	0.17	0.18	A	A	No	-
San Pablo Avenue Northbound											
37th Street	40th Street	3	1,061	1,086	2%	0.44	0.45	B	B	No	-
40th Street	53rd Street	2	1,215	1,238	2%	0.76	0.77	D	D	No	-
53rd Street	Powell/Stanford Avenue	2	1,089	1,093	0%	0.68	0.68	C	C	No	-
Powell/Stanford Avenue	59th Street	2	471	479	2%	0.29	0.30	A	A	No	-
San Pablo Avenue Southbound											
59th Street	Powell/Stanford Avenue	2	987	996	1%	0.62	0.62	C	C	No	-
Powell/Stanford Avenue	53rd Street	2	612	620	1%	0.38	0.39	B	B	No	-
53rd Street	40th Street	2	680	700	3%	0.42	0.44	B	B	No	-
40th Street	37th Street	3	1,489	1,512	2%	0.62	0.63	C	C	No	-
Stanford Avenue/Powell Street Eastbound											
Frontage Road	I-80 NB Ramps	3	854	881	3%	0.36	0.37	B	B	No	-
I-80 NB Ramps	Christie Avenue	5	1,751	1,802	3%	0.44	0.45	B	B	No	-
Christie Avenue	Hollis Street	2	820	848	3%	0.51	0.53	B	B	No	-
Hollis Street	Powell/Stanford Avenue	2	1,147	1,148	0%	0.72	0.72	C	C	No	-
Powell/Stanford Avenue	San Pablo Avenue	2	610	621	2%	0.38	0.39	B	B	No	-

Table IV.C-25: 2025 PM Peak Hour CMP Roadway Segment Analysis

Link Location at Segment Limits		# Lanes	No Project Volume	With Project Volume	Percent Increase	V/C Ratio No Project	V/C Ratio With Project	No Project LOS	With Project LOS	Change from LOS E or better to LOS F	LOS F and Change in V/C
Stanford Avenue/Powell Street Westbound											
San Pablo Avenue	Powell/Stanford Avenue	2	1,262	1,271	1%	0.79	0.79	D	D	No	-
Powell/Stanford Avenue	Hollis Street	2	522	531	2%	0.33	0.33	A	A	No	-
Hollis Street	Christie Avenue	2	1,610	1,633	1%	1.01	1.02	F	F	-	No
Christie Avenue	I-80 NB Ramps	4	1,194	1,224	3%	0.37	0.38	B	B	No	-
I-80 NB Ramps	Frontage Road	3	1,859	1,884	1%	0.77	0.79	D	D	No	-

Source: Fehr & Peers, 2015. *Sherwin-Williams Mixed-Use Development Transportation Impact Analysis*, December.

Table IV.C-26: 2040 PM Peak Hour CMP Roadway Segment Analysis

Link Location at Segment Limits		# Lanes	No Project Volume	With Project Volume	Percent Increase	V/C Ratio No Project	V/C Ratio With Project	No Project LOS	With Project LOS	Change from LOS E or better to LOS F	LOS F and Change in V/C
Freeway Segments											
I-80 Northbound											
I-580	Powell Street	5	5,425	5,449	0%	0.54	0.54	B	B	-	No
Powell Street	Ashby Street	4	8,966	8,986	0%	1.12	1.12	F	F	-	No
I-80 Southbound											
Ashby Street	Powell Street	4	8,104	8,109	0%	1.01	1.01	F	F	-	No
Powell Street	I-580	3	3,693	3,714	1%	0.62	0.62	C	C	-	No
Arterials											
40th Street Eastbound											
Ohlone Way	Shellmound Street	2	188	211	12%	0.12	0.13	A	A	No	-
Shellmound Street	Horton Street	2	403	426	6%	0.25	0.27	A	A	No	-
Horton Street	Hollis Street	2	358	381	6%	0.22	0.24	A	A	No	-
Hollis Street	San Pablo Avenue	2	1,258	1,285	2%	0.79	0.80	D	D	No	-
40th Street Westbound											
San Pablo Avenue	Hollis Street	2	660	689	4%	0.41	0.43	B	B	No	
Hollis Street	Horton Street	2	484	499	3%	0.30	0.31	A	A	No	
Horton Street	Shellmound Street	2	188	201	7%	0.12	0.13	A	A	No	
Shellmound Street	Ohlone Way	2	403	416	3%	0.25	0.26	A	A	No	

Table IV.C-26: 2040 PM Peak Hour CMP Roadway Segment Analysis

Link Location at Segment Limits		# Lanes	No Project Volume	With Project Volume	Percent Increase	V/C Ratio No Project	V/C Ratio With Project	No Project LOS	With Project LOS	Change from LOS E or better to LOS F	LOS F and Change in V/C
San Pablo Avenue Northbound											
37th Street	40th Street	3	1,271	1,296	2%	0.53	0.54	B	B	No	-
40th Street	53rd Street	2	1,374	1,397	2%	0.86	0.87	D	D	No	-
53rd Street	Powell/Stanford Avenue	2	1,262	1,266	0%	0.79	0.79	D	D	No	-
Powell/Stanford Avenue	59th Street	2	1,079	1,087	1%	0.67	0.68	C	C	No	-
San Pablo Avenue Southbound											
59th Street	Powell/Stanford Avenue	2	1,151	1,160	1%	0.72	0.73	C	C	No	-
Powell/Stanford Avenue	53rd Street	2	1,226	1,234	1%	0.77	0.77	D	D	No	-
53rd Street	40th Street	2	1,295	1,315	2%	0.81	0.82	D	D	No	-
40th Street	37th Street	3	2,171	2,194	1%	0.90	0.91	D	E	No	-
Stanford Avenue/Powell Street Eastbound											
Frontage Road	I-80 NB Ramps	3	725	752	4%	0.30	0.31	A	A	No	-
I-80 NB Ramps	Christie Avenue	5	1,949	2,000	3%	0.49	0.50	B	B	No	-
Christie Avenue	Hollis Street	2	1,002	1,030	3%	0.63	0.64	C	C	No	-
Hollis Street	Powell/Stanford Avenue	2	1,226	1,227	0%	0.77	0.77	D	D	No	-
Powell/Stanford Avenue	San Pablo Avenue	2	826	837	1%	0.52	0.52	B	B	No	-
Stanford Avenue/Powell Street Westbound											
San Pablo Avenue	Powell/Stanford Avenue	2	1,381	1,390	1%	0.86	0.87	D	D	No	-
Powell/Stanford Avenue	Hollis Street	2	709	718	1%	0.44	0.45	B	B	No	-
Hollis Street	Christie Avenue	2	1,757	1,780	1%	1.10	1.11	F	F	-	No
Christie Avenue	I-80 NB Ramps	4	1,345	1,375	2%	0.42	0.43	B	B	No	-
I-80 NB Ramps	Frontage Road	3	1,954	1,979	1%	0.81	0.82	D	D	No	-

Source: Fehr & Peers, 2015. *Sherwin-Williams Mixed-Use Development Transportation Impact Analysis*, December.

Site Access and Circulation. Site access and circulation are described below.

Vehicle Access. Primary vehicular access to the site would be provided from a new east-west oriented street constructed between 45th Street and 53rd Street along the 46th Street alignment, and an extension of Hubbard Street north into the site. A driveway serving the Parcel B-1 garage would be provided from Sherwin Avenue between Horton Street and Hubbard Street. Under Option A, a driveway serving the Parcel C-1 garage would also be provided on Sherwin Avenue at Halleck Street. Option B would provide vehicle access to Parcel C-1 from Hubbard Circle. An additional driveway to the Parcel B-1 parking garage and a driveway to the Parcel B-2 parking garage would be provided from 46th Street. The proposed B-1 and B-2 driveways would be aligned, east of Hubbard Circle. Access to the Parcel C-2 garage would be provided from 46th Street where it intersects with Hubbard Circle. Access to the Parcel D garage would be provided from Hubbard Circle, north of 46th Street.

Recommendation 1: Prior to approval, provide to the City design details of the internal garage circulation and interface with the street system.

Operations analysis of the site access intersections as presented in prior report sections generally concludes that side-street stop-control is the appropriate traffic control for intersections along the project frontage. At the Sherwin Avenue/Horton Street intersection, vehicles traveling to or from Sherwin Avenue yield to through traffic on Horton Street. At the Sherwin Avenue/Hubbard Circle intersection, vehicles on Hubbard Street yield to traffic on Sherwin Avenue. At the 46th Street/Horton Street intersection, vehicles turning from 46th Street should yield to travel on Horton Street. Exclusive turn pockets are not recommended at any of the site access locations.

Recommendation 2: Coordinate with the City in regards to recommended traffic control at the site access intersections shown on Figure IV.C-18.

Pedestrian Facilities. Reconstructed sidewalks would be provided along the Sherwin Avenue and Horton Street frontage. Sidewalks would also be constructed on new streets within the project site. Internal pedestrian paths would also be constructed throughout the site to provide connections between the various buildings and open space areas. Although not included as part of this project, the internal sidewalk system would connect to the planned South Bayfront pedestrian bridge, ultimately providing a direct pedestrian connection over the railroad tracks to the South Bayfront area.

General design guidance in the Park Avenue District Plan calls for establishing or maintaining a minimum sidewalk width of 12 feet, with planting areas. Sidewalk encroachments, such as street furniture and landscaping are permitted, but a 6-foot throughway zone on the sidewalk must be provided. These guidelines apply to Horton Street and Sherwin Avenue along the project frontage, as well as new streets in the District.

Proposed sidewalk cross sections are shown in the Preliminary Development Plan Submittal dated January 2015. The following summarizes the key elements shown in the plans and compares them to guidance in the Park Avenue District Plan as well as other City plans.

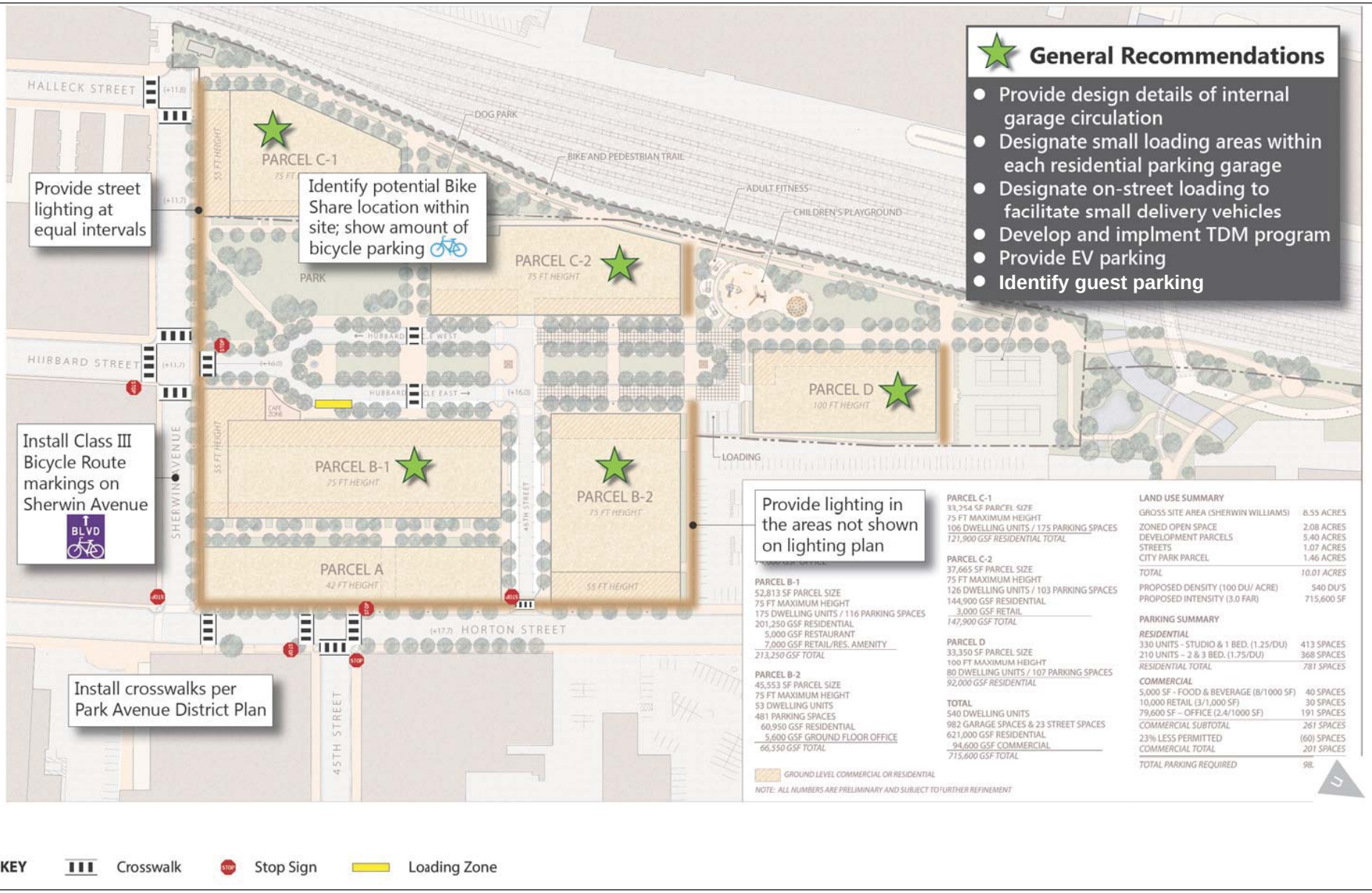

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FIGURE IV.C-18

NOT TO SCALE

Sherwin-Williams Project EIR

Site Plan Recommendations

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Sherwin Avenue along the project frontage would be reconstructed to provide a 15-foot wide sidewalk area, including a 5-foot landscape zone between the curb edge and the pedestrian realm, 8-foot throughway zone, and a 2-foot frontage zone for landscaping between the pedestrian realm and the building frontage.

Horton Street along the project frontage would maintain its existing configuration with 12-foot wide sidewalk area, including a 5-foot landscape zone, and 7-foot throughway zone.
New streets would be constructed within the project site, including the extension of 46th Street and Hubbard Circle. 46th Street would provide a 12-foot wide sidewalk area, including a 5-foot landscape zone, and a 7-foot throughway zone. On Hubbard Circle, a 15-foot wide sidewalk area, including a 5-foot landscape zone, 8-foot throughway zone, and a 2-foot frontage zone would be constructed.
A pedestrian pathway would be constructed between Parcel A and Parcel B-1 within a 35-foot right-of-way. It would provide a 12-foot pedestrian throughway zone, 12-feet of landscaping, with the remaining area for bio-retention. Along the greenway corridor through the site, a 25-foot area would be provided with a 5-foot landscape buffer, 10-foot two-way bicycle path, 4-foot buffer, and 6-foot pedestrian path.

Sidewalk design throughout the site generally meets or exceeds the standards shown in the in the Park Avenue District Plan.

The City's Pedestrian and Bicycle Plan identifies pedestrian improvements at the Sherwin Avenue/ Halleck Street and Sherwin Avenue/Hubbard Street intersections to be implemented in conjunction with development on the Sherwin-Williams site. However, these improvements are not shown on the Preliminary Development Plan Submittal.

> Recommendation 3: As part of the project, install crosswalks on all legs of the Sherwin Avenue/Halleck Street and Sherwin Avenue/Hubbard Street intersections, consistent with the City's Pedestrian and Bicycle Plan.

Bicycle Facilities. The project would provide a Class I bicycle path along the western boundary connecting to planned bicycle facilities in the area. As part of the project, the portion of the Horton Landing Park Paths within the project site would be constructed, ultimately connecting to other planned segments of the local and regional trail system, including the Emeryville Greenway and the Bay Trail. As discussed above, the bicycle path through the site would provide a 10-foot throughway zone with buffers on either side. On-site bicycle facilities provide connections identified in the City's Pedestrian and Bicycle Plan.

Sherwin Avenue is designated as a Class III bicycle facility in the Pedestrian and Bicycle Plan. Class III route markings are not shown on the conceptual roadway cross-section for Sherwin Avenue along the project frontage.

> Recommendation 4: As part of the project, provide Class III bicycle facility roadway markings and signage on Sherwin Avenue.

The City's Pedestrian and Bicycle Plan identifies a potential bike share station within the project boundaries. This element is not shown on the site plans.

Recommendation 5: Identify a location within the site where a bike share station could be located if the City undertakes a bicycle share program.

Other Street Design Elements. With the project, a new east-west oriented street would be constructed along the 46th Street alignment. Hubbard Street would be extended north into the site to create a grid system and provide access to individual parcels. Roadways within the site should have a clear width of 20 feet with no parking on either side of the roadway. If parking is provided, the roadway should be a minimum of 28 feet (parking on one side) or 36 feet (parking on both sides). The proposed roadways shown in the Preliminary Development Plan Submittal meet or exceed these requirements.

Curb extensions are proposed at the 46th Street intersection with Horton Street. Curb extensions reduce the pedestrian crossing distance and can also result in large vehicles entering the opposing travel way to complete the turn. As 46th Street is expected to be a low volume roadway; however, conflicts are expected to be minimal.

The proposed lighting plan was also reviewed. New lighting along Horton Street and Sherwin Avenue is proposed, along with lighting on the interior roadways and pathways. No lighting is shown along the pedestrian pathway between Parcel A and Parcel B-1. No lighting is shown on the north sides of Parcel C-2 or the north side of Parcel D by the proposed sports courts. The proposed spacing of lighting is not consistent along Sherwin Avenue and Horton Street, which can detract from the pedestrian experience. It also appears that there are pedestrian access points to Parcel B-2 on the north side of the parcel, located off of a potential pedestrian path connecting Horton Street to Hubbard Circle, with no lighting shown on this side of the building.

Recommendation 6: If feasible, provide lighting at equal spacing along Sherwin Avenue and Horton Street, and provide pedestrian scale lighting along the pedestrian pathway, north of Parcel C-2 and north of Parcel D. If the area on the northside of Parcel B-2 is intended to provide pedestrian circulation, additional lighting shall be provided in this area.

Modal Conflicts. Pedestrian access to and around the site would be provided by sidewalks, paths and pedestrian crossings of Hubbard Circle and 46th Street. The project would provide sidewalks throughout the development that meet the Park Avenue District Plan design guidelines. There are a number of locations throughout the site where there would be pedestrian crossings of roadways, or potential conflicts between pedestrians and driveways. High visibility crosswalks, such as those with ladder or diagonal striping, should be provided within the site and at driveways to reinforce the desired pedestrian travel routes through the site and to alert drivers to the presence of pedestrians. A mid-block crosswalk should be provided across Hubbard Circle West and East along the pedestrian desire line.

It is not clear from the conceptual site plans where entry doors are proposed for the various parcels. The door swing should be outside of the pedestrian realm.

Recommendation 7: The final site design should show the entry door swing into the public right-of-way to ensure that the 6-foot pedestrian clear zone is maintained along the corridor when doors are open. The building design should orient pedestrians away from the door zone.

Transit Access. Bus transit service within and in the site vicinity is provided by AC Transit and Emery-Go-Round, with the closest bus stops on 40th Street and Hollis Street. To access bus stops on 40th Street, pedestrians can walk along Horton Street. Sidewalks are provided on both sides of Horton Street, connecting the project site to transit on 40th Street. Sidewalks on the west side of Horton Street between Park Avenue and Sherwin Avenue have not yet been improved to the Park Avenue District Plan Standards. This could result in higher levels of pedestrian activity on the sidewalk on the east side of Horton Street and pedestrians crossing at the Sherwin Avenue at Horton Street intersection.

> Recommendation 8: Install curb extensions and a high visibility crosswalk on the north leg of Horton Street at Sherwin Avenue such that pedestrians and transit riders accessing the site from 40th Street do not have to cross two streets to access the site. Implementation of this recommendation may result in the loss of some on-street parking.

To access transit stops on Hollis Street, pedestrian can walk along 45th Street. No crosswalks are provided at the 45th Street at Horton Street intersection.

> Recommendation 9: Install a high visibility crosswalk and curb ramps on the north leg of Horton Street at 45th Street to improve pedestrian access to transit. Implementation of this recommendation may result in the loss of some on-street parking.

The project would be subject to an annual assessment to fund the operations of the Emery-Go-Round service, which is required of all commercial entities including for-rent residential projects of more than three units. Although the project is expected to increase transit ridership in the area, annual contributions will also be made to fund transit service in the area.

Delivery Vehicle Access. The City of Emeryville Code also outlines off-street loading zone requirements for a variety of uses, as detailed in Table 9-4.409 of the Emeryville Planning Regulations (Ordinance No 13-001) Adopted February 5, 2013 and updated in October 2015. For multi-family projects with between 50 and 149 units, one small loading zone is required. For multi-family projects with between 150 and 300 units, two small loading zones are required. Each additional 300 units or fraction of one-half or more thereof requires a medium loading zone. Office uses between 25,000 and 100,000 square feet should provide one medium loading zone. For commercial uses between 10,000 square feet and 20,000 square feet, one medium loading zone is required. This requirement results in a potential of three medium zones and two small loading zones. However, it is expected that loading zones could be shared between the various site uses.

Four loading zones are shown on the site plan on Hubbard Circle East between Parcels B-2 and D. It is not clear if these loading areas are intended to be shared between all parcels, as it does not provide convenient delivery access to Parcels C-1, C-2, B-1 or A. It is also expected that many deliveries to future retail or office establishments would occur through smaller delivery trucks, such as Federal Express or UPS trucks, and these trucks might prefer to use an on-street loading area to minimize delivery time.

> Recommendation 10: Provide small loading areas within each of the residential garages to facilitate move-in/move-out operations.

Recommendation 11: Designate an on-street loading zone on Hubbard Circle to facilitate small deliveries within the site.

Parking. Parking recommendations are described below.

Parking Area Design. Insufficient details are provided to evaluate the parking design elements within the proposed parking garages. As the final plans are developed for these areas, the parking design should conform to design guidelines provided in Section 9-4.406 of the City's Planning Regulations. Generally, parking aisle widths should be 24 feet wide for perpendicular parking and parking stall lengths should be a minimum of 18 feet. City of Emeryville Planning Regulations requires parking stalls adjacent to a wall be one foot wider than a standard stall.

Vehicle Parking Requirements. The project proposes to provide approximately 982 garage parking spaces under Option A and 929 garage parking spaces under Option B. A credit of one vehicle space for every four motorcycle spaces is available. On-street parking is permitted on Sherwin Avenue and Horton Street and is proposed on new roadways within the site. Although on-street parking is permitted in the area, available parking supplies are limited around the site during a typical weekday afternoon and may not be available for new project residents or patrons.

The City's off-street parking requirements, as contained in Section 9-4.406 of the City's Planning Regulations, reflect the expected peak parking demands for various uses. Both residential and commercial projects are allowed the flexibility to provide 33 percent less parking than the peak demand and up to 10 percent more than the peak demand. Additionally, locally serving uses[16] of less than 5,000 square feet are not required to provide off-street parking and the first 1,500 square feet of each commercial use is exempt. For residential uses, parking requirements are based on the number of units. Results of the parking assessment, presented in Table IV.C-27, indicates that the project could be required to provide between 598 and 983 parking spaces, which would be provided under both Option A and Option B.

Recommendation 12: Prepare and implement transportation demand management and parking demand management plans for the project, potentially including the following strategies:

- Provide time limits on the commercial parking supplies not used by employees to encourage parking turnover for commercial patrons.
- Provide information to new residents about the availability of transit and bicycle facilities in the area.
- Monitor building parking demand as the commercial spaces become occupied and implement additional transportation demand management strategies if needed to manage area parking supplies.
- Designate car share pods within the site.
- Designate an on-site transportation coordinator.

[16] "Local-serving" is defined as "having a market area generally not exceeding one mile in radius" (Section 9-8.212(g) of the Emeryville Municipal Code.

Table IV.C-27: City Code Automobile Parking Requirements

Land Use	Size	Base Requirement	Reductions Per Code	Base Off Street Parking Requirement
Retail	10,000 square feet (sf)	3 spaces per 1,000 sf	First 1,500 sq. ft. exempted (Section 9-4.404)	26
Restaurant	5,000 sf	8 spaces per 1,000 sf	First 1,500 sq. ft. exempted (Section 9-4.404)	28
Office	79,600	2.4 spaces per 1,000 sf		191
			Total	245
			33% Less than Demand	**164**
			10% More than Demand	**270**
Residential				
Resident	540	1.0 per unit		540
Guest	540	0.20 per unit		108
			Total	**648**
			33% Less Demand	**434**
			10% More than Demand	**713**
			Site Total	**598 to 983**

Source: City of Emeryville Zoning Ordinance; Fehr & Peers, 2015.

The project is required to equip at least 3 percent of the residential parking supplies with electric vehicle charging infrastructure.

> Recommendation 13: The parking garage designs should support the provision of electric vehicle charging infrastructure.

Bicycle Parking Requirements. Short-term and long-term bicycle parking is required for the project. Based on current City Code, one short-term bike parking space is required per every 10 required vehicle parking spaces, with a minimum of at least two bicycle parking spaces for the commercial portion of the project. Long-term bicycle spaces are required at the same rate. This requirement results in 25 short-term and 25 long-term bicycle parking spaces for the commercial portion of the project. Residential uses are required to provide one short-term space for every four visitor vehicle spaces and one long-term space for each unit.

> Recommendation 14: The final site plan should identify the amount and location where bicycle parking would be provided throughout the site. Similar projects in the Berkeley/Emeryville area have experienced bicycle parking demand greater than the available supply as some residents have multiple bicycles in each unit. Overflow bicycle parking areas should also be identified.

The proposed dog park within the site has the potential to attract dog owners from the surrounding community. Although many dog park visitors will walk to the site, some may drive.

> Recommendation 15: Identify guest and patron parking supplies within the final site plans.

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D. AIR QUALITY

This section has been prepared using the methodologies and assumptions contained in the Bay Area Air Quality Management District's (BAAQMD) *Air Quality CEQA Guidelines*[1]. In keeping with these guidelines, this section describes existing air quality and the regulatory framework for air quality and describes the potential effects of the project on air quality, including the effects of project construction and operational traffic on regional pollutant levels and health risks. Mitigation measures to reduce potentially significant air quality impacts are identified, where appropriate.

1. Setting

This section describes existing air quality conditions in the City of Emeryville, beginning with a discussion of typical air pollutant types and sources, health effects, and climatology relating to air quality.

a. Air Pollutants and Health Effects. Both State and federal governments have established health-based Ambient Air Quality Standards (AAQS) for six criteria air pollutants:[2] carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead (Pb), and suspended particulate matter (PM). In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety. Long-term exposure to elevated levels of criteria pollutants may result in adverse health effects. However, emission thresholds established by an air district are used to manage total regional emissions within an air basin based on the air basin's attainment status for criteria pollutants. These emission thresholds were established for individual projects that would contribute to regional emissions and pollutant concentrations and could adversely affect or delay the projected attainment target year for certain criteria pollutants.

Because of the conservative nature of the thresholds and the basin-wide context of individual project emissions, there is no direct correlation between a single project and localized air quality-related health effects. One individual project that generates emissions exceeding a threshold does not necessarily result in adverse health effects for residents in the project vicinity. This condition is especially true for criteria pollutants, with regional effects, such as ozone precursors like nitrogen oxides (NO_x) and reactive organic gases (ROG).

Occupants of facilities such as schools, day care centers, parks and playgrounds, hospitals, and nursing and convalescent homes are considered to be more sensitive than the general public to air pollutants because these population groups have increased susceptibility to respiratory disease. Persons engaged in strenuous work or exercise also have increased sensitivity to poor air quality. Residential areas are considered more sensitive to air quality conditions, compared to commercial and industrial areas, because people generally spend longer periods of time at their residences, with greater associated exposure to ambient air quality conditions. Recreational uses are also considered sensitive compared to commercial and industrial uses due to greater exposure to ambient air quality conditions associated with exercise.

[1] Bay Area Air Quality Management District, 2011. *CEQA Air Quality Guidelines*. May.

[2] Criteria pollutants are defined as those pollutants for which the federal and State governments have established ambient air quality standards, or criteria, for outdoor concentrations in order to protect public health.

Air pollutants and their health effects, and other air pollution-related considerations are summarized in Table IV.D-1 and are described in more detail below.

Table IV.D-1: Sources and Health Effects of Air Pollutants

Pollutants	Sources	Primary Effects
Carbon Monoxide (CO)	• Incomplete combustion of fuels and other carbon-containing substances, such as motor exhaust. • Natural events, such as decomposition of organic matter.	• Reduced tolerance for exercise. • Impairment of mental function. • Impairment of fetal development. • Death at high levels of exposure. • Aggravation of some heart diseases (angina).
Nitrogen Dioxide (NO_2)	• Motor vehicle exhaust. • High temperature stationary combustion. • Atmospheric reactions.	• Aggravation of respiratory illness. • Reduced visibility. • Reduced plant growth. • Formation of acid rain.
Ozone (O_3)	• Atmospheric reaction of organic gases with nitrogen oxides in sunlight.	• Aggravation of respiratory and cardiovascular diseases. • Irritation of eyes. • Impairment of cardiopulmonary function. • Plant leaf injury.
Lead (Pb)	• Contaminated soil.	• Impairment of blood functions and nerve construction. • Behavioral and hearing problems in children.
Suspended Particulate Matter ($PM_{2.5}$ and PM_{10})	• Stationary combustion of solid fuels. • Construction activities. • Industrial processes. • Atmospheric chemical reactions.	• Reduced lung function. • Aggravation of the effects of gaseous pollutants. • Aggravation of respiratory and cardiorespiratory diseases. • Increased cough and chest discomfort. • Soiling. • Reduced visibility.
Sulfur Dioxide (SO_2)	• Combustion of sulfur-containing fossil fuels. • Smelting of sulfur-bearing metal ores. • Industrial processes.	• Aggravation of respiratory diseases (asthma, emphysema). • Reduced lung function. • Irritation of eyes. • Reduced visibility. • Plant injury. • Deterioration of metals, textiles, leather, finishes, coatings, etc.

Source: California Air Resources Board, 2012.

(1) Ozone. Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving ROG and NO_x. The main sources of ROG and NO_x, often referred to as ozone precursors, are combustion processes (including combustion in motor vehicle engines) and the evaporation of solvents, paints, and fuels. In the Bay Area, automobiles are the single largest source of ozone precursors. Ozone is referred to as a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production through the photochemical reaction process. Ozone causes eye irritation, airway constriction, and shortness of breath and can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

(2) Carbon Monoxide. CO is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicles. While CO transport is limited, it disperses with distance from the source under normal meteorological condi-

tions. However, under certain extreme meteorological conditions, CO concentrations near congested roadways or intersections may reach unhealthful levels that adversely affect local sensitive receptors (e.g., residents, schoolchildren, the elderly, and hospital patients). Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service (LOS) or with extremely high traffic volumes. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, and fatigue, impair central nervous system function, and induce angina (chest pain) in persons with serious heart disease. Extremely high levels of CO, such as those generated when a vehicle is running in an unventilated garage, can be fatal.

(3) Particulate Matter. Particulate matter is a class of air pollutants that consists of heterogeneous solid and liquid airborne particles from manmade and natural sources. Particulate matter is categorized in two size ranges: PM_{10} for particles less than 10 microns in diameter and $PM_{2.5}$ for particles less than 2.5 microns in diameter. In the Bay Area, motor vehicles generate about half of the air basin's particulates, through tailpipe emissions as well as brake pad and tire wear. Wood burning in fireplaces and stoves, industrial facilities, and ground-disturbing activities such as construction are other sources of fine particulates. These fine particulates are small enough to be inhaled into the deepest parts of the human lung and can cause adverse health effects. According to the California Air Resources Board (ARB), studies in the United States and elsewhere have demonstrated a strong link between elevated particulate levels and premature deaths, hospital admissions, emergency room visits, and asthma attacks. Studies of children's health in California have demonstrated that particle pollution may significantly reduce lung function growth in children. The ARB also reports that Statewide attainment of particulate matter standards could prevent thousands of premature deaths, lower hospital admissions for cardiovascular and respiratory disease and asthma-related emergency room visits, and avoid hundreds of thousands of episodes of respiratory illness in California.[3]

(4) Nitrogen Dioxide. NO_2 is a reddish brown gas that is a byproduct of combustion processes. Automobiles and industrial operations are the main sources of NO_2. Aside from its contribution to ozone formation, NO_2 also contributes to other pollution problems, including a high concentration of fine particulate matter, poor visibility, and acid deposition. NO_2 may be visible as a coloring component on high pollution days, especially in conjunction with high ozone levels. NO_2 decreases lung function and may reduce resistance to infection. On January 22, 2010, the U.S. Environmental Protection Agency (U.S. EPA) strengthened the health-based National Ambient Air Quality Standards (NAAQS) for NO_2.

(5) Sulfur Dioxide. SO_2 is a colorless acidic gas with a strong odor. It is produced by the combustion of sulfur-containing fuels such as oil, coal, and diesel. SO_2 has the potential to damage materials and can cause health effects at high concentrations. It can irritate lung tissue and increase the risk of acute and chronic respiratory disease.[4] SO_2 also reduces visibility and the level of sunlight at the ground surface.

(6) Lead. Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources.

[3] California Air Resources Board, 2011. *Fact Sheets*. Website: www.arb.ca.gov/htm/fslist.htm#Health.pdf (accessed March 18, 2014). October.

[4] Bay Area Air Quality Management District, 2011, op. cit.

As a result of the phase-out of leaded gasoline, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery factories.

Twenty years ago, mobile sources were the main contributor to ambient lead concentrations in the air. In the early 1970s, the U.S. EPA established national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. The U.S. EPA banned the use of leaded gasoline in highway vehicles in December 1995. As a result of the U.S. EPA's regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector and overall levels of lead in the air decreased dramatically.

(7) Odors. Odors are also an important element of local air quality conditions. Specific activities can raise concerns related to odors on the part of nearby neighbors. Major sources of odors include restaurants and manufacturing plants. Odor producers near the project site include industrial facilities. The BAAQMD provided historical odor complaints in the project site area, as follows; confirmed auto parts cleaner in 2011 and unconfirmed construction diesel in 2012. Additional unconfirmed odor complaints for the City of Emeryville, without a site location provided, between January 2012 and March 2015 are described as burning plastic (2012), refinery odors (2012), natural gas (2012), and sweet perfume (2014). While sources that generate objectionable odors must comply with air quality regulations, the public's sensitivity to locally-produced odors often exceeds regulatory thresholds.

(8) Toxic Air Contaminants. In addition to the criteria pollutants discussed above, Toxic Air Contaminants (TACs) are another group of pollutants of concern. Some examples of TACs include: benzene, butadiene, formaldehyde, and hydrogen sulfide. Potential human health effects of TACs include birth defects, neurological damage, cancer, and death. There are hundreds of different types of TACs with varying degrees of toxicity. Individual TACs vary greatly in the health risk they present; at a given level of exposure, one TAC may pose a hazard that is many times greater than another.

TACs do not have ambient air quality standards, but are regulated by the U.S. EPA, ARB, and the BAAQMD. In 1998, ARB identified particulate matter from diesel-fueled engines as a TAC. ARB has completed a risk management process that identified potential cancer risks for a range of activities and land uses that are characterized by use of diesel-fueled engines.[5] High-volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic (distribution centers, truck stops) were identified as posing the highest risk to adjacent receptors. Other facilities associated with increased risk include warehouse distribution centers, large retail or industrial facilities, high volume transit centers, and schools with a high volume of bus traffic. Health risks from TACs are a function of both concentration and duration of exposure.

Monitoring data and emissions inventories of TACs help the BAAQMD determine potential health risks to Bay Area residents. Ambient monitoring concentrations of TACs indicate that pollutants

[5] California Air Resources Board, 2000. Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles. October.

emitted primarily from motor vehicles (1,3-butadiene and benzene) account for slightly over 50 percent of the average calculated cancer risk from ambient air in the Bay Area.[6]

Unlike TACs emitted from industrial and other stationary sources noted above, most diesel particulate matter is emitted from mobile sources – primarily "off-road" sources such as construction and mining equipment, agricultural equipment, and truck-mounted refrigeration units, as well as trucks and buses traveling on freeways and local roadways.

Agricultural and mining equipment is not commonly used in urban parts of the Bay Area, while construction equipment typically operates for a limited time at various locations. As a result, the readily identifiable locations where diesel particulate matter is emitted in the City of Emeryville include high-traffic roadways and other areas with substantial truck traffic.

Although not specifically monitored, recent studies indicate that exposure to diesel particulate matter may contribute significantly to a cancer risk (a risk of approximately 500 to 700 in 1,000,000) that is greater than all other measured TACs combined.[7] The technology for reducing diesel particulate matter emissions from heavy-duty trucks is well established, and both State and federal agencies are moving aggressively to regulate engines and emission control systems to reduce and remediate diesel emissions. ARB anticipates that by 2020 average Statewide diesel particulate matter concentrations will decrease by 85 percent from levels in 2000 with full implementation of the Diesel Risk Reduction Plan, meaning that the Statewide health risk from diesel particulate matter is expected to decrease from 540 cancer cases in 1,000,000 to 21.5 cancer cases in 1,000,000. It is likely that the Bay Area cancer risk from diesel particulate matter will decrease by a similar factor by 2020.

(9) High Volume Roadways. Air pollutant exposures and their associated health burdens vary considerably within places in relation to sources of air pollution. Motor vehicle traffic is perhaps the most important source of intra-urban spatial variation in air pollution concentrations. Air quality research consistently demonstrates that pollutant levels are substantially higher near freeways and busy roadways, and human health studies have consistently demonstrated that children living within 100 to 200 meters (328 to 656 feet) of freeways or busy roadways have reduced lung function and higher rates of respiratory disease.[8] At present, it is not possible to attribute the effects of roadway proximity on non-cancer health effects to one or more specific vehicle types or vehicle pollutants. Engine exhaust, from diesel, gasoline, and other combustion engines, is a complex mixture of particles and gases, with collective and individual toxicological characteristics. Four epidemiological studies on roadways and health impacts conducted in California populations are described below.

- In Oakland, California, children at schools in proximity to high volume roadways experienced more asthma and bronchitis symptoms.[9]

[6] Bay Area Air Quality Management District, 2007. *Toxic Air Contaminant Control Program Annual Report 2003 Volume 1.* August.

[7] Ibid.

[8] California Environmental Protection Agency and Air Resources Board, 2005. *Air Quality and Land Use Handbook: A Community Health Perspective.* Website: www.arb.ca.gov/ch/handbook.pdf (accessed March 18, 2015).

[9] Ibid.

- In a low-income population of children in San Diego, children with asthma living within 550 feet of roadways with high traffic volumes were more likely than those residing near roadways with lower traffic volumes to have more medical care visits for asthma.[10]
- In a study of Southern California school children, residence location within 75 meters (246 feet) of a major road was associated with an increased risk of asthma.[11]
- In a study conducted in 12 Southern California communities, children who lived within 500 feet of a freeway had reduced growth in lung capacity compared to those living greater than 1,500 feet from a freeway.[12]

Federal and State regulations control air pollutants at the regional level by limiting vehicle and stationary source emissions. However, air quality regulations have not limited the use of vehicles and generally have not protected sensitive land uses from air pollution "hot spots" associated with proximity to transportation facilities.

b. Existing Climate and Air Quality. Regional air quality, local climate, and air quality in the East Bay Area region, and air pollution climatology are described below.

(1) Local Climate and Topography. The City of Emeryville is located in the San Francisco Bay Area, a large shallow air basin ringed by hills that taper into a number of sheltered valleys around the perimeter. Two primary atmospheric outlets exist. One is through the strait known as the Golden Gate, a direct outlet to the Pacific Ocean. The second extends to the northeast, along the west delta region of the Sacramento and San Joaquin Rivers.

Air quality is a function of both local climate and local sources of air pollution. Air quality is the balance of the natural dispersal capacity of the atmosphere and emissions of air pollutants from human uses of the environment. Westerly and northwesterly winds are most common in Emeryville, reflecting the orientation of the Bay and the San Francisco Peninsula. Winds from these directions carry pollutants released by autos and factories from upwind areas of the Bay Area toward Emeryville, particularly during the summer months. Winds are lightest on average in the fall and winter at which time local pollutants tend to build up in the atmosphere.

Pollutants can be diluted by mixing in the atmosphere both vertically and horizontally. Vertical mixing and dilution of pollutants are often suppressed by inversion conditions, when a warm layer of air traps cooler air close to the surface. During the summer, inversions are generally elevated above ground level, but are present over 90 percent of both the morning and afternoon hours. In winter, surface-based inversions dominate in the morning hours, but frequently dissipate by afternoon.

The result of the wind distribution in Emeryville is that the area is ventilated in the daytime with corresponding good air quality, but the air stagnation at night creates a strong potential for elevated pollution levels. The air draining toward the Bay and through the elevated terrain east of the Bay Area

[10] Ibid.

[11] McConnell, R., et al., 2006. Traffic, Susceptibility, and Childhood Asthma. In *Environmental Health Perspectives*.

[12] Gauderman, W. J., 2005. " The Effect of Air Pollution on Lung Development From 10 to 18 Years of Age." In *New England Journal of Medicine*. March 2005.

is relatively unpolluted. The air pollution in Emeryville is among the lowest in the San Francisco Bay Area Basin, due largely to good ventilation and less influx of pollutants from upwind sources.

(2) Air Monitoring Data. The City of Emeryville is within the jurisdiction of the BAAQMD, which has seen air quality conditions improve significantly since the BAAQMD was created in 1955. Ambient concentrations of air pollutants and the number of days during which the region exceeds air quality standards have fallen dramatically. Exceedances of air quality standards occur primarily during meteorological conditions conducive to high pollution levels, such as cold, windless winter nights or hot, sunny summer afternoons.

Pollutant monitoring results for the years 2012 to 2014 at the 1100 21st Street, Oakland ambient air quality monitoring station (the closest monitoring station to the project site), are shown in Table IV.D-2; for pollutants with data not available in Oakland, the Rumrill Boulevard monitoring station in San Pablo was used. Pollutant monitoring results shown in Table IV.D-2 indicate that air quality in the project area has generally been good.

Based on the monitoring data, air pollutant levels in the project vicinity were well below all applicable State and National Ambient Air Quality Standards for gaseous criteria pollutants including ozone, CO, SO_2, and NO_2. In general, levels of criteria pollutants were in the middle of the distribution of the Bay Area air monitoring sites. NO_2 and SO_2 levels are similar to levels at other suburban locations within the Bay Area. The same was true for SO_2 emissions, with measurements similar to San Pablo and Livermore. CO measurements in Emeryville were among the highest in the Bay Area but still well below State and federal standards. SO_2 and NO_2 standards were not exceeded in this area during the three-year period. No violations of the State or federal $PM_{2.5}$ or PM_{10} standards were recorded during the three-year period. The Bay Area is an unclassified area for the federal PM_{10} standard.

Ozone levels, measured by peak concentrations and the number of days over the State 1-hour standards, have declined substantially as a result of aggressive programs by the BAAQMD and other regional, State, and federal agencies. The reduction of peak concentrations represents progress in improving public health. As indicated in the monitoring results, exceedances of the State's 1-hour standard have not been recorded from 2012 to 2014. In addition, exceedances of the State or federal 8-hour standards have not occurred during the 3-year period. For ozone, levels at the 1100 21st Street monitoring station were among the lowest monitoring values the Bay Area.

c. Regulatory Framework. Air quality standards, the regulatory framework, and State and federal attainment status are discussed below.

The BAAQMD is primarily responsible for regulating air pollution emissions from stationary sources (e.g., factories) and indirect sources (e.g., traffic associated with new development), as well as for monitoring ambient pollutant concentrations. The BAAQMD's jurisdiction encompasses seven counties – Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa – and portions of Solano and Sonoma Counties. The ARB and the U.S. EPA regulate direct emissions from motor vehicles.

Table IV.D-2: Ambient Air Quality at the 1100 21st Street, Oakland, Monitoring Station

Pollutant	Standard	2012	2013	2014
Carbon Monoxide (CO)				
Maximum 1-hour concentration (ppm)		2.8	3.8	2.8
Number of days exceeded:	State: > 20 ppm	0	0	0
	Federal: > 35 ppm	0	0	0
Maximum 8-hour concentration (ppm)		2.4	ND	ND
Number of days exceeded:	State: > 9 ppm	0	0	0
	Federal: > 9 ppm	0	0	0
Ozone (O_3)				
Maximum 1-hour concentration (ppm)		0.061	0.071	0.072
Number of days exceeded:	State: > 0.09 ppm	0	0	0
Maximum 8-hour concentration (ppm)		0.049	0.060	0.059
Number of days exceeded:	State: > 0.07 ppm	0	0	0
	Federal: > 0.08 ppm	0	0	0
Coarse Particulates (PM_{10}) [a]				
Maximum 24-hour concentration ($\mu g/m^3$)		45.1 [a]	45.6 [a]	44.3 [a]
Number of days exceeded:	State: > 50 $\mu g/m^3$	0	0	0
	Federal: > 150 $\mu g/m^3$	0	0	0
Annual arithmetic average concentration ($\mu g/m^3$)		15.2	17.8	16.0
Exceeded for the year:	State: > 20 $\mu g/m^3$	ND	No	No
	Federal: > 50 $\mu g/m^3$	ND	No	No
Fine Particulates ($PM_{2.5}$)				
Maximum 24-hour concentration ($\mu g/m^3$)		12.4	42.7	38.8
Number of days exceeded:	Federal: > 35 $\mu g/m^3$	0	2	1
Annual arithmetic average concentration ($\mu g/m^3$)		ND	ND	12.7
Exceeded for the year:	State: > 12 $\mu g/m^3$	ND	Yes	No
	Federal: > 15 $\mu g/m^3$	ND	No	No
Nitrogen Dioxide (NO_2)				
Maximum 1-hour concentration (ppm)		0.053	0.064	0.056
Number of days exceeded:	State: > 0.250 ppm	0	0	0
Annual arithmetic average concentration (ppm)		0.015	0.016	0.014
Exceeded for the year:	Federal: > 0.053 ppm	0	0	0
Sulfur Dioxide (SO_2)				
Maximum 1-hour concentration (ppm)		0.068	0.050	0.017
Number of days exceeded:	State: > 0.25 ppm	0	0	0
Maximum 3-hour concentration (ppm)		ND	ND	ND
Number of days exceeded:	Federal: > 0.50 ppm	ND	ND	ND
Maximum 24-hour concentration (ppm)		0.008	0.007	0.003
Number of days exceeded:	State: > 0.04 ppm	0	0	0
	Federal: > 0.14 ppm	0	0	0
Annual arithmetic average concentration (ppm)		ND	ND	ND
Exceeded for the year:	Federal: > 0.030 ppm	ND	ND	ND

[a] Results based on readings at the San Pablo – Rumrill Boulevard monitoring station.
ppm = parts per million
$\mu g/m^3$ = micrograms per cubic meter
ND = No data. There was insufficient (or no) data to determine the value.

Source: ARB, EPA, and BAAQMD, 2015.

(1) United States Environmental Protection Agency. At the federal level, the U.S. EPA has been charged with implementing national air quality programs. U.S. EPA's air quality mandates are drawn primarily from the Federal Clean Air Act (FCAA), which was enacted in 1963. The FCAA was amended in 1970, 1977, and 1990.

The FCAA required U.S. EPA to establish primary and secondary NAAQS and required each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The FCAA Amendments of 1990 added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. U.S. EPA has responsibility to review all state SIPs to determine conformity with the mandates of the FCAAA and determine if implementation will achieve air quality goals. If the U.S. EPA determines a SIP to be inadequate, a Federal Implementation Plan (FIP) may be prepared for the nonattainment area, which imposes additional control measures. Failure to submit an approvable SIP or to implement the plan within the mandated timeframe may result in sanctions on transportation funding and stationary air pollution sources in the air basin.

The U.S. EPA is also required to develop National Emission Standards for Hazardous Air Pollutants, which are defined as those which may reasonably be anticipated to result in increased deaths or serious illness and which are not already regulated. An independent science advisory board reviews the health and exposure analyses conducted by the U.S. EPA on suspected hazardous pollutants prior to regulatory development.

(2) California Air Resources Board. The ARB is the agency responsible for the coordination and oversight of State and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA), adopted in 1988. The CCAA requires that all air districts in the State achieve and maintain the California Ambient Air Quality Standards (CAAQS) by the earliest practical date. The CCAA specifies that districts should focus on reducing the emissions from transportation and air-wide emission sources, and provides districts with the authority to regulate indirect sources.

ARB is also primarily responsible for developing and implementing air pollution control plans to achieve and maintain the NAAQS. ARB is primarily responsible for Statewide pollution sources and produces a major part of the SIP. Local air districts provide additional strategies for sources under their jurisdiction. ARB combines this data and submits the completed SIP to U.S. EPA.

Other ARB duties include monitoring air quality (in conjunction with air monitoring networks maintained by air pollution control and air quality management districts), establishing CAAQS (which are more stringent than the NAAQS), determining and updating area designations and maps, and setting emissions standards for mobile sources, consumer products, small utility engines, and off-road vehicles. The ARB's Diesel Risk Reduction Plan[13] is intended to substantially reduce diesel particulate matter emissions and associated health risks through introduction of ultra-low-sulfur diesel fuel – a step already implemented – and cleaner-burning diesel engines.

[13] California Air Resources Board, 2000. Stationary Source Division and Mobile Source Control Division. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles.* October.

Because of the robust evidence relating proximity to roadways and a range of non-cancer and cancer health effects, the ARB also created guidance for avoiding air quality conflicts in land use planning in its Air Quality and Land Use Handbook: A Community Health Perspective.[14] In its guidance, the ARB advises that new sensitive uses (e.g. residences, schools, day care centers, playgrounds, and hospitals) not be located within 500 feet of a freeway or urban roads carrying 100,000 vehicles per day, or within 1,000 feet of a distribution center (warehouse) that accommodates more than 100 trucks or more than 90 refrigerator trucks per day.

ARB guidance suggests that the use of these guidelines be customized for individual land use decisions, and take into account the context of development projects. The Air Quality and Land Use Handbook specifically states that these recommendations are advisory and acknowledges that land use agencies must balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.

(3) National and State Ambient Air Quality Standards. Pursuant to the FCAA of 1970, the U.S. EPA established NAAQS. The NAAQS were established for major pollutants, termed "criteria" pollutants. Criteria pollutants are defined as those pollutants for which the federal and State governments have established ambient air quality standards, or criteria, for outdoor concentrations in order to protect public health.

Both the U.S. EPA and the ARB have established ambient air quality standards for the following common pollutants: CO, O_3, NO_2, SO_2, Pb, and PM. In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety. These ambient air quality standards are levels of contaminants that avoid specific adverse health effects associated with each pollutant.

Federal standards include both primary and secondary standards. Primary standards establish limits to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, and damage to animals, crops, vegetation, and buildings.[15] State and federal standards for the criteria air pollutants are listed in Table IV.D-3.

[14] California Environmental Protection Agency and Air Resources Board, 2005. op. cit.

[15] U.S. Environmental Protection Agency, 2011. Website: www.epa.gov/air/criteria.html (Accessed March 18, 2015). October.

Table IV.D-3: State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]		Federal Standards[b]		
		Concentration[c]	Method[d]	Primary[c,e]	Secondary[c,f]	Method[g]
Ozone (O_3)	1-Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	–	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.07 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		
Respirable Particulate Matter (PM_{10})	24-Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		–		
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	No Separate State Standard		35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12 µg/m^3	15 µg/m^3	
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry (NDIR)
	1-Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		–	–	
Nitrogen Dioxide (NO_2)[h]	Annual Arithmetic Mean	0.03 ppm (57 µg/m^3)	Gas Phase Chemilumi-nescence	53 ppb (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemilumi-nescence
	1-Hour	0.18 ppm (339 µg/m^3)		100 ppb (188 µg/m^3)	None	
Lead (Pb)[j,k]	30-day average	1.5 µg/m^3	Atomic Absorption	–	–	High-Volume Sampler and Atomic Absorption
	Calendar Quarter	–		1.5 µg/m^3 (for certain areas)[k]	Same as Primary Standard	
	Rolling 3-month average[i]	–		0.15 µg/m^3		
Sulfur Dioxide (SO_2)[i]	24-Hour	0.04 ppm (105 µg/m^3)	Ultraviolet Fluorescence	0.14 ppm (for certain areas)[i]	–	Ultraviolet Fluorescence; Spectro-photometry (Pararosaniline Method)
	3-Hour	–		–	0.5 ppm (1300 µg/m^3)	
	1-Hour	0.25 ppm (655 µg/m^3)		75 ppb (196 µg/m^3)	–	
	Annual Arithmetic Mean	–		0.030 ppm (for certain areas)[i]	–	
Visibility-Reducing Particles[l]	8-Hour	See footnote a.	Beta Attenuation and Transmittance through Filter Tape	No Federal Standards		
Sulfates	24-Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[j]	24-Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

Table notes included on next page.

[a] California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, suspended particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[b] National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.

[c] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[d] Any equivalent procedure which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

[e] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[f] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[g] Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.

[h] To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national standards are in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national standards to the California standards the units can be converted from ppb to ppm. In this case, the national standards of 53 ppb and 100 ppb are identical to 0.053 ppm and 0.100 ppm, respectively.

[i] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved. Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standards to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

[j] The ARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[k] The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

[l] In 1989, the ARB converted both the general Statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the Statewide and Lake Tahoe Air Basin standards, respectively.

°C = degrees Celsius
ARB = California Air Resources Board
U.S. EPA = United States Environmental Protection Agency
$\mu g/m^3$ = micrograms per cubic meter
mg/m^3 = milligrams per cubic meter
ppm = parts per million
ppb = parts per billion

Source: ARB, 2015.

(4) Bay Area Air Quality Management District. The BAAQMD seeks to attain and maintain air quality conditions in the San Francisco Bay Area Air Basin through a comprehensive program of planning, regulation, enforcement, technical innovation, and education. The clean air strategy includes the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations, and issuance of permits for stationary sources. The BAAQMD also inspects stationary sources and responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by law.

BAAQMD Regulation 7 places general limitations on odorous substances and specific emission limitations on certain odorous compounds.[16] This regulation limits the "discharge of any odorous substance which causes the ambient air at or beyond the property line…to be odorous and to remain odorous after dilution with four parts of odor-free air." The BAAQMD must receive odor complaints from ten or more complainants within a 90-day period in order for the limitations of this regulation to go into effect. If this criterion has been met, an odor violation can be issued by the BAAQMD if a test panel of people can detect an odor in samples collected periodically from the source.

Clean Air Plan. The BAAQMD is responsible for developing a Clean Air Plan[17] which guides the region's air quality planning efforts to attain the CAAQS. The BAAQMD's 2010 Clean Air Plan is the latest Clean Air Plan which contains district-wide control measures to reduce ozone precursor emissions (i.e., ROG and NO_x), particulate matter, and greenhouse gas emissions. The BAAQMD is in the process of updating this plan and will release an updated Clean Air Plan in 2016.

The Bay Area 2010 Clean Air Plan, which was adopted on September 15, 2010 by the BAAQMD's Board of Directors:

- Updates the Bay Area 2005 Ozone Strategy in accordance with the requirements of the CCAA to implement "all feasible measures" to reduce ozone;
- Provides a control strategy to reduce ozone, PM, TACs, and greenhouse gases in a single, integrated plan;
- Reviews progress in improving air quality in recent years; and
- Establishes emission control measures to be adopted or implemented in the 2010 to 2012 timeframe.

BAAQMD CARE Program. The Community Air Risk Evaluation (CARE) program was initiated in 2004 to evaluate and reduce health risks associated with exposures to outdoor TACs in the Bay Area. The program examines TAC emissions from point sources, area sources, and on-road and off-road mobile sources with an emphasis on diesel exhaust, which is a major contributor to airborne health risk in California. The CARE program is an on-going program that encourages community involvement and input. The technical analysis portion of the CARE program is being implemented in three phases that include an assessment of the sources of TAC emissions, modeling and measurement programs to estimate concentrations of TACs, and an assessment of exposures and health risks. Throughout the program, information derived from the technical analyses will be used to focus

[16] Bay Area Air Quality Management District, 1982. *Rules and Regulations, Regulation 7: Odorous Substances.* March.

[17] Bay Area Air Quality Management District, 2010. *Bay Area 2010 Clean Air Plan.* September.

emission reduction measures in areas with high TAC exposures and a high density of sensitive populations. Risk reduction activities associated with the CARE program are focused on the most at-risk communities in the Bay Area. The BAAQMD has identified seven impacted communities; western Alameda County, including Emeryville, has been identified as an affected community.

For commercial and industrial sources, the BAAQMD regulates TACs using a risk-based approach. This approach uses a health risk assessment (HRA) to determine what sources and pollutants to control as well as the degree of control. A HRA is an analysis in which human health exposure to toxic substances is estimated and considered together with information regarding the toxic potency of the substances, in order to provide a quantitative estimate of health risks.[18] As part of ongoing efforts to identify and assess potential health risks to the public, the BAAQMD has collected and compiled air toxics emissions data from industrial and commercial sources of air pollution throughout the Bay Area.

BAAQMD CEQA Air Quality Guidelines. The BAAQMD CEQA Air Quality Guidelines were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process, consistent with CEQA requirements, and include recommended thresholds of significance, mitigation measures, and background air quality information. They also include recommended assessment methodologies for air toxics, odors, and greenhouse gas emissions. In June 2010, the BAAQMD's Board of Directors adopted CEQA thresholds of significance and an update of the CEQA Guidelines. In May 2011, the updated BAAQMD CEQA Air Quality Guidelines[19] were amended to include a risk and hazards threshold for new receptors and modified procedures for assessing impacts related to risk and hazard impacts.

On March 5, 2012, the Alameda County Superior Court issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the thresholds of significance in the BAAQMD CEQA Air Quality Guidelines. The court did not determine whether the thresholds of significance were valid on their merits, but found that the adoption of the thresholds was a project under CEQA. The court issued a writ of mandate ordering the BAAQMD to set aside the thresholds and cease dissemination of them until the BAAQMD complied with CEQA. The Air District has appealed the Alameda County Superior Court's decision. The Court of Appeal of the State of California, First Appellate District, reversed the trial court's decision. The Court of Appeal's decision was appealed to the California Supreme Court, which granted limited review to the question of, under what circumstances, if any, does CEQA require an analysis of how existing environmental conditions will impact future residents or users of a proposed project.[20] The Court reversed the Court of Appeal's judgement and concluded that an analysis of the impact of existing environmental conditions on a project's future residences is generally not required.

[18] In general, a health risk assessment is required if the BAAQMD concludes that projected emissions of a specific air toxic compound from a proposed new or modified source suggests a potential public health risk. Such an assessment generally evaluates chronic, long-term effects, including the increased risk of cancer as a result of exposure to one or more TACs.

[19] Bay Area Air Quality Management District, 2011, op. cit.

[20] Bay Area Air Quality Management District, 2015. *Updated CEQA Guidelines*. Website: www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Updated-CEQA-Guidelines.aspx (accessed May 20, 2015).

In view of the court's order, the BAAQMD is no longer recommending that the thresholds of significance from the 2011 CEQA Air Quality Guidelines be used as a generally applicable measure of a project's significant air quality impacts.[21] Following the court's order, the BAAQMD released revised CEQA Air Quality Guidelines in May of 2012 that include guidance on calculating air pollution emissions, obtaining information regarding the health impacts of air pollutants, and identifying potential mitigation measures, and which set aside the significance thresholds. The BAAQMD recognizes that lead agencies may rely on the previously recommended Thresholds of Significance contained in its CEQA Guidelines adopted in 1999.[22]

The court's invalidation of BAAQMD's thresholds presents uncertainty for current project applicants and local agencies regarding proper evaluation of air quality and greenhouse gas emissions in CEQA documents. Although reliance on the 2011 thresholds is no longer required, local agencies still have a duty to evaluate impacts related to air quality and greenhouse gas emissions. In addition, CEQA grants local agencies broad discretion to develop their own thresholds of significance, or to rely on thresholds previously adopted or recommended by other public agencies or experts so long as they are supported by substantial evidence.[23] Accordingly, the City of Emeryville is using the BAAQMD's 2011 thresholds to evaluate project impacts in order to protectively evaluate the potential effects of the project on air quality and the potential effects of the existing air quality conditions to future residents of the project site. The City believes that these protective thresholds are appropriate in the context of the size, scale, and location of the project in close proximity to sensitive residential uses.

The City also notes that the Alameda County Superior Court, in ordering BAAQMD to set aside the thresholds, did not address the merits of the science or evidence supporting the thresholds. The City finds that, despite the court ruling, the science and reasoning contained in the BAAQMD 2011 CEQA Air Quality Guidelines provide the latest state-of-the-art guidance available. For that reason, substantial evidence supports continued use of the BAAQMD 2011 CEQA Air Quality Guidelines.

(5) Attainment Status Designations. The ARB and U.S. EPA designate areas of the State as attainment, nonattainment, or unclassified for each State or federal standard, respectively. An "attainment" designation for an area signifies that pollutant concentrations did not violate pollutant standards. A "nonattainment" designation indicates that a pollutant concentration violated the standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. An "unclassified" designation signifies that data do not support either an attainment or nonattainment status. The State also divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

Table IV.D-4 provides a summary of the attainment status for the San Francisco Bay Area with respect to national and State ambient air quality standards.

[21] Bay Area Air Quality Management District, 2014. Website: baaqmd.gov/Divisions/Planning-and-Research/CEQA-Guidelines (accessed May 20, 2015).

[22] Bay Area Air Quality Management District, 1999. *BAAQMD CEQA Guidelines, Assessing the Air Quality Impacts of Projects and Plans.* December.

[23] Public Resources Code Section 21082: 14 Cal. Code Regs. And Section 15064.7, 15064.4 (addressing greenhouse gas emissions impacts). See also *Citizens for Responsible and Equitable Environmental Development v. City of Chula Vista* (2011) 197 Cal.App.4th.327 (upholding city's greenhouse gas emissions threshold based on Assembly Bill 32 compliance).

Table IV.D-4: Bay Area Attainment Status

Pollutant	Averaging Time	California Standards [a]		National Standards [b]	
		Concentration	Attainment Status	Concentration [c,j]	Attainment Status
Ozone (O_3)	8-Hour	0.070 ppm (137µg/m^3)	Nonattainment [h]	0.075 ppm	Nonattainment [d]
	1-Hour	0.09 ppm (180 µg/m^3)	Nonattainment	Not Applicable	Not Applicable [e]
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	Attainment	9 ppm (10 mg/m^3)	Attainment [f]
	1-Hour	20 ppm (23 mg/m^3)	Attainment	35 ppm (40 mg/m^3)	Attainment
Nitrogen Dioxide (NO_2)	1-Hour	0.18 ppm (339 µg/m^3)	Attainment	0.100 ppm	Unclassified
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	Not Applicable	0.053 ppm (100 µg/m^3)	Attainment
Sulfur Dioxide (SO_2)	24-Hour	0.04 ppm (105 µg/m^3)	Attainment	0.14 ppm (365 µg/m^3)	Attainment
	1-Hour	0.25 ppm (655 µg/m^3)	Attainment	Not Applicable	Attainment
	Annual Arithmetic Mean	Not Applicable	Not Applicable	0.030 ppm (80 µg/m^3)	Attainment
Particulate Matter Coarse (PM_{10})	Annual Arithmetic Mean	20 µg/m^3	Nonattainment [g]	Not Applicable	Not Applicable
	24-Hour	50 µg/m^3	Nonattainment	150 µg/m^3	Unclassified
Particulate Matter Fine ($PM_{2.5}$)	Annual Arithmetic Mean	12 µg/m^3	Nonattainment [g]	12 µg/m^3	Attainment
	24-Hour	Not Applicable	Not Applicable	35 µg/m^3 [1]	Nonattainment

[a] California standards for ozone, carbon monoxide (except in the Lake Tahoe air basin), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, suspended particulate matter – PM_{10}, and visibility reducing particles are values that are not to be exceeded. The standards for sulfates, Lake Tahoe carbon monoxide, lead, hydrogen sulfide, and vinyl chloride are not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour or 24-hour average (i.e., all standards except for lead and the PM_{10} annual standard), then some measurements may be excluded. In particular, measurements are excluded that ARB determines would occur less than once per year on average. The Lake Tahoe CO standard is 6.0 ppm, a level one-third the national standard and two-thirds the State standard.

[b] National standards shown are the "primary standards" designed to protect public health. National standards other than for ozone, particulates and those based on annual averages are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent 3-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than 1. The 8-hour ozone standard is attained when the 3-year average of the fourth highest daily concentrations is 0.075 ppm (75 ppb) or less. The 24-hour PM_{10} standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than 150 µg/m^3. The 24-hour $PM_{2.5}$ standard is attained when the 3-year average of 98th percentiles is less than 35 µg/m^3. Except for the national particulate standards, annual standards are met if the annual average falls below the standard at every site. The national annual particulate standard for PM_{10} is met if the 3-year average falls below the standard at every site. The annual $PM_{2.5}$ standard is met if the 3-year average of annual averages spatially-averaged across officially-designed clusters of sites falls below the standard.

[c] National air quality standards are set by U.S. EPA at levels determined to be protective of public health with an adequate margin of safety.

[d] In June 2004, the Bay Area was designated as a marginal nonattainment area for the national 8-hour ozone standard. U.S. EPA lowered the national 8-hour ozone standard from 0.80 to 0.75 PPM (i.e., 75 ppb), effective May 27, 2008.

[e] The national 1-hour ozone standard was revoked by U.S. EPA on June 15, 2005.

Table notes continued on next page.

[f] In April 1998, the Bay Area was redesignated to attainment for the national 8-hour carbon monoxide standard.
[g] In June 2002, ARB established new annual standards for $PM_{2.5}$ and PM_{10}.
[h] The 8-hour California ozone standard was approved by the ARB on April 28, 2005 and became effective on May 17, 2006.
[i] U.S EPA lowered the 24-hour $PM_{2.5}$ standard from 65 $\mu g/m^3$ to 35 $\mu g/m^3$ in 2006. The U.S. EPA designated the Bay Area as nonattainment for the 35 $\mu g/m^3$ $PM_{2.5}$ standard on October 8, 2009. The effective date of the designation is December 14, 2009, and the BAAQMD has 3 years to develop a plan called a State Implementation Plan (SIP) that demonstrates how the Bay Area will achieve the revised standard by 2014. The SIP for the new standard must be submitted to the U.S. EPA by December 14, 2012.
[j] To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010).

Lead (Pb) is not listed in the above table because it has been in attainment since the 1980s.
ppm = parts per million
mg/m^3 = milligrams per cubic meter
$\mu g/m^3$ = micrograms per cubic meter

Source: Bay Area Air Quality Management District, Bay Area Attainment Status, 2015.

(6) City of Emeryville General Plan. The Conservation, Safety, and Noise Element of the Emeryville General Plan includes the following policies related to air quality.[24]

- Policy CSN-P-1: Air quality will be maintained and improved by requiring project mitigation, such as Transportation Demand Management (TDM) techniques, where significant air quality impacts are identified.
- Policy CSN-P-2: The City will budget for clean fuels and vehicles in the City's long range capital expenditure plans, to replace and improve the existing fleet of gasoline and diesel powered vehicles.
- Policy CSN-P-3: The City will coordinate air quality planning efforts with local, regional, and state agencies and support the Bay Area Air Quality Management District's efforts to monitor and control air pollutants from stationary sources.
- Policy CSN-P-4: Dust abatement actions are required for all new construction and redevelopment projects.
- Policy CSN-P-5: All large construction projects are required to reduce diesel exhaust emissions through use of alternate fuels and/or control devices.
- Policy CSN-P-6: Adequate buffer distances shall be provided between offensive odor sources and sensitive receptors, such as schools, hospitals, and community centers.

2. Impacts and Mitigation Measures

This section provides an assessment of the potential adverse impacts related to air quality associated with the proposed project. It begins with the criteria of significance, which establish the thresholds for determining whether an impact is significant. The latter part of this section identifies potential project related impacts. Where potentially significant impacts are identified, mitigation measures are recommended.

[24] Emeryville, City of, 2009. *Emeryville General Plan*. October. Amended April 2, 2013.

a. Significance Criteria. Consistent with guidance from the BAAMQD and Appendix G of the CEQA Guidelines, the proposed project would have a significant impact on the environment related to air quality if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
    - Contributing to CO concentrations exceeding the State ambient air quality standards;
    - Generating construction emissions of ROG, NO_x or $PM_{2.5}$ greater than 54 pounds per day or PM_{10} exhaust emissions greater than 82 pounds per day; or
    - Generation of operational emissions of ROG, NO_x or $PM_{2.5}$ of greater than 10 tons per year or 54 pounds per day, or PM_{10} emissions greater than 15 tons per year or 82 pounds per day.
- Result in a cumulatively considerable net increase of any nonattainment pollutant;
- Expose sensitive receptors to substantial pollutant concentrations by:
    - Individually exposing sensitive receptors (such as residential areas) to toxic air contaminants in excess of the following thresholds:
        - Increased cancer risk greater than 10.0 in one million;
        - Increased non-cancer risk of greater than 1.0 on the hazard index (chronic or acute);
        - Ambient $PM_{2.5}$ increase greater than 0.3 $\mu g/m^3$ annual average; or
    - Cumulatively exposing sensitive receptors to toxic air contaminants in excess of the following thresholds:
        - Increased cancer risk greater than 100.0 in one million;
        - Increased non-cancer risk of greater than 10.0 on the hazard index (chronic);
        - Ambient $PM_{2.5}$ increase greater than 0.8 $\mu g/m^3$ annual average; or
- Create objectionable odors affecting a substantial number of people.

The emission thresholds were established based on the attainment status of the air basin for specific criteria pollutants. Because the concentration standards were set at a level that protects public health with an adequate margin of safety according to the U.S. EPA, these emission thresholds are regarded as protective.

b. Project Impacts. The following discussion describes potential impacts related to air quality that would result from implementation of the proposed project. The applicant is proposing two potential development options; the potential impacts and mitigation measures discussed below would apply for both of the potential development options (Option A and Option B), unless indicated otherwise.

(1) Consistency with BAAQMD's Clean Air Plan. The applicable air quality plan is the BAAQMD 2010 Clean Air Plan, which was adopted on September 15, 2010. The Clean Air Plan is a comprehensive plan to improve Bay Area air quality and protect public health. The Clean Air Plan defines a control strategy to reduce emissions and ambient concentrations of air pollutants; safeguard public health by reducing exposure to air pollutants that pose the greatest health risk, with an emphasis on protecting the communities most heavily affected by air pollution; and reduce green-house gas emissions to protect the climate. Consistency with the Clean Air Plan can be determined if the project does the following: 1) supports the goals of the Clean Air Plan; 2) includes applicable control measures from the Clean Air Plan; and 3) would not disrupt or hinder implementation of any control measures from the Clean Air Plan. The project's consistency with these objectives is described below.

Clean Air Plan Goals. The primary goals of the 2010 Bay Area Clean Air Plan are to: attain air quality standards; reduce population exposure to air pollutants and protect public health in the Bay Area; and reduce greenhouse gas emissions and protect the climate.

The BAAQMD has established significance thresholds for project construction and operational impacts at a level at which the cumulative impact of exceeding these thresholds would have an adverse impact on the region's attainment of air quality standards. The health and hazards thresholds were established to help protect public health. As discussed in this section of the EIR and as described in the project description, the project would result in less-than-significant construction and operational emission impacts; and the project contains numerous features that would benefit regional air quality and support the goals of the Clean Air Plan, including: a development plan that would minimize commuting trips by providing mixed-use residential parcels; provision of electric vehicle parking spaces; and provision of bicycle sharing, bike lockers, and increased bicycle access. In addition, with implementation of Mitigation Measure AIR-2 discussed below, long-term operation of the project would not significantly affect exposure to air pollutants. Overall, the project supports the goals of the Clean Air Plan.

Clean Air Plan Control Measures. The control strategies of the 2010 Clean Air Plan include measures in the following categories: stationary source measures, mobile source measures, and transportation control measures. The Clean Air Plan also identifies two additional subcategories of control measures, which are land use and local impact measures and energy and climate measures. Stationary source measures in the Clean Air Plan such as those to control emissions from metal melting facilities, cement kilns, refineries, and glass furnaces are not applicable to the proposed project. Therefore, consistency with the Clean Air Plan stationary source measures is not evaluated further in this EIR.

Transportation and Mobile Source Control Measures. The transportation control measures in the 2010 Clean Air Plan are designed to reduce emissions from motor vehicles by reducing vehicle trips and vehicle miles traveled (VMT) in addition to vehicle idling and traffic congestion.

Mobile Source Control Measure (MSM) A-2, Zero Emission Vehicles and Plug-In Hybrids, supports State and federal efforts to expand the use of zero emission vehicles and plug-in hybrids by promotion of these vehicles through local business and local governments. The proposed project would include electric vehicle charging stations for 5 percent of nonresidential parking. Therefore, the project is consistent with MSM A-2.

Transportation Control Measure (TCM) C-1, Voluntary Employer-Based Trip Reduction Programs, supports voluntary efforts by Bay Area employers to encourage their employees to use alternative commute modes, such as transit, ride sharing, bicycling, walking, or telecommuting. The purpose of this measure is to reduce ozone precursor emissions by reducing commute trips, VMT, and vehicle emissions. In addition this measure is intended to reduce emissions of particulate matter, air toxics, and greenhouse gases. The project does include on-site pedestrian and bicycle facilities, which would make it easy for employees to move around the site by foot or bike. As a mixed-use project, the project would provide a variety of on-site uses, which would allow for trip linking and promote pedestrian and bicycle trips, reducing vehicle trips. These provisions would reduce vehicle trips generated by the project and would be consistent with TCM C-1 of the Clean Air Plan.

TCM D-1, Bicycle Access and Facilities Improvements, is intended to expand bicycle facilities serving employment sites, educational and cultural facilities, residential areas, shopping districts, and other activity centers. Typical improvements include bike lanes, routes, paths, and bicycle parking facilities. This measure is designed to reduce ozone precursor emissions by sustaining and improving bicycle access and facilities throughout the Bay Area. The proposed project would provide bicycle access to and through the project site, provide bicycle sharing, and bike lockers. The project's objectives are to extend the Emeryville Greenway through the site and to add bike facilities on Sherwin Avenue to improve bicycle and pedestrian access and safety.

In general the project would promote the BAAQMD's initiatives to reduce driving and increase the use of alternate means of transportation. Therefore, the project would include the applicable Transportation demand and control measures from the BAAQMD's Clean Air Plan and would be consistent with TCM D-1 of the Clean Air Plan.

Land Use and Local Impact Measures. The BAAQMD's 2010 Clean Air Plan includes Land Use and Local Impacts Measures to achieve the following: ensure that planned growth is focused in a way that protects people from exposure to air pollution associated with stationary and mobile sources of emissions; and promote mixed-use, compact development to reduce motor vehicle travel and emissions. The proposed project includes mixed-use residential development parcels which is consistent with the intent of the land use local impact measures and therefore conforms to the Clean Air Plan Land Use and Local Impact Measures.

Energy Measures. The Clean Air Plan also includes Energy and Climate Control Measures (ECM), which are designed to reduce ambient concentrations of criteria pollutants and reduce emissions of CO_2. Implementation of these measures is intended to promote energy conservation and efficiency in buildings throughout the community, promote renewable forms of energy production, reduce the "urban heat island" effect by increasing reflectivity of roofs and parking lots, and promote the planting of (low volatile organic compound emitting) trees to reduce biogenic emissions, lower air temperatures, provide shade, and absorb air pollutants.

ECM-1, Energy Efficiency, is intended to promote energy efficiency through education and outreach, and technical assistance to local governments, and provide incentives for increased energy efficiency in schools. The purpose of this measure is to reduce the amount of energy consumed in the Bay Area. This measure is not specifically applicable to the proposed project; however the project intends to

obtain LEED ND Certified (Silver) status, and therefore, it would promote green building and energy efficiency.[25] As such, the project would not conflict with this measure.

ECM-2, Renewable Energy, is intended to promote the incorporation of renewable energy sources into new development and foster innovative renewable energy projects through the provision of incentives to reduce energy consumption. The proposed project would pursue LEED ND Certification (Silver) thus requiring, at minimum, to be a Certified Green Building through an IAF-accredited body (e.g., International Code Council's 2012 International Green Construction Code (IgCC)) and to meet minimum building energy performance according to the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) minimum requirements for energy-efficient design, standard ASHRAE 90.1-2010.[26] Therefore, the project would not conflict with ECM-2.

ECM-3, Urban Heat Island Mitigation, includes regulatory and educational approaches to reduce the "urban heat island" phenomenon by increasing the application of "cool roofing" and "cool paving" technologies. The implementation actions of this measure are not specifically applicable to the proposed project, as they specifically relate to future building code standards and other regulatory actions. However, the proposed project would develop 90,605 square feet of open space, and would have parking enclosed in garages which would limit the need for asphalt paving. Therefore, the proposed project would not conflict with ECM-3.

ECM-4, Shade Tree Planting, includes voluntary approaches to reduce the heat island effect by increasing shading in urban and suburban areas through the planting of trees. The implementation actions do not specifically relate to the proposed project as the actions are intended to be implemented by local governments and the BAAQMD through regulations. However, the project would increase the number of trees on the site in the publicly accessible open space and on Sherwin Avenue. Therefore, the proposed project would not conflict with ECM-4.

Clean Air Plan Implementation. As discussed above, the proposed project would generally implement the applicable measures outlined in the Clean Air Plan, including transportation control measures and energy measures. Therefore, the project would not disrupt or hinder implementation of a control measure from the Clean Air Plan and ultimately would be consistent with the Clean Air Plan.

(2) Violate Any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation. According to the BAAQMD CEQA Air Quality Guidelines, to meet air quality standards for operational-related criteria air pollutant and air precursor impacts, the project must not:

[25] U.S. Green Building Council, 2015. LEED ND: Plan V4. *Certified Green Building.* Website: www.usgbc.org/node/2612911?return=/credits/neighborhood-development-plan/v4/green-infrastructure-%26-buildings (accessed: March 19, 2015).

[26] American Society of Heating and Air-Conditioning Engineers, 2013. Standard 90.1-2013: *Energy Standard for Buildings Except Low-Rise Residential Buildings.* Website: www.ashrae.org/resources--publications/bookstore/standard-90-1 (accessed March 19, 2015).

- Contribute to CO concentrations exceeding the State ambient air quality standards;
- Generate average daily construction emissions of ROG, NO_x or $PM_{2.5}$ (exhaust) greater than 54 pounds per day or PM_{10} exhaust emissions greater than 82 pounds per day; or
- Generate average operational emissions of ROG, NO_x or $PM_{2.5}$ of greater than 10 tons per year or 54 pounds per day or PM_{10} emissions greater than 15 tons per year or 82 pounds per day.

Localized CO Impacts. Emissions and ambient concentrations of CO have decreased dramatically in the Bay Area with the introduction of the catalytic converter in 1975. No exceedances of the State or federal CO standards have been recorded at Bay Area monitoring stations since 1991. The May 2011 BAAQMD CEQA Air Quality Guidelines include recommended methodologies for quantifying concentrations of localized CO levels for proposed transportation projects. Guidance is not provided for evaluation of development projects. However, in order to provide a comprehensive analysis of the potential impacts of the project on air pollution, a screening level analysis using guidance from the BAAQMD 2011 CEQA Air Quality Guidelines was performed. The screening methodology provides a conservative indication of whether the implementation of a proposed project would result in significant CO emissions. According to the BAAQMD's 2011 CEQA Air Quality Guidelines, a proposed project would result in a less-than-significant impact to localized CO concentrations if the following screening criteria are met:

- The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, and the regional transportation plan and local congestion management agency plans.
- Project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
- The project would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, or below-grade roadway).

The proposed project would not conflict with standards established by the Alameda County Transportation Commission (Alameda CTC) for designated roads and highways, a regional transportation plan, or other agency plans. The proposed project would also not be located in an area where vertical or horizontal mixing is substantially limited. The project would generate 540 PM peak hour trips and the traffic volumes on roadways in the vicinity of the project site are well below 44,000 vehicles per hour. As shown in Table IV.D-2, background CO concentrations are substantially below State and federal standards. Therefore, as the proposed project would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour and the project would not result in localized CO concentrations that exceed State or federal standards, localized CO impacts would be less than significant.

Construction Period Impacts. During construction, short-term degradation of air quality may occur due to the release of particulate matter emissions generated by excavation, grading, hauling, and other activities. Emissions from construction equipment are also anticipated and would include CO, NO_x, ROG, directly-emitted particulate matter ($PM_{2.5}$ and PM_{10}), and TACs such as diesel exhaust particulate matter.

Impact AIR-1: Construction of the proposed project would generate air pollutant emissions that could violate air quality standards. (S)

Site preparation and project construction would involve building reconstruction, clearing, grading, and building activities. Construction-related effects on air quality from the proposed project would be greatest during the site preparation phase because most engine emissions are associated with the excavation, handling, and transport of soils on the site. If not properly controlled, these activities would temporarily generate PM_{10}, $PM_{2.5}$, and to a lesser extent CO, SO_2, NO_x, and volatile organic compounds. Sources of fugitive dust would include disturbed soils at the construction sites and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit dirt and mud on local streets, which could be an additional source of airborne dust after it dries. PM_{10} emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM_{10} emissions would depend on soil moisture, the silt content of soil, wind speed, and the amount of operating equipment. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site. These emissions would be temporary and limited to the immediate area surrounding the construction sites.

The BAAQMD has established standard measures for reducing fugitive dust emissions ($PM_{2.5}$ and PM_{10}) including the use of water or other soil stabilizers. Project construction plans include use of such dust suppression measures. With the implementation of standard construction measures such as frequent watering (e.g., two times per day at a minimum), fugitive dust emissions from construction activities would not result in adverse air quality impacts.[27]

The proposed construction schedule for the project is estimated to be built in one phase and is estimated to commence in the third quarter of 2016 and the first units would be delivered in the second quarter of 2018, the construction period to final completion would be 32 to 34 months. Construction emissions were estimated for the project using the California Emissions Estimator Model (CalEEMod). Detailed calculations are provided in Appendix C.

The effects of construction activities would be increased dust and locally elevated levels of PM_{10} downwind of construction activity. Construction dust would be generated at levels that could create an annoyance to occupants of nearby properties. As shown in Table IV.D-5, construction emissions would not exceed the BAAQMD's threshold for average daily construction emissions.

Table IV.D-5: Project Construction Emissions in Pounds Per Day

Project Construction	ROG	NO_x	Exhaust $PM_{2.5}$	Total $PM_{2.5}$	Exhaust PM_{10}	Total PM_{10}
Average Daily Emissions	32.0	18.2	0.8	1.6	0.9	3.3
BAAQMD Thresholds	54.0	54.0	54.0	NA	82.0	NA
Exceed Threshold?	No	No	No	NA	No	NA

NA = Not Applicable, the BAAQMD does not have threshold

Source: LSA Associates, Inc., 2015.

[27] Bay Area Air Quality Management District, 2011, op. cit.

Although the project would not exceed the exhaust emission thresholds, the BAAQMD recommends the implementation of Best Management Practices to reduce construction dust impacts to a less-than-significant level. Implementation of Mitigation Measure AIR-1 would require implementation of the BAAQMD's Best Management Practices and additional measures to reduce diesel PM exhaust emissions and other construction pollutants. Implementation of this mitigation measure would reduce construction emissions to a less-than-significant level.

Mitigation Measure AIR-1: Consistent with guidance from the BAAQMD, the following actions shall be required in relevant construction contracts and specifications for the project:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt tracked-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.
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).
- 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.
- Construction equipment idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 2 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.
- All construction equipment shall be maintained and properly tuned in accordance with the manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- The project applicant shall post a publicly visible sign with the telephone number and person to contact at the City of Emeryville regarding dust complaints. This person shall respond to complaints and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.
- All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or a moisture probe.
- All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.
- Vegetative ground cover (e.g., fast-germinating native grass seed) or other plants that offer dust mitigation measures shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established.
- The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. To the extent feasible, activities shall be phased to reduce the amount of disturbed surfaces at any one time.

- All trucks and equipment, including their tires, shall be washed off prior to leaving the site.
- Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than 1 percent.
- The project contractor shall use low volatile organic compound (i.e., ROG) coatings beyond the local requirements (i.e., Regulation 8, Rule 3: Architectural Coatings).
- All construction equipment, diesel trucks, and generators shall be equipped with Best Available Control Technology for emission reductions of NO_x and PM.
- All contractors shall use equipment that meets California ARB's most recent certification standard for off-road heavy duty diesel engines.

Implementation of the above measures would minimize construction emissions to a less-than-significant level. Additionally, application of the above measures would minimize construction-related dust migration off of the construction site to Sherwin Avenue, Holden Street, Horton Street, and 45th Street. Therefore, the live/work studios located on 45th Street and Horton Streets, as well as other residences in the project vicinity, would not be adversely affected. Implementation of Mitigation Measure AIR-1 would reduce residual dust to a less-than-significant level within the project vicinity, including for those units located between 50 feet and 500 feet from the project site. Additionally, because the project would result in less-than-significant emissions as shown in Table IV.D-5, the proposed project would not be expected to have adverse respiratory health effects, including increased asthma episodes, in children or adults during the construction duration.

Operational Emissions. The project would generate long-term air emissions associated with changes in the permanent use of the project site. These long-term emissions are primarily mobile source emissions that would result from vehicle trips associated with the proposed project. Area sources, such as natural gas heaters, landscape equipment, and use of consumer products such as pressurized air canisters would also result in pollutant emissions.

Project Emissions. According to the TIA prepared for the project (see Appendix B), the project is expected to generate approximately 3,610 weekday daily trips which would result in mobile source emissions. Area source emissions associated with the project would include consumer product use, architectural coatings, and the use of landscaping equipment. Emissions associated with the project were calculated using CalEEMod.

The net new daily and annual emissions associated with the project are identified in Table IV.D-6 for ROG, NO_x, PM_{10}, and $PM_{2.5}$. All calculation details are provided in Appendix C. The results indicate the net new project emissions would not exceed the BAAQMD's threshold for ROG, NO_x, $PM_{2.5}$ and PM_{10}; therefore, the proposed project would not have a significant effect on regional air quality or result in a violation of air quality standards.

Table IV.D-6: Project Regional Emissions

Emission Category	Reactive Organic Gases (ROG)	Nitrogen Oxides (NO_x)	PM_{10}	$PM_{2.5}$
Emissions in Pounds Per Day				
Area Source Emissions	27.7	0.5	0.8	0.8
Energy Source	0.2	1.9	0.1	0.1
Mobile Source Emissions	10.5	21.3	0.3	0.3
Total Emissions	**38.4**	**23.7**	**1.3**	**1.2**
BAAQMD Significance Threshold	**54.0**	**54.0**	**82.0**	**54.0**
Exceed?	**No**	**No**	**No**	**No**
Emissions in Tons Per Year				
Area Source Emissions	4.8	0.1	0.02	0.02
Energy Source	0.0	0.3	0.03	0.03
Mobile Source Emissions	1.6	3.4	2.68	0.75
Total Emissions	**6.4**	**3.8**	**2.73**	**0.80**
BAAQMD Significance Threshold	**10.0**	**10.0**	**15.0**	**10.0**
Exceed?	**No**	**No**	**No**	**No**

Source: LSA Associates, Inc., 2015.

The primary emissions associated with the project are regional in nature, meaning that air pollutants are rapidly dispersed on emission or, in the case of vehicle emissions associated with the project; emissions are released in other areas of the air basin. Because the resulting emissions are dispersed rapidly and contribute only a small fraction of the region's air pollution, air quality in the immediate vicinity of the project site would not substantially change compared to existing conditions or the air quality monitoring data reported in Table IV.D-2. The proposed project would not be expected to increase acute asthma episodes in children or adults.

As shown in Table IV.D-6 the primary source of emissions associated with the project are mobile source emissions (except for ROG, which area source emissions are the primary source) generated by resident and customer vehicle trips to and from the project site. Pollutant emissions associated with operation of the project would be a less-than-significant impact.

(3) Result in a cumulatively considerable net increase of any nonattainment pollutant. According to the BAAQMD, regional air pollution is largely a cumulative impact. No single project is sufficient in size to independently create regional nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. Therefore, if daily average or annual emissions of construction- or operational-related criteria air pollutants exceed any applicable threshold established by the BAAQMD or the City of Emeryville, the proposed project would result in a considerable contribution to a cumulatively significant impact.[28]

[28] BAAQMD, 2011,, op. cit.

Additional projects in the City in Emeryville that could result in a future cumulative impacts include but are not limited to the Novartis Master Plan, EmeryStation West and the Emeryville Transit Center, Parc on Powell, EmeryStation Greenway, Pixar Warehouse, Emeryville Center of Community Life, Potential replacement of the Banker Marks building, and the Restoration Hardware 40th/ Hubbard project. These projects are all subject to environmental review and would also need to be consistent with the BAAQMD Clean Air Plan.

As shown in Table IV.D-5 and Table IV.D-6, implementation of the project would not exceed construction or operational thresholds for nonattainment pollutants. Based on the analysis of the project's consistency with the Clean Air Plan, the project would not disrupt or hinder implementation of a control measure from the Clean Air Plan and ultimately would be consistent with the Clean Air Plan. Therefore, the project would not result in a considerable contribution to a cumulatively significant criteria air pollutant impact.

(4) Expose Sensitive Receptors to Substantial Pollutant Concentrations. According to the BAAQMD, a project would result in a significant impact if it would: individually expose sensitive receptors to TACs resulting in an increased cancer risk greater than 10.0 in one million, increased non-cancer risk of greater than 1.0 on the hazard index (chronic or acute), or an annual average ambient $PM_{2.5}$ increase greater than 0.3 $\mu g/m^3$. A significant cumulative impact would occur if the project in combination with other projects located within a 1,000-foot radius of the project site would expose sensitive receptors to TACs resulting in an increased cancer risk greater than 100.0 in one million, an increased non-cancer risk of greater than 10.0 on the hazard index (chronic), or an ambient $PM_{2.5}$ increase greater than 0.8 $\mu g/m^3$ on an annual average basis. This section describes the potential impact on sensitive receptors from construction and operation of the proposed project.

To determine health risks associated with the project to both on and off-site receptors, LSA conducted a health risk assessment (HRA) for this project based on three current guidance documents: 1) the California EPA Air Toxics Hot Spots Program Guidance Manual For Preparation of Health Risk Assessments,[29] 2) The California Air Pollution Control Officers Association (CAPCOA) Health Risk Assessment for Proposed Land Use Projects,[30] and 3) the BAAQMD Recommended Methods for Screening and Modeling Local Risks and Hazards.[31] The BAAQMD document was released in May 2011 with the purpose of assisting lead agencies in conducting a risk and hazard analysis as part of the environmental review process for proposed land use projects. It provides Bay Area-specific guidance on how to screen projects and provides specific inputs for HRA modeling.

Project Construction – Toxic Air Contaminants. The project site is located in an urban area in close proximity to existing residential uses that could be exposed to diesel emission exhaust during the construction period. To estimate the potential cancer risk associated with construction of the proposed project from equipment exhaust (including diesel particulate matter), a dispersion model was used to translate an emission rate from the source location to a concentration at the receptor

[29] California Environmental Protection Agency, 2015. *Air Toxics Hot Spots Program Guidance manual For Preparation of Health Risk Assessments.* March.

[30] California Air Pollution Control Officers Association, 2009. *Health Risk Assessment for Proposed Land Use Projects.* July.

[31] Bay Area Air Quality Management District, 2011. *Recommended Methods for Screening and Modeling Local Risks and Hazards.* May.

location of interest (i.e., nearby residences). Dispersion modeling varies from a simpler, more conservative screening-level analysis to a more complex and refined detailed analysis. This assessment was conducted using ARB's exposure methodology, with the air dispersion modeling performed using the U.S. EPA dispersion model AERMOD. The model provides a detailed estimate of exhaust concentrations based on site and source geometry, source emissions strength, distance from the source to the receptor, and site-specific meteorological data.

Construction Emission Estimation. PM_{10} and $PM_{2.5}$ off-road construction equipment exhaust emissions from the proposed project were calculated using emission factors from the U.S. EPA's off-road engine Tier Standards (code of Federal Regulations Title 40 Part 1039.102) in conjunction with brake horse powers (BHP) by equipment type. On-road mobile source emissions were calculated using the ARB's EMFAC2014 system in conjunction with BHPs identified in CalEEMod. Modeled construction equipment emissions are based on the equipment list provided to LSA by the project applicant that is included in Appendix C. PM_{10} exhaust emissions were used in the model as a surrogate for diesel particulate matter (DPM).

Model Use. To estimate the construction PM_{10} exhaust concentrations, the AERMOD model was used with all regulatory options selected. The model was run using the Oakland Airport meteorological dataset from the years 2009 through 2013. Terrain data from Lakes' WebGIS website was also used to evaluate terrain near the project site. Emissions from construction activities were modeled as an area source encompassing the project site with a release height of 10 feet. Following BAAQMD guidance, concentrations were calculated at 0 feet. The resulting modeled concentrations were then post-processed using OEHHA's 2015 risk guidance document.

The total construction emissions were summed using specific operational assumptions, including hourly and daily equipment usage for each phase of construction, as shown in Appendix C. The total emissions from operations were then modeled using conservative operational conditions to determine an average emission concentration. The resulting concentration represents the maximum exposure concentration to off-site receptors.

Construction Receptor Grid. A survey of the project vicinity indicated that sensitive receptors are located adjacent to the project site. A construction receptor grid was established as part of the modeling effort to capture locations representing existing off-site receptors that may be affected by project construction emissions. The construction grid identifies blocks of nearby receptors that were modeled in the analysis to determine potentially significant impacts using the thresholds identified by the BAAQMD. A grid space sufficient to ensure that nearby residents are adequately assessed was used. The BAAQMD recommends a receptor spacing of between 33 and 82 feet (10 and 25 meters) and heights of 6 feet and 20 feet (2 and 6 meters) when conducting refined modeling.[32] Therefore, in order to conduct a cautious impact analysis that is protective of human health, a receptor spacing of 33 feet (10 meters) or less was used.

Exposure Assumptions. Also called dose-response assessment, exposure assumptions involve the process of characterizing the relationship between exposure to an agent and incidence of an adverse health effect in exposed populations. In a quantitative carcinogenic risk assessment such as this one, the dose-response relationship is expressed in terms of a potency slope that is used to

[32] Ibid.

calculate the probability or risk of cancer associated with an estimated exposure. Cancer potency factors are expressed as the 95th percent upper confidence limit of the slope of the estimated dose-response curve, assuming continuous lifetime exposure to a substance at a dose of 1 milligram per kilogram of body weight per day and commonly expressed in units of inverse dose (i.e., $(mg/kg/day)^{-1}$). It is assumed in cancer risk assessments that risk is directly proportional to dose and that there is no threshold for carcinogenesis. The Office of Environmental Health and Hazard (OEHHA) has compiled cancer potency factors that were used in this risk assessment.

For non-carcinogenic effects, dose-response data developed from animal or human studies are used to develop acute and chronic non-cancer Reference Exposure Levels (RELs). The acute and chronic RELs are defined as the concentration at which no adverse non-cancer adverse health effects are anticipated. The most sensitive health effect is chosen to determine the REL if the chemical affects multiple organ systems. Unlike cancer health effects, non-cancer acute and chronic health effects are generally assumed to have thresholds for adverse effects. In other words, acute or chronic injury from a pollutant will not occur until exposure to that pollutant has reached or exceeded a certain concentration (i.e., threshold). The acute and chronic RELs are intended to be below the threshold for health effects for the general population. The actual threshold for health effects in the general population is generally not known with any precision.

Risk characterization is the final step of risk assessment. Modeled concentrations and public exposure information, which are determined through exposure assessment, are combined with potency factors and RELs that are developed through dose-response assessment.

Cancer Risk. The maximum incremental cancer risk from exposure to TACs was calculated following the guidelines established by OEHHA in March of 2015.[33] As recommended by OEHHA, the breathing rate 95 percentile for each age bin in liters per kilogram per day was used. The exposure frequency was assumed to be 350 days per year.[34] The exposure duration for project construction was assumed to be four years. The inhalation absorption factor was based on the conservative assumption that all pollution would be absorbed, and thus was 1.0. To determine incremental cancer risk, the estimated dose through inhalation was multiplied by the OEHHA-established cancer potency slope factor for DPM, which is 1.1 $(mg/kg/day)^{-1}$.

Analyses conducted by the OEHHA indicate that both the prenatal and postnatal life stages can be, but are not always, much more susceptible to developing cancer than the adult life stage. The analyses also indicate that the age sensitivity factors (ASFs) for these age windows vary by chemical, gender and species. ASFs for prenatal, postnatal and juvenile exposures are complicated by the limited database of chemicals and studies available for analysis, and the broad distribution of results for different chemicals. The BAAQMD recommends a CRAF of 10 for construction projects to account for exposure from the third trimester to age 2. After reaching age 2, the CRAF is reduced to 3, until the resident child reaches age 16.

[33] Office of Environmental Health Hazard Assessment, 2005. *Air Toxics Hot Spot Program Risk Assessment Guidelines.* February.

[34] Bay Area Air Quality Management District, 2010. *Air Toxics NSR Program Health Risk Screening Analysis Guidelines.* January

The concentration of each TAC at every receptor and the OEHHA's 2015 guidance was applied to determine the cancer risk from construction diesel exhaust emissions. The cancer risk level was determined at each receptor. The cancer risk at all locations of sensitive receptors was then determined and the highest of these was reported for the "maximum exposed individual" (MEI). Work sites in the project vicinity were determined to have a lower maximum risk level than residential areas, as the exposure duration of 8 hours for construction workers would be much lower than the exposure duration of 24 hours for residents. Worker exposures are also not subject to the age sensitivity factors which increase risk associated with residential receptors. Therefore, the MEI was determined to be an off-site residential receptor.

Chronic Non-Cancer. Non-cancer health risk is based on a hazard index for chronic (long-term) exposures. The hazard index is established by the OEHHA and is the ratio of the predicted incremental exposure concentration (using the annual emission concentration) to the REL that could cause adverse chronic health effects. The Chronic REL is the inhalation exposure concentration at which no adverse chronic health effects would be anticipated following exposure. For instance, the OEHHA has established a DPM Chronic REL of 5.0 $\mu g/m^3$. This REL represents the level below which exposure to DPM would not result in adverse health effects. The DPM chronic risk level is calculated as follows:

Inhalation chronic risk = C_{air} / Inhalation Chronic REL

where: C_{air} = annual concentration of DPM
Inhalation Chronic REL = 5.0

This is repeated for all TACs with chronic RELs and the resulting chronic hazard indices at each receptor are summed and reported as the total chronic hazard index.

Acute Non-Cancer. Similarly, the acute hazard index is established by the OEHHA and is the ratio of the predicted incremental exposure concentration to the REL that could cause adverse acute health effects. The Acute REL is the inhalation exposure concentration at which no adverse acute health effects would be anticipated following exposure.

Construction Health Risk Assessment Results. Existing residents in the vicinity of the project site would be exposed to TAC emissions generated during construction of the project. The comprehensive receptor grid developed for this analysis allows the examination of TAC concentrations throughout the area surrounding the project site, including all residents in the immediate vicinity. Maximum construction health risk and $PM_{2.5}$ concentrations are shown in Table V.D-7. The results for acute and chronic impacts are also shown in Table V.D-7. AERMOD model inputs and results for all height levels for construction of the project are included in Appendix C. Results of the analysis indicate that construction of the project would not expose sensitive receptors in the project site vicinity to health risk levels that would exceed the criteria established by the Bay Area Air Quality Management District, and this impact would be less than significant.

Table IV.D-7: Inhalation Health Risks from Project Construction to Off-Site Receptors

	Carcinogenic Inhalation Health Risk in One Million with CRAF	Chronic Inhalation Hazard Index	Acute Inhalation Hazard Index	Annual $PM_{2.5}$ Concentration ($\mu g/m^3$)
Maximum Exposed Individual Location	4.69	0.0036	0.0	0.018
Threshold	**>10.0 in one million**	**>1.0**	**>1.0**	**>0.30**

CRAF = Cancer Risk Adjustment Factors

Source: LSA Associates, Inc., 2015.

Results of the analysis indicate that the highest risk during construction would be a risk level of 4.69 in one million for the residents located southeast of the project site. This analysis conservatively assumed the resident to be an infant during the construction period and therefore assumed the CRAF to be 10 until the resident reached age 2, when the CRAF is 3. This risk level is below the threshold of 10 in one million. The Chronic Hazard Index would be below the threshold at 0.014.

The acute inhalation Hazard Index threshold for non-carcinogenic TACs is 1.0. As shown in Table V.D-7, the maximum Acute Hazard Index would be negligible. Therefore, the potential for short-term acute exposure would be less-than-significant.

The results of the analysis also indicate that the maximum $PM_{2.5}$ concentration at a receptor location southeast of the project site would be 0.018 $\mu g/m^3$, which is also below the BAAQMD's significance threshold of 0.3 $\mu g/m^3$.

Based on the results of the construction HRA, the proposed project would not result in the exposure of sensitive receptors in the project vicinity to substantial pollutant concentrations to a significant degree.

Project Operation – Toxic Air Contaminants. Future residents of the project site could be exposed to increased levels of TACs from vehicle emissions on high volume roadways, railroad emissions, and emissions from stationary sources in the project vicinity.

Mobile Sources. High volume roadways and the adjacent rail line in the project vicinity could expose future residents on the project site to TACs. The project site would be located approximately 800 feet east of I-80. The site would also be located adjacent to railroad tracks. LSA conducted a health risk assessment for these sources following the methodology outlined above for emissions generated from I-80 and the railroad tracks and determined the contribution of $PM_{2.5}$ concentration on the project site would be 0.038 $\mu g/m^3$ which is below the BAAQMD's threshold of 0.30 $\mu g/^{m3}$ (see Table IV.D-8). The estimated cancer risk associated with exposure to these mobile sources is 12 in 1 million, which is above the BAAQMD's threshold of 10 in 1 million. Therefore, potential toxic air contaminant impacts from mobile sources would be significant.

Stationary Sources. The BAAQMD issues permits to businesses whose operation includes the release of TACs. These operations are known as stationary air pollution sources and should be considered for their exposure when locating sensitive receptors in a new location. In order to identify stationary sources for a particular location, the BAAQMD provides KML (Google Earth) files for

each county within the BAAQMD jurisdiction. Using the KML file for Alameda County and a 1,000-foot evaluation zone, 10 stationary sources, shown in Table IV.D-8, were identified.

Table IV.D-8: Stationary and Roadway TAC Sources within 1,000 feet of the Project Site

Source (Name & Address)	Cancer Health Risk (in a million)	$PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Bayer Health Care (1403 Stanford Ave.)	13.7	0.065	0.043
Courtyard By Marriott (generator-5555 Shellmound)	1.4	0.0005	0.013
Novartis Vaccines and Diagnostics (4560 Horton St)	24.1	0.017	1.540
Color Folio Design (1467 Park Ave.)	0.3	0.00	0.000
4th St. Woodworking Co (1266 45th St.)	1.0	0.00	0.116
Sentinel Cremation Societies (HRA-4080 Horton St.)	10.1	0.36	0.918
Global Power Group (generator- 3938 Horton S.t)	0.0	0.00	0.001
Pixar Animation Studios (generator-1215 45th St.)	0.7	0.0004	0.006
Level 3 Communications (HRA- 5000 Hollis St.)	11.8	0.021	0.032
Bay Street Apartments (generator-5864 Bay St.)	5.0	0.002	0.087
I-80 and Railroad Tracks	12.0	0.038	0.003
Single Source Threshold	10 in 1 million	0.3	1.0
Exceeds Single Source Thresholds	**Yes**	**Yes**	**Yes**
Cumulative Sources	80.1	0.50	2.759
Cumulative Sources Threshold	100 in 1 million	0.8	10
Exceeds Cumulative Threshold	**No**	**No**	**No**

Source: Bay Area Air Quality Management District, 2015; LSA Associates, Inc., 2015.

According to BAAQMD guidance and OEHHA guidance,[35] adjustments can be made to account for the amount of time a person spends away from their home during his or her lifetime. Following the new OEHHA guidance document recommendations, a time away from home (TAFH) factor of 73 percent was applied to more accurately represent the exposure a person would have over a lifetime when they are at home. The TAFH factor of 73 assumes one would spend approximately 27 percent of his or her time in a location other than the home during the 70 year lifetime evaluation period. Health risk values were adjusted for distance using BAAQMD's distance adjustment calculator and the time away from home factor was applied.

[35] Office of Environmental Health and Hazard, 2012. *Air Toxics Hot Spots Program Risk Assessment Guidelines: Technical Support Document for Exposure Assessment and Stochastic Analysis*. August 27.

Results of the stationary source analysis indicate that future residents would be exposed to TAC emissions from multiple sources that would exceed the significance criteria established by the BAAQMD for the single source level. Mitigation measures to reduce this impact would be required.

Impact AIR-2: Operation of the proposed project would expose future residents of the project site to toxic air contaminants. (S)

An air ventilation system with filtration can remove particulate matter from indoor air and substantially reduce health risk. To reduce health risk levels for future residents of the project site, LSA calculated the particulate matter control efficiency requirements for the project. Results indicate that an HVAC system with a control efficiency of 65.5 percent would reduce carcinogenic health risk levels for future residents of site to 8.4, which would be below the BAAQMD's significance criteria of 10. It would also reduce the $PM_{2.5}$ concentration to 0.03 $\mu g/m^3$ which is well below the BAAQMD's threshold of 0.3 $\mu g/m^3$. The ventilation system should be certified to achieve the stated performance effectiveness from indoor areas.

Implementation of Mitigation Measure AIR-2a and AIR-2b would require the implementation of air filtration systems and would reduce this impact to a less-than-significant level.

> Mitigation Measure AIR-2a: To reduce health risk levels for future residents of the project site, the project applicant shall provide an air ventilation system with filtration that can remove particulate matter from indoor air to a level sufficient to achieve compliance with the BAAQMD threshold. To reduce health risk levels for future residents of the project site, the control efficiency must result in a reduction of 60 percent of particulates of 2.5 microns or less, such as Minimum Efficiency Reporting Value (MERV)-11 filters or other indoor air filtration systems, which would reduce the maximum single source carcinogenic health risk level for future residents to 8.4 (which would be below the BAAQMD's significance criteria of 10). The ventilation system shall be certified to the satisfaction of the City to achieve the stated performance effectiveness from indoor areas.
>
> Mitigation Measure AIR-2b: The project applicant shall disclose to potential occupants of the project that the proximity of the project site to the freeway, railroad tracks, and industrial sources of air pollution could result in increased long-term health risks. The disclosure shall indicate the specifications for the installed air filtration system. The property manager shall be required to maintain particulate filters to ensure proper operation of HVAC equipment. (LTS)

Cumulative Toxic Air Contaminant Emissions. The cumulative analysis sums the risk levels from project construction emissions, risk levels for the permitted stationary sources in the project vicinity, and roadway risk levels within 1,000 feet of the project. LSA included the risk levels (adjusted for distance) in Table IV.D-8 above. Future residents of the project site would not be exposed to cumulative operational TAC emissions from nearby sources in excess of BAAQMD thresholds. Therefore, residents in the vicinity of the project site would not be exposed to significant cumulative health risk impacts, and this impact would be less than significant.

(5) Odors. During construction, the various diesel powered vehicles and equipment in use on-site would create localized odors. These odors would be temporary and are not likely to be noticeable for extended periods of time beyond the project site. The potential for diesel odor impacts is therefore considered less than significant. Odors from existing uses are not generally noticeable

beyond the site boundary. Records from the BAAQMD indicate there were a total of six odor complaints in Emeryville between the years of 2011 to 2014. The only confirmed complaint was from 2011 due to odors emanating from the Sherwin-Williams Paint Factory. The plant has since closed and the proposed project would provide an adaptive reuse of the existing building to residential and mixed-uses. The proposed uses that would be developed within the project site would be similar to surrounding operational uses, and are not expected to produce any offensive odors that would result in the generation of odors that would affect a substantial number of people.

c. Cumulative Air Quality Impacts. According to the BAAQMD, regional air pollution is largely a cumulative impact. No single project is sufficient in size to independently create regional nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. Therefore, if daily average or annual emissions of construction- or operational-related criteria air pollutants exceed any applicable threshold established by the BAAQMD or the City of Emeryville, the proposed project would result in a cumulatively significant impact.[36]

As shown in Table IV.D-6, implementation of the project would not exceed operational thresholds for criteria pollutants. Therefore, the project would not result in a considerable contribution to a cumulatively significant criteria air pollutant impact. Additionally, as shown in Table IV.D-8, the project would not exceed the BAAQMD's operational cumulative thresholds for TACs.

As discussed above, the Clean Air Plan defines the control strategies to reduce emissions and ambient concentrations of air pollutants at the cumulative level. Based on the analysis of the project's consistency with the Clean Air Plan, the project would not disrupt or hinder implementation of a control measure from the Clean Air Plan and ultimately would be consistent with the Clean Air Plan. The project would not result in a cumulatively considerable net increase of any criteria pollutant because no single project is sufficient in size to independently create regional air quality impacts. Therefore, the project would be considered to have a less-than-significant cumulative impact.

[36] Bay Area Air Quality Management District, 2011, op. cit.

E. GREENHOUSE GAS EMISSIONS

This section describes the general background information on greenhouse gas emissions, global climate change, meteorology, the regulatory framework for global climate change, energy conservation per Appendix F of the CEQA Guidelines and provides data on the existing global climate setting and greenhouse gas emissions in the City of Emeryville. This section also evaluates the project's greenhouse gas emissions and provides mitigation measures as necessary.

a. Global Climate Change Background. The following section provides background information on greenhouse gases and global climate change.

(1) Global Climate Change. Global climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans in recent decades. Global surface temperatures have risen by 0.74°C (±0.18°C) over the last 100 years (1906–2005). The rate of warming over the last 50 years is almost double that over the last 100 years.[1] The prevailing scientific opinion on climate change is that most of the warming observed over the last 50 years is attributable to human activities. The increased amounts of carbon dioxide (CO_2) and other greenhouse gases are the primary causes of the human-induced component of warming. Greenhouse gases are released by the burning of fossil fuels, land clearing, agriculture, and other activities and lead to an increase in the greenhouse effect.[2]

Greenhouse gases are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. The gases that are widely seen as the principal contributors to human-induced global climate change are the following:

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur Hexafluoride (SF_6)

Over the last 200 years, humans have caused substantial quantities of greenhouse gases to be released into the atmosphere. These extra emissions are increasing greenhouse gases concentrations in the atmosphere and enhancing the natural greenhouse effect, which is believed to be causing global warming. While manmade greenhouse gases include naturally occurring greenhouse gases such as CO_2, CH_4, and N_2O, some gases, like HFCs, PFCs, and SF_6, are completely new to the atmosphere.

[1] Intergovernmental Panel on Climate Change, 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IPCC.*

[2] The temperature on Earth is regulated by a system commonly known as the "greenhouse effect." Just as the glass in a greenhouse lets heat from sunlight in and reduces the heat escaping, greenhouse gases like carbon dioxide, methane, and nitrous oxide in the atmosphere keep the Earth at a relatively even temperature. Without the greenhouse effect, the Earth would be a frozen globe; thus, although an excess of greenhouse gas results in global warming, the *naturally occurring* greenhouse effect is necessary to keep our planet at a comfortable temperature.

Certain gases, such as water vapor, are short-lived in the atmosphere. Others remain in the atmosphere for significant periods of time, contributing to climate change in the long term. Water vapor is excluded from the list of greenhouse gases above because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

These gases vary considerably in terms of global warming potential (GWP), which is a concept developed to compare the ability of each greenhouse gas to trap heat in the atmosphere relative to another gas. The GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and length of time that the gas remains in the atmosphere (atmospheric lifetime). The GWP of each gas is measured relative to CO_2, the most abundant greenhouse gas. The definition of the GWP for a particular greenhouse gas is the ratio of heat trapped by one unit mass of the greenhouse gas to the ratio of heat trapped by one unit mass of CO_2 over a specified time period. Greenhouse gas emissions are typically measured in terms of pounds or tons of CO_2 equivalents (CO_2e). Table IV.E-1 shows the GWPs for each type of greenhouse gas. For example, SF_6 is 22,800 times more potent at contributing to global warming than CO_2.

Table IV.E-1: Global Warming Potential of Greenhouse Gases

Gas	Atmospheric Lifetime (Years)	Global Warming Potential (100-year Time Horizon)
Carbon Dioxide	50-200	1
Methane	12	25
Nitrous Oxide	114	298
HFC-23	270	14,800
HFC-134a	14	1,430
HFC-152a	1.4	124
PFC: Tetrafluoromethane (CF_4)	50,000	7,390
PFC: Hexafluoromethane (C_2F_6)	10,000	12,200
Sulfur Hexafluoride (SF_6)	3,200	22,800

Source: Intergovernmental Panel on Climate Change, 2007. *Climate Change 2007: The Physical Science Basis.* Contribution of Working Group I to the Fourth Assessment Report of the IPCC.

The following discussion summarizes the characteristics of the major greenhouse gases.

Carbon Dioxide. In the atmosphere, carbon generally exists in its oxidized form as CO_2. Natural sources of CO_2 include the respiration (breathing) of humans, animals and plants, volcanic outgassing, decomposition of organic matter, and evaporation from the oceans. Human caused sources of CO_2 include the combustion of fossil fuels and wood, waste incineration, mineral production, and deforestation. Natural sources release approximately 150 billion tons of CO_2 each year, far outweighing the 7 billion tons of man-made emissions of CO_2 each year. Nevertheless, natural removal processes, such as photosynthesis by land and ocean-dwelling plant species, cannot keep pace with this extra input of man-made CO_2, and, consequently, the gas is building up in the atmosphere.

In 2012, CO_2 emissions from fossil-fuel combustion accounted for approximately 94 percent of U.S. CO_2 emissions and approximately 86.5 percent of California's overall greenhouse gas emissions (CO_2e)[3] from 2000-2012. The transportation sector accounted for California's largest portion of CO_2 emissions, with gasoline consumption making up the greatest portion of these emissions. Electricity generation was California's second largest category of greenhouse gas emissions.

Methane. Methane is produced when organic matter decomposes in environments lacking sufficient oxygen. Natural sources include wetlands, termites, and oceans. Decomposition occurring in landfills accounts for the majority of human-generated CH_4 emissions in California and in the United States as a whole. Agricultural processes such as intestinal fermentation, manure management, and rice cultivation are also significant sources of CH_4 in California. Methane accounted for approximately 7.2 percent of gross climate change emissions (CO_2e) in California from 2000-2014.[4]

Total annual emissions of methane are approximately 500 million tons, with manmade emissions accounting for the majority. As with CO_2, the major removal process of atmospheric methane—a chemical breakdown in the atmosphere—cannot keep pace with source emissions, and methane concentrations in the atmosphere are increasing.

Nitrous Oxide (N_2O). Nitrous oxide is produced naturally by a wide variety of biological sources, particularly microbial action in soils and water. Tropical soils and oceans account for the majority of natural source emissions. Nitrous oxide is a product of the reaction that occurs between nitrogen and oxygen during fuel combustion. Both mobile and stationary combustion emit N_2O, and the quantity emitted varies according to the type of fuel, technology, and pollution control device used, as well as maintenance and operating practices. Agricultural soil management and fossil fuel combustion are the primary sources of human-generated N_2O emissions in California. Nitrous oxide emissions accounted for approximately 2.9 percent of man-made greenhouse gas emissions (CO_2e) in California, 2000-2012. [5]

Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), and Sulfur Hexafluoride (SF_6). Hydrofluorocarbons are primarily used as substitutes for ozone-depleting substances regulated under the Montreal Protocol.[6] Perfluorocarbons and SF_6 are emitted from various industrial processes, including aluminum smelting, semiconductor manufacturing, electric power transmission and distribution, and magnesium casting. There is no aluminum or magnesium production in California; however, the rapid growth in the semiconductor industry leads to greater use of PFCs. Hydro-fluorocarbons, PFCs, and SF_6 accounted for about 4.1 percent of man-made greenhouse gas emissions (CO_2e) in California, 2000-2012. [7]

[3] California Environmental Protection Agency, Air Resources Board, 2014. *California Greenhouse Gas Emission Inventory: 2000-2012.* May.

[4] Ibid.

[5] Ibid.

[6] The Montreal Protocol is an international treaty that was approved on January 1, 1989, and was designated to protect the ozone layer by phasing out the production of several groups of halogenated hydrocarbons believed to be responsible for ozone depletion.

[7] Ibid.

(2) Impacts of Climate Change. The potential impacts of global climate change are described in the following section.

Temperature Increase. The latest projections, based on state-of-the art climate models, indicate that temperatures in California are expected to rise 3 to 10.5°F by the end of the century.[8] Because greenhouse gases persist for a long time in the atmosphere, accumulate over time, and are generally well-mixed, their impact on the atmosphere cannot be tied to a specific point of emission.

Climate change refers to any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change may result from the following:

- Natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun;
- Natural processes within the climate system (i.e., changes in ocean circulation and reduction in sunlight from the addition of greenhouse gases and other gases to the atmosphere from volcanic eruptions); or
- Human activities that change the atmosphere's composition (i.e., through burning fossil fuels) and the land surface (i.e., from deforestation, reforestation, urbanization, and desertification).

The primary effect of global climate change has been a rise in the average global temperature. The impact of human activities on global climate change is readily apparent in the observational record. For example, surface temperature data show that 11 of the 12 years from 1995 to 2006 rank among the 12 warmest since 1850, the beginning of the instrumental record for global surface temperature.[9] Climate change modeling shows that further warming could occur, which would induce additional changes in the global climate system during the current century. Changes to the global climate system, ecosystems, and the environment of California could include but are not limited to the following:

- The loss of sea ice and mountain snowpack resulting in higher sea levels and higher sea surface evaporation rates with a corresponding increase in tropospheric water vapor due to the atmosphere's ability to hold more water vapor at higher temperatures;
- Rise in global average sea level primarily due to thermal expansion and melting of glaciers and ice caps in the Greenland and Antarctic ice sheets;
- Changes in weather that include widespread changes in precipitation, ocean salinity, and wind patterns, and more energetic aspects of extreme weather, including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones;
- Decline of the Sierra snowpack, which accounts for a significant amount of the surface water storage in California, by 70 percent to as much as 90 percent over the next 100 years;

[8] California Climate Change Center, 2006. *Our Changing Climate. Assessing the Risks to California.* July.

[9] California, State of, 2008. California Energy Commission's Public Interest Energy Research Program. *The Future is Now: An Update on Climate Change Science, Impacts, and Response Options for California.* September.

- Increase in the number of days conducive to ozone formation by 25 to 85 percent (depending on the future temperature scenario) in high ozone areas of Los Angeles and the San Joaquin Valley by the end of the 21st century; and
- High potential for erosion of California's coastlines and seawater intrusion into the Delta and levee systems due to the rise in sea level.

Precipitation and Water Supply. Global average precipitation is expected to increase overall during the 21st century as the result of climate change but will vary in different parts of the world. However, global climate models are generally not well-suited for predicting regional changes in precipitation because of the scale of regionally important factors (e.g., proximity of mountain ranges) that affect precipitation.[10]

Most of California's precipitation falls in the northern part of the State during the winter. A vast network of man-made reservoirs and aqueducts capture and transport water throughout the State from northern California rivers, as the greatest demand for water comes from users in the southern part of the State during the spring and summer.[11] The current distribution system relies on Sierra Nevada snowpack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snowpack, increasing the risk of summer water shortages.

Some models predict drier conditions and decreased water flows, while others predict wetter conditions in various parts of the world. If heat-trapping emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, thus reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent over the next 100 years.

The extent to which various meteorological conditions will impact groundwater supply is unknown. Warmer temperatures could increase the period when water is on the ground by reducing soil freeze. However, warmer temperatures could also lead to higher evaporation or shorter rainfall seasons, shortening the recharge season. Warmer winters could increase the amount of runoff available for groundwater recharge. However, the additional runoff would occur at a time when some basins, particularly in Northern California, are being recharged at their maximum capacity.

Where precipitation is projected to increase in California, the increases are focused in Northern California. However, various California climate models provide mixed results regarding changes in total annual precipitation in the State through the end of this century; therefore, no conclusion on an increase or decrease can be made. Considerable uncertainties about the precise effects of climate change on California hydrology and water resources will remain until there is more precise and consistent information about how precipitation patterns, timing, and intensity will change.[12]

[10] Intergovernmental Panel on Climate Change, 2007, op. cit.

[11] California Climate Change Center, 2006. *Our Changing Climate. Assessing the Risks to California.* July.

[12] California, State of, 2006. Department of Water Resources. *Progress on Incorporating Climate Change into Management of California's Water Resources*. July.

The East Bay Municipal Utility District (EBMUD) supplies water for the City of Emeryville. The principle raw water source for EBMUD is the Mokelumne River in the Sierra Nevada, with a diversion point at Pardee Reservoir in Calavaras and Amador Counties.[13] The EBMUD evaluated the potential effects of climate change on future water supplies for the East Bay and found that the District will likely "experience changes in its Mokelumne River watershed water supply in the future; though, due to relatively coarse information currently available about the degree of future climate changes, these impacts cannot be known exactly."[14] As such, the District identified potential strategies to meet future challenges of reduced supply due to the effects of climate change:[15]

- Employ potable demand management measures;
- Increase system storage;
- Optimize use and storage of excess water in wet years;
- Reoperation of Mokelumne Reservoir system;
- Intra- and interregional cooperation and agreements;
- Development of drought resistant supplies (not dependent on hydrologic conditions); and
- Diversification of water supply source locations.

Sea Level Rise. Rising sea level is one of the major areas of concern related to global climate change. Two of the primary causes for a sea level rise are the thermal expansion of ocean waters (water expanding as it heats up) and the addition of water to ocean basins by the melting of land-based ice. From 1961 to 2003, global average sea level rose at an average rate of 0.07 inches per year, and at an accelerated average rate of about 0.12 inches per year during the last decade of this period (1993 to 2003).[16] Over the past 100 years, sea levels along California's coasts and estuaries have risen about 7 inches.[17]

Sea levels could rise an additional 22 to 35 inches by the end of the century as global climate change continues.[18] Although these projections are on a global scale, the rate of sea level rise along California's coast is relatively consistent with the worldwide average rate observed over the past century. Therefore, it is reasonable to assume that changes in worldwide sea level rise will also be experienced along California's coast.[19]

[13] East Bay Municipal Utility District, 2012. *Water Supply Management Program 2040 Plan.* April. Website: ebmud.com/water-and-wastewater/water-supply/water-supply-management-program-2040 (accessed June 24, 2014).

[14] *Ibid.* p. 4-20.

[15] *Ibid.*

[16] California, State of, 2008. California Energy Commission's Public Interest Energy Research Program. *The Future is Now: An Update on Climate Change Science, Impacts, and Response Options for California.* September.

[17] Ibid.

[18] California Climate Change Center, 2006. *Our Changing Climate. Assessing the Risks to California.* July.

[19] California, State of. Department of Water Resources, 2006. *Progress on Incorporating Climate Change into Management of California's Water Resources*. July.

Sea level rise of this magnitude would increasingly threaten California's coastal regions with more intense coastal storms, accelerated coastal erosion, threats to vital levees, and disruption of inland water systems, wetlands, and natural habitats. Rising sea levels and more intense storm surges could increase the risk for coastal flooding. The San Francisco Bay Conservation and Development Commission (BCDC) employed geographic information system software to identify the shoreline areas likely to be most impacted by a 1.0 meter rise in sea level.[20]

In the San Francisco Bay Area, the background rate of sea level rise has been estimated to be approximately 0.079 inch per year over the past 100 years.[21] An increased rate of sea level rise is anticipated in the near future due to projected global climate change. Although the rate of increase has not been precisely modeled and cannot be known with certainty, several projections predict a rise in sea level of at least 50 centimeters (approximately 20 inches) and as much as 200 centimeters (approximately 80 inches) by the year 2100.

Water Quality. Water quality depends on a wide range of variables such as water temperature, flow, runoff rates and timing, waste discharge loads, and the ability of watersheds to assimilate wastes and pollutants. Climate change could alter water quality in a variety of ways, including higher winter flows that reduce pollutant concentrations (through dilution) or increased erosion of land surfaces and stream channels, leading to higher sediment, chemical, and nutrient loads in rivers. Water temperature increases and decreased water flows can result in increasing concentrations of pollutants and salinity. Increases in water temperature alone can lead to adverse changes in water quality, even in the absence of changes in precipitation.

Land and resource use changes can have impacts on water quality comparable to or even greater than those from global climate change. The net effect on water quality for rivers, lakes, and groundwater in the future is dependent not just on climate conditions, but also on a wide range of other human actions and management decisions.

Public Health. Global climate change is anticipated to result in not only changes to average temperature but also to more extreme heat events.[22] These extreme heat events increase the risk of death from dehydration, heart attack, stroke, and respiratory distress, especially with people who are ill, children, the elderly, and the poor, who may lack access to air conditioning and medical assistance. According to the California Climate Change Center, more research is needed to understand the effects of higher temperatures and how adapting to these temperatures can minimize health effects.

(3) Emission Inventories. The emissions inventory that identifies and quantifies the primary human-generated sources and sinks of greenhouse gases is a well-recognized and useful tool for

[20] California, State of, 2009. San Francisco Bay Conservation and Development Commission. *Climate Change*. Website: www.bcdc.ca.gov/planning/climate_change/climate_change.shtml (accessed June 24, 2014).

[21] National Oceanic & Atmospheric Administration (NOAA), 2007. *Mean Sea Level Trend (station)9414290 San Francisco, California.* http://co-ops.nos.noaa.gov/sltrends/sltrends_station.shtml?stnid=9414290 (accessed June 24, 2014).

[22] California Climate Change Center, 2006. *Our Changing Climate. Assessing the Risks to California.* July.

addressing climate change. This section summarizes the latest information on global, United States, California, and local greenhouse gas emission inventories.

Global Emissions. Worldwide net emissions (including the effects of land use and forestry) of greenhouse gases in 2010 were 46 billion metric tons[23] of CO_2e per year.[24] This represents a 35 percent increase from 1990.

United States Emissions. In 2012, the United States emitted about 6.5 billion metric tons of CO_2e or about 21 metric tons per year per person. The total 2012 CO_2e emissions represent a 5 percent increase since 1990 but a 10 percent decrease since 2005. Of the six major sectors nationwide – residential, commercial, agricultural, industry, transportation, and electricity generation – electricity generation accounts for the highest amount of greenhouse gas emissions since 1990 (approximately 32 percent), with transportation being a close second at 27 percent since 1990; these emissions are generated entirely from direct fossil fuel combustion.[25]

State of California Emissions. The ARB is responsible for developing the California Greenhouse Gas Emission Inventory. This inventory estimates the amount of greenhouse gases emitted to and removed from the atmosphere by human activities within the State and supports the AB 32 Climate Change Program.

According to ARB emission inventory estimates, California emitted approximately 460 million metric tons of CO_2e emissions in 2012.[26] California ranks second in the nation in terms of total greenhouse gas emissions (Texas is highest), with a per-capita greenhouse gas emission rate of approximately 12 metric tons per person (43 percent less than the national average in 2012); only five other states (all in the northeast) have lower per-capita greenhouse gas emissions.[27]

California greenhouse gas emissions from the transportation sector—still the State's largest single source of greenhouse gases, contributing 36 percent of total emissions—declined modestly compared to 2011; however, over the past 7 years, transportation-related greenhouse gas emissions have dropped 12 percent.[28] The ARB attributes much of this decrease to the growing statewide fleet of fuel-efficient vehicles—the hybrid vehicle market share increased in 2012 to 7.4 percent from the 2011 level of 5.4 percent.[29]

[23] A metric ton is equivalent to approximately 1.1 tons.

[24] U.S. Environmental Protection Agency, 2014. Climate Change Indicators in the United States: Global Greenhouse Gas Emissions. Website: www.epa.gov/climatechange/science/indicators/ghg/global-ghg-emissions.html (accessed June 23, 2014).

[25] Ibid.

[26] California Air Resources Board, 2014. *Greenhouse Gas Inventory Data for 2000–2012.* Website: www.arb.ca.gov/cc/inventory/data/data.htm (accessed June 23, 2014).

[27] California Air Resources Board, 2014. *California Greenhouse Gas Emissions for 2000 to 2012: Trends of Emissions and Other Indicators*. Website: www.arb.ca.gov/cc/inventory/data/data.htm (accessed June 23, 2014). May 13.

[28] Ibid.

[29] Ibid.

ARB staff has projected 2020 unregulated greenhouse gas emissions, which represent the emissions that would be expected to occur in the absence of any greenhouse gas reduction actions, would be 507 million metric tons (MMT) of CO_2e.[30] The total emissions are lower than originally forecast (596 MMT) in the AB 32 Scoping Plan to account for new estimates for future fuel and energy demand and accounting for the recent economic recession.

Greenhouse gas emissions in 2020 from the transportation sector as a whole are expected to increase to 184 MMT of CO_2e (2012 inventory is 167 MMT of CO_2e). The industrial sector consists of large stationary sources of greenhouse gas emissions and includes oil and gas production and refining facilities, cement plants, and large manufacturing facilities. Emissions for this sector are forecast to grow to 91.5 MMT of CO_2e by 2020, an increase of approximately 3 percent from the 2012 emissions inventory level. The commercial and residential sectors are expected to contribute 45.3 MMT of CO_2e, or about 9 percent of the total Statewide greenhouse gas emissions in 2020.[31]

San Francisco Bay Area Emissions. The BAAQMD established a climate protection program in 2005 to acknowledge the link between climate change and air quality. The BAAQMD regularly prepares inventories of criteria and toxic air pollutants to support planning, regulatory and other programs. The most recent emissions inventory estimates greenhouse gas emissions produced by the San Francisco Bay Area in 2011.[32] The inventory, which was published January 2015, updates the Air District's previous greenhouse gas emission inventory for base year 2007.

In 2011, 86.6 million metric tons of CO_2e of greenhouse gases were emitted by the San Francisco Bay Area. Fossil fuel consumption in the transportation sector was the single largest source of the San Francisco Bay Area's greenhouse gas emissions in 2011. The transportation sector (including on-road motor vehicles, locomotives, ships and boats, and aircraft) contributed 39.7 percent of greenhouse gas emissions and the industrial and commercial sectors (excluding electricity and agriculture) contributed 35.7 percent of greenhouse gas emissions in the Bay Area. Energy production activities such as electricity generation and co-generation were the third largest contributor with approximately 14.0 percent of the total greenhouse gas emissions. Off-road equipment such as construction, industrial, commercial, and lawn and garden equipment contributed 1.5 percent of greenhouse gas emissions.

City of Emeryville Emissions. The City of Emeryville, in coordination with ICLEI—Local Governments for Sustainability (formerly the International Council for Local Environmental Initiatives), developed a baseline greenhouse gas emissions inventory for both community-wide and municipal sources for the 2004 operational year. The baseline inventory was compiled using ICLEI's Clean Air Climate Protection (CACP) software.[33] The community-wide sources within the CACP software are intended to represent greenhouse gas emissions from the following sectors: residential, commercial, and industrial energy use; transportation; and solid waste.

[30] California Air Resources Board, 2015. *Greenhouse Gas Inventory: 2020 Business-as-Usual (BAU) Emissions Projection.* 2014 Edition. Website: www.arb.ca.gov/cc/inventory/data/bau.htm (accessed March 11, 2015).

[31] Ibid.

[32] Bay Area Air Quality Management District, 2015. *Source Inventory of Bay Area Greenhouse Gas Emissions.* January.

[33] Emeryville, City of, 2008. *City of Emeryville Climate Action Plan*. November.

While the baseline inventory is meant to capture emissions that physically occur in Emeryville as a direct result of activities within the community, it also includes some of the emissions in other jurisdictions caused as an indirect result of activities within Emeryville for which adequate data exists (e.g., electricity use, waste water). Other indirect emissions, such as transportation beyond City limits, air travel by Emeryville residents, and the production and transportation of goods consumed in Emeryville, are not included in the emission inventory because of their difficulty to accurately quantify.

Table IV.E-2: 2004 Greenhouse Gas Emissions Inventory

Sector	CO_2e Emissions (metric tons)[a]
Transportation	87,447
Residential	9,380
Commercial	76,204
Waste	5,801
Total [b]	**178,832**

[a] Emission do not include emissions from State highway VMT due to the inability of City policies to control or affect State highway VMT patterns.
[b] Total reflects rounding.
Source: Emeryville, City of, 2008. *City of Emeryville Climate Action Plan*. November.

The 2004 baseline greenhouse gas emissions inventory for the City of Emeryville is 178,832 metric tons CO_2e. As shown in Table IV.E-2, approximately 49 percent of the greenhouse gas emissions are related to transportation. This percentage does not reflect the greenhouse gas emissions associated with travel on State highways; these indirect emissions were left out of the 2004 baseline inventory because of the inability of City policies to control or affect State highway vehicle miles traveled (VMT) patterns.

b. Regulatory Framework. The federal and State regulatory framework related to greenhouse gas emissions is described below.

(1) Federal Regulations. The United States has historically had a voluntary approach to reducing greenhouse gas emissions. However, on April 2, 2007, the United States Supreme Court ruled [549 U.S. 497 (2007)] that the U.S. Environmental Protection Agency (U.S. EPA) has the authority to regulate CO_2 emissions under the federal Clean Air Act (CAA). While there currently are no adopted federal regulations for the control or reduction of greenhouse gas emissions, the U.S. EPA commenced several actions in 2009 to implement a regulatory approach to global climate change, including the ones described below.

On September 22, 2009, the U.S. EPA issued a final rule for mandatory reporting of greenhouse gases from large greenhouse gas emission sources in the United States. In general, this national reporting requirement will provide the U.S. EPA with accurate and timely greenhouse gas emissions data from facilities that emit 25,000 metric tons or more of CO_2 per year. This publicly-available data will allow the reporters to track their own emissions, compare them to similar facilities, and aid in identifying cost-effective opportunities to reduce emissions in the future. Reporting is at the facility level, except that certain suppliers of fossil fuels and industrial greenhouse gases, along with vehicle and engine manufacturers, will report at the corporate level. An estimated 85 percent of the total U.S. greenhouse gas emissions, from approximately 10,000 facilities, are covered by this rule.

On December 7, 2009, the U.S. EPA Administrator signed a final action under the CAA, finding that six greenhouse gases (CO_2, CH_4, N_2O, HFCs, PFCs, SF_6) constitute a threat to public health and welfare, and that the combined emissions from motor vehicles contribute to global climate change. This U.S. EPA action does not impose any requirements on industry or other entities. However, the findings are a prerequisite to finalizing the greenhouse gas emission standards for light-duty vehicles

discussed further below. The U.S. EPA received ten petitions challenging this determination. On July 29, 2010, U.S. EPA denied these petitions.

On April 1, 2010, the U.S. EPA and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) announced a final joint rule to establish a national program consisting of new standards for model year 2012 through 2016 light-duty vehicles that will reduce greenhouse gas emissions and improve fuel economy. U.S. EPA is finalizing the first-ever national greenhouse gas emissions standards under the CAA, and NHTSA is finalizing Corporate Average Fuel Economy standards under the Energy Policy and Conservation Act. The U.S. EPA greenhouse gas standards require light-duty vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile in model year 2016, equivalent to 35.5 miles per gallon.

In December 2010, the U.S. EPA issued its plan for establishing greenhouse gas pollution standards under the CAA in 2011. The agency looked at a number of sectors and is moving forward on greenhouse gas standards for fossil fuel power plants and petroleum refineries – two of the largest industrial sources, representing nearly 40 percent of the greenhouse gas pollution in the United States.

On August 9, 2011, U.S. EPA and the NHTSA announced the first-ever standards to reduce greenhouse gas emissions and improve the fuel efficiency of heavy-duty trucks and buses. The final combined standards of the Heavy-Duty National Program will reduce CO_2 emissions by about 270 MMT and save about 530 million barrels of oil over the life of vehicles built for the 2014 to 2018 model years. The heavy duty sector addressed in the U.S. EPA and NHTSA rules (including the largest pickup trucks and vans, semi-trucks, and all types and sizes of work trucks and buses in between) accounts for nearly 6 percent of all U.S. greenhouse gas emissions and 20 percent of transportation emissions. In addition, air quality will continue to improve as less fuel use leads to reduced ozone and particulate matter.

(2) State Regulations. In 1967, the California Legislature passed the Mulford–Carrell Act, which combined two Department of Health bureaus, the Bureau of Air Sanitation and the Motor Vehicle Pollution Control Board, to establish the California Air Resources Board (ARB). Since its formation, the ARB has worked with the public, the business sector, and local governments to find solutions to California's air pollution problems.

The ARB is typically the lead agency for implementing climate change regulations in the State. There are many regulations and statutes in California that address, both directly and indirectly, greenhouse gas emissions, such as renewable portfolio standards (SB 1078, SB 107, SB 2(1X)) and energy efficiency standards (Title 24, Cal. Code Regs.). Key State regulatory activities specifically addressing climate change and greenhouse gas emissions are discussed below.

Assembly Bill 1493 (2002). In a response to the transportation sector's significant contribution to California's CO_2 emissions, AB 1493 (Pavley) was enacted on July 22, 2002. AB 1493 requires the ARB to set greenhouse gas emission standards for passenger vehicles and light duty trucks (and other vehicles whose primary use is noncommercial personal transportation in the State) manufactured in 2009 and all subsequent model years. These standards (starting in model years 2009 to 2016) were approved by the ARB in 2004, but the needed waiver of CAA Preemption was not granted by the U.S. EPA until June 30, 2009. The ARB responded by amending its original regulation, now referred to as Low Emission Vehicle III, to take effect for model years starting in 2017 to 2025.

Executive Order S-3-05 (2005). Governor Arnold Schwarzenegger signed Executive Order S-3-05 on June 1, 2005, which proclaimed that California is vulnerable to the impacts of climate change. To combat those concerns, the executive order established California's greenhouse gas emissions reduction targets, which established the following goals:

- Greenhouse gas emissions should be reduced to 2000 levels by 2010;
- Greenhouse gas emissions should be reduced to 1990 levels by 2020; and
- Greenhouse gas emissions should be reduced to 80 percent below 1990 levels by 2050.

The Secretary of the California Environmental Protection Agency (CalEPA) is required to coordinate efforts of various State agencies in order to collectively and efficiently reduce greenhouse gases. A biannual progress report must be submitted to the Governor and State Legislature disclosing the progress made toward greenhouse emission reduction targets. In addition, another biannual report must be submitted illustrating the impacts of global warming on California's water supply, public health, agriculture, the coastline, and forestry, and report possible mitigation and adaptation plans to address these impacts.

Assembly Bill 32 (2006), California Global Warming Solutions Act. California's major initiative for reducing greenhouse gas emissions is AB 32, passed by the State legislature on August 31, 2006. This effort aims at reducing greenhouse gas emissions to 1990 levels by 2020. The ARB has established the level of greenhouse gas emissions in 1990 at 427 MMT CO_2e. The emissions target of 427 MMT requires the reduction of 169 MMT from the State's projected business-as-usual 2020 emissions of 596 MMT. AB 32 requires the ARB to prepare a Scoping Plan that outlines the main State strategies for meeting the 2020 deadline and to reduce greenhouse gases that contribute to global climate change. The Scoping Plan was approved by the ARB on December 11, 2008, and contains the main strategies California will implement to achieve the reduction of approximately 169 MMT of CO_2e, or approximately 30 percent, from the State's projected 2020 emission level of 596 MMT of CO_2e under a business-as-usual scenario (this is a reduction of 42 MMT CO_2e, or almost 10 percent from 2002-2004 average emissions). The Scoping Plan also includes ARB-recommended greenhouse gas reductions for each emissions sector of the State's greenhouse gas inventory. The Scoping Plan calls for the largest reductions in greenhouse gas emissions to be achieved by implementing the following measures and standards:

- Improved emissions standards for light-duty vehicles (estimated reductions of 31.7 MMT CO_2e);
- The Low-Carbon Fuel Standard (15.0 MMT CO_2e);
- Energy efficiency measures in buildings and appliances and the widespread development of combined heat and power systems (26.3 MMT CO_2e); and
- A renewable portfolio standard for electricity production (21.3 MMT CO_2e).

The Scoping Plan identifies 18 emission reduction measures that address cap-and-trade programs, vehicle gas standards, energy efficiency, low carbon fuel standards, renewable energy, regional transportation-related greenhouse gas targets, vehicle efficiency measures, goods movement, solar roof programs, industrial emissions, high speed rail, green building strategies, recycling, sustainable forests, water, and air. The measures would result in a total reduction of 174 MMT CO_2e by 2020.

On August 24, 2011, the ARB unanimously approved both ARB's new supplemental assessment and reapproved its Scoping Plan, which provides the overall roadmap and rule measures to carry out AB 32. The ARB also approved a more robust CEQA equivalent document supporting the supplemental analysis of the cap-and-trade program. The cap-and-trade took effect on January 1, 2012, with an enforceable compliance obligation that began January 1, 2013.

ARB has not yet determined what amount of greenhouse gas reductions it recommends from local government operations and local land use decisions; however, the Scoping Plan states that land use planning and urban growth decisions will play an important role in the State's greenhouse gas reductions because local governments have primary authority to plan, zone, approve, and permit how land is developed to accommodate population growth and the changing needs of their jurisdictions (meanwhile, ARB is also developing an additional protocol for community emissions). ARB further acknowledges that decisions on how land is used will have large impacts on the greenhouse gas emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emission sectors. The Scoping Plan states that the ultimate greenhouse gas reduction assignment to local government operations is to be determined. With regard to land use planning, the Scoping Plan expects an approximately 5.0 MMT CO_2e reduction due to implementation of SB 375.

The ARB approved the First Update to the Climate Change Scoping Plan on May 22, 2014, which is currently underway. The First Update identifies opportunities to leverage existing and new funds to further drive GHG emission reductions through strategic planning and targeted low carbon investments. The First Update defines ARB's climate change priorities until 2020, and also sets the groundwork to reach long-term goals set forth in Executive Orders S-3-05 and B-16-2012. The Update highlights California's progress toward meeting the "near-term" 2020 GHG emission reduction goals and defined in the initial Scoping Plan. It also evaluates how to align the State's "longer-term" GHG reduction strategies with other State policy priorities for water, waste, natural resources, clean energy, transportation, and land use.

Senate Bill 375 (2008). Signed into law on October 1, 2008, SB 375 supplements greenhouse gas reductions from new vehicle technology and fuel standards with reductions from more efficient land use patterns and improved transportation. Under the law, the ARB approved greenhouse gas reduction targets in February 2011 for California's 18 federally designated regional planning bodies, known as Metropolitan Planning Organizations (MPOs). The ARB may update the targets every four years and must update them every eight years. MPOs in turn must demonstrate how their plans, policies and transportation investments meet the targets set by the ARB through Sustainable Community Strategies (SCS). The SCS are included with the Regional Transportation Plan (RTP), a report required by State law. However, if an MPO finds that their SCS will not meet the greenhouse gas reduction target, they may prepare an Alternative Planning Strategy (APS). The APS identifies the impediments to achieving the targets.

Senate Bill 97 (2007). SB 97, signed by the Governor in August 2007 (Chapter 185, Statutes of 2007; Public Resources Code, Sections 21083.05 and 21097), acknowledges climate change is a prominent environmental issue that requires analysis under CEQA. This bill directed the OPR to prepare, develop, and transmit to the California Resources Agency guidelines for mitigating greenhouse gas emissions or the effects of greenhouse gas emissions, as required by CEQA.

The California Natural Resources Agency adopted the amendments to the CEQA Guidelines in January 2010, which went into effect in March 2010. The amendments do not identify a threshold of significance for greenhouse gas emissions, nor do they prescribe assessment methodologies or specific mitigation measures. The amendments encourage lead agencies to consider many factors in performing a CEQA analysis, but preserve the discretion granted by CEQA to lead agencies in making their own determinations based on substantial evidence. The amendments also encourage public agencies to make use of programmatic mitigation plans and programs when they perform individual project analyses.

CEQA Guidelines Appendix F. In order to assure that energy implications are considered in project decisions, CEQA requires that EIRs consider the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy (see Public Resources Code section 21100(b)(3)). Energy conservation implies that a project's cost effectiveness be reviewed not only in dollars, but also in terms of energy requirements.

(3) Bay Area Air Quality Management District. The BAAQMD is the regional government agency that regulates sources of air pollution within the nine San Francisco Bay Area counties. The BAAQMD regulates greenhouse gas emissions through the following plans, programs, and guidelines.

Clean Air Plans. BAAQMD and other air districts prepare clean air plans in accordance with the State and federal CAAs. The Bay Area 2010 Clean Air Plan is a comprehensive plan to improve Bay Area air quality and protect public health through implementation of a control strategy designed to reduce emissions and ambient concentrations of harmful pollutants. The 2010 Clean Air Plan also includes measures designed to reduce greenhouse gas emissions. The BAAQMD is in the process of updating this plan and will release an updated Clean Air Plan in 2016.

BAAQMD Climate Protection Program. The BAAQMD established a climate protection program to reduce pollutants that contribute to global climate change and affect air quality in the San Francisco Bay Area Air Basin. The climate protection program includes measures that promote energy efficiency, reduce vehicle miles traveled, and develop alternative sources of energy, all of which assist in reducing emissions of greenhouse gas and in reducing air pollutants that affect the health of residents. 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.

BAAQMD CEQA Air Quality Guidelines. The BAAQMD CEQA Air Quality Guidelines were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process, consistent with CEQA requirements, and include recommended thresholds of significance, mitigation measures, and background air quality information. The guidelines also include recommended assessment methodologies for air toxics, odors, and greenhouse gas emissions. In June 2010, the BAAQMD's Board of Directors adopted CEQA thresholds of significance and an update of the CEQA Guidelines. In May 2011, the updated BAAQMD CEQA Air Quality Guidelines were amended to include a risk and hazards threshold for new receptors and modified procedures for assessing impacts related to risk and hazard impacts.

As discussed in Section IV.D., Air Quality, under the 2011 CEQA Air Quality Guidelines, a local government may prepare a Qualified Greenhouse Gas Reduction Strategy that is consistent with AB 32 goals. If a project is consistent with an adopted qualified Greenhouse Gas Reduction Strategy and General Plan that addresses the project's greenhouse gas emissions, it can be presumed that the project will not have significant greenhouse gas emissions under CEQA. The 2011 Guidelines also included a quantitative threshold for project level analyses based on estimated greenhouse emissions as well as per capita metrics.

(4) Metropolitan Transportation Commission/Association of Bay Area Governments Sustainable Communities Strategy. The Metropolitan Transportation Commission (MTC) is the federally recognized MPO for the nine county Bay Area, which includes Alameda County and the City of Emeryville. In March 2011, Plan Bay Area released its Initial Vision Scenario, which presents a first draft of targeted growth areas and regional projections. Based on the Initial Vision Scenario, Plan Bay Area adopted a preferred SCS scenario. On March 22, 2013 the Draft Plan Bay Area was released and the Plan Bay Area EIR was released on April 2, 2013 for public review and comment. These documents were certified and adopted in July 2013.

(5) City of Emeryville General Plan. The Sustainability Element of the Emeryville General Plan[34] includes the following policies related to greenhouse gas emissions and global climate change.

- Policy ST-P-1: The City shall maintain a Climate Action Plan to achieve energy efficiency and conservation goals.
- Policy ST-P-2: The City shall maintain a Climate Action Plan to achieve waste reduction goals.
- Policy ST-P-3: The City shall adopt a Zero Waste Plan and actions for the year 2030.
- Policy ST-P-4: The City shall negotiate a new Zero Waste Franchise Agreement with a hauling company that uses waste reduction programs and the disposal rate structure to monetarily incentivize recycling and composting which will result in zero tons of methane-producing materials going to landfill by 2030.
- Policy ST-P-5: The City shall encourage, promote, practice, and where feasible, require Bay-Friendly landscaping practices as defined in the Bay-Friendly Landscape Guidelines, Sustainable Practices for Landscape Professionals.
- Policy ST-P-6: The City shall collaborate with residents, businesses, and other members of the community, including architects, builders, and contractors, to encourage private development within the City to use green building methods and practices and to achieve standards set by LEED for commercial building and the Alameda Count Residential Green Building Guidelines for residential projects.
- Policy ST-P-7: The City shall adopt a construction and demolition waste recycling ordinance which will require that, except in unusual circumstances, all construction, demolition and renovation projects meeting a certain size or dollar value, to divert from the waste stream, 100 percent of all portland cement concrete and asphalt concrete and an average of at least 50 percent of all remaining debris from construction, demolition, and renovation projects.

[34] Emeryville, City of, 2013. *Emeryville General Plan.* April 2.

- Policy ST-P-8: The City shall establish incentives for energy retrofits to support implementation of photovoltaic and other renewable energy technologies that result in an energy savings of at least 20 percent when compared to consumption that would occur with traditional energy sources.
- Policy ST-P-9: The City shall support companies working in the sustainability sector (such as materials recycling or green building) to locate in Emeryville.
- Policy ST-P-10: The City shall develop and implement an Environmentally Preferable Product Purchasing program for municipal purchases that target products and services, which minimize environmental impacts, toxics, pollution, and hazards to worker and community safety to the greatest extent possible.

(6) City of Emeryville Climate Action Plan. The City of Emeryville adopted the City of Emeryville Climate Action Plan[35] (CAP) in November 2008. The CAP outlines the following goals for the City and community to reduce greenhouse gasses and energy consumption and, thus, the effects of global climate change.

- Increase transit oriented development;
- Adopt a Green Building and Bay-Friendly Ordinance;
- Enhance transportation demand management conditions ;
- New pedestrian, cycling and transit programs and incentives;
- Increase transit service and ridership;
- Commercial and residential energy conservation ordinances;
- Develop and incentivize local renewable energy production;
- Conserve potable water and develop rainwater usage; and
- Reduce 2004 landfilled waste tonnage by 50 percent by 2020.

The CAP is broad in scope and is intended to reduce greenhouse gas emissions generated in municipal and community-wide activities including building and community energy use, transportation and land use, waste reduction and diversion, water conservation, and green infrastructure enhancements. The strategies, objectives, measures, and actions are meant to direct the City's reduction efforts through 2020.

The strategies identified in the CAP provide approximately 102,977 metric tons CO_2e of potential reductions, or 25 percent below 2004 baseline levels, by 2020. This level of reduction goes beyond the recommendation of the State's Climate Action Scoping Plan, which calls on local governments to reduce emissions to 15 percent below current levels by 2020.

As measures within the CAP are under development, the City of Emeryville continues to identify and quantify emissions reduction benefits of climate and sustainability strategies that could be implemented in the future, including energy efficiency, renewable energy, vehicle fuel efficiency, alternative

[35] Emeryville, City of. 2008, op. cit.

transportation, vehicle trip reduction, land use and transit planning, waste reduction and other strategies.

2. Impacts and Mitigation Measures

This section evaluates significant impacts related to greenhouse gas emissions that could result from development of the proposed project. This section begins with the criteria of significance establishing the thresholds to determine whether an impact is significant. Where potentially significant impacts are identified, mitigation measures are recommended, as appropriate. The consistency of the project with plans adopted for the purpose of reducing greenhouse gas emissions is also discussed.

a. Criteria of Significance. This section evaluated impacts related to greenhouse gas emissions and global climate change that could result from implementation of the proposed project. Section 15064.4 of the *CEQA Guidelines* states that: "A lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project." In performing that analysis, the lead agency has discretion to determine whether to use a model or methodology to quantify greenhouse gas emissions, or to rely on a qualitative analysis or performance-based standards. In making a determination as to the significance of potential impacts, the lead agency then considers the extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting, whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project, and the extent to which the project complies with regulations or requirements adopted to implement a Statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions.

An individual development project typically does not generate a sufficient quantity of greenhouse gas emissions to affect global climate change; therefore, the global climate change impacts of the proposed project are discussed in the context of cumulative impacts, per the approach recommended by the BAAQMD. This section begins by establishing the thresholds to determine whether an impact is significant. The latter part of this section identifies greenhouse gas emissions associated with existing operations on the project site and evaluates the greenhouse gas emissions expected to result from the project.

The BAAQMD adopted greenhouse gas thresholds of significance for operational emissions in its 2011 version of the CEQA Air Quality Guidelines.[36] The BAAQMD did not adopt thresholds for construction emissions but recommends quantification and disclosure of these emissions. Local agencies are encouraged to adopt feasible mitigation measures to reduce construction emissions. This EIR analyzes whether the project's greenhouse gas emissions would be cumulatively significant. Accordingly, the project would result in significant adverse impacts related to greenhouse gas emissions if it would generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. The project would have a significant impact on the environment if it would exceed at least one of the following criteria:

- Result in operational-related greenhouse gas emissions of less than 1,100 metric tons of CO_2e a year, or

[36] Bay Area Air Quality Management District, 2011, op. cit.

- Resulting in operational-related greenhouse gas emissions of less than 4.6 metric tons of CO_2e per capita service population (employees plus residents) per year.
- Conflict with goals, objectives, or policies of the Emeryville Climate Action Plan, or other applicable energy or greenhouse gas emission policy or standard.

These significance thresholds were adopted as part of the May 2011 BAAQMD CEQA Air Quality Guidelines.

As previously noted, although lead agencies may rely on the 2011 BAAQMD CEQA Air Quality Guidelines for assistance in calculating air pollution emissions, obtaining information regarding the health impacts of air pollutants, and identifying potential mitigation measures, the BAAQMD has been ordered to set aside the thresholds and is no longer recommending that they be used as a general measure of a project's significant air quality impacts. The BAAQMD also recognizes that lead agencies may rely on the previously recommended thresholds of significance contained in its CEQA Air Quality Guidelines adopted in 1999.[37] However, the 1999 CEQA Guidelines do not contain thresholds to determine the significance of greenhouse gas emissions.

The court's invalidation of BAAQMD's thresholds presents uncertainty for current project applicants and local agencies regarding proper evaluation of air quality and greenhouse gas emissions in CEQA documents. Although reliance on the thresholds is no longer required, local agencies still have a duty to evaluate impacts related to air quality and greenhouse gas emissions. In addition, CEQA grants local agencies broad discretion to develop their own thresholds of significance, or to rely on thresholds previously adopted or recommended by other public agencies or experts so long as they are supported by substantial evidence.[38] The BAAQMD's approach to developing a quantitative threshold of significance for greenhouse gas emissions was to identify the emissions level for which a project would not be expected to substantially conflict with existing California legislation and policy adopted to reduce Statewide greenhouse gas emissions. According to the BAAQMD CEQA Air Quality Guidelines, if a project would generate greenhouse gas emissions above the threshold level, it would be considered to contribute substantially to a cumulative impact, and would be considered significant. The Alameda County Superior Court did not question the science behind the thresholds or their merit. For that reason, substantial evidence supports continued use of the 2011 BAAQMD CEQA Air Quality Guidelines and the significance thresholds contained therein.

b. Project Impacts. The project consists of two options, Option A and Option B, which differ (for the purposes of evaluating greenhouse gas emissions) in the number of garage parking spaces; Option A would have 53 more garage parking spaces than Option B. A further description of option differences can be found in Chapter III, Project Description. Based on project development scenarios, both options would have similar greenhouse gas emissions. Implementation of the either proposed option would result in the impacts discussed below.

[37] Bay Area Air Quality Management District, 1999. *BAAQMD CEQA Guidelines, Assessing the Air Quality Impacts of Projects and Plans.* December.

[38] CEQA 2014 Guidelines Section 21082; *CEQA Guidelines* Sections 15064.7 and 15064.4 (addressing GHG impacts).

(1) Generation of Greenhouse Gas Emissions. The project would generate greenhouse gas emissions during both construction and operation.

Construction Activities. Construction activities, such as site preparation, site grading, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, and motor vehicles transporting the construction crew would produce combustion emissions from various sources. During construction of the project, greenhouse gases would be emitted through the operation of construction equipment and from worker and builder supply vendor vehicles, each of which typically uses fossil-based fuels to operate. The combustion of fossil-based fuels would create greenhouse gas such as CO_2, CH_4, and N_2O. Furthermore, CH_4 would be emitted during the fueling of heavy equipment.

It is anticipated that development of the project site would require extensive earth moving and hauling of materials to the site. The proposed buildings would be construction in the third quarter of 2016 and the first units available would be in the second quarter of 2018. Using the California Emission Estimator Model (CalEEMod v.2013.2.2), the total CO_2 emissions associated with construction equipment for the proposed project would be approximately 1,705 tons CO_2e. Model output sheets are included in Appendix C.

The BAAQMD does not have a numeric threshold to determine the significance of construction emissions. However, the project would be required to implement the construction exhaust control measures listed in Mitigation Measure AIR-1 of Section IV.D, Air Quality, including minimization of construction equipment idling and implementation of proper engine tuning and exhaust controls. These measures would reduce greenhouse gas emissions during the construction period to a less-than-significant level.

Operational Emissions. Operational project emissions were estimated for area use, energy use, water use, waste generation, and mobile sources, as described below. For the proposed project fireplaces and hearths were not included.

Area Use. The proposed project would contribute to area source greenhouse gas emissions during project operation. Area emissions for the proposed project include consumer products, area architectural coatings, and landscaping equipment. The addition of 540 residential units would result in approximately 951 residents, contributing to the use of consumer products, and the 90,605 square feet of open space would require the use of landscaping equipment. Area architectural coating was calculated at an application rate of 10 percent of the surface area is repainted every year.[39]

Energy and Natural Gas Use. Buildings represent 36 percent of U.S. primary energy use and 65 percent of electricity consumption.[40] The proposed project would increase the demand for electricity and natural gas due to the new buildings with additional residents and employees occupying the project site. The project would indirectly result in increased greenhouse gas emissions from off-site electricity generation at power plants.

[39] CalEEMod, 2013. *California Emissions Estimator Model: User's Guide, Version 2013.2.* July.

[40] United States Department of Energy, 2007. *Buildings Energy Data Book.* September.

Redevelopment of the site once used for manufacturing and industrial uses with the infill mixed-use project would not result in the wasteful consumption of energy. Operation of the project would increase demand for electricity and gas service at the site from the current condition, but not to levels that could not be met by PG&E.

The City would also review project development plans prior to project approval to ensure that California Code of Regulations Title 24 energy conservation and efficiency standards are met and incorporated into project design. Therefore, the proposed project is not expected to increase the demand for energy or natural gas to an extent that these services could not be provided to the site by existing facilities and the project would have a less-than-significant impact on electricity and gas services.

Water Use. Water-related energy use consumes 19 percent of California's electricity every year.[41] Energy use and related greenhouse gas emissions are based on water supply and conveyance, water treatment, water distribution, and wastewater treatment. CalEEMod estimates the additional water demand for the proposed project is projected to be approximately 112.2 acre-feet per year during project operation.

Solid Waste Disposal. The proposed project would generate solid waste during the operation phase of the project. As described in Section IV.L, Utilities, residents, customers, and employees associated with development of the multi-use residential parcels would generate approximately 9,905 pounds per day of solid waste.

Mobile Sources. Mobile sources (vehicle trips and associated miles traveled) would be the largest emission source of greenhouse gases associated with the proposed project. Transportation is also the largest source of greenhouse gas emissions in California and represents approximately 38 percent of annual CO_2 emissions generated in the State. As with most development projects, VMT is the most direct indicator of CO_2 emissions from the proposed project and associated CO_2 emissions function as the best indicator of total greenhouse gas emissions. Vehicle emissions would decrease with time due to increased regulation of tailpipe emissions.

Emissions associated with the proposed project are shown in Table IV.E-3. Emissions associated with the service population (residents and employees) CO_2e generation for the proposed project are shown in Table IV.E-4.

According to the BAAQMD CEQA Air Quality Guidelines, a project would have a less-than-significant impact related to greenhouse gas emissions if it would generate less than 1,100 metric tons per year CO_2e or would result in emissions per employee of 4.6 metric tons per year CO_2e or less. As discussed in Section IV.B, Population and Housing, buildout of the project would result in up to 1,253 net new residents and employees.

[41] California, State of, 2005. California Energy Commission. *California's Water-Energy Relationship*. November.

Table IV.E-3: Annual Greenhouse Gas Emissions (Metric Tons per Year)

Emissions Source	Operational Emissions				
	CO_2	CH_4	N_2O	CO_2e	Percent of Total
Area	24	0	0	25	1
Energy	972	0	0	980	25
Mobile	2,644	0	0	2,647	67
Water	51	2	0	116	3
Waste	0	5	0	179	5
Total Annual Emissions				**3,945**	**100**

Note: Column totals may vary slightly due to independent rounding of input data.

Source: LSA Associates, Inc., 2015.

Table IV.E-4: Annual Greenhouse Gas Emissions (Metric Tons/Service Population/Year)

Emissions Source	Project Square Footage/Units	Service Population (SP) Emissions	
		Service Population/ Square Foot [a]	Service Population
Retail	3,000	549	18
Restaurant	5,000	100	50
Office	74,000	304	262
Residential	540	1.71b	923
Total Service Population			1,253
Emissions per Service Population CO_2e (MT/Year/SP)			3.15

[a] U.S. Green Building Council. 2008. Building Area Per Employee By Business Type. February.

Source: City of Emeryville, 2010 City of Emeryville Census Bureau Data, Bay Area Census. 2010; LSA Associates, Inc., 2015.

Model results indicate the total emissions from operation of the project under buildout conditions would be 3,945 metric tons per year CO_2e, resulting in a per service population emission rate of 3.15 metric tons per year. The annual emissions would therefore exceed the 1,100 meter tons CO_2e threshold, but would meet the threshold of 4.6 metric tons of CO_2e per service population per year. Therefore, the proposed project would have a less-than-significant impact related to the generation of greenhouse gas emissions. Mitigation would not be required to reduce emissions.

(2) Consistency with Plans. The City adopted a CAP that identified a set of emission and energy use reduction measures. Consistency with the CAP can be determined if the project would support the goals of the CAP, include applicable control measures, and would not disrupt or hinder implementations of any control measures from the CAP. The project's consistency with these objectives is described below.

The primary goal of the 2008 CAP is to decrease emissions below the 2004 baseline by 2020. The City has established a summary of proposed actions for community-wide emissions reduction. The actions are divided into the following sectors/measures types: transportation, energy efficiency,

renewable energy, and solid waste management (including waste reduction, recycling, composting, and final disposal activities).[42] Table IV.E-5 outlines the project's consistency with the City's CAP.

Table IV.E-5: Project Consistency with the Climate Action Plan

Proposed Actions	Project Consistency
Increase Transit Oriented Development	
• These actions are designed to increase location efficiency by locating the project in an urban area/downtown central business district, and/or locating the project on a brownfield site/infill area to reduce VMT and encourage public transit usage.	• The proposed project would satisfy this action based on the proximity to public transit and construction of bicycle and pedestrian walkways. • The proposed project is located within 0.2-miles of the AC Transit stop located on 40th Street at Horton Street, and approximately 0.1-miles to the Emery-Go-Round stop located on Hollis Street at 45th Street, and within 0.5-miles of the Emeryville Amtrak Station on Horton Street at 59th Street. Additionally the proposed project would include pathways and sidewalks for non-auto transportation and amenities would be located within walking/biking distance. • The proposed project would be constructed on a brownfield site.
Adopt a Green Building and Bay-Friendly Ordinance	
• Implementation of these actions is intended to promote efficient water use and prevent water waste, promote energy conservation and efficiency in buildings, and promote renewable energy production and usage of renewable building materials.	• The proposed project would satisfy this action by achieving the LEED ND Certified (Silver) status. For LEED certification the proposed project would be required, at a minimum, to be a Certified Green Building through an International Accreditation Forum (IAF)-accredited body (e.g., International Code Council's 2012 International Green Construction Code (IgCC)) and to meet minimum building energy performance according to guidelines set by American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) standards for energy-efficient design, specifically standard ASHRAE 90.1-2010.[43] • Additionally, the proposed project would include energy efficient retrofits of the adaptive re-use of the Sherwin-Williams building. • The proposed project would incorporate the Bay-Friendly Ordinance principles for sustainable landscaping.

[42] Ibid.

[43] ASHRAE. Standard 90.1-2013: *Energy Standard for Buildings Except Low-Rise Residential Buildings*. Website: www.ashrae.org/resources--publications/bookstore/standard-90-1 (accessed March 19, 2015).

Table IV.E-5: Project Consistency with the Climate Action Plan

Proposed Actions	Project Consistency
Enhance Transportation Demand Management Conditions	
• These actions encourage design strategies to reduce private-auto-dependence.	• The proposed project would include an extension of Hubbard Street with a 20-foot lane for vehicular and bicycle movement, as well as an additional connection eastward to Horton Street. Additional bicycle circulation paths would be provided along the western boundary of the project site and within the project site on proposed pathways. The proposed project's objectives are to have bicycle sharing, bike lockers, and electronic transit information signs.
New Pedestrian, Cycling and Transit Programs and Incentives	
• These actions promote community-wide action to ensure that planned growth is focused in a way that provides for alternative, non-auto, transportation.	• The proposed project would construct sidewalks on the proposed Hubbard Circle and the extension of Halleck Street. Pedestrian crosswalks would be provided at intersections, and stop signs would be provided at the Hubbard Street intersection with Sherwin Avenue and at the new 46th Street intersection with Horton Street. Stop signs and crosswalks would be provided at the intersection of 46th Street and Hubbard Circle in the east/west direction of travel. Additionally, the proposed project would include a bicycle sharing program.
Increase Transit Service and Ridership	
• These actions include provisions of expanding transportation routes and increased public transportation usage.	• Although not directly related, the proposed project is consistent with this action and is located approximately 1,000-feet away from existing AC Transit and Emery-go-Round stops on 40th Street, and 700-feet from an Emery-go-Round stop on Hollis Street. The Emeryville Amtrak station located on Horton Street at 59th Street is approximately 0.5-miles north of the project site. Additionally, the project includes an electronic transit information sign to increase community awareness of transit options.
Develop and Incentivize Local Renewable Energy Production	
• These actions encourage electricity generation from renewable power systems to decrease electricity demand which would ordinarily be supplied by varying generation.	• The proposed project would not include any renewable energy sources and would not be consistent with this proposed action.
Conserve Potable Water and Develop Rainwater Usage	
• Actions under this category are developed to promote potable water conservation and water reuse.	• The proposed project would include greywater reuse systems that would reduce potable water usage and therefore be consistent with this action. • The proposed project would be in the pursuit of LEED ND Certification (Silver) and thus should reduce indoor water usage by an average of 20 percent from a baseline calculated by EPA Water

Table IV.E-5: Project Consistency with the Climate Action Plan

Proposed Actions	Project Consistency
	Sense. Under the USGBC Guidelines for LEED ND Certification all newly installed toilets, urinals, private lavatory faucets, and showerheads that are eligible for labeling must be Water Sense (or a local equivalent) labeled. • Additionally, the use of greywater is proposed to irrigate landscaping, which would be primarily native and adaptive plants. Turf grass is proposed in picnicking areas to further reduce potable water used for irrigation.
Reduce 2004 Landfill Waste Tonnage by 50 percent by 2020	
• These actions are intended to increase participation in commercial recycling/reuse programs for paper, cardboard, metal, glass, and plastics, in addition to increasing participation in commercial and residential food waste collection programs (for composting). Furthermore these actions encourage businesses to participate in the County Green Business program.	• The proposed project would be required to submit a waste management plan (WMP) to the City per Emeryville's Municipal Code that would promote waste reduction and therefore satisfy this action. • The WMP indicates that at least 100 percent of the portland cement concrete and asphalt concrete and 50 percent of all remaining construction and demolition debris generated by the project would be diverted. • The Alameda County Mandatory Recycling Ordinance Phase II began on July 1, 2014 and its purpose is to reduce the amount of easily recyclable and compostable materials deposited in landfills from businesses, institutions, multi-family properties and self-haulers. This ordinance would be applicable to the proposed project and would support Emeryville's CAP by ensuring that recyclables and compostables make up less than 10 percent of material sent to landfill by 2020. • City Ordinance # 07-004 Food Service Waste Reduction, found in the City's municipal code, provides effective ways to reduce the negative environmental impacts of throw-away food service ware by reuse and compostable and biodegradable take-out materials. Restaurants as part of this multi-use project would be consistent with the ordinance to reduce landfill waste.
Reduce 2004 Landfill Waste Tonnage by 50 percent by 2020, *Continued*	• The City of Emeryville requires that contractors of all demolition projects and construction projects with a valuation of over 1,000 square feet recycle or reuse at least 50 percent of all debris generate by a project. Thus compliance with the City's Solid Waste Ordinance and Construction and Demolition Ordinance # 09-004 would be met.

Source: LSA Associates, Inc., 2015.

As discussed above, the proposed project would generally implement the applicable measures outlined in the CAP, including Energy and Transportation/Land-Use and Solid Waste Reduction Community-wide measures. Therefore, the project would not disrupt or hinder implementation of a control measure from the CAP and ultimately would be consistent with the CAP and would be in compliance with Appendix F of the CEQA Guidelines.

c. Cumulative Impacts. Cumulative impacts are the collective impacts of one or more past, present, or reasonably foreseeable future projects, that when combined, result in adverse changes to the environment. Climate change is a global environmental problem in which: (a) any given development project contributes only a small portion of any net increase in greenhouse gases; and (b) global growth is continuing to contribute large amounts of greenhouse gases across the world. Development projects may contribute to the phenomenon of global climate change in ways that would be experienced worldwide, with some specific effects felt in California. However, no scientific study has established a direct causal link between individual development project impacts and global warming.

The combination of greenhouse gas emissions from past, present, and future projects contributes to the phenomenon of global climate change and its associated environmental impacts. No individual project would result in a measureable impact on global climate change. Therefore, this section has addressed climate change primarily as a cumulative impact. As noted above, in developing the threshold of significance for greenhouse gas emissions, the BAAQMD identified the emissions level for which a project would conflict with existing California legislation adopted to reduce Statewide greenhouse gas emissions. Additionally the City of Emeryville's CAP provided community-wide measures to further reduce greenhouse gas emissions and energy consumption. According to the BAAQMD, if a project would generate greenhouse gas emissions above the threshold level, it would be considered to contribute substantially to a cumulative impact, and would be considered significant. As indicated in the analysis presented above, the proposed project would not exceed the project-level significance criteria established by the BAAQMD and therefore the proposed project would have a less-than-significant cumulative impact related to greenhouse gas emissions, energy consumption, and global climate change.

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F. NOISE

This section describes existing noise conditions in the vicinity of the project site, describes criteria for determining the significance of noise impacts, and estimates noise levels that would result from implementation of the proposed project. Where appropriate, mitigation measures are recommended to reduce project-related noise impacts.

1. Setting

The setting section begins with an introduction to several key concepts and terms that are used in evaluating noise and vibration, a related issue. This setting section concludes with a description of existing noise sources and noise levels that are experienced in the project site vicinity.

a. Characteristics of Sound. Noise is generally defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, and sleep.

To the human ear, sound has two significant characteristics: pitch and loudness. Pitch is the number of complete vibrations or cycles per second of a sound wave that results in the range of tone from high to low. Loudness is the strength of a sound that describes a noisy or quiet environment, and it is measured by the amplitude of the sound wave. Loudness is determined by the intensity of the sound waves combined with the reception characteristics of the human ear. Sound intensity refers to how hard the sound wave strikes an object, which in turn produces the sound's effect. This characteristic of sound can be precisely measured with instruments. The analysis of a project defines the noise environment of the project area in terms of sound intensity and its effects on adjacent sensitive land uses (e.g., residences, nursing homes, schools).

b. Measurement of Sound. Sound is characterized by various parameters that describe the rate of oscillation (frequency) of sound waves, the distance between successive troughs or crests in the wave, the speed that it travels, and the pressure level or energy content of a given sound. The sound pressure level has become the most common descriptor used to characterize the loudness (or amplitude) of an ambient sound, and the decibel (dB) scale is used to quantify sound intensity. A decibel (dB) is a unit of measurement which indicates the relative intensity of a sound. The 0 point on the dB scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Changes of 3 dB or less are only perceptible in laboratory environments. Audible increases in noise levels generally refer to a change of 3 dB or more, as this level has been found to be barely perceptible to the human ear in outdoor environments.

Because sound can vary in intensity by over one million times within the range of human hearing, a logarithmic loudness scale[1] is used to keep sound intensity numbers at a convenient and manageable level. Thus, a 10 dBA increase in the level of a continuous noise represents a perceived doubling of loudness, while a 20 dBA increase is 100 times more intense, and a 30 dBA increase is 1,000 times more intense. As noise spreads from a source, it loses energy so that the farther away the noise receiver is from the noise source, the lower the perceived noise level. Noise levels diminish or attenuate as distance from the source increases based on an inverse square rule, depending on how the noise

[1] Unlike linear units such as inches or pounds, decibels are measured on a logarithmic scale, representing points on a sharply rising curve. The logarithmic decibel scale allows an extremely wide range of acoustic energy to be characterized in a manageable notation.

source is physically configured. Noise levels from a single-point source, such as a single piece of construction equipment at ground level, attenuates at a rate of 6 dB for each doubling of distance (between the single-point source of noise and the noise-sensitive receptor of concern). Heavily traveled roads with few gaps in traffic behave as continuous line sources and attenuate roughly at a rate of 3 dB per doubling of distance.

Since the human ear is not equally sensitive to all pitches (sound frequencies) within the entire spectrum, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity in a process called "A-weighting," expressed as "dBA." The dBA or A-weighted decibel refers to a scale of noise measurement that approximates the range of sensitivity of the human ear to sounds of different frequencies. Table IV.F-1 contains a list of typical acoustical terms and definitions. Table IV.F-2 shows some representative noise sources and their corresponding noise levels in dBA.

There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound, including during sensitive times of the day and night. The equivalent continuous sound level (L_{eq}) is the total sound energy of time varying noise over a sample period. However, the predominant rating scales for human communities in the State of California are the L_{eq}, the community noise equivalent level (CNEL), and the day-night average level (L_{dn}) based on A-weighted decibels (dBA). CNEL is the time varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and 10 dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). L_{dn} is similar to the CNEL scale, but without the adjustment for events occurring during the evening relaxation hours. CNEL and L_{dn} are within 1 dBA of each other and are normally interchangeable. The noise adjustments are added to the noise events occurring during the more sensitive hours. Typical A-weighted sound levels from various sources are identified in Table IV.F-2.

When assessing the annoyance factor, other noise rating scales of importance include the maximum noise level (L_{max}), which is the highest exponential time averaged sound level that occurs during a stated time period. The noise environments discussed in this analysis are specified in terms of maximum levels denoted by L_{max} for short-term noise impacts. L_{max} reflects peak operating conditions and addresses the annoying aspects of intermittent noise.

Noise impacts can be organized into three categories. The first category comprises audible increases in noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3.0 dBA or greater, since, as described earlier, this level has been found to be barely perceptible in exterior environments. The second category, potentially audible, refers to a change in the noise level between 1.0 and 3.0 dBA. This range of noise levels has been found to be noticeable only in laboratory environments. The last category is changes in noise level of less than 1.0 dBA that are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

Table IV.F-1: Definitions of Acoustical Terms

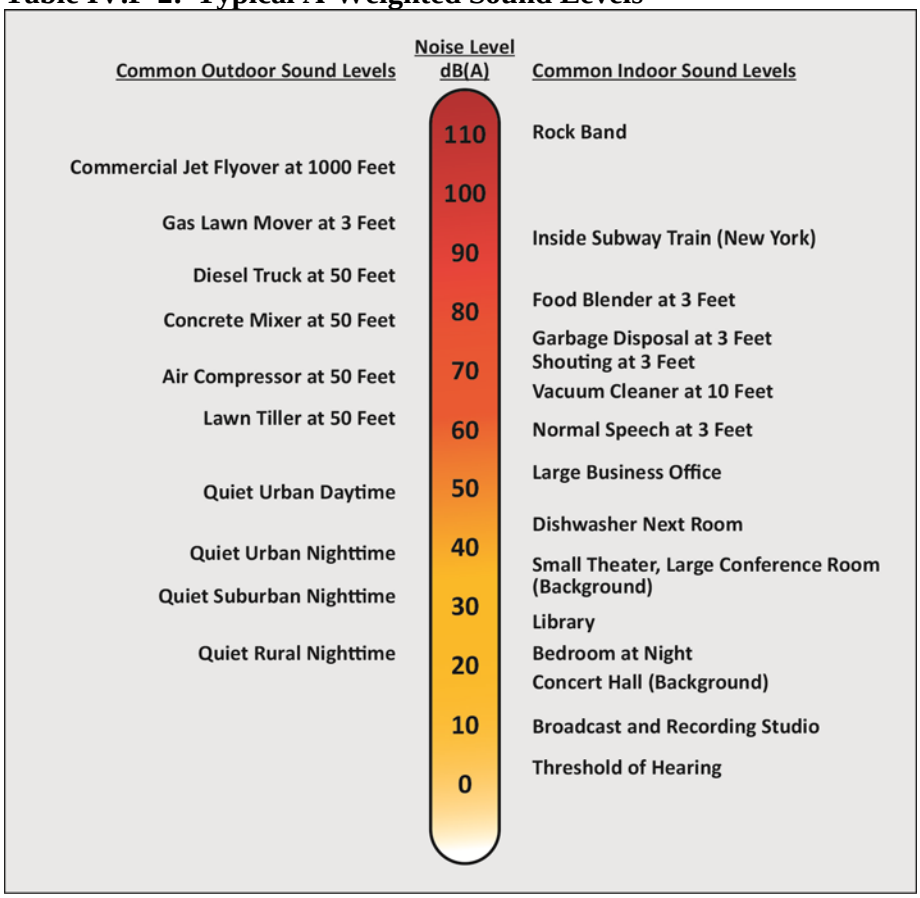
Term	Definitions
Decibel, dB	A unit that denotes the ratio between two quantities proportional to power; the number of decibels is 10 times the logarithm (to the base 10) of this ratio.
Frequency, Hz	Of a function periodic in time, the number of times that the quantity repeats itself in one second (i.e., number of cycles per second).
A-Weighted Sound Level, dBA	The sound level obtained by use of A-weighting. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this section are A-weighted, unless reported otherwise.
L_{01}, L_{10}, L_{50}, L_{90}	The fast A-weighted noise levels equaled or exceeded by a fluctuating sound level for 1 percent, 10 percent, 50 percent, and 90 percent of a stated time period.
Equivalent Continuous Noise Level, L_{eq}	The level of a steady sound that, in a stated time period and at a stated location, has the same A-weighted sound energy as the time-varying sound.
Community Noise Equivalent Level, CNEL	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 5 decibels to sound levels occurring in the evening from 7:00 p.m. to 10:00 p.m. and after the addition of 10 decibels to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
Day/Night Noise Level, L_{dn}	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 10 decibels to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
L_{max}, L_{min}	The maximum and minimum A-weighted sound levels measured on a sound level meter, during a designated time interval, using fast time averaging.
Ambient Noise Level	The all-encompassing noise associated with a given environment at a specified time, usually a composite of sound from many sources at many directions, near and far; no particular sound is dominant.
Intrusive	The noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Harris, Cyril M., 1998. *Handbook of Acoustical Measurements and Noise Control*.

c. Physiological Effects of Noise. According to the U.S. Department of Housing and Urban Development's 1985 Noise Guidebook, permanent physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 to 90 dBA. Exposure to high noise levels affects our entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, and thereby affecting blood pressure, functions of the ear, and the nervous system. In comparison, extended periods of noise exposure above 90 dBA would result in permanent cell damage. When the noise level reaches 120 dBA, a tickling sensation occurs in the human ear even with short-term exposure. This level of noise is called the threshold of feeling. To avoid adverse effects on human physical and mental health in the workplace or in communities, the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) requires the protection of workers from hearing loss when the noise exposure equals or exceeds an 8-hour time-weighted average of 85 dBA.[2]

[2] Occupational Safety & Health Administration, 2011. Regulations, Standards 29 CFR, Occupational Noise Exposure 1910.95.

Table IV.F-2: Typical A-Weighted Sound Levels



Source: Compiled by LSA Associates, Inc., 2009.

Unwanted community effects of noise occur at levels much lower than those that cause hearing loss and other health effects. Noise annoyance occurs when it interferes with sleeping, conversation, and noise-sensitive work, including learning or listening to the radio, television, or music. According to World Health Organization (WHO) noise studies, few people are seriously annoyed by daytime activities with noise levels below 55 dBA, or are only moderately annoyed with noise levels below 50 dBA.[3]

d. Characteristics of Groundborne Vibration. Vibrating objects in contact with the ground radiate vibration waves through various soil and rock strata to the foundations of nearby buildings. As the vibration propagates from the foundation throughout the remainder of the building, the vibration of floors and walls may cause perceptible vibration from the rattling of windows or a rumbling noise. The rumbling sound caused by the vibration of room surfaces is called groundborne noise. When assessing annoyance from groundborne noise, vibration is typically expressed as root mean square (rms) velocity in units of decibels of 1 micro-inch per second. To distinguish vibration levels from

[3] World Health Organization, 1999. *Guidelines for Community Noise*. Website: www.who.int/docstore/peh/noise/guidelines2.html (accessed November 19, 2015).

noise levels, the unit is written as "VdB." Human perception to vibration in indoor environments starts at levels as low as 67 VdB and sometimes lower. Annoyance due to vibration in residential settings starts at approximately 70 VdB. Groundborne vibration is almost never annoying to people who are outdoors. Although the motion of the ground may be perceived, without the effects associated with the shaking of the building, the motion does not provoke the same adverse human reaction.

In extreme cases, excessive groundborne vibration has the potential to cause structural damage to buildings. Construction vibration impacts on building structures are generally assessed in terms of peak particle velocity (PPV). Common sources of groundborne vibration include trains and construction activities such as blasting, pile driving and operating heavy earthmoving equipment. Typical vibration source levels from construction equipment are shown in Table IV.F-3.

Table IV.F-3: Typical Vibration Source Levels for Construction Equipment

Equipment		PPV at 25 ft (in/sec)	Approximate VdB at 25 feet
Pile Driver (impact)	Upper range	1.518	112
	Typical	0.644	104
Pile Driver (sonic)	Upper range	0.734	105
	Typical	0.170	93
Clam shovel drop (slurry wall)		0.202	94
Hydromill (slurry wall)	In soil	0.008	66
	In rock	0.017	75
Vibratory roller		0.210	94
Hoe ram		0.089	87
Large bulldozer		0.089	87
Caisson drilling		0.089	87
Loaded trucks		0.076	86
Jackhammer		0.035	79
Small bulldozer		0.003	58

Notes: PPV= peak particle velocity; in/sec= inches per second

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

e. Existing Noise Environment. The project site is located within an urban area with a mix of land uses. Commercial uses (including retail) and residential uses on Bay Street are located to the west of the project site and the Union Pacific Railroad (UPRR) tracks. The Novartis Research Center and Bayer (research and development facilities) are located to the north. Residential and commercial uses are located to the east and south.

The following section describes the existing noise environment and identifies the primary noise sources in the vicinity of the project site.

(1) Existing Ambient Noise Levels. The ambient noise environment in the City of Emeryville is impacted by a variety of sources including stationary noise sources, traffic, rail, and airport. Short-term noise monitoring was conducted to establish the existing ambient noise environment at sensitive land uses in the vicinity of the project site. Monitoring locations are shown in Figure IV.F-1.

Five short-term noise measurements (identified as ST-1 through ST-5) were conducted mid-day of March 17, 2015, between 11:00 a.m. and 1:30 p.m. for periods of 15 minutes each. Noise measurement data collected during the short-term noise measurements are summarized in Table IV.F-4. The meteorological data conditions at the time of the noise monitoring are shown in Table IV.F-5. The short-term noise measurements indicate that ambient noise in the project site vicinity ranges from approximately 52.9 dBA to 59.1 dBA L_{eq}. Traffic on surrounding roadways is the primary noise source while a maximum level of 68 dBA was generated during train pass-by events.

The parking garage to the west of the site, serving the residential and retail units at the Bay Street Emeryville mixed-use center, produces punctuated sounds that reverberate within the parking garage. Vehicular traffic in and out of the garage was heard on site during short-term measurement ST-3. There were two incidences recorded during the 15-minute measurement.

One long-term noise measurement was taken from 2:00 p.m. March 17, 2015 to 2:00 p.m. March 18, 2015 at location LT-1. Results of the long-term monitoring indicate 24-hour ambient noise conditions in the southeast quadrant of the project site is 63 dBA CNEL, which is consistent with the City's General Plan noise analysis, which indicates the Sherwin-Williams site is exposed to ambient roadway noise around 60 dBA and rail noise levels between 60 to 70 dBA. [4]

Table IV.F-4: Short-Term Ambient Noise Monitoring Results, dBA, March 17, 2015

Location Number	Location Description	Start Time	L_{eq} [a]	L_{max} [b]	L_{min} [c]	Primary Noise Sources
ST-1	Horton Street sidewalk, ~50 feet north of 45th Street, in front of 45th Street Artist Co-op	1:00 p.m.	59.1	78.8	44.4	Horton Street and 45th Street traffic noise, people conversing
ST-2	Southeast portion of Site, ~110 feet east of Hubbard Street	11:00 a.m.	58.4	70.4	51.6	Traffic on I-80, occasional Sherwin Avenue traffic, railroad traffic
ST-3	Northwest portion of Site, across from Bay Street parking garage, ~14 feet from west fence	11:30 a.m.	52.9	64.6	48.8	Bay Street parking garage, generator from building to the north
ST-4	Northeast portion of Site, ~12 feet south of parking lot fence, ~104 feet west of Horton Street	12:00 p.m.	54.2	65.6	50.6	Traffic on I-80, Horton Street traffic, pump on Horton Street
ST-5	South portion of Site ~40 feet north of Sherwin Avenue, between Halleck and Hubbard Streets	12:30 p.m.	53.6	71.9	48.5	Traffic on I-80, train passing, occasional Sherwin Avenue traffic

[a] L_{eq} represents the average of the sound energy occurring over the 15-minute time period.
[b] L_{max} is the highest sound level measured during the 15-minute time period.
[c] L_{min} is the lowest sound level measured during the 15-minute time period.

Source: LSA Associates, Inc., March 2015.

Table IV.F-5: Meteorological Conditions During Ambient Noise Monitoring

Location Number	Maximum Wind Speed (mph)	Average Wind Speed (mph)	Temperature (˚F)	Relative Humidity (%)	Sky Conditions
ST-1	0	0	69	56	Clear
ST-2a	0	0	66	63	Clear
ST-3	0	0	66	63	Clear
ST-4	0	0	67	62	Clear
ST-5	3	2	68	57	Clear

[a] Meteorological conditions during ST-3 were used for ST-2.

Source: LSA Associates, Inc., March 2015.

[4] Ibid.

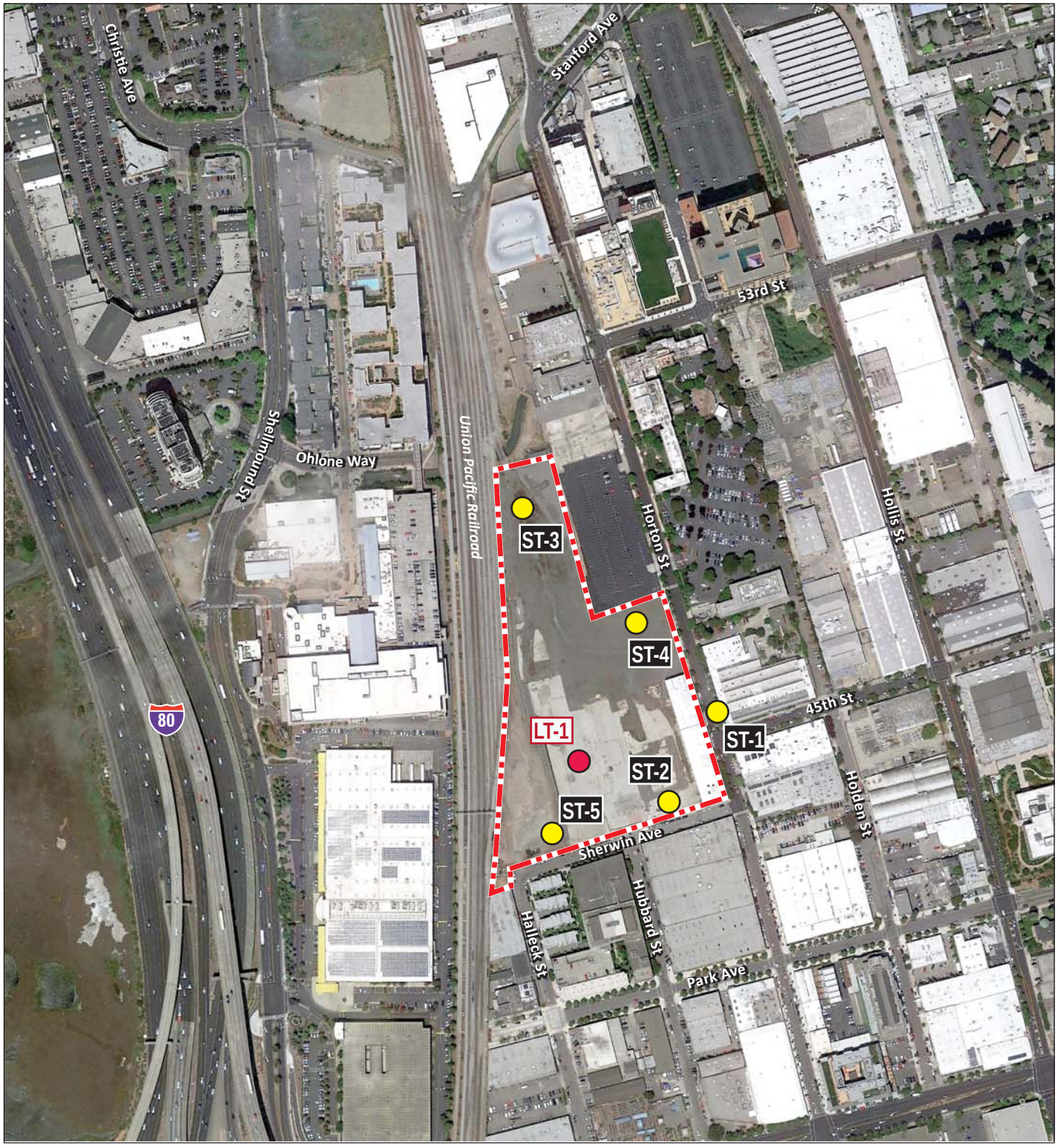


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FIGURE IV.F-1

Sherwin-Williams Project EIR

Noise Monitoring Locations

SOURCE: GOOGLE EARTH 06/14; LSA ASSOCIATES, INC., 2015.

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(2) Existing Traffic Noise Levels. Motor vehicles with their distinctive noise characteristics is one of the dominant sources of noise in Emeryville. The amount of noise varies according to many factors, such as volume of traffic, vehicle mix (percentage of cars and trucks), average traffic speed, and distance from the observer. Major contributing roadway noise sources in the project vicinity include Interstate 80 (I-80) and I-580 and local streets including San Pablo Avenue, 40th Street, Hollis Street, and Powell Street.

Existing traffic noise levels were calculated using guidelines provided by the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model. Traffic data used in the model were obtained from the Transportation Impact Analysis prepared by Fehr & Peers Transportation Consultants for the proposed project (see Appendix B). The traffic noise model printouts are included in Appendix D.

Table IV.G-6 lists the calculated traffic noise levels along roadway segments in the project site vicinity under existing conditions. Results indicate that existing traffic noise levels from modeled roadway segments nearest the project site range from approximately 46 to 63 dBA CNEL as measured at 50 feet from the centerline of the outermost travel lane.

The parking garage to the west of the site, serving the residential and retail units at the Bay Street Emeryville mixed-use center, produces punctuated sounds that reverberate within the parking garage. Vehicular traffic in and out of the garage was heard on-site during short-term measurement ST-3. There were two incidences recorded during the 15-minute measurement.

Worst-case scenario traffic volumes were calculated based on PM peak traffic data to estimate the average daily traffic (ADT) volumes. PM peak hour volumes traffic was higher than AM peak hour traffic volumes.

Table IV.F-6: Existing Traffic Noise Levels

Roadway Segment	Average Daily Trips [a]	Centerline to 70 dBA CNEL (feet)	Centerline to 65 dBA CNEL (feet)	Centerline to 60 dBA CNEL (feet)	CNEL (dBA) 50 Feet From Outermost Lane
Horton Street - 53rd Street to Stanford Avenue	4,900	< 50	< 50	< 50	57.6
53rd Street - Horton Street to Hollis Street	700	< 50	< 50	< 50	49.2
Horton Street - 53rd Street to Project Driveway	4,900	< 50	< 50	< 50	57.6
Horton Street - 45th Street to Project Driveway	5,000	< 50	< 50	< 50	57.7
45th Street - Horton Street to Hollis Street	1,100	< 50	< 50	< 50	51.1
Hollis Street - 53rd Street to 45th Street	10,900	< 50	< 50	88	63.0
Sherwin Avenue - Horton Street to Halleck Street	700	< 50	< 50	< 50	49.2
Hubbard Street - Park Avenue to Sherwin Avenue	300	< 50	< 50	< 50	45.5
Horton Street - Sherwin Avenue to Park Avenue	4,700	< 50	< 50	< 50	57.4

Note: Shaded cells indicate roadway segments adjacent to the project site.
[a] Average daily trips are estimated based on the peak hour traffic volumes.

Source: LSA Associates, Inc., 2015.

(3) Existing Rail Noise Levels. Rail operations are a source of noise within cities with existing rail networks such as Emeryville. The Amtrak rail line passes north-south through the center of the City. The Emeryville Station is located approximately 0.6 miles north of the project site on

Horton Street and 59th Street. The City of Emeryville is also served by the UPRR traversing north-south through the center of the city. The UPRR rail line borders the project to the west. The train noise can generate high, relatively brief, intermittent noise events particularly at street crossings. Factors that influence the overall impact of railroad noise on adjacent uses include the distance of buildings from the tracks, the intermittent nature of train noise (engine, horns, tracks), and the lack of sound walls or other barriers between the tracks and adjacent uses.

During the short-term measurement at location ST-2, a cargo train began to leave the station and resulted in a noise level around 65 dBA L_{max}, an Amtrak train passed by during the same measurement period and produced noise levels around 68 dBA L_{max}.

(4) Existing Aircraft Noise Levels. The public airports nearest to the project site are the Oakland International Airport (12 miles south of the site) and San Francisco International Airport (20 miles southwest of the site). The nearest private airfield, Buchanan Field Airport, is located approximately 22 miles northeast of the site. Although aircraft-related noise is occasionally audible on the project site, the site does not lie within an airport land use plan area or within the 65 dBA CNEL noise contours of any of these public airports or private airfield.

f. Regulatory Framework. The following section summarizes the regulatory framework related to noise, including federal, State and City of Emeryville plans, policies and standards.

Table IV.F-7: Summary of EPA Noise Levels

Effect	Level	Area
Hearing loss	$L_{eq}(24) \leq 70$ dB	All areas.
Outdoor activity interference and annoyance	$L_{dn} \leq 55$ dB	Outdoors in residential areas and farms and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use.
	$L_{eq}(24) \leq 55$ dB	Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.
Indoor activity interference and annoyance	$L_{eq} \leq 45$ dB	Indoor residential areas.
	$L_{eq}(24) \leq 45$ dB	Other indoor areas with human activities such as schools, etc.

Source: U.S. Environmental Protection Agency, 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. March.

Table IV.F-8: Summary of Human Effects in Areas Exposed to 55 dBA L_{dn}

Type of Effects	Magnitude of Effect
Speech – Indoors	100 percent sentence intelligibility (average) with a 5 dB margin of safety.
Speech – Outdoors	100 percent sentence intelligibility (average) at 1.4 feet. 99 percent sentence intelligibility (average) at 3.2 feet. 95 percent sentence intelligibility (average) at 11.5 feet.
Average Community Reaction	None evident; 7 dB below level of significant complaints and threats of legal action and at least 16 dB below "vigorous action."
Complaints	1 percent dependent on attitude and other non-level related factors.
Annoyance	17 percent dependent on attitude and other non-level related factors.
Attitude Towards Area	Noise essentially the least important of various factors.

Source: U.S. Environmental Protection Agency, 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. March.

(1) U.S. Environmental Protection Agency (U.S. EPA). In 1972, Congress enacted the Noise Control Act. This act authorized the U.S. EPA to publish descriptive data on the effects of noise and establish levels of sound "requisite to protect the public welfare with an adequate margin of safety." These levels are separated into health (hearing loss levels) and welfare (annoyance levels) categories, as shown in Table IV.F-7. The U.S. EPA cautions that these identified levels are not standards because they do not take into account the cost or feasibility of the levels.

For protection against hearing loss, 96 percent of the population would be protected if sound levels are less than or equal to an $L_{eq(24)}$ of 70 dBA. The "(24)" signifies L_{eq} duration of 24 hours. The U.S. EPA activity and interference guidelines are designed to ensure reliable speech communication at about 5 feet in the outdoor environment. For outdoor and indoor environments, interference with activity and annoyance should not occur if levels are below 55 dBA and 45 dBA, respectively.

The noise effects associated with an outdoor L_{dn} of 55 dBA are summarized in Table IV.F-8. At 55 dBA L_{dn}, 95 percent sentence clarity (intelligibility) may be expected at 11 feet, and no substantial community reaction. However, 1 percent of the population may complain about noise at this level and 17 percent may indicate annoyance.

(2) State of California. The State of California has established regulations that help prevent adverse impacts to occupants of buildings located near noise sources. The "State Noise Insulation Standard" requires noise-sensitive land uses to meet performance standards through design and/or building materials that would offset any noise source in the vicinity of the building. The standard requires that interior CNEL not exceed an annual CNEL of 45 dBA in any room. The State has also established land use compatibility guidelines for determining acceptable noise levels for specified land uses. The City of Emeryville has adopted the State's land use compatibility guidelines, as discussed below and shown in Table IV.F-9.

(3) City of Emeryville. The project site is located within the City of Emeryville. The applicable noise policies, standards, and ordinances of the City are summarized as follows. The City of Emeryville addresses noise in the Conservation, Safety, and Noise Element of the General Plan[5] and in the Municipal Code.[6] The City's land use compatibility standards for community noise environments are shown in Table IV.F-9. The policies listed in the Noise Element of the General Plan that are applicable to the proposed project are provided below:

- Policy CSN-P-50: The community noise compatibility standards (Table V.F-9) shall be used as review criteria for new land uses.
- Policy CSN-P-51: Noise impacts should be controlled at the noise source where feasible, as opposed to at receptor end. This includes measures to buffer, dampen, or actively cancel noise sources.
- Policy CSN-P-52: Occupants of existing and new buildings should be protected from exposure to excessive noise, particularly adjacent to Interstate-80 and the railroad.
- Policy CSN-P-53: A noise study and mitigation measures shall be required for all projects that have noise exposure levels greater than "normally acceptable" levels.
- Policy CSN-P-54: Developers shall reduce the noise impacts on new development through appropriate means (e.g. double-paneled or soundproof windows, setbacks, berming, and screening). This noise attenuation method should avoid the use of visible sound walls.
- Policy CSN-P-55: Site design, building design, hours of operation, and other techniques for new developments deemed to be noise generators shall be used to control noise sources.
- Policy CSN-P-56: The City will work with the California Public Utilities Commission, other pertinent agencies and stakeholders to determine the feasibility of developing a railroad quiet zone in Emeryville.

[5] Emeryville, City of, 2013. *Emeryville General Plan.* April 2.

[6] Emeryville, City of, 2014. *Emeryville Municipal Code.* March 18.

- Policy CSN-P-57: The City shall require noise buffering, dampening, or active cancellation, on roof-top or other outdoor mechanical equipment located near residences, parks, and other noise sensitive land uses.
- Policy CSN-P-58: The City shall limit the potential noise impacts of construction activities on surrounding land uses through Noise Ordinance regulations that address allowed days and hours of construction, types of work, construction equipment, notification of neighbors, and sound attenuation devices.

Table IV.F-9: City of Emeryville Noise and Land Use Compatibility Standards

Land Use Category	Community Noise Exposure in Decibels (CNEL) or Day/Night Average Noise Level in Decibels (Ldn)					
	55	60	65	70	75	80
Residential – Low Density (Single-Family, Duplex, Mobile Homes)						
Residential – Multi-Family						
Transient Lodging (Motels, Hotels)						
Schools, Libraries, Churches, Hospitals, Nursing Homes						
Auditoriums, Concert Halls, Amphitheaters						
Sports Arena, Outdoor Spectator Sports						
Playgrounds, Neighborhood Parks						
Golf Courses, Riding Stables, Water Recreation, Cemeteries						
Office Buildings, Business Commercial and Professional Centers						
Industrial, Manufacturing, Utilities, Agriculture						

NORMALLY ACCEPTABLE Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.	NORMALLY UNACCEPTABLE New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
CONDITIONALLY ACCEPTABLE New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise reduction features included in the design. Conventional construction, but with windows closed and fresh air supply systems or air conditioning will normally suffice.	CLEARLY UNACCEPTABLE New construction or development should generally not be undertaken.

Source: Emeryville, City of, 2013. *Emeryville General Plan.* April 2.

The City of Emeryville further addresses noise in the Municipal Code in Chapter 13, Noise, while Chapter 5.1109 establishes the acceptable daytime and nighttime maximum noise levels at receiving land uses. The maximum permissible noise level (as measured at receiving sensitive land uses) that may be generated by sources on a nonresidential land use is 55 dBA during nighttime hours and 65 dBA during daytime hours. Daytime hours are defined to be the period from 7:00 a.m. to 9:00 p.m. on weekdays, and from 8:00 a.m. to 9:00 p.m. on weekends.

According to Chapter 13.08 of the Municipal Code, the use of motorized equipment for landscape maintenance activities, such as leaf blowers, generators and other equipment with similar noise levels is limited to the hours of 8:00 a.m. to 5:00 p.m. During these hours, noise from the use of motorized equipment for landscape maintenance activities is allowed to exceed the maximum permissible noise limits provided that the equipment is operated over the minimal period necessary.

According to Chapter 13.05 of the Municipal Code, noise from construction activities are also allowed to exceed the maximum permissible noise limits described above, and except for emergency work, are limited to the hours of 7:00 a.m. and 6:00 p.m. Monday through Friday, and between the hours of 8:00 a.m. and 5:00 pm on Saturday or Sunday.

2. Impacts and Mitigation Measures

This section identifies the significance criteria and evaluates potential noise impacts associated with implementation of the proposed project. Mitigation measures have also been identified to address significant impacts, as necessary.

a. Criteria of Significance. A project would have a significant noise effect if it would substantially increase the ambient noise levels for adjoining areas or conflict with adopted environmental plans and goals of applicable regulatory agencies, including, as appropriate, the City of Emeryville. For the purposes of this EIR, the project would result in a significant noise impact if it would:

- Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Expose persons to or generate excessive ground-borne vibration or ground-borne noise levels;
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project and in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project and in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- 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, expose people residing or working in the project area to excessive noise levels; or

For the purposes of this analysis, a substantial permanent increase in ambient noise levels is considered to be more than 5 dBA, as a change of 5 dBA is considered the smallest change that is readily perceptible in urban outdoor environments.

b. Project Impacts. This section analyzes the potential noise impacts that could result from implementation of the Sherwin-Williams project (either Option A or Option B). Mitigation measures are recommended, as appropriate.

(1) Expose Persons to or Generate Noise Levels in Excess of Applicable Standards. Implementation of the proposed project could result in the exposure of future on-site residents and existing local residences to excessive noise levels, as discussed in detail below.

Impact NOI-1: Implementation of the proposed project could result in the exposure of future residences of the project site to excessive noise levels. (S)

Existing traffic largely attributes to the ambient noise environment at the project site. The primary noise sources in the area are located west of the project site and include I-80, the UPRR and Amtrak railroad tracks, and the adjacent parking garages serving the Bay Street development. An LSA technician performed the ambient noise monitoring and reported the traffic on I-80 to be the dominant and most consistent noise source. Proposed parcels located on the west side of the project site would be closer to I-80 and the railroad tracks, and would be exposed to higher ambient noise levels than parcels located on the east side of the project site.

The March 2015 24-hour long-term noise study (LT-1) was located approximately 1,000 feet east of I-80 and approximately 300 feet east of the UPRR and Amtrak railroad tracks. The normally acceptable land use compatibility noise standard for multi-level residential and mixed-use projects is up to 65 dBA CNEL.[7] Neighborhood parks are normally acceptable for noise levels up to 67.5 dBA CNEL. Table IV.F-10 shows the projected noise levels based on the parcel's distance from I-80 and the railroad tracks for each option.

Table IV.F-10: Project Site Existing Noise Levels

Building	Community Equivalent Noise Level CNEL, dBA	Normally Acceptable Noise Level CNEL, dBA	Exceeds Exterior Noise Standards?	Interior Noise Level [a] CNEL, dBA
Option A				
Parcel A	61	65	No	46
Parcel B-1	62	65	No	47
Parcel B-2	62	65	No	47
Parcel C-1	63	65	No	48
Parcel C-2	62	65	No	47
Parcel D	63	65	No	48
Open Space	63	67.5	No	--
Option B				
Parcel A	61	65	No	46
Parcel B-1	62	65	No	47
Parcel B-2	62	65	No	47
Parcel C-1	62	65	No	47
Parcel C-2	62	65	No	47
Parcel D	63	65	No	48
Open Space	63	67.5	No	--

[a] Bold numbers indicate interior noise levels that exceed the standard of 45 dBA CNEL without additional mitigation.

Source: LSA Associates, Inc. 2015.

[7] Emeryville, City of, 2014. *Emeryville Municipal Code*, op. cit.

Indoor noise environments for the proposed project would exceed the U.S. EPA's recommendations of 45 dBA CNEL for interior noise levels without appropriate mitigation. Based on the U.S. EPA's Protective Noise Levels,[8] a Northern California residential building constructed in compliance with the 2013 California Building Code would provide more than 25 dBA in exterior-to-interior noise reduction with all windows closed, and a 15 dBA or more reduction with windows open. With windows open, interior noise levels would not be below the U.S. EPA's recommendation of 45 dBA CNEL (i.e., 63 dBA – 15 dBA = 48 dBA). Therefore, to reduce noise-related disturbance to future residences, an alternate form of ventilation, such as an air-conditioning system, would be required to ensure that windows can remain closed for a prolonged period of time. Therefore, with mitigation, indoor noise environments could be reduced to a less-than-significant level (i.e., 63 dBA – 25 dBA = 38 dBA).

> Mitigation Measure NOI-1: All residential units shall be designed and equipped with an alternate form of ventilation, such as mechanical ventilation or air conditioning to allow windows and doors to remain closed. Interior noise would be reduced to meet the standard of 45 dBA CNEL when all windows and doors are closed. (LTS)

Based on the information above, the proposed project would not exceed established land use compatibility noise thresholds with implementation of Mitigation Measure NOI-1. Therefore, through mitigation, the proposed project would be reduced to a less-than-significant noise impact.

(2) Expose Persons to or Generate Excessive Groundborne Vibration or Groundborne Noise Levels. The UPRR tracks lie directly to the west of the project site and are a source of groundborne vibration. Additional construction activities related to development of the proposed project could result in groundborne vibration levels that would be perceptible at points along the project site property line when heavy earthmoving equipment operates near the periphery of the site. The General Plan addresses vibrational impacts in land use and traffic policies and requires that groundborne vibration be mitigated to the extent possible.[9]

Construction Groundborne Vibration. The City of Emeryville's Municipal Code states that groundborne vibration impacts involved in the demolition of structures are acceptable. In general, groundborne vibration from standard construction practices is only a potential issue when within 25 feet of sensitive uses. The project would not require demolition and construction is not proposed within 25 feet of any existing sensitive structures; therefore, impacts associated with groundborne vibration are considered less than significant.

Rail Groundborne Vibration. Vibration levels inside proposed buildings would depend on the existing vibration levels and proposed building construction. Based on the methodology for a "general vibration assessment" in the FTA guidance manual, vibration levels inside buildings are typically less than the vibration levels in the ground. This is due to the losses associated with the coupling of the building's foundation to the ground. Measurements of ground vibration were conducted on the project site to quantify the vibration levels generated by train events by Rosen, Goldberg, and Der in 2005.[10] The monitoring indicated there is an average of 78 train events per day

[8] Environmental Protection Agency, 1978. *Protective Noise Levels, Condensed Version of EPA Levels Document*. November.

[9] Emeryville, City of, 2013. *Emeryville General Plan,* op. cit.

[10] Rosen, Goldberg and Der, 2005. *Sherwin-Williams Redevelopment Noise Assessment.*

and the highest measured vibration level was 71 VdB. This level is near the threshold of perceptibility. The measured vibration levels are generally consistent with levels that would be expected for slow moving trains that were observed during the measurements. [11]

The general rule is that the heavier the building, the greater the coupling loss. Therefore, since the vibration levels measured at the site are less than the 72 VdB threshold, anticipated vibration levels inside the buildings would be expected to also be less than the threshold. Therefore, vibration within the project site is considered a less-than-significant impact.

It should be noted that vibration may still be perceptible in the closest buildings to the railroad tracks, which should be disclosed to potential residents. Also, some structural designs can cause amplification of vibration levels in floors. This is particularly true for wood frame buildings. Therefore, reasonable efforts should be made during the structural design of the buildings closest to the tracks to minimize this amplification. However, these impacts are not considered significant.

(3) Increase in Noise. Implementation of the proposed project could result in stationary noise levels in excess of City standards and could result in a permanent increase in stationary noise and traffic noise.

<u>Impact NOI-2</u>: Implementation of the project could result in a substantial increase in stationary noise levels, due to delivery and loading/unloading activities, experienced at off-site sensitive land uses in the project vicinity compared to levels that would exist without the project. (S)

As described in the regulatory framework discussion above, the City of Emeryville establishes the acceptable daytime and nighttime maximum noise levels at receiving land uses. The maximum permissible noise level (as measured at receiving sensitive land uses) that may be generated by sources on a nonresidential land use is 55 dBA L_{max} during nighttime hours and 65 dBA L_{max} during daytime hours. Stationary noise sources could include mechanical equipment, occasional truck delivery loading/unloading activities, and typical parking lot activities.

Of the on-site stationary noise sources, noise generated by delivery truck activity would generate the highest maximum noise levels. While parking activities, such as people conversing or doors slamming, would generate noise levels of approximately 60 dBA to 70 dBA L_{max} at 50 feet, delivery truck loading and unloading activities would result in maximum noise levels from 75 dBA to 85 dBA L_{max} at 50 feet. There are generally two types of loading that would occur on the site: small deliveries like parcels and packages, and large deliveries such as retail items, weekly food deliveries for dining facilities, or bulk supplies for the proposed office facilities. The former are typically made via passenger car, van, or single-unit truck. These activities are potential point sources of noise that could affect noise-sensitive receptors in the project site vicinity. Stationary noise impacts at the nearest sensitive land uses are discussed in detail below.

Specific loading and unloading locations have not been established. Should delivery and loading/ unloading activities occur on Horton Street, noise levels could be between 73 dBA to 83 dBA L_{max} at the nearby sensitive receptors located in the live/work studios and residential units on Horton Street and 45th Street, approximately 60 feet away. Should delivery and loading/unloading activities occur on Sherwin Avenue, maximum noise levels ranging from 73 dBA to 83 dBA L_{max} could be

[11] Ibid.

experienced at the nearby residential uses, approximately 60 feet from the project site boundary. Delivery and loading and unloading activities located on Horton Street and Sherwin Avenue would result in a significant impact by exposing nearby residences to noise levels exceeding the City's maximum permissible noise level of 65 dBA for daytime hours.[12]

The propose project would include mechanical noise sources (i.e., electrical generation facilities and-heating-air-conditioning-and-ventilation (HVAC) systems) that could exceed the City's acceptable noise levels at sensitive receiving land uses in the project vicinity. In order for stationary source noise levels to be reduced to a less-than-significant level the proposed project shall implement the following measure:

> Mitigation Measure NOI-2: The final project design shall incorporate standard industrial noise control measures for any project stationary noise sources to meet the City of Emeryville Municipal Code standards of 55 dBA during the night and 65 dBA during the day. Such measures may include enclosing equipment in sound-attenuating structures, using buildings to shield these noise sources from sensitive receptors, or mounting equipment on resilient pads to reduce both groundborne and airborne vibration noises. The project sponsor shall ensure that operational noise from stationary sources do not exceed the thresholds set forth in the City of Emeryville Municipal Code for the surrounding residential land uses. The project sponsor shall use standard design features/approaches, including installation of relatively quiet models of mechanical equipment, installation of exhaust silencers, orientation of shielding to protect sensitive land uses, and installation within enclosures when necessary to reduce stationary, or fixed source, noise levels to below the established threshold when measures at the property line of the nearest affected sensitive receptor. Loading and unloading activities shall be restricted to the hours of 7:00 a.m. to 9:00 p.m. on weekdays and 8:00 a.m. to 9:00 p.m. on weekends. (LTS)

Implementation of Mitigation Measure NOI-2 would reduce stationary noise impacts to a less-than-significant level.

Traffic Noise. Implementation of the proposed project would result in increased ambient noise levels in the project site vicinity due to increased vehicular traffic. The two additional intersections, one on Horton Street and the proposed 46th Street, and one on Sherwin Avenue and the proposed extension of Hubbard Street, could increase noise related to automobile acceleration and increase the number of vehicles on the surrounding roadways. Traffic noise levels were modeled for both options at nine roadway segments in the project vicinity. Existing traffic noise levels are shown in Table IV.F-6 and existing plus project traffic noise levels are shown in Table IV.F-11 and Table IV.F-12 for Option A and Option B, respectively.

[12] Emeryville, City of, 2012. *General Plan.* op. cit.

Table IV.F-11: Modeled Existing Plus Project Option A Traffic Noise Levels

Roadway Segment	Average Daily Trips [a]	Centerline to 70 dBA CNEL (feet)	Centerline to 65 dBA CNEL (feet)	Centerline to 60 dBA CNEL (feet)	CNEL (dBA) 50 Feet From Outermost Lane	Increase from Baseline Conditions (dBA)
Horton Street - 53rd Street to Stanford Avenue	5,800	< 50	< 50	< 50	58.4	0.8
53rd Street - Horton Street to Hollis Street	1,000	< 50	< 50	< 50	50.7	1.5
Horton Street - 53rd Street to Project Driveway	6,200	< 50	< 50	< 50	58.6	1.0
Horton Street - 45th Street to Project Driveway	5,700	< 50	< 50	< 50	58.3	0.6
45th Street - Horton Street to Hollis Street	1,300	< 50	< 50	< 50	51.9	0.8
Hollis Street - 53rd Street to 45th Street	11,000	< 50	< 50	88	63.0	0.0
Sherwin Avenue - Horton Street to Halleck Street	1,300	< 50	< 50	< 50	51.9	2.7
Hubbard Street - Park Avenue to Sherwin Avenue	800	< 50	< 50	< 50	49.3	4.4
Horton Street - Sherwin Avenue to Park Avenue	5,600	< 50	< 50	< 50	58.2	0.8

Note: Shaded cells indicate roadway segments adjacent to the project site.
[a] Average daily trips are estimated based on the peak hour traffic volumes.

Source: LSA Associates, Inc., 2015.

Table IV.F-12: Modeled Existing Plus Project Option B Traffic Noise Levels

Roadway Segment	Average Daily Trips [a]	Centerline to 70 dBA CNEL (feet)	Centerline to 65 dBA CNEL (feet)	Centerline to 60 dBA CNEL (feet)	CNEL (dBA) 50 Feet From Outermost Lane	Increase from Baseline Conditions (dBA)
Horton Street - 53rd Street to Stanford Avenue	5,800	< 50	< 50	< 50	58.4	0.8
53rd Street - Horton Street to Hollis Street	1,100	< 50	< 50	< 50	51.1	1.9
Horton Street - 53rd Street to Project Driveway	6,300	< 50	< 50	< 50	58.7	1.1
Horton Street - 45th Street to Project Driveway	5,700	< 50	< 50	< 50	58.3	0.6
45th Street - Horton Street to Hollis Street	1,300	< 50	< 50	< 50	51.9	0.8
Hollis Street - 53rd Street to 45th Street	11,000	< 50	< 50	88	63.0	0.0
Sherwin Avenue - Horton Street to Halleck Street	1,200	< 50	< 50	< 50	51.5	2.3
Hubbard Street - Park Avenue to Sherwin Avenue	900	< 50	< 50	< 50	50.3	4.8
Horton Street - Sherwin Avenue to Park Avenue	5,600	< 50	< 50	< 50	58.2	0.8

Note: Shaded cells indicate roadway segments adjacent to the project site.
[a] Average daily trips are estimated based on the peak hour traffic volumes.

Source: LSA Associates, Inc., 2015.

The increase of traffic as a result of the proposed project would result in a less-than-significant long-term noise impact as none of the noise levels on the studied roadway segments would increase by 5dBA. Long-term noise related impacts from the proposed project for both options are discussed below.

Option A. The proposed project's Option A would not result in a significant increase in long-term traffic noise levels above baseline conditions. As modeled, the roadway segment with the largest increase above baseline traffic noise conditions was on Hubbard Street from Park Avenue to Sherwin Avenue. This increase in traffic noise levels would be attributed to the extension of Hubbard Street to the proposed project site. As stated above, a substantial permanent increase in ambient noise levels would increase the community equivalent noise level by 5 dBA. The traffic noise attributable to Hubbard Street would result in a 4.4 dBA increase from 45.5 dBA CNEL to 49.3 dBA CNEL. However, existing noise levels measured near to Hubbard Street (see Figure IV.F-1) was 63 dBA, with the primary noise source being traffic from I-80. The localized traffic noise with the project would be less than the existing community noise levels (i.e., 49.3 dBA is less than 63 dBA). The proposed project would result in a less-than-significant traffic noise impact for roadways in the project vicinity.

As shown in Table IV.F-11 above, the proposed project would result in an increase of approximately 0.8 dBA in traffic related noise levels at the corner of 45th Street and Horton Street; therefore, there would be a less-than-significant traffic noise impact for Option A.

Option B. Option B would extend Hubbard Street north from Sherwin Avenue, which would increase traffic in the area. Existing traffic noise levels are 45.5 dBA CNEL and are expected to increase by 4.8 dBA to 50.3 dBA CNEL as a result of the proposed project. The long-term noise measurement taken on the project site recorded existing noise levels of 63 dBA CNEL. Therefore, project-related increase in traffic noise levels in the vicinity of Hubbard Street and Sherwin Avenue would not be considered a significant impact. The proposed increase in noise levels attributed to project-related traffic is less than existing noise levels attributed by I-80. Additionally, the 4.8 dBA increase would not be considered a significant increase as a change of 5.0 dBA is considered the smallest change that is readily perceptible in outdoor urban environments. Therefore, the proposed project would have a less-than-significant traffic noise impact for Option B.

As shown in Table IV.F-12 above, the proposed project would result in an increase of approximately 0.8 dBA in traffic related noise levels at the corner of 45th Street and Horton Street; therefore, there would be a less-than-significant traffic noise impact for Option B.

(4) Result in a Substantial Temporary Increase in Ambient Noise Levels. Implementation of the proposed project could include construction activities that would result in substantial temporary increases in ambient noise levels in the project site vicinity. Potential impacts are discussed in more detail below.

Construction Noise. Implementation of the proposed project could result in a temporary increase in ambient noise levels.

<u>Impact NOI-3</u>: Noise from construction activities could result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. (S)

Noise generated during grading, site preparation, and building erection on the project site would result in potential noise impacts on off-site uses. Existing receptors in the vicinity, including residential land uses, would be subject to short-term noise generated by construction equipment and activities on the project site when construction occurs near the project boundary.

Construction of the proposed project is expected to be completed in one continuous phase over many months and would require the use of earthmovers such as bulldozers and scrapers, loaders and graders, water trucks, and pickup trucks. The use of impact pile driving equipment or rock drills is not anticipated during construction of the proposed project.

As shown in Table IV.F-13, the typical maximum noise level generated by backhoes on the project site is assumed to be 86 dBA L_{max} at 50 feet from the operating equipment. The maximum noise level generated by bulldozers is approximately 85 dBA L_{max} at 50 feet. The maximum noise level generated by water and other trucks is approximately 86 dBA L_{max} at 50 feet from these vehicles. Each doubling of the sound sources with equal strength would increase the noise level by 3 dBA. Assuming each piece of construction equipment operates at some distance apart from the other equipment, the worst-case combined noise level during this phase of construction would be 91 dBA L_{max} at a distance of 50 feet from an active construction area.

Table IV.F-13: Typical Construction Equipment Maximum Noise Levels, L_{max}

Type of Equipment	Range of Maximum Sound Levels (dBA at 50 feet)	Suggested Maximum Sound Levels for Analysis (dBA at 50 feet)
Pile Drivers	81 to 96	93
Rock Drills	83 to 99	96
Jackhammers	75 to 85	82
Pneumatic Tools	78 to 88	85
Pumps	74 to 84	80
Scrapers	83 to 91	87
Haul Trucks	83 to 94	88
Cranes	79 to 86	82
Portable Generators	71 to 87	80
Rollers	75 to 82	80
Dozers	77 to 90	85
Tractors	77 to 82	80
Front-End Loaders	77 to 90	86
Hydraulic Backhoe	81 to 90	86
Hydraulic Excavators	81 to 90	86
Graders	79 to 89	86
Air Compressors	76 to 89	86
Trucks	81 to 87	86

Source: Bolt, Beranek & Newman, 1987. *Noise Control for Buildings and Manufacturing Plants.*

The closest noise-sensitive receptors to the project site boundaries are located approximately 60 feet east from the project site. Residential units are located south of the project on Sherwin Avenue from Halleck Street to Hubbard Street. The nearest private outdoor active use space (a courtyard) is located approximately 60 feet south of the project site property line extending south, while the nearest building façades are also located approximately 60 feet from the project site property line. To the east, live/work studios and residential units are located on Horton Street, near the southeast corner of the project site boundary. The closest units are located approximately 60 feet from the project site boundary. The studios on the corner of Horton Street and 45th Street are located in a retrofitted warehouse where noise infiltration is a primary resident concern. During the construction period, if multiple pieces of heavy construction equipment are operated simultaneously at the nearest site boundary, noise levels could range up to 89 dBA L_{max} at the nearest building façade.

As described in the regulatory framework discussion above, the City of Emeryville Municipal Code establishes acceptable construction daytime hours to be 7:00 a.m. and 6:00 p.m. Monday through Friday, and between the hours of 8:00 a.m. and 5:00 pm on Saturday or Sunday. During these hours construction generated noise does not have maximum noise level standards. Implementation of the following mitigation measure would help reduce construction noise impacts on the off-site near-by sensitive receptors.

Mitigation Measure NOI-3: The project contractor shall implement the following measures:

- General construction noise on private and public projects shall be limited to weekdays from 7:00 a.m. to 6:00 p.m. The loudest activities shall be limited to weekdays from 8:00 a.m. to 5:00 p.m., as stated in the City's Municipal Code.
- The applicant shall designate a construction liaison that would be responsible for responding to any local complaints about construction noise. The liaison would determine the cause of the noise complaints (e.g., starting too early, bad muffler) and institute reasonable measures to correct the problem. The applicant shall conspicuously post a telephone number for the liaison at the construction site.
- The project contractor shall, to the extent feasible, place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site.
- The construction contractor shall locate on-site equipment staging areas so as to maximize the distance between construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction.
- Construction activities shall be prohibited on holidays.
- It the project applicant requests construction hours outside the Municipal Code's designated hours, the project applicant shall provide a Construction Noise Reduction Plan to meet a maximum permissible noise level of 55 dBA at the project boundary.
- Whenever feasible, the project contractor shall encourage implementation of the following strategies throughout all phases of construction:
    - Use smaller or quieter equipment;
    - Use electric equipment in lieu of gasoline or diesel powered equipment;
    - Turn off all idling equipment when anticipated to not be in use for more than 5 minutes;
    - Minimize drop height when loading excavated materials onto trucks;
    - Minimize drop height when unloading or moving materials on-site; and
    - Sequence noisy activities to coincide with noisiest ambient hours (i.e., 8:00 a.m. to 9:00 a.m. or 4:00 p.m. to 6:00 p.m.). (LTS)

Implementation of the abovementioned measures would reduce the construction noise impacts to a less-than-significant noise impact. The proposed project would not be expected to have a significant impact on the surrounding neighborhoods or on children playing outside or at nearby schools.

(5) Airport Noise. The project site is not located within or in the vicinity of an airport land use plan or within the 55 dBA CNEL noise contour of any airport. The public airports nearest to the project site are the Oakland International Airport (12 miles south of the site) and San Francisco International Airport (20 miles southwest of the site). The nearest private airfield, Buchannan Field Airport, is located approximately 22 miles northeast of the site. Although aircraft-related noise is occasionally audible on the project site, the site does not lie within an airport land use plan area or within the 65 dBA CNEL noise contours of any of these public airports or private airfields. Therefore, implementation of the project would not expose persons working in the project site to excessive noise levels from aircraft noise sources. Therefore, impacts related to noise levels from aircraft noise sources would be less than significant.

c. Cumulative Impacts. The proposed project would not create a cumulatively considerable contribution to regional noise conditions. As shown in Table IV.F-6, existing traffic noise levels on the modeled roadway segments are currently below the City's normally acceptable thresholds for the adjacent land uses. The model results also show that traffic noise levels, as a result of the proposed project, would remain beneath the City's acceptable noise levels for the receiving land uses and would not result in a significant increase of more than 5 dBA. Therefore, the development of the proposed project would not create a significant impact under cumulative noise conditions.

G. GEOLOGY, SOILS AND SEISMICITY

This section assesses the project site geologic environment based on an inspection of current site conditions, a review of published and unpublished geologic reports and maps, and site-specific subsurface investigations and geotechnical reports.[1,2,3] This section also assesses potential impacts from strong ground shaking, liquefaction, and differential settlement that could result from seismic activity. Mitigation measures are provided, as appropriate.

1. Setting

The project site is located at the western coastal margin of the Coast Range Geomorphic Province of Northern California and the eastern edge of the San Francisco Bay. This region is dominated by northwest-southeast trending ranges of low mountains and intervening valleys. The site is located in the seismically active San Francisco Bay Area. The main geologic feature generating seismic activity in the region is the tectonic plate boundary between the North American and Pacific plates. Locally, this boundary is referred to as the San Andreas Fault Zone, which includes the San Andreas Fault and numerous other active faults.

a. Geologic Setting. The following discussion includes a description of the topography, soils, and seismic conditions of the project site.

(1) Topography. The project site is located within a relatively flat urbanized area. The existing ground surface elevation is approximately 10 to 24 feet relative to the National Geodetic Vertical Datum.[4] No open creek or stream channels cross the site. Temescal Creek is located immediately north of the project site.

(2) Geology and Soils. Based on regional geologic mapping, the project site is underlain by Quaternary-aged fine-grained alluvium deposited along the eastern margin of San Francisco Bay.[5] Geologic mapping included in the City's General Plan indicates that the historic (1850) Bay margin is located approximately 200 feet west of the western site boundary.

A preliminary geotechnical investigation conducted at the project site in 2003 included two soil borings and six cone penetration tests (CPT) completed to a depth of approximately 100 feet below the ground surface. The CPT and boring logs indicate the presence of interbedded clay, silt, sand, and gravel layers to the maximum depth explored. Seven additional borings were installed and sampled in

[1] CDM, 2003. *The Sherwin Williams Company, Summary of Geotechnical Results and Conceptual Geotechnical Engineering Recommendations for the Sherwin-Williams Company Emeryville, CA Manufacturing Facility*. August 15.

[2] CDM, 2012. *2012 Update – Geotechnical Results and Conceptual Geotechnical Engineering Recommendations Sherwin-Williams Company Emeryville, CA Manufacturing Site*. November 7.

[3] Treadwell & Rollo, 2013. *Review of Geotechnical Reports Sherwin-Williams Site 1450 Sherwin Avenue Emeryville, California*. September 26.

[4] CDM, 2003, op. cit.

[5] Helley, E.J., and K.R. LaJoie, 1979. *Flatland Deposits of the San Francisco Bay Region, California-Their Geology and Engineering Properties, and Their Importance to Comprehensive Planning*, USGS Professional Paper 943.

2012. Specifically, the geotechnical investigation differentiated between five stratigraphic horizons (starting with the surface layer).[6] These layers are described below.

- *Layer 1.* This heterogeneous layer is composed of silty/clayey gravel with sand and frequently contains debris, including glass, concrete, and brick fragments. Designated as "fill," this layer ranges in thickness between 4 and 22 feet.
- *Layer 2.* This layer is composed of soft medium- to high-plasticity black sandy clay containing abundant organic material. These clayey deposits range in thickness from 10 to 33 feet.
- *Layer 3.* This layer is composed of medium-dense to dense clayey sand and silty sand, ranging in thickness from 3 to 16 feet.
- *Layer 4.* This layer is composed of medium- to high-plasticity sandy clay with varying amounts of silt and gravel. These sandy clay deposits range in thickness from 3 to greater than 53 feet.
- *Layer 5.* This layer is composed of medium-dense to very-dense sand, gravelly sand, and silty gravel. These deposits range in thickness 5 to 13 feet.

In addition to these distinct stratigraphic layers of sediment, compacted structural fill was placed in the central portion of the site following removal of contaminated sediment in 2011 and 2012.[7] The deepest potion of the fill (primarily silty sand with some sand and gravel) extends to a depth of approximately 20 feet below ground surface. Portions of the site are underlain by a soil-bentonite slurry wall (3 feet wide and up to 22 feet deep) installed during site remediation activities. Based on data from the site-specific soil boring and CPT logs, groundwater occurred at depths ranging from 10 to 14 feet below the ground surface in 2003.

The soils underlying the project site have been mapped as "urban land" by the Soil Conservation Service (SCS), currently named the Natural Resources Conservation Service.[8] Urban land consists of areas that are covered by houses, industrial buildings, parking lots and other urban structures, and where the soil material has been altered or mixed during urban development. The drainage and geotechnical properties of this soil unit are not designated by the SCS.

b. Seismic Conditions. The project site is located within the San Andreas Fault Zone (SAFZ), a complex of active faults forming the boundary between the North American and Pacific lithospheric plates. Movement of the plates relative to one another results in the accumulation of strain along the faults, which is released during earthquakes. Numerous moderate to strong historic earthquakes have been generated in northern California by the SAFZ. The level of active seismicity results in classification of the area of as seismic risk Zone 4 (the highest risk category) in the California Building Code.

The SAFZ includes numerous active faults found by the California Division of Mines and Geology (now named California Geological Survey) under the Alquist-Priolo Earthquake Fault Zoning Act to

[6] CDM, 2003, op. cit.

[7] CDM, 2012, op. cit.

[8] United States Department of Agriculture, 2015. Natural Resources Conservation Services. *Soil Map-Alameda County, California, Western Part*.

be "active" (i.e., to have evidence of fault rupture in the past 11,000 years). The closest active fault to the project site is the Hayward Fault, which is approximately 3 miles northeast of the site. Other regional faults that could affect the project site include the San Andreas, Calaveras, Concord-Green Valley, Rodgers Creek, Greenville, and San Gregorio faults. Regional active faults are shown in Figure IV.G-1.

A recently released U.S. Geological Survey earthquake prediction model estimates that there is a 72 percent probability that between 2014 and 2044, a 6.7 or greater magnitude earthquake will occur in the San Francisco Bay Region.[9] The probability of a 6.7 magnitude or greater (classified as "damaging") earthquake occurring along individual faults was estimated to be 14 percent along the Hayward Fault, 6 percent along the northern San Andreas Fault and 7 percent along the Calaveras Fault. Relative to earlier prediction models, the recent model predicts lower probabilities for damaging earthquakes in the Bay area and higher probabilities from "great" (magnitude 8.0 or greater) earthquakes. Following is a discussion of direct and indirect seismic hazards associated with earthquake activity in the SAFZ, including the project site.

(1) Surface Rupture. Surface rupture occurs when the ground surface is broken due to fault movement during an earthquake. The location of surface rupture generally can be assumed to be along an active or potentially active major fault trace. No active faults have been mapped at the project site. Therefore, potential for fault rupture at the site is negligible, and no portion of the site is located within an Alquist-Priolo Earthquake Fault Zone.

(2) Ground Shaking. Ground shaking is a general term referring to all aspects of motion of the earth's surface resulting from an earthquake, and is normally the major cause of damage during seismic events. The extent of ground shaking is controlled by the magnitude and intensity of the earthquake, distance from the epicenter, and local geologic conditions. Magnitude is a measure of the energy released by an earthquake; it is assessed by seismographs that measure the amplitude of seismic waves.

Intensity is a more subjective measure of the perceptible effects of seismic energy at a given point, and varies with distance from the epicenter and local geologic conditions. The Modified Mercalli Intensity Scale (MMI) is the most commonly used scale for measurement of the subjective effects of earthquake intensity (refer to Table IV.G-1).

Intensity can also be quantitatively measured using accelerometers (strong motion seismographs) that record ground acceleration at a specific location, a measure of force applied to a structure under seismic shaking. Acceleration is measured as a fraction or percentage of the acceleration under gravity (g). A repeat of the 1906 San Francisco earthquake along the Northern San Andreas Fault (7.9 magnitude) would generate very strong seismic shaking (MMI IX) at the project site.[10]

[9] Field, E.H., and 2014 Working Group on California Earthquake Probabilities, 2015. *UCERF3: A New Earthquake Forecast for California's Complex Fault System: U.S. Geological Survey 2015–3009.* Website: dx.doi.org/10.3133/fs20153009 (accessed March 19, 2015).

[10] Association of Bay Area Governments, 2005. Alameda County Earthquake Hazard. Website: gis.abag.ca.gov/website/Shaking-Maps/viewer.htm (accessed March 18, 2015).

Estimates of the peak ground acceleration have been made for the project site and its surroundings based on probabilistic models that account for multiple seismic sources. Under these models, consideration of the probability of expected seismic events is incorporated into the determination of the level of ground shaking at a particular location. The expected peak horizontal acceleration (with a 10 percent chance of being exceeded in the next 50 years) generated by any of the seismic sources potentially affecting the area, including the project site, is estimated by the California Geological Survey as 0.6g.[11] This level of ground shaking at the project site is a potentially serious hazard.

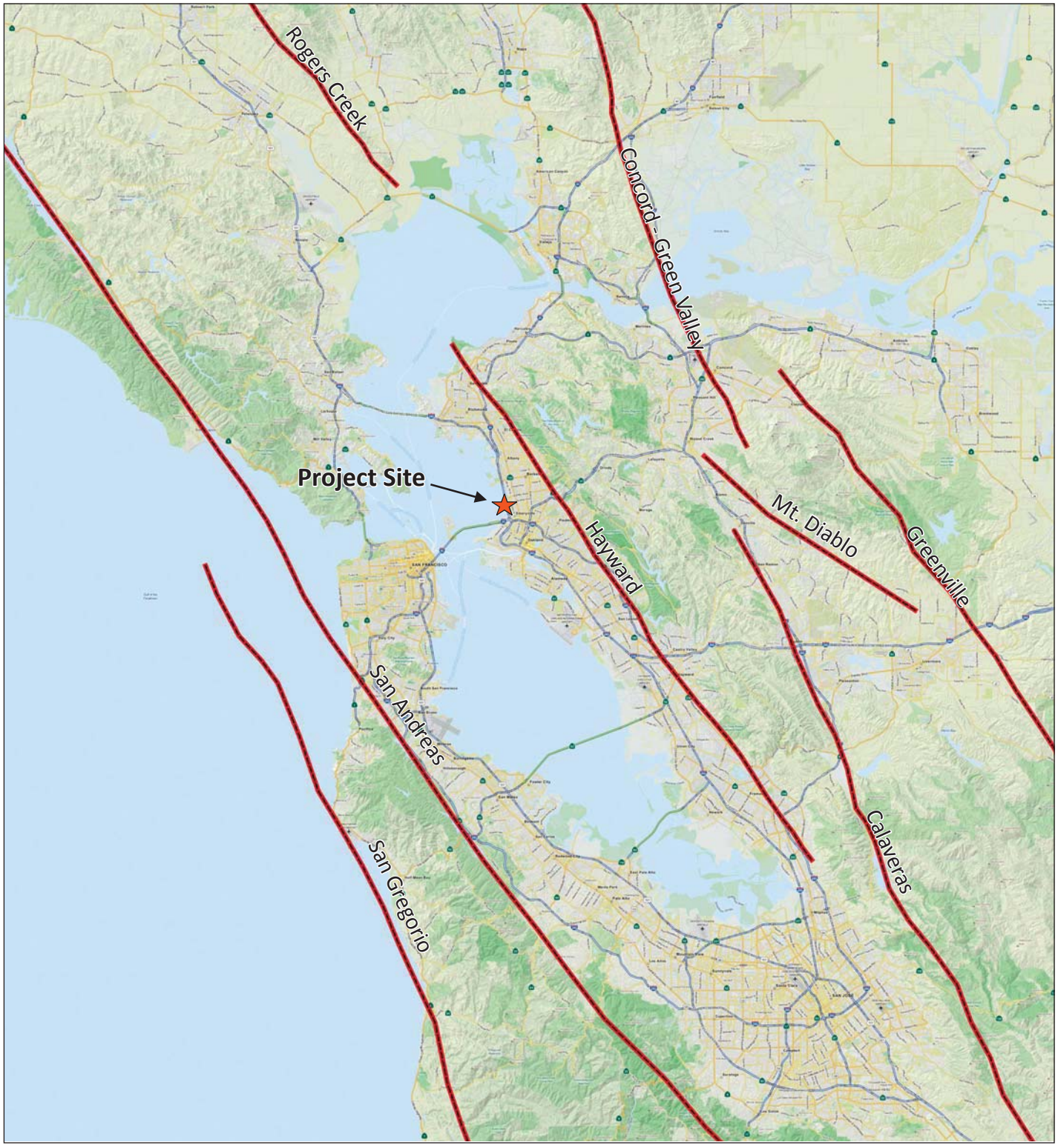
Table IV.G-1: Modified Mercalli Intensity (MMI) Scale

I	Not felt except by a very few under especially favorable circumstances.
II	Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.
III	Felt quite noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibration like passing of truck. Duration estimated.
IV	During the day felt indoors by many, outdoors by few. At night some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Felt by nearly everyone, many awakened. Some dishes, windows, etc., broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop.
VI	Felt by all, many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.
VII	Everybody runs outdoors. Damage negligible in building of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars.
VIII	Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motor cars disturbed.
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from river banks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.
XI	Few, if any, (masonry) structures remain standing. Bridges destroyed. Board fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.
XII	Damage total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted.

Source: Modified from California Geological Survey, 2002. *How Earthquakes and Their Effects are Measured*, Note 32.

(3) Liquefaction. Liquefaction is the temporary transformation of loose, saturated granular sediments from a solid state to a liquefied state. In the process, the soil undergoes transient loss of strength, which commonly causes ground displacement or ground failure to occur.

[11] California Geological Survey, 2008. *Probabilistic Seismic Hazards, Peak Ground Acceleration – 10 Percent of Being Exceeded in 50 Years*. Website: www.quake.ca.gov/gmaps/PSHA/psha_interpolator.html (accessed March 19, 2015).



LSA

FIGURE IV.G-1

N

0 5 10
MILES

Sherwin-Williams Project EIR

San Francisco Bay Area Fault Map

SOURCES: MAPQUEST; UNITED STATES GEOLOGICAL SURVEY, 2015.

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Since saturated soils are a necessary condition for liquefaction, soil layers in areas where the groundwater table is near the surface have higher liquefaction potential than those in which the water table is located at greater depths. Liquefaction potential increases in the vicinity of the San Francisco Bay and locally near creeks where loose, granular recently deposited sediments have accumulated as a result of stream processes. Liquefaction has resulted in substantial loss of life, injury, and damage to property. In addition, liquefaction increases the hazard of fires because of explosions induced when underground gas lines break, and because the breakage of water mains substantially reduces fire suppression capability. In general, where there is any potential for liquefaction, site-specific studies are needed to determine the extent of the hazard if development were to occur in the area.

The project site is located within a Seismic Hazard Zone (based on liquefaction potential of the underlying sediments), as mapped by the California Geological Survey.[12] The area of the site is also identified by the U.S. Geological Survey as having a high liquefaction hazard.[13] The preliminary geotechnical technical memorandum prepared for the project site indicates that the determination of liquefaction susceptibility by the Seismic Hazard Zone mapping program "is generally consistent with site investigation results."[14] However, the evaluation did not include detailed analysis of liquefaction hazards.

Seismic Hazard Zones are regulatory zones that encompass areas prone to liquefaction and/or earthquake-induced landslides. Seismic hazard mapping has been completed for some areas in the State as required under the Seismic Hazards Zones Mapping Act (Article 10, California Code of Regulations). If a property is undeveloped or is proposed to undergo major redevelopment, a site-specific investigation by a licensed engineering geologist and/or civil engineer is required before structures can be permitted.

(4) Slope Stability. The project site is relatively level, and is not adjacent to steep hillsides. Therefore, it would not be expected to be susceptible to slope instability hazards.

(5) Differential Settlement. Subsidence and differential settlement could occur if buildings were built on low-strength foundation materials (including non-engineered fill). Pilings are often used to anchor structures to firmer deposits below the surface in these situations. Although differential settlement generally occurs slowly enough that its effects are not sudden or catastrophic, building damage can occur. Any areas of the site that contain uncontrolled (non-engineered) fill may be susceptible to settlement.

c. Emeryville General Plan. The Conservation, Safety, and Noise Element of the General Plan contains policies pertaining to geology and geotechnical hazards, as listed below:

- Policy CSN-P-34: The City will continue to regulate development, including remodeling or structural rehabilitation, to ensure adequate mitigation of safety hazards on sites having a history or threat of seismic dangers, erosion, subsidence, or flooding.

[12] California Geological Survey, 2003. *Seismic Hazard Zone Map, Oakland West Quadrangle.* Available online at: gmw.consrv.ca.gov/shmp/download/quad/OAKLAND_WEST/maps/ozn_oakw.pdf.

[13] Holzer, T.L., et al., 2010. Liquefaction Hazard and Shaking Amplification Maps of Alameda, Berkeley, Emeryville, Oakland, and Piedmont, California: A Digital Database. *U.S. Geological Survey Open-File Report 02–296*.

[14] CDM, 2003, op. cit.

- Policy CSN-P-35: The City will require geotechnical investigation of all sites proposed for development in areas where geologic conditions or soil types are susceptible to liquefaction (see "very high" and high" level areas on Figure 6-4 of the General Plan). The City also requires submission of geotechnical investigation and demonstration that project conforms to all recommended mitigation measures prior to city approval (as required by State law).
- Policy CSN-P-36: The City will continue to require soil erosion control measures during construction.
- Policy CSN-P-37: The City will enforce regulation of potentially hazardous structures to be retrofitted and made safe and encourage property owners to abate or remove structural hazards that create unaccepted levels of risk.

2. Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to geology, soils and seismicity that could result from implementation of the proposed project. The section begins with the criteria of significance, which establish the thresholds to determine if an impact is significant. The latter part of this section presents the impacts associated with implementation of the proposed project (either Option A or Option B) and the recommended mitigation measures, if required.

a. Criteria of Significance. The project would have a significant geology, soils, or seismicity impact if it would:

- Expose people or structures to substantial risk of loss, injury, or death involving:
  - Rupture of a known active or potentially active 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;
  - Strong seismic ground shaking;
  - Seismic-related ground failure, including liquefaction; and
  - Landslides;
- Result in substantial soil erosion or loss of topsoil;
- 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 an on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse;
- Be located on expansive soil, as defined in Section 1803.5 of the 2010 California Building Code, creating substantial risks to life or property; or
- 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.

b. Project Impacts. The following discussion describes the potential impacts related to geologic and seismic conditions. The potential impacts identified would be the same for both Option A and Option B development plans.

(1) Fault Rupture. No known active faults cross the project site, and therefore impacts associated with fault rupture are considered less-than-significant.

(2) Seismic Shaking. All structures in the Bay Area could potentially be affected by ground shaking in the event of an earthquake. The amount of ground shaking that would occur depends on the magnitude of the earthquake, the distance from the epicenter, and the type of earth materials in between. Violent ground shaking could occur at the project site during expected earthquakes on the Hayward Fault. In addition, strong to very strong shaking could occur at the site during earthquakes on other regional faults. The project site is located within an area that has been determined to be susceptible to liquefaction. Liquefaction of sediments underlying the project site could cause ground displacement and ground failure, including lateral spreading and flows. The site is relatively flat and is not adjacent to area of steep slopes. Therefore, landsliding would not be expected to occur at the site.

Impact GEO-1: Implementation of the proposed project could expose people or structures to strong seismic shaking and related seismically induced hazards, including liquefaction. (S)

Building 1-31, located at the southeast corner of the project site, would be retained and adaptively reused as part of the proposed project. The potential level of seismic shaking at the site could cause injuries and fatalities and/or extensive structural and non-structural damage to existing and future buildings within the site. Seismic hazards cannot be completely eliminated even with site-specific geotechnical investigation and advanced building practices (as provided in Mitigation Measure GEO-1 below). However, exposure to seismic hazards is a generally accepted part of living in the San Francisco Bay Area and occupancy of the proposed project would be voluntary (as opposed to a school, hospital, or prison). Therefore, the mitigation measure described below would reduce the potential hazards associated with seismic activity to a less-than-significant level.

Mitigation Measure GEO-1: The project site is located within a mapped seismic hazard zone (under the Seismic Hazard Zone Mapping Act), and the following specific criteria for project approval shall apply:

(a) The potential for the nature and severity of the seismic hazards, including liquefaction potential, at the site have been fully evaluated in a site-specific geotechnical report and appropriate mitigation measures have been proposed.

(b) The geotechnical report(s) for the project shall be prepared by a registered civil engineer or certified engineering geologist who has competence in the field of seismic hazard evaluation and mitigation. The geotechnical report shall contain site-specific evaluations of the seismic hazards affecting the project site, and shall identify portions of the project site containing seismic hazards. The report shall also identify any known off-site seismic hazards that could adversely affect the site in the event of an earthquake. The contents of the geotechnical report shall include, but shall not be limited to, the following:

- Project description and a description of the geologic and geotechnical conditions at the site;
- Evaluation of site-specific seismic hazards based on geological and geotechnical conditions, in accordance with current standards of practice.
- Recommendations for appropriate mitigation measures.
- Name of report preparer(s), and signature(s) of a certified engineering geologist and/or registered civil engineer, having competence in the field of seismic hazard evaluation and mitigation.

(c) Prior to approving the project, the City shall independently conduct a review of the geotechnical reports to determine the adequacy of the hazard evaluation and proposed mitigation measures. Such reviews shall be conducted by a certified engineering geologist or registered civil engineer, having competence in the field of seismic hazard evaluation and mitigation. Analysis presented in the geotechnical report shall conform with the California Geological Survey (formerly known as the California Division of Mines and Geology) recommendations presented in the *Guidelines for Evaluating Seismic Hazards in California*.[15] All mitigation measures, design criteria, and specifications set forth in the geotechnical and soils report shall be implemented as a condition of project approval.

(d) Prior to approval of an occupancy permit for the redeveloped Building 1- 31, a design-level seismic upgrade report shall be prepared, submitted to the City for review and approval, and the upgrade recommendations shall be implemented. Prior to approving the design-level report, the City shall independently review the seismic upgrade report to determine the adequacy of the hazards evaluation and proposed mitigation measures. Such reviews shall be conducted by a structural engineer or registered civil engineer who has competence in the field of seismic hazard evaluation and mitigation. (LTS)

(3) Erosion. Demolition, excavation, grading and construction on the project site would require temporary disturbance and exposure of shallow soils through removal of existing structures, pavements, and vegetative cover. During the construction period, excavation and grading activities would result in exposure of soil to runoff, potentially causing erosion and entrainment of sediment in the runoff. This potential effect is fully addressed in Section IV.H, Hydrology and Water Quality, Impact HYD-1 and Mitigation Measure HYD-1.

(4) Expansive Soils. The construction phase would include grading activities, the installation of foundations, the development of new buildings, and the rehabilitation of Building 1-31. Further grading at the project site would be limited to shallow excavation for foundations and pavement construction. All parking structures would be constructed above the existing grade. New construction is proposed in an area underlain by non-engineered fill and unconsolidated sediments. Buildings and infrastructure located on these soils could be damaged by differential soil settlement. Foundation recommendations in the geotechnical reports for the planned buildings are presented for different building height categories. Low and mid-rise buildings are grouped in one category and high-rise in another.

<u>Impact GEO-2:</u> Construction of structures in areas of unstable geologic units, including expansive soils could expose people, structures, or utilities to damage. (S)

Conventional spread footings or mats (shallow foundations) that take support in Layer 3 or deeper soils or structural fill are recommended for low- to mid-rise buildings.[16] Layers 1 and 2 were determined to be unsuitable for supporting these foundation types. In areas of shallow foundation installation, Layer 1 and 2 soils would be removed and replaced with granular engineered fill. The

[15] California Geological Survey, 2008. *Guidelines for Evaluating and Mitigating Seismic Hazards in California*, *CDMG Special Publication 117A*, page 98.

[16] CDM, 2003, op. cit.

specific depth and extent of excavation is not known at this time. However, subsurface information indicates that these sediments may extend to depths of 40 feet or more below the existing ground surface. It is possible that the excavation could occur in areas near existing buildings, streets, and infrastructure. Failure of unstable and/or improperly supported sidewalls of the excavations could result in substantial damage to the areas adjacent to the excavation. The geotechnical report[17] suggests that appropriate sloping of the excavation sidewalls would provide acceptable stability. It is possible that shoring may be required in some circumstances.

As described in the geotechnical report, if removal of Layers 1 and 2 soils is not practical, shallow foundations may be supported on piles or shafts bearing on suitable soils.[18] The high-rise building foundations would be supported by either driven pre-cast, pre-stressed concrete piles or drilled cast-in-place shafts founded in Layer 3 or deeper soils. In areas underlain by structural fill, pre-drilling of pile locations may be necessary to avoid damage to piles during installation.

The artificial soils (Layer 1) that mantle the project site are a mixture of sand, silts, and clay which typically have a low shrink/swell potential. However, clayey bay mud deposits (Layer 2) that could be encountered at shallow depths in portions of the project site have moderate to high shrink/swell potential. Shrink/swell occurs when expansive soils undergo alternate cycles of wetting (swelling) and drying (shrinking). During these cycles, the volume of the soil changes significantly. Structural damage, warping, cracking of roads and sidewalks, and rupture of utility lines may occur if the potential expansive soils were not considered during the design and construction of improvements. Building foundations placed on expansive soils can also be deformed by this process. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level:

> Mitigation Measure GEO-2a: Prior to issuance of a grading permit, a final site-specific geotechnical report that evaluates the project site and the proposed grading plan for potential impacts associated with differential settlement shall be prepared and submitted to the City Department of Public Works for approval. The report shall include specific recommendations for mitigation of potential settlements associated with native soil/fill boundaries and areas of differential fill thickness. Recommendations for specific foundation designs which minimize the potential for damage related to settlement shall be presented in the report.
>
> Mitigation Measure GEO-2b: For areas with expansive soils with moderate to high shrink-swell potential, recommendations for proposed building foundations and improvements shall take into account the following conditions: foundation design may include drilled pier and grade beams, deepened footings (extending below expansive soil), or post-tensioned slabs. Alternatively, expansive soil shall be removed and replaced with compacted non-expansive soil prior to foundation construction. The final geotechnical report for the project shall require that subgrade soils for pavements consist of moisture-conditioned, lime-treated, or non-expansive soil, and that surface (including roof drainage) and subsurface water be directed away from foundation elements to minimize variations in soil moisture.

[17] CDM, 2012, op. cit.

[18] Treadwell & Rollo, 2013, op. cit.

Mitigation Measure GEO-2c: All excavation and shoring activities shall be conducted under the supervision of a certified engineering geologist and/or registered civil engineer who has competence in the field of soils and shoring systems. (LTS)

(5) Septic Tanks and Alternative Wastewater Disposal Systems. The project would be serviced by the City and East Bay Municipal Utility District (EBMUD) wastewater water collection and treatment system; no impacts associated with the operation of a septic system or alternative wastewater disposal system would occur.

c. Cumulative Impacts. Geology impacts are generally confined to a specific site and are not cumulative in nature. The project proposes reuse of filled urban land on the margin of San Francisco Bay. Although the project would include new structures that would attract new residents and workers, the structures would be required to comply with all current building codes. Existing buildings would be seismically upgraded. Site grading would result in typical temporary ground disturbance followed by construction of structures, pavement and landscaping. These activities would not result in any significant cumulative impacts related to geologic or seismic conditions.

H. HYDROLOGY AND WATER QUALITY

This section describes the existing hydrological setting for the project site, based on information obtained from: 1) a review of federal, State, and local documents and reports; 2) a review of the information provided as part of the project application; and 3) a reconnaissance of the project site conducted in January 2015. This section also identifies potentially significant impacts that could result from implementation of the proposed project and provides mitigation measures to reduce identified impacts to a less-than-significant level.

1. Setting

This subsection provides a brief description of the existing hydrological setting at and near the project site; the regulations affecting water resources at the federal, State, and local level; and local policies and programs related to hydrology and water quality.

a. Climate. The climate of the San Francisco Bay Area is characterized as Mediterranean, with cool, wet winters and warm, dry summers. The mean annual rainfall in the vicinity of the project site, for the period between 1893 and 2012, was approximately 23 inches, with rainfall occurring primarily from November through March.[1] During the period of record, annual rainfall has varied from 10 inches (1929) to 48 inches (1983).[2] The average annual high temperature is 65º Fahrenheit (F); the average annual low temperature is 49º F.[3] Analysis of long-term precipitation records indicates that wetter and drier cycles lasting several years are common in the region. Severe, damaging rainstorms occur at a frequency of about once every three years.[4]

b. Runoff and Drainage. Stormwater runoff on the project site drains into two drainage areas; one to the north and one to the south.[5] The southern drainage area is 2.88 acres and drains into a 15-inch main on Halleck Street. The northern drainage area is 7.13 acres and drains into Temescal Creek. Temescal Creek is a channelized creek that runs near the northern boundary of the project site. Both Temescal Creek and the main storm drainage on Halleck Street discharge to the Bay, located approximately 1,000 feet west of the project site.

The project site is mostly vacant except for Building 1-31, located in the southeast corner of the project site. In addition to Building 1-31, the project site contains remnants of the former Sherwin-Williams facility near Building 1-31 providing additional impervious cover. The rest of the project site is covered with gravel.[6] Stormwater flows overland as runoff which is drained by existing storm drains that convey stormwater to the south and north of the project site.

[1] Western Regional Climate Center, 2012a. *Period of Record General Climate Summary – Precipitation. Station 040693 – Berkeley, California*. Website: www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?carchm+sfo (accessed December 16, 2014).

[2] Ibid.

[3] Western Regional Climate Center, 2012b. Peri*od of Record General Climate Summary – Temperature. Station 040693 – Berkeley, California.* Website: www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?carchm+sfo (accessed December 16, 2014).

[4] Ellen, S.D. and G.F. Wieczorek, 1988. *Landslides, Floods, and Marine Effects of the Storm of January 3-5, 1982, in the San Francisco Bay Region, California.* U.S. Geological Survey Professional Paper 1434.

[5] BKF, 2015. *Sherwin Williams – Stormwater Runoff Memorandum.* March 16.

[6] Ibid.

c. Flooding. The project site is designated as Zone X on a Flood Insurance Rate Map (FIRM) for Emeryville published by the Federal Emergency Management Agency (FEMA).[7] Zone X is defined as an area outside of the 500-year floodplain. The project site is also not located within the 100-year flood hazard zone, as mapped by FEMA. Therefore, the project site is not expected to be susceptible to storm-related flooding.

The project site is located within the mapped dam failure inundation zone for Lake Temescal.[8] The Lake Temescal dam is an earthen dam completed in 1869.[9] The dam, located approximately 3.3 miles to the east of the project site, has a storage capacity of approximately 200 acre-feet.[10] The Lake Temescal dam is managed by the East Bay Regional Park District and is under the regulatory jurisdiction of the California Department of Water Resources, Division of Safety of Dams (DSOD).[11] Existing dams under DOSD's jurisdiction are regularly inspected to ensure that they are adequately maintained and adhere to seismic safety standards.[12,13] These measures are intended to ensure that the dams are performing correctly and are being maintained in a safe manner.

d. Coastal Hazards. The location and elevation of the project site (near San Francisco Bay at approximately 10 feet above the National Geodetic Vertical Datum of 1929 [NGVD][14]) provides protection from coastal hazards, such as sea level rise, seiche, tsunami, or extreme high tides, all of which tend to present hazards for sites at elevations lower than 10 feet NGVD.

(1) Sea Level Rise. According to the San Francisco Bay Conservation and Development Commission (BCDC), sea level (including in the San Francisco Bay), is rising and is expected to continue to rise even with existing efforts to mitigate global warming through reduction of greenhouse gas emissions.[15] A shoreline vulnerability assessment performed by BCDC identifies shoreline areas that could be exposed to sea level rise projections of 16 inches by 2050 and 55 inches by 2100.[16] The assessment indicated that the project site would not be affected by a 16-inch sea level rise but may have potential impacts with a 55-inch sea level rise.[17] However, the assessment was

[7] Federal Emergency Management Agency, 2009. *Flood Insurance Rate Map (FIRM), Alameda County, California, Map Number 06001C0058G*. August 3.

[8] Emeryville, City of, 2009. *General Plan, Conservation, Safety, and Noise Element.* Amended on April 2, 2013.

[9] Water Resources, Department of, 2013. California Data Exchange Center – Lake Temescal. Website: cdec.water.ca.gov/cgi-progs/damMeta?dam_id=702 (accessed December 19, 2014).

[10] Ibid.

[11] Emeryville, City of, 2009, op. cit.

[12] Ibid.

[13] Water Resources, Department of, Division of Safety of Dams, undated. *Statues and Regulations Pertaining to Supervision of Dams and Reservoirs.* Available online at: www.water.ca.gov/damsafety/docs/statutes-regulations.pdf (accessed April 16, 2015).

[14] United States Geological Survey, 1993. *Oakland West Quadrangle, California, 7.5 Minute Series (Topographic).*

[15] San Francisco Bay Conservation and Development Commission, 2011. *Living with a Rising Bay: Vulnerability and Adaptation in San Francisco Bay and on its Shoreline*, October 6.

[16] Ibid.

[17] Emeryville, City of, 2009, op. cit.

performed by comparing the average of the highest monthly tide with the projected sea level rise and land elevation data without taking into account shoreline protection measures such as the Interstate 80 (I-80) barrier located between the project site and the Bay.[18] The project site is therefore not considered to be at risk from flooding associated with sea level rise.

(2) Seiche. A seiche is the oscillation of a body of water. Seiches occur most frequently in enclosed or semi-enclosed basins such as lakes, bays, or harbors. They can be triggered in an otherwise still body of water by strong winds, changes in atmospheric pressure, earthquakes, tsunamis, or tides. Triggering forces that set off a seiche are most effective if they operate at specific frequencies relative to the size of an enclosed basin. Coastal measurements of sea level often show seiches with amplitudes of a few centimeters and periods of a few minutes due to oscillations of the local harbor, estuary, or bay, superimposed on the normal tidal changes. Seiches are not considered a hazard in the San Francisco Bay because of the long tidal periods and large area of the Bay.[19]

(3) Tsunami. Tsunamis are long-period water waves caused by underwater seismic events, volcanic eruptions, or undersea landslides. Tsunamis affecting the San Francisco Bay Area would originate west of the Bay in the Pacific Ocean. Areas that are highly susceptible to tsunami inundation tend to be low-lying coastal areas, such as tidal flats, marshlands, and former Bay margins that have been artificially filled. Inundation or damage caused by a tsunami may disrupt highway traffic in those low-lying areas. Tsunamis entering San Francisco Bay through the relatively narrow Golden Gate would tend to dissipate as the energy of the wave spreads out as the Bay becomes wider and shallower.[20]

The California Emergency Management Agency, California Geological Survey, and the Tsunami Research Center at the University of Southern California have produced tsunami inundation maps for areas along the State's coastline, including Emeryville.[21] The maps identify areas at risk to inundation from a combination of maximum-considered tsunamis for each area. The tsunami inundation map for Alameda County identifies a tsunami inundation area that terminates just west of the Union Pacific Railroad (UPRR) tracks, immediately west of the project site. While the tsunami inundation limit is relatively close to the project site, the tsunami inundation map was developed by combining inundation results for an ensemble of tsunami source events.[22] Therefore, the mapped inundation area is considered unlikely to be inundated during a single tsunami event and it is unlikely that the project site would be subject to tsunami inundation.

[18] Ibid.

[19] Borrero, J., L. et al., 2006. *Numerical Modeling of Tsunami Effects at Marine Oil Terminals in San Francisco Bay*. Prepared for the Marine Facilities Division of the California State Lands Commission. June 8.

[20] Ibid.

[21] California Emergency Management Agency, California Geological Survey, and University of Southern California, 2009. *Tsunami Inundation Map for Emergency Planning, State of California ~ County of Alameda, Oakland West Quadrangle*. Available online at: www.conservation.ca.gov/cgs/geologic_hazards/Tsunami/Inundation_Maps/Alameda/Documents/Tsunami_Inundation_OaklandWest_Quad_Alameda.pdf (accessed March 12, 2015). July 31.

[22] Ibid.

(4) Extreme High Tides. Extreme high tides in San Francisco Bay result from the combined effects of astronomical high tides (related to the lunar cycle) and other factors, including winds, barometric pressure, ocean temperatures, and freshwater runoff. In California, the highest astronomical tides occur in the summer and winter, and therefore extreme high tides are most likely to occur during these times. Based on the 129-year record of annual high tide for the Presidio, the U.S. Army Corps of Engineers (USACE) estimated a 100-year high tide elevation for various tide stations around the San Francisco Bay (an extreme high tide with a probability of occurrence every 100 years). The elevation of the estimated 100-year tide at the Matson Wharf tide station at the Port of Oakland, the nearest station to the project site, is 6.5 feet NGVD, below the ground surface elevation of the project site of about 10 feet NGVD.[23] Therefore, flooding as a result of extreme high tides is not expected to occur at the project site.

e. Water Quality. The quality of surface water and groundwater in the vicinity of the project site is affected by past and current land uses at the project site and within the watershed and the composition of geologic materials in the vicinity. Water quality in surface water and groundwater is regulated by the State Water Resources Control Board (State Water Board) and the Regional Water Quality Control Boards. The project site is under the jurisdiction of the San Francisco Bay Regional Water Quality Control Board (Regional Water Board), which is responsible for implementation of State and federal water quality protection statutes, regulations, and policies in the Bay Area. The Regional Water Board implements the Water Quality Control Plan (Basin Plan),[24] a master policy document for managing water quality issues in the region. The Basin Plan establishes beneficial water uses for waterways and water bodies within the region.

(1) Stormwater Quality. The State Water Board administers a number of stormwater programs to regulate the discharge of pollutants to surface waters from various sources, including municipal stormwater discharges. Municipal stormwater discharges are regulated by the Municipal Stormwater Program under the National Pollutant Discharge Elimination System (NPDES) in accordance with the federal Clean Water Act. The NPDES program is a federal program by the U.S. Environmental Protection Agency, implementation of which has been delegated in California to the State Water Board. In the San Francisco Bay area, including the project site, the NPDES program is administered by the Regional Water Board.

Under the Municipal Stormwater Program, the State Water Board has issued two types of NPDES permits authorizing the discharge of stormwater from municipalities. Phase I permits were issued to medium and large municipalities serving between 100,000 and 250,000 people and 250,000 people or more, respectively. A Phase II permit was issued as a general permit to small municipalities serving less than 100,000 people. In the San Francisco Bay area, the existing Phase I permit was issued to a group of co-permittees consisting of contiguous municipalities covering a geographic area. The City of Emeryville is a co-permittee of Alameda County which facilitates NPDES compliance through the Clean Water Program. Municipal stormwater discharges in Alameda County, including the project site, are authorized under the Regional Water Board's Municipal Regional Stormwater NPDES

[23] United States Army Corps of Engineers, 1984. *San Francisco Bay Tidal Stage vs. Frequency Study*, October.

[24] California Regional Water Quality Control Board, San Francisco Bay Region, 2011. *San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan).* December 31.

Permit, Order No. R2-2009-0074, NPDES Permit No. CAS612008, adopted on October 14, 2009 (MRP).

MRP Provision C.3 addresses post-construction stormwater management requirements for new development and redevelopment projects that add and/or replace 10,000 square feet or more of impervious area. Provision C.3 requires the City to require incorporation of site design, source control, and stormwater treatment measures into development projects, to minimize the discharge of pollutants in stormwater runoff and non-stormwater discharges, and to prevent increases in runoff flows. The MRP requires that Low Impact Development (LID) techniques are to be the primary mechanism for implementing such controls.

MRP Provision C.3.g pertains to hydrograph modification (or "hydromodification")[25] management. Projects subject to hydromodification management propose creation and/or replacement of 1 acre or more of impervious surface and an increase in impervious surface area compared to pre-development conditions. Provision C.3.g of the MRP requires that stormwater discharges not cause an increase in the erosion potential of the receiving stream over the existing condition. Increases in runoff flow and volume must be managed so that the post-project runoff does not exceed estimated pre-project rates and durations, where such increased flow and/or volume is likely to cause increased potential for erosion of creek beds and banks, silt pollutant generation, or other adverse impacts on beneficial uses due to increased erosive forces. The project site is located in an area that discharges to concrete engineered channels and enclosed pipe or culverts which are tidally influenced.[26] Therefore, hydromodification requirements do not apply to the project site.

In addition, projects disturbing more than 1 acre of land during construction are required to comply with the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbing Activities, Order No. 2009-009-DWQ, NPDES No. CAS000002 (Construction General Permit). To obtain coverage under the Construction General Permit, the project applicant must provide, via electronic submittal, a Notice of Intent, a Storm Water Pollution Prevention Plan (SWPPP), and other documents required by Attachment B of the Construction General Permit. Activities subject to the Construction General Permit include clearing, grading, and disturbances to the ground, such as grubbing or excavation. Construction General Permit activities are regulated at the local level by the Regional Water Board.

The Construction General Permit uses a risk-based permitting approach and mandates certain requirements based on the project risk level (i.e., Level 1, Level 2, or Level 3). The project risk level is based on the risk of sediment discharge and the receiving water risk. The sediment discharge risk depends on the project location and timing (i.e., wet season versus dry season activities). The receiving water risk depends on whether the project would discharge to a sediment-sensitive receiving water. The determination of the project risk level would be made by the project applicant when the Notice of Intent is filed (and more details of the timing of the construction activity are known).

[25] The modification of a stream's hydrograph, caused in general by increases in flows and durations that result when land is developed (e.g., made more impervious). The effects of hydromodification include, but are not limited to, increased bed and bank erosion, loss of habitat, increased sediment transport and deposition, and increased flooding.

[26] Alameda Countywide Clean Water Program, 2006. *Attachment A: HMP Susceptibility Map*. November 13.

The performance standard in the Construction General Permit is that dischargers shall minimize or prevent pollutants in stormwater discharges and authorized non-stormwater discharges through the use of controls, structures, and best management practices (BMPs) that achieve Best Available Technology (BAT) for treatment of toxic and non-conventional pollutants and Best Conventional Technology (BCT) for treatment of conventional pollutants. A SWPPP must be prepared by a Qualified SWPPP Developer that meets the certification requirements in the Construction General Permit. The purpose of the SWPPP is: 1) to help identify the sources of sediment and other pollutants that could affect the quality of stormwater discharges; and 2) to describe and ensure the implementation of BMPs to reduce or eliminate sediment and other pollutants in stormwater as well as non-stormwater discharges resulting from construction activity. Operation of BMPs must be overseen by a Qualified SWPPP Practitioner that meets the requirements outlined in the permit.

The SWPPP must also include a construction site monitoring program. The monitoring program includes, depending on the project risk level, visual observations of site discharges, water quality monitoring of site discharges (pH, turbidity, and non-visible pollutants, if applicable), and receiving water monitoring (pH, turbidity, suspended sediment concentration, and bioassessment).

(2) Groundwater Quality. The project site is located within the East Bay Plain groundwater sub-basin (East Bay Plain).[27] The East Bay Plain covers an area up to 114 square miles.[28] Existing beneficial uses of this groundwater basin identified in the Basin Plan include municipal and domestic water supply, industrial process water supply, industrial service water supply, and agricultural water supply. The Regional Water Board considers all groundwater suitable or potentially suitable for municipal or domestic water supply unless it meets one or more of the following criteria:

- The total dissolved solids exceed 3,000 milligrams per liter (5,000 microSiemens per centimeter, for electrical conductivity), and it is not reasonably expected by the Regional Water Board that the groundwater could supply a public water system;
- There is contamination, either by natural processes or by human activity, that cannot be reasonably treated for domestic use;
- There is no sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day; or
- The aquifer is regulated as a geothermal energy-producing source.

The beneficial or potential beneficial uses identified in the Basin Plan are not exhaustive. The Regional Water Board acknowledges the possibility that other beneficial uses exist or have the potential to exist.

Groundwater quality beneath the project site has been affected by historic industrial land uses. Previous land uses, subsurface investigations, remediation activities performed at the project site, and the current regulatory status of the project site are discussed in Section IV.I, Hazards and Hazardous Materials, within this Draft EIR. The Hazards and Hazardous Materials section also includes a

[27] Regional Water Board, 2011, op. cit.

[28] Emeryville, City of, 2009, op. cit.

discussion of properties near the project site where releases of hazardous materials have occurred and whether conditions at these properties could affect the project site.

The City of Emeryville Municipal Code, Title 6, Chapter 9 prohibits installation of water supply wells. Specifically, the Code states:

> *The use of, or attempted use of, groundwater from within the limits of the City of Emeryville, as a potable water supply, or for any residential, commercial, or industrial use by the installation or drilling of wells or by any other method, is hereby prohibited. This prohibition expressly includes the City of Emeryville. Nothing within this chapter shall prohibit the construction or use of a groundwater monitoring well; provided, that said groundwater monitoring well is constructed pursuant to all applicable State and local regulations.*

This prohibition ensures that groundwater underlying the project site is not used for water supply for residential, commercial, or industrial uses. Water is supplied to the project site and surrounding area by East Bay Municipal Utility District.

On-going groundwater monitoring has been performed at the Sherwin-Williams parcel since 2012 as part of post-remediation activities.[29] The purpose of groundwater monitoring is to gather groundwater data to evaluate the effectiveness of remediation and to determine whether contingency actions are needed to achieve cleanup goals.[30] Groundwater monitoring is performed in accordance with an Operations and Maintenance Plan approved by Department of Toxic Substances Control (DTSC).[31] Groundwater monitoring involves collection of groundwater samples for chemical analysis and water level measurements of monitoring wells and piezometers located on- and off-site. During the October 2014 groundwater monitoring event, depth to groundwater measurements were collected from 14 monitoring wells and two piezometers located on the project site. Groundwater elevations at the project site during the October 2014 groundwater monitoring event ranged from 5.68 feet at the north parcel boundary near Temescal Creek and 10.06 feet North American Vertical Datum of 1988[32] near the southeast corner of the parcel near Building 1-31. Based on groundwater elevations, the groundwater flow direction at the time of monitoring was toward the northwest toward Temescal Creek. This groundwater flow direction is consistent with the topography of the project site.

On the Successor Agency parcel, a potential historic domestic well was identified during the January 2015 reconnaissance of the project site. The well is located near the south end of the Successor Agency parcel near Halleck Street outside the area of proposed development. The well had not been abandoned. It is unclear who operated the well or whether the well continues to be operated. The

[29] ARCADIS U.S., Inc., 2015. *Data Summary Report for Groundwater Monitoring Activities for the Period from July 1, 2014 through December 31, 2014, Sherwin-Williams Site, 1450 Sherwin Avenue, Emeryville, California, DTSC Docket No. HSA-O&MEA 11/12-096*, January 8.

[30] Ibid.

[31] CDM Smith, 2012. *Operations and Maintenance Plan, Sherwin-Williams Company, Emeryville, California*, December 11.

[32] 2.96 feet to 7.34 feet NGVD of 1929.

proposed project does not propose use of the well, and there is no other information available for this well.

f. Emeryville General Plan. The following Emeryville General Plan[33] goals and policies pertain to hydrology and storm drainage.

- **Goal CSN-G-8.** Protection from natural and manmade hazards – Protection of life, natural environment, and property from natural and manmade hazards due to seismic activity, hazardous material exposure or flood damage.
- Policy CSN-P-7: New commercial and industrial activities, as well as construction and demolition practices, shall be regulated to minimize discharge of pollutant and sediment concentrations into San Francisco Bay.
- Policy CSN-P-10: New development is required to incorporate source control, site design, and stormwater treatment to reduce pollutants in stormwater runoff.
- Policy CSN-P-13: The City promotes construction and incorporation of cisterns, green roofs and other rainwater harvesting methods in existing, new and rehabilitation projects.
- Policy CSN-P-36: The City will continue to require soil erosion control measures during construction.
- Policy CSN-P-44: The City will continue to require development projects to implement on-site stormwater management measures through the City's development permit process.
- Policy CSN-P-45: Storm drains shall be maintained, and replaced or upgraded as needed to reduce potential flooding.
- Policy CSN-P-46: The City will cooperate with state and federal agencies to address flooding risks due to dam inundation, tsunamis, sea level rise, or major flood events.

2. Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to hydrology and water quality that could result from implementation of the proposed project. The section begins with the criteria of significance, which establish the thresholds to determine if an impact is significant. The latter part of this section presents the impacts associated with implementation of the proposed project and mitigation measures that would reduce the identified impact to a less-than-significant level.

a. Criteria of Significance. Development of the proposed project would result in a significant impact related to hydrology and water quality if it would:

- Violate any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);

[33] Emeryville, City of, 2009, op. cit.

- 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;
- Substantially alter the existing drainage pattern of 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;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or off-site;
- Otherwise substantially degrade water quality;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- Place within a 100-year flood hazard area structures, which would impede or redirect flood flows;
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- Expose people or structures to a substantial risk of inundation by seiche, tsunami, extreme high tides, and/or sea level rise.

b. Project Impacts. The following discussion describes the potential impacts related to hydrology and water quality that would result from implementation of the proposed project. The applicant is proposing two potential development options; the potential impacts and mitigation measures discussed below would apply for both of the potential development options (Option A and Option B), unless indicated otherwise.

(1) Water Quality Standards. Demolition, excavation, grading, and construction on the project site would require temporary disturbance and exposure of shallow soils through removal of existing structures, pavements, and vegetative cover. During the construction period, excavation and grading activities would result in exposure of soil to runoff, potentially causing erosion and entrainment of sediment in the runoff.

Impact HYD-1: Construction or operation of the proposed project could violate water quality standards or waste discharge requirements. (S)

Soil stockpiles and excavations during construction on the project site would be exposed to runoff and, if not managed properly, the runoff could cause erosion and increased sedimentation in water courses outside of the project site. The accumulation of sediment could result in blockage of flows, potentially causing increased localized ponding or flooding.

The potential for chemical releases is present at most construction sites. Once released, substances such as fuels, oils, paints, and solvents could be transported to nearby surface waterways and/or groundwater in stormwater runoff, wash water, and dust control water, potentially reducing the quality of the receiving waters. In addition, the project site is the location of confirmed historic chemical releases that have affected soil quality. Erosion of contaminated soils could result in the transport of contaminants (along with the sediments) to the Bay.

Mitigation Measure HYD-1a: Consistent with the requirements of the statewide Construction General Permit, the project applicant shall prepare and implement a SWPPP designed to reduce potential adverse impacts to surface water quality during the project construction period. The SWPPP shall be designed to address the following objectives:

1. All pollutants and their sources, including sources of sediment associated with construction, construction site erosion and all other activities associated with construction activity are controlled;
2. Where not otherwise required to be under a Regional Water Board permit, all non-stormwater discharges are identified and either eliminated, controlled, or treated; and
3. BMPs are effective and result in the reduction or elimination of pollutants in stormwater discharges and authorized non-stormwater discharges from construction activity to the BAT/BCT standard.

   The SWPPP shall be prepared by a Qualified SWPPP Developer. The SWPPP shall include the minimum BMPs required for this type of project (based on final determination of the project's Risk Level status, to be determined as part of the Notice of Intent for coverage under the Construction General Permit); these include: BMPs for erosion and sediment control, site management and housekeeping, waste management, management of non-stormwater discharges, runon and runoff controls, and BMP inspection/maintenance/repair activities. BMP implementation shall be consistent with the BMP requirements in the most recent version of the California Stormwater Quality Association Stormwater Best Management Handbook-Construction.

   The SWPPP shall include a construction site monitoring program that identifies requirements for dry weather visual observations of pollutants at all discharge locations, and as appropriate (depending on the project Risk Level), sampling of the site effluent and receiving waters. A Qualified SWPPP Practitioner (QSP) shall be responsible for implementing the BMPs at the site. The QSP shall also be responsible for performing all required monitoring and BMP inspection, maintenance, and repair activities. (LTS)

Mitigation Measure HYD-1b: The project applicant shall comply with the applicable requirements of Provision C.3 of the MRP. Responsibilities include, but are not limited to, designing BMPs into project features and operations to reduce potential impacts to surface water quality associated with operation of the project. These features shall be included in a design-level stormwater control plan (SCP). The SCP will serve as the overall stormwater quality management document that will describe measures to mitigate potential water quality impacts associated with the operation of the proposed project. At a minimum, the SCP for the project shall include:

1. An inventory and accounting of existing and proposed impervious areas.
2. LID design details incorporated into the project. LID features, include minimizing disturbed areas and impervious cover and then infiltrating, storing, detaining, evapotranspiring, and/or biotreating stormwater runoff and are required by the MRP. Practices used to adhere to these LID principles include measures such as rain barrels and cisterns, green roofs, permeable pavement, preserving undeveloped open space, and biotreatment through rain gardens, bioretention units, bioswales, and planter/tree boxes.

3. Measures to address potential stormwater contaminants. These may include measures to cover or control potential sources of stormwater pollutants at the project site.
4. All stormwater runoff from impervious surfaces shall be treated with Bay-Friendly Landscaping.[34]
5. All stormwater treatment landscaping shall be maintained using a Bay-Friendly Landscaping company or staff. (LTS)

Funding for long-term maintenance of all BMPs must be specified as the City will not assume maintenance responsibilities for these features. The project applicant shall establish a self-perpetuating drainage system maintenance program for the life of the project that includes annual inspections of any stormwater detention devices and drainage inlets. Any accumulation of sediment or other debris would need to be promptly removed. In addition, an annual report documenting the inspection and any corrective action conducted shall be submitted to the Public Works Department and/or Building Inspection Division for review and approval.

(2) Groundwater Supplies. The proposed project does not propose to use local groundwater supplies. Groundwater in the vicinity of the project site has been affected by historic industrial uses at and the near the project site and a City Code specifically prohibits the use of groundwater in Emeryville. Activities at the project site affecting the subsurface, including groundwater, are regulated by the DTSC. The Land Use Covenant (LUC) for the project site (more specifically the Sherwin-Williams parcel) prohibits the use of groundwater other than for groundwater monitoring. Water service at the project site will be provided by the East Bay Municipal Utility District by connecting to existing water lines on Sherwin Avenue and Horton Street. Therefore, implementation of the proposed project would not deplete groundwater supplies, reduce the amount of water in the aquifer, or lower the groundwater table.

Because of residual contamination in the subsurface, DTSC is limiting the amount of stormwater that can be infiltrated into the ground to 3.75 inches per year. The purpose of this requirement is to prevent migration of subsurface contaminants or possible discharge of contaminants into surface water. While minimal recharge is allowed, this is not expected to interfere substantially with recharge of groundwater because Temescal Creek is not identified as a groundwater recharge area.[35]

Depending on the horizontal and vertical location of underground utilities, some dewatering might be required during construction activities. During the groundwater monitoring event in October 2014, groundwater throughout the project site varied from about 3 feet below the ground surface (bgs) in the south southeast portion of the project site to about 7 feet bgs in the northern portion near Temescal Creek.[36] Should dewatering be required, management of extracted groundwater would be subject to the requirements of a Soil Management Plan prepared in accordance with the LUC. In addition, management procedures would also be included in the SWPPP for the project (Mitigation

[34] Bay-Friendly Landscaping and Gardening Coalition, 2011. *Rating Manual for New Civic, Commercial and Multifamily Landscapes, Version 1.1*, July.

[35] Regional Water Board, 2011, op. cit.

[36] ARCADIS U.S., Inc., 2015, op cit.

Measure HYD-1a) and permits would be required prior to discharge of the dewatered groundwater to the storm or sanitary sewer.

(3) Storm Drainage System Capacity. The storm drains downstream of the project site are at near capacity. Implementation of the proposed project could adversely affect downstream storm drainage.

Impact HYD-2: Implementation of the proposed project could create or contribute runoff water which could exceed the capacity of existing or planned stormwater drainage systems. (S)

Preliminary hydraulic calculations prepared by the applicant indicate that implementation of the project would result in a reduction of impervious surfaces relative to existing conditions. Based on these preliminary calculations, total stormwater runoff from a 10-year storm with a 10-minute duration is estimated to decrease from 18.45 cubic feet per second (cfs) to 15.17 cfs.[37] However, since these calculations are not based on final design and the storm drain system on Halleck Street is near capacity, the potential for the project to result in an impact to downstream drainage capacity is significant.

Mitigation Measure HYD-2: As a condition of approval of the final grading and drainage plans for the project, it must be demonstrated through detailed hydraulic analysis that implementation of the proposed drainage plans will:

1. Not increase peak runoff rates from any subareas, and/or that there is no increase in combined peak runoff volumes from subareas draining to the same downstream conveyance component (i.e., reductions in one subarea can offset increases in another subarea, if they drain to the same downstream conveyance), or that the downstream conveyance has adequate capacity to handle the proposed increase. The final drainage plan for the project shall document runoff rates for the final design and shall be prepared by a licensed professional engineer.
2. Include drainage components that are designed in compliance with City of Emeryville standards. The grading and drainage plans shall be reviewed for compliance with these requirements by the City of Emeryville Department of Public Works. Any improvements deemed necessary by the City, will be part of the conditions of approval. (LTS)

Implementation of this mitigation measure would reduce potential impacts associated with peak runoff volumes to a less-than-significant level.

(4) Drainage Pattern. The proposed project would alter the existing drainage pattern on the project site by installing new storm drainage facilities and changing the size and location of impervious surfaces on the project site. The proposed project would also install new public storm drainage facilities on Sherwin Avenue and on Horton Street from 45th Street to Sherwin Avenue but the new public storm drainage facilities would not alter the existing drainage pattern outside of the project site because the purpose of the new facilities are to increase capacity. Alteration of the

[37] BKF, 2015, op. cit.

existing drainage pattern on the project site would not be expected to result in substantial erosion or siltation because areas covered with gravel at the project site, which are susceptible to erosion, would be eliminated. In addition, the new storm drainage facilities on the project site would incorporate LID strategies designed to minimize runoff volumes and treat stormwater for pollutants including sediments. Therefore, the proposed project would not result in substantial erosion or siltation on- or off-site and impacts would be less than significant.

(5) On- and Off-Site Flooding. The proposed project would alter the existing drainage pattern on the project site by installing new storm drain facilities and changing the size and location of impervious surfaces. However, the change in drainage pattern would not be expected to result in flooding on- or off-site because of proposed improvements to increase the capacity of existing storm drainage facilities in the immediate vicinity of the project site and incorporation of LID techniques designed to reduce runoff volumes through retention and infiltration. In addition, Mitigation Measure HYD-2 would require a hydraulic analysis to demonstrate that existing or planned storm drainage infrastructure would be adequate to handle runoff flows during the operational phase of the proposed project; therefore, impacts related to on- and off-site flooding would be less than significant.

(6) Degrade Water Quality. Construction and operation of the proposed project would not result in any substantial changes to on-site water quality, with the exception of potential impacts associated with stormwater runoff. Implementation of Mitigation Measures HYD-1a and HYD-1b would reduce potential impacts to water quality to a less-than-significant level. No additional mitigation measures are required.

(7) Place Housing within a Flood Hazard. The proposed project is a mixed-use residential, commercial, and open space project. According to the FIRM prepared by FEMA, the project site is designated as Zone X, areas outside the 100-year and 500-year flood hazard zones.[38] Therefore, implementation of the proposed project would not place housing within a 100-year flood hazard area, and no significant impact would result related to flood hazards.

(8) Failure of a Levee or Dam. The project site is located within a mapped dam inundation area for Lake Temescal. As discussed above, Lake Temescal dam is regulated by the DSOD to ensure that maintenance is performed and identified deficiencies are corrected. Regular inspections and required maintenance ensure structural integrity and substantially reduce the potential for catastrophic failure, including potential failure that could be caused by earthquakes. Therefore, the project site would not be at a significant risk of flooding, including flooding as a result of dam failure. There are no levees near the project site.

(9) Seiche, Tsunami, Extreme High Tides, and Sea Level Rise. BCDC projects a 16-inch sea level rise by 2050. USACE estimates a 100-year extreme high tide elevation of 6.5 feet NGVD near the project site. The combination of these two events could result in a flood level of 7.8 feet NGVD; this would be below the ground surface elevation of the project site of about 10 feet NGVD. In addition, the project site's location and elevation and the configuration of the Bay provide

[38] Federal Emergency Management Agency, 2009, op. cit.

protection against tsunamis and seiches, respectively. Coastal hazards associated with sea level rise, seiches, tsunamis, and extreme high tides are therefore considered less than significant.

c. Cumulative Hydrology and Water Quality Impacts. Stormwater within the City of Emeryville, including the project site vicinity, ultimately discharges to the San Francisco Bay. Stormwater discharges are affected by urban pollutants that would contribute to impairment of the water quality of the San Francisco Bay. Urban pollutants in stormwater include petroleum hydrocarbons, sediments, metals, and trash. Stormwater regulations have become progressively more stringent since the passage of the federal Clean Water Act, and current requirements now require new developments to manage and treat all significant sources of stormwater pollutants; in particular stormwater runoff from past, present, and existing development is treated in accordance with NPDES requirements. As such, a reduction in overall pollutant loads in stormwater is anticipated over time. Therefore, no significant adverse impacts would be expected from cumulative water quality conditions, as these conditions would be expected to cumulatively improve.

With required project-level mitigation, the proposed project would not result in increased discharge of runoff that could exceed the capacity of the storm drainage system in the southern drainage area. However, future projects in the affected drainage area may contribute discharges resulting in exceedance of drainage system capacity which could increase the potential for flooding. However, new projects that could increase runoff rates and volumes would also be subject to environmental review and permitting and be required to minimize increases in runoff and/or upgrade downstream drainage facilities (under existing City programs and requirements). The potential cumulative hydrology and water quality impacts would be less than significant.

I. HAZARDS AND HAZARDOUS MATERIALS

This section describes hazards and hazardous materials[1] related to development of the Sherwin-Williams Development Project (project) site that could potentially pose a significant threat to human health or the environment. The setting section describes the pertinent federal, State, and local agency regulatory framework related to hazards and hazardous materials, as well as existing conditions at the project site and vicinity. The impacts and mitigation measures section defines the criteria of significance and identifies potential impacts and mitigation measures related to hazards and hazardous materials for the project.

1. Setting

This section summarizes the existing conditions of the project site, the previous environmental investigation activities performed to evaluate impacts from historic releases of hazardous materials at the project site, and remediation activities that have been performed to mitigate the environmental impacts. The regulatory framework related to hazardous materials and hazardous waste, lead, asbestos, and other hazardous building materials and applicable worker health and safety requirements are also described.

a. Existing Conditions. The following sections summarize historic land uses at the project site, previous environmental investigations and remediation activities performed at the project site, the current regulatory status of the project site, a reconnaissance of the project site performed as part of the preparation of this section, and off-site properties of potential environmental concern.

(1) Historical Land Uses. A discussion of the historical land uses of the Sherwin-Williams parcel and Successor Agency parcel is presented below.

Sherwin-Williams Parcel Land Uses. The Sherwin-Williams Company first constructed a paint and coating manufacturing plant on a 3-acre portion of the Sherwin-Williams parcel in 1919, and by 1923 had expanded the property to 6 acres. Lead-arsenate pesticides were also manufactured at the plant from the 1920s until the mid-1940s. By 1964 the Sherwin-Williams Company had purchased the adjacent property to the west from Southern Pacific Railroad, expanding the Sherwin-Williams parcel to roughly its current area. The plant was converted from oil-based to water-based paint production in 1987 and stopped all production in 2006. In December 2006, the Sherwin-Williams Company discontinued its operations and decommissioned the manufacturing plant. The Sherwin-Williams Company performed demolition of the manufacturing plant in 2007.[2] All buildings were demolished with the exception of Building 1-31 (technically two buildings but functioning as a single building) which is located in the southeast corner of the project site. Environmental investigations and remediation activities have been conducted at the Sherwin-Williams parcel from 1988 until the present, as discussed further below.

[1] The California Health and Safety Code Section 25501 defines a hazardous material as "... any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety, or to the environment. Hazardous materials include, but are not limited to, hazardous substances, hazardous waste, radioactive materials, and any material which a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment."

[2] CDM, 2010. *The Sherwin-Williams Company, Remedial Action Plan, Emeryville, California.* June 11.

Successor Agency Parcel Land Uses. The Successor Agency parcel was undeveloped in the late 1800s and in 1903 it was a portion of the New California Jockey Club Race Track and contained a building that was used for jockey's rooms and a gymnasium. By 1911, the majority of the Successor Agency parcel had been developed with railroad spurs by Southern Pacific Transportation Company (SPTC).[3] The Successor Agency parcel remained occupied by railroad spurs and a small rail yard into the late 1980s. In the 1930s, Southern Pacific Transportation Company (SPTC) constructed a fuel and water station at the Successor Agency parcel to service steam locomotives. The station included a large water tank, a pump house, and underground storage tanks (USTs) containing Bunker C fuel. It is not known when the station was abandoned or demolished, and in the mid-1990s the USTs were encountered in the northern portion of the Successor Agency parcel during construction activities.[4] The UST removal activities are discussed further below. A Phase I Environmental Site Assessment (ESA) [5] prepared for the Successor Agency parcel identified these USTs as being located at a railroad spur at the Sherwin Williams/SPTC property. However, based on figures presented in a Case Closure letter,[6] the USTs actually were located in the northern portion of the Successor Agency parcel.

From at least 1987 through 2008, Technichem Inc. operated the Department of Toxic Substances Control (DTSC)-permitted Solid Waste Management Unit (SWMU) #6 in a shed in the southwestern corner of the Successor Agency parcel. The SWMU #6 was associated with a former Tetrachloro-ethylene (PCE) recycling operation at the property located at 4245 Halleck Street, adjacent to and south of the Successor Agency parcel.[7]

The Successor Agency parcel was acquired by the Emeryville Redevelopment Agency in 2006 and environmental investigation and remediation activities were performed from 2006 to 2008 (described further below). The Successor Agency parcel has been vacant since 2008 with the exception of one small structure and one above ground utility box that are located within Union Pacific Railroad (UPRR) easements along its southwestern boundary, and stockpiles of materials including clean top soil and mulch from City Public Works projects.

(2) Previous Environmental Investigations and Remediation Activities. A discussion of the previous environmental investigations and remediation activities performed at the Sherwin-Williams Parcel and Successor Agency parcel is presented below.

Sherwin-Williams Parcel. Environmental investigations and remediation activities for the Sherwin-Williams parcel are described below.

Pre-Remediation Environmental Investigations and Evaluations. Information presented below regarding pre-remediation environmental investigations and evaluations at the Sherwin-Williams

[3] Erler & Kalinowski, Inc., 2006. *Phase I Environmental Site Assessment, UPRR Parcel D, At the Intersection of Sherwin Avenue and Halleck Street, Emeryville, California.* October 2.

[4] Alameda County Department of Environmental Health, 2006. *Fuel Leak Site Case Closure; Southern Pacific Transportation Company, 1450 Sherwin Avenue, Emeryville, CA; Case No. RO0000441*. January 27.

[5] Erler & Kalinowski, Inc., 2006, op. cit.

[6] Alameda County Department of Environmental Health, 2006, op. cit.

[7] URS, 2013. *Technical Memorandum, Technichem Site Investigation, January and March 2013*. May 30.

parcel was obtained from the June 2010 Remedial Action Plan (RAP).[8] Soil, soil gas,[9] and groundwater investigations have been conducted at the Sherwin-Williams parcel since 1988 to delineate chemically-affected soils and groundwater that resulted from historic releases during manufacturing operations. The investigations revealed that the chemicals of concern (COCs) in the subsurface were metals (primarily lead and arsenic), volatile organic compounds (VOCs), (primarily aromatic constituents and ketones), semi-volatile organic compounds (SVOCs), and petroleum hydrocarbons. Chlorinated constituents were also detected in groundwater samples collected throughout the Sherwin-Williams parcel; however, in most instances those appear to be related to past releases on adjacent properties and not attributable to historic releases at the Sherwin-Williams parcel. The largest area of impacted soil and groundwater was located in the central portion of the Sherwin-Williams parcel where the former lead-arsenate pesticide plant and associated aboveground storage tanks (ASTs) were located. Impacts in this area were found to extend off-site and into the southwest portion of the Rifkin Lot. In the 1990s, interim remedial measures (IRMs) were performed under the oversight of the Regional Water Board to control off-site migration of contaminated groundwater and human exposure to contaminated soils. The IRMs included the following:

- Low permeability slurry walls were installed to contain chemically affected areas and control the migration of impacted groundwater off-site.
- An asphalt and concrete cap and storm water collection system were installed to reduce infiltration of storm water into impacted soils.
- A groundwater extraction and treatment (GWET) system was installed to pump and treat groundwater from inside the slurry wall.

In 2006, CDM, a consultant to the Sherwin-Williams Company,[10] conducted an evaluation of the IRMs and indicated that the effectiveness of the slurry walls to fully contain impacted groundwater was limited due to physical constraints including property boundaries, weak points where utilities crossed the slurry wall, and the presence of a former building which limited access for construction of the slurry wall. CDM also indicated that the GWET system required extensive operation and maintenance efforts, but had been effective in treating influent concentrations to comply with permitted discharge limits. In 2006 and 2007, CDM evaluated possible treatment technologies that could potentially be used to treat impacted soil and groundwater at the Sherwin-Williams parcel.[11]

Remedial Action Plan. In 2010 a Remedial Action Plan (RAP)[12] was prepared under the oversight of DTSC to address DTSC's Imminent and Substantial Endangerment Determination and Order and Remedial Action Order No. 05/06-007. Remedial cleanup goals were established for soil and groundwater at the Sherwin-Williams parcel in the 2010 RAP. With the exception of arsenic, the cleanup goals for soil consisted of risk-based target levels (RBTLs) which were developed for the unrestricted residential exposure scenario as part of a human health risk assessment (HHRA) performed for the Sherwin-Williams parcel in 2005. The cleanup goal for arsenic was based on a

[8] CDM, 2010, op. cit.

[9] The term "soil gas" refers to the atmosphere present in soil pore spaces.

[10] CDM, 2010, op. cit.

[11] Ibid.

[12] Ibid.

proposed naturally occurring background concentration. The basis for groundwater cleanup goals varied between RBTLs developed in the HHRA, and established regulatory agency screening levels including the Regional Water Board's Environmental Screening Levels (ESLs) and the California Department of Health Services Maximum Contaminant Levels (MCLs). Several potential remedial action alternatives were evaluated in the 2010 RAP, and the selected remedial alternative was vadose zone excavation/source area excavation/monitored natural attenuation (MNA)/land use covenants (LUCs).[13]

Remedy Implementation. A Remedial Design Implementation Plan (RDIP) was prepared in June 2011, and the RAP and RDIP were approved by DTSC in letters dated June 2010 and June 2011, respectively.[14] The implementation of remedial action occurred between March 2011 and April 2012, and was documented in the July 2012 Remedy Implementation and Completion Report (Completion Report)[15] which described the following key components:

- Installation and operation of an air monitoring system and air sampling program to evaluate the effectiveness of site controls in maintaining the safety of the surrounding community.
- Installation and operation of a temporary soil gas extraction and treatment system to remove VOCs from the most impacted vadose zone excavation area in the central portion of the Sherwin-Williams parcel.
- Excavation and off-site disposal of approximately 150,000 tons of debris and soil including material impacted with arsenic, lead, and/or organic contaminants to support future potential residential use and long-term protection of groundwater.
- Excavation dewatering and on-site pre-treatment and discharge to sanitary sewer of over 5 million gallons of extracted water.
- Backfill of excavation areas to control groundwater movement and re-grading/surfacing to facilitate storm water drainage.
- Extension of the existing slurry wall along the southwestern portion of the Sherwin-Williams parcel.
- Installation of a membrane barrier and interceptor trench to prevent movement of groundwater from the Sherwin-Williams parcel to the Novartis property.
- Removal of portions of the existing slurry wall to control groundwater movement from the Sherwin-Williams parcel to off-site, down-gradient (western) areas.
- In-place abandonment of a former UST.
- Abandonment of selected groundwater wells and installation of new groundwater wells required for the post-remedy implementation groundwater monitoring program.

[13] Ibid.

[14] CDM Smith, 2012a. *Remedy Implementation Completion Report, The Sherwin-Williams Company, 1450 Sherwin Avenue, Emeryville, California*. July 25.

[15] Ibid.

Confirmation soil sampling was performed in vadose zone excavations to demonstrate that impacted soil was sufficiently removed to achieve the cleanup goal for arsenic. The cleanup goal established for arsenic was that the 95 percent upper confidence limit (UCL) of the arsenic results from confirmation samples be less than 24 milligrams per kilogram (mg/kg), with no arsenic result exceeding 100 mg/kg. Confirmation samples collected from the vadose zone excavation sidewalls demonstrated conformance with the cleanup goal.[16] Confirmation soil samples were not analyzed for other COCs with the exception of the excavation around the former UST, where confirmation soil samples and grab groundwater samples were also analyzed for lead, VOCs, SVOCs, and total petroleum hydrocarbons (TPH) as gasoline (TPH-g), diesel (TPH-d), and motor oil (TPH-mo). Concentrations of TPH-d in soil, and TPH-g, TPH-d, TPH-mo, and arsenic in groundwater were found above their respective cleanup goals. After sample collection, the former UST excavation was backfilled. The UST could not be removed because a portion of the UST was located beneath a transformer; therefore the UST was abandoned in-place by cleaning the inside of the UST and filling it with cement grout. [17]

The Completion Report was approved by DTSC in August 2012, and an Operations & Maintenance (O&M) Plan[18] and a LUC[19] for the Sherwin-Williams parcel were finalized and approved by DTSC in December 2012, as part of the requirements of the RAP. The LUC imposes environmental restrictions because VOCs and arsenic remain in groundwater and/or soil gas above the unrestricted cleanup goals as defined in the RAP. The O&M Plan describes long-term monitoring and O&M activities to be performed for remedial features installed at the Sherwin-Williams parcel. The LUC and O&M Plan for the Sherwin-Williams parcel is described in the current regulatory status of the project site presented below.

Post-Remediation Monitoring. Post-remediation monitoring of groundwater and soil gas is described below.

Groundwater. Post-remediation groundwater monitoring continues to be performed at the Sherwin-Williams parcel as required by the O&M Plan and O&M Agreement[20] between DTSC and the Sherwin-Williams Company. The most recent report documenting groundwater monitoring activities was issued in January 2015, and indicated that post-remediation groundwater monitoring data collected from April 2012 through October 2014 demonstrated that the remediation is meeting the established effectiveness criteria, with the exception of an increasing concentration trend for arsenic in one monitoring well. [21] Post-remediation statistical trends for groundwater are below contingency criteria for implementing active groundwater extraction, and groundwater monitoring

[16] Ibid.

[17] Ibid.

[18] CDM Smith, 2012b. *Operations & Maintenance Plan, The Sherwin-Williams Company, 1450 Sherwin Avenue, Emeryville, California.* December 11.

[19] Department of Toxic Substances Control, 2012. *Covenant to Restrict Use of Property, Environmental Restriction.* Recorded December 20.

[20] Department of Toxic Substances Control, 2013. *Docket No. HSA-O&MEA 11/12-096, Operations & Maintenance Agreement.* Executed January 23.

[21] ARCADIS U.S. Inc., 2015. *Data Summary Report for Groundwater Monitoring Activities for the Period from July 1, 2014 through December 31, 2014, Sherwin-Williams Site, 1450 Sherwin Avenue, Emeryville, California*. January 8.

was proposed to continue using varying sampling frequencies (quarterly, semi-annual, or annual) for various monitoring wells.[22]

Soil Gas. Post-remediation soil gas monitoring was performed in general accordance with the O&M Plan in June 2012, January 2013, and June 2013, as documented in the Updated Soil Gas Data Summary and Evaluation Report (Soil Gas Report) prepared by CDM Smith in August 2013.[23] Benzene, ethylbenzene, and naphthalene were the only COCs detected in soil gas samples above their respective residential California Human Health Screening Levels (CHSSLs) during the soil gas sampling events. Concentrations of these COCs generally decreased between the June 2012 and June 2013 sampling events. Of all the soil gas concentrations detected on the Sherwin-Williams parcel in June 2013, only one concentration of naphthalene exceeded CHHSLs. In the Rifkin Lot, two sample locations had concentrations of naphthalene which increased to be above the CHHSL and one sample location had a concentration of benzene that remained above the CHHSL in the June 2013 sampling event.[24] CDM Smith recommended that several of the soil gas monitoring points (SGMPs) be abandoned, and that two SGMPs on the Sherwin-Williams parcel and all three SGMPS on the Rifkin Lot be maintained for potential future evaluation of soil gas as part of future redevelopment plans.[25]

Successor Agency Parcel. Environmental investigations and remediation activities for the Successor Agency parcel are described below.

In 1994, four former railcar tankers that were converted to USTs (three 6,500-gallon and one 5,725-gallon capacity) were removed from the northern portion of the Successor Agency parcel. Residual Bunker C fuel was cleaned out of the USTs prior to removal and 250 cubic yards of soil was excavated from around the USTs. In 1995, two additional smaller motor oil USTs (270-gallon capacity) were removed from the northern portion of the Successor Agency parcel and approximately 5 cubic yards of discolored soil was excavated from around the USTs. For both UST removal events, the excavations could not be expanded further due to the physical constraints of the railroad tracks to the west and a slurry wall to the east; therefore, soil impacted with petroleum hydrocarbons was left in place. Residual impacts from petroleum hydrocarbons were also present in groundwater in the vicinity of the USTs. The Alameda County Department of Environmental Health (ACDEH) issued a Case Closure letter in 2006 for the former USTs, which indicated that the site is to be re-evaluated due to nuisance and odor concerns if the land use were to change in the future.[26]

According to the March 2008 Site Cleanup Plan (SCP),[27] a soil and groundwater investigation was performed at the Successor Agency parcel in October 2006, and the primary COCs in soil were TPH compounds and metals including arsenic, cadmium, lead, and zinc; the primary COC in groundwater was arsenic. The SCP established cleanup goals for soil which would allow for future multi-family

[22] Ibid.

[23] CDM Smith, 2013. *Updated Soil Gas Data Summary and Evaluation Report, The Sherwin-Williams Company, 1450 Sherwin Avenue, Emeryville, California.* August 15.

[24] Ibid.

[25] Ibid.

[26] ACDEH, 2006, op. cit.

[27] Erler & Kalinowski, Inc., 2008. *Final Site Cleanup Plan, UPRR Parcel D, Emeryville, California.* March 18.

residential or park uses of the Successor Agency parcel.[28] The SCP presented proposed remedial excavation limits and depths to remove soil with concentrations of COCs exceeding cleanup goals, and proposed performing additional pre-excavation soil characterization to confirm or modify the depths of proposed excavation.

In 2008, soil remediation activities were conducted at the Successor Agency parcel in accordance with the San Francisco Bay Regional Water Quality Control Board (RWQCB) and DTSC approved SCP. The SCP also met the corrective action and closure requirements for the Technichem facility's SWMU #6. Prior to commencing remediation activities, additional delineation soil sampling was performed in January 2008. Based on the additional sampling results, soil was pre-characterized for off-site disposal and minor modifications were made to the extent of proposed excavation areas. Based on the results of excavation confirmation soil sampling, additional excavation beyond the limits shown in the SCP was performed until the cleanup goals were met, the property boundary was reached, or further excavation was not possible as it could have compromised the stability of temporary slopes required to maintain integrity of above-ground structures (e.g., adjacent buildings, railroad tracks, and sidewalks). Approximately 16,000 tons of soil was removed from the Successor Agency parcel and disposed off-site. Following the completion of remedial excavation activities, soil impacted with concentrations of COCs exceeding cleanup goals remained on the Successor Agency parcel due to the physical constraints preventing further excavation, as discussed above. The entire site was backfilled with fill material imported from the Dumbarton Quarry which was tested (to ensure it was non-contaminated) in accordance with DTSC guidelines.[29]

During remedial excavation activities, an area of pea gravel fill material was encountered below approximately 3 feet of other fill material in the northern portion of the Successor Agency parcel. No signs or evidence of hazardous materials were observed in the pea gravel and the pea gravel was left in place.[30] The location of this pea gravel fill material corresponds with the locations of the former USTs described in the ACDEH Case Closure letter.[31] Residual impacts from petroleum hydrocarbons remained in soil and groundwater in the vicinity of these USTs following their removal in the 1990s,[32] therefore, residual impacts from petroleum hydrocarbons may remain in soil below and adjacent to the pea gravel fill and in groundwater within and surrounding the pea gravel fill.

(3) Current Regulatory Status of Project Site. A discussion of the current regulatory status of the Sherwin-Williams parcel and Successor Agency parcel is presented below.

Sherwin-Williams Parcel. The Sherwin-Williams parcel is assigned Envirostor ID number 60000189 and DTSC Site Code 200956, and has a current cleanup status of Certified/O&M as indicated on the DTSC's Envirostor database, meaning that remediation has been completed and that

[28] Ibid.

[29] Erler & Kalinowski, Inc., 2009. *Remedial Action Completion Report, UPRR Parcel D, Emeryville, California.* January 30.

[30] Ibid.

[31] ACDEH, 2006, op. cit.

[32] Ibid.

operations and monitoring is required.[33] Post-remediation groundwater monitoring will continue for the Sherwin-Williams parcel as proposed in the January 2015 monitoring report[34] which was approved by DTSC in a letter dated January 8, 2015.[35] Post-remediation soil gas monitoring is no longer being performed for the Sherwin-Williams parcel because sufficient data have been collected to evaluate current vapor intrusion[36] concerns and future evaluation of soil gas must be performed as part of future redevelopment plans as discussed in the August 2013 Soil Gas Report,[37] which was approved by DTSC in an e-mail dated August 15, 2013.[38]

The LUC for the Sherwin-Williams parcel describes the installed remediation features (including a slurry wall with breaches, an interceptor trench, high and low permeability backfill materials, contingent groundwater extraction risers, and groundwater monitoring wells) and defines restrictions and requirements intended to protect the remedial features and prevent potential exposure of construction workers, the public, and the environment to hazardous materials which are present in the subsurface of the Sherwin-Williams parcel.[39] These restriction and requirements include:

- Prohibiting any use of the property which may adversely affect the integrity of the remedial features and prohibiting any use of groundwater for any purpose other than groundwater monitoring.
- Requiring preparation of a Soil Management Plan (SMP) and DTSC approval prior to performing any activities that will disturb soil on the property or import soil to the property.
- Prohibiting activities including any drilling, extraction of groundwater, installation of preferential pathways (e.g., utility trenches), or other construction or development activities which are inconsistent with the remediation features without written approval from DTSC.
- Prior to construction or other development of the property, the owner shall submit an evaluation of soil gas conditions and indoor air quality and obtain DTSC approval, and DTSC may require further investigation and/or implementation of engineering controls to address the potential for vapor intrusion to indoor air.
- Prohibiting any activities which may disturb or adversely affect the integrity or effectiveness of the remediation features, or alter or remove the remediation features without prior written approval from DTSC.

[33] Department of Toxic Substances Control, 2015a. Envirostor web page for Sherwin-Williams, 1450 Sherwin Avenue, Emeryville, CA. http://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=60000189 (accessed January 16).

[34] ARCADIS U.S. Inc., 2015, op. cit.

[35] Department of Toxic Substances Control, 2015b. Correspondence letter to Mr. Larry Mencin, The Sherwin-Williams Company. January 8.

[36] The term "vapor intrusion" is used to describe the migration of volatile chemical vapors from soil gas to indoor air.

[37] CDM Smith, 2013, op. cit.

[38] Bacey, Juanita, 2013. Former Project Manager for Department of Toxic Substances Control, correspondence e-mail to Mr. Larry Mencin of The Sherwin-Williams Company. August 15.

[39] Department of Toxic Substances Control, 2012, op. cit.

The LUC also specifies that access to the property must be allowed for DTSC personnel for the purpose of performing inspections, monitoring, and other activities; and that access to the property must be allowed for the entity or person responsible for implementing O&M activities for the purpose of implementing O&M activities. The LUC also indicates that annual inspection reports must be prepared and submitted to DTSC to document that the restriction and requirements of the LUC are being followed, and describes the actions to be taken if violations of the LUC are identified.[40]

The O&M Plan prepared for the Sherwin-Williams parcel describes long-term monitoring activities that will be performed for evaluation of groundwater and soil gas conditions, and inspections that will be performed to ensure that the integrity and effectiveness of remediation features are maintained. The remediation features are passive and predominantly underground, therefore constant maintenance is not required; however, the components of the remediation features must remain whole in order to continue operating as designed; therefore, future construction activities must not impact the remediation features and approval must be obtained from DTSC prior to any modification of the remediation features.[41]

The O&M Plan describes the frequency for long-term monitoring and inspection activities, and describes contingency actions (e.g., increased monitoring frequency, groundwater extraction) that would be implemented if groundwater monitoring data do not meet the remediation effectiveness criteria established in the O&M Plan. The O&M Plan also describes the frequency for periodic reports that will be prepared to document the implementation of the O&M Plan, including preparation of annual and Five-Year Review Reports.[42]

The Sherwin-Williams Company entered into an O&M Agreement with DTSC which requires Sherwin-Williams, or any successor property owner, to implement the O&M Plan for the property. The O&M Agreement requires DTSC approval prior to modifying or discontinuing any remediation system component, and indicates that DTSC may require modification, replacement, or additions to the remediation systems. The O&M Agreement indicates that all work performed pursuant to the O&M Agreement is subject to DTSC's review and approval. [43]

Successor Agency Parcel. A closed leaking UST (LUST) case identified as the Southern Pacific Transportation Company is listed on the State Water Resources Control Board (State Water Board) Geotracker database, and based on information presented on Geotracker, this former LUST site is within the northern portion of the Successor Agency parcel. This closed LUST case is assigned Geotracker Global ID T0600101882 and ACDEH Case No. RO0000441, and has been a closed case since January 2006. The Geotracker web page for this site indicates that there are Post-Closure Site Management Requirements which include prohibiting sensitive land uses (including residential) and requiring notification prior to change in land use, development, or excavation of the property.[44]

[40] Ibid.

[41] CDM Smith, 2012b, op. cit.

[42] Department of Toxic Substances Control, 2012, op. cit.

[43] Department of Toxic Substances Control, 2013, op. cit.

[44] State Water Board, 2015a. Geotracker web page for Southern Pacific Transportation Company, 1450 Sherwin Avenue, Emeryville, CA. http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0600101882 (accessed March 20).

The Successor Agency parcel is identified on DTSC's Envirostor database as UPRR Parcel D, and is assigned Envirostor ID number 60000833 and DTSC Site Code 201773, and has a current cleanup status of "referred to another agency" as of December 2007.[45] The Envirostor database does not contain information regarding cleanup activities performed at the Successor Agency parcel or its current regulatory status.

A draft No Further Action (NFA) letter for the Successor Agency parcel was submitted to the SFRWQCB and DTSC; however, DTSC stated that they could not concur with the NFA if concentrations remain above residential levels without a deed restriction. A preliminary draft deed restriction was prepared by the City in 2010.[46] In November 2015, the City initiated preparation of an exhibit showing those areas of the Successor Agency parcel that were not remediated in order to finalize a LUC for the Successor Agency parcel.[47]

(4) Project Site Reconnaissance. Baseline Environmental Consulting (Baseline) conducted a reconnaissance of the project site in January 2015. A discussion of observations at the Sherwin-Williams parcel and Successor Agency parcel is presented below.

Sherwin-Williams Parcel. During the site reconnaissance concrete floor slabs of former buildings and the existing Building 1-31 were observed on the Sherwin-Williams parcel. The Sherwin-Williams parcel was surrounded by a locked fence and was observed to be unoccupied with the exception of 24-hour security personnel. The concrete slabs were interconnected by asphalt and gravel surfaced areas, with vegetation growing on much of the gravel surface. The circular bases of former ASTs were observed on the concrete pad in the south-central portion of the Sherwin-Williams parcel. The concrete sidewalks surrounding the Sherwin-Williams parcel were generally in good condition, with the exception of some sections of sidewalk along Horton Street that were raised by tree roots. No fill-ports or vent pipes (signs of potential USTs) were observed in the sidewalk surrounding the Sherwin-Williams parcel. The area of a former UST which was abandoned in place, and an adjacent large transformer were observed west of the northwest portion of Building 1-31. It is not known whether this large transformer or other electrical equipment in Building 1-31 contain Polychlorinated biphenyls (PCBs). Many monitoring wells were observed on the Sherwin-Williams parcel. Many drums, 5-gallon buckets, and other containers were observed on the first floor of Building 1-31. The majority of these containers was empty or contained only residual liquids. Based on the container labels, the majority of the containers appeared to have contained heavy petroleum products including oils and grease. Several 55-gallon drums were observed which contained purged groundwater from monitoring well sampling activities.

Successor Agency Parcel. During the site reconnaissance, the Successor Agency parcel was observed to be a vacant lot with the exception of the one small structure and one above-ground utility box which are located within UPRR easements along its southwestern boundary and separated from

[45] Department of Toxic Substances Control, 2015c. Envirostor web page for UPRR Parcel D, North of Sherwin Avenue and Halleck Street, Emeryville, CA. Website: www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=60000833 (accessed January 16).

[46] Colman, 2015. Emeryville Site Status. June 1.

[47] Biddle, Michael, 2015. Attorney for the City of Emeryville. Written correspondence to Earl James and Joy Su of Earler & Kalinowski, Inc., consultant for the cleanup of the Successor Agency Parcel. November 2.

the greater area of the Successor Agency parcel by chain-link and barbed wire fencing. As of November 2015, the contents and use of the structure in the UPRR easement is unknown. The Successor Agency parcel was observed to be surrounded by chain-link fencing with a locked access gate on Sherwin Avenue, and the ground surface consisted of soil and gravel with sparse vegetation. Stockpiled materials including soil, mulch, asphalt fragments, and gravelly material were observed in the southern portion of the Successor Agency parcel. According to the City, these stockpiles are remnants from City Public Works projects, and the soil stockpiles are clean top soil. A small pile of wooden railroad ties, which are classified as treated wood waste (a specific classification of hazardous waste) for landfill disposal purposes, was also observed in the northern portion of the Successor Agency parcel. No evidence of staining, distressed vegetation, or odors that would indicate a potential hazardous materials concern were noted at the Successor Agency parcel.

An approximately 1-foot diameter metal casing with a lid was observed sticking out of the ground near the southern boundary of the Successor Agency parcel adjacent to Halleck Street, but just outside the proposed development area. This feature may be a well or drainage sump. Two monitoring wells were also observed in the southern portion of the Successor Agency parcel, immediately north of the building at 4245 Halleck Street, but outside the development area for the proposed project. These monitoring wells are associated with the on-going environmental investigation of the Technichem site at 4245 Halleck Street, which is discussed further in the following section.

A surface patch was observed in the asphalt and concrete ground surface adjacent to the northeast corner of the building at 4245 Halleck Street, immediately southeast of the most southwestern portion of the Successor Agency parcel, and three circular metal covers were observed within the patched area. Two of these metal covers were labeled "fill box." It is not known what is beneath the metal covers, however similar metal covers are often found on the fill ports of USTs, therefore a UST may be present beneath Halleck Street at this location. Records regarding the presence of a UST or a release of hazardous materials from a UST at this location have not been found. Because the proposed development does not include the most southwestern portion of the Successor Agency parcel and the groundwater flow direction in the area of 4245 Halleck Street has been found to be towards the south,[48] away from the Successor Agency parcel, it is unlikely that a possible UST in this area would impact the proposed project.

(5) Properties of Potential Environmental Concern in Vicinity of the Project Site. The project site is located in the vicinity of several properties where known releases of hazardous materials have occurred. The potential for these properties to environmentally impact the project site is discussed below.

The Rifkin Lot. The Rifkin Lot is located at 4525-4549 Horton Street, adjacent to and northeast of the project site. This property was historically occupied by various commercial/ manufacturing facilities including Rotary Oil and Rheem Manufacturing from 1928 through 1937, and multiple corrugated shipping container manufacturing companies between 1937 and 1969.

[48] URS, 2013, op. cit.

Several USTs (including heating oil, gasoline, coatings, and a diesel tank) were present on the Rifkin property as early as the 1940s.[49]

This property is listed as an open LUST case on Geotracker, the State Water Board's on-line database. No documents were available on Geotracker that provide additional information regarding the current environmental condition of this property.[50] Because impacts from the Sherwin-Williams parcel extended into the Rifkin Lot, investigations and remediation activities were performed by the Sherwin-Williams Company on the Rifkin Lot.[51] Due to the presence of the slurry wall and impermeable membrane between the project site and the Rifkin Lot, migration of potential contaminants in groundwater from the Rifkin Lot to the project site should be limited; therefore, this property may not pose a significant environmental concern for the project site.

Pacific Gas & Electric Company – Emeryville. The Pacific Gas & Electric (PG&E) property is located at 4525 and 4227 Hollis Street, approximately 400 feet east and up-gradient of the project site. The primary COCs at the 4525 Hollis Street address are arsenic, lead, PCBs and heavy petroleum hydrocarbons.[52] These COCs are not very mobile and therefore this portion of the PG&E property may not pose a significant environmental concern for the project site. A release of more mobile chlorinated solvents (PCE and trichloroethylene [TCE]) occurred in PG&E's Building A, located at 4227 Hollis Street. Soil, groundwater, and soil gas sampling was recently performed near residential and commercial properties located adjacent to and immediately down-gradient (northwest) of PG&E's Building A. According to DTSC, the impacts from PCE and TCE should not pose a significant health risk to the surrounding building occupants, and environmental cleanup activities will be performed to address the release of PCE and TCE.[53] Because the project site is further from this release of PCE and TCE than the area recently evaluated, and environmental cleanup activities will be performed to address the release of PCE and TCE, the PG&E property at 4227 Hollis Street should not pose a significant environmental concern for the project site.

Chromex. The Chromex property is located at 1400 Park Avenue, approximately 100 feet southeast of the project site across Horton Street. This property is listed on the State Water Board's Geotracker website as both a LUST cleanup site[54] and Cleanup Program Site,[55] with ACDEH providing oversight as the lead regulatory agency. A 1995 Supplementary Site Assessment (SSA)

[49] CDM, 2010, op. cit.

[50] State Water Board, 2015b. Geotracker web page for Rifkin Investment Company, 4525-4549 Horton Street, Emeryville, CA. http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0600101139 (accessed January 13).

[51] CDM, 2012, op. cit.

[52] Department of Toxic Substances Control, 2015d. Envirostor web page for PG&E - Emeryville, 4525 Hollis Street, Emeryville, CA. http://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=01490011 (accessed January 15).

[53] Department of Toxic Substances Control, 2014. Community Notice, Emeryville Materials Facility, 4525 Hollis Street, Emeryville, California, 94608, January.

[54] State Water Board, 2015c. Geotracker web page for Chromex, 1400 Park Avenue, Emeryville, CA. http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0600102202 (accessed January 15).

[55] State Water Board, 2015d. Geotracker web page for Chromex (Toxics), 1400 Park Avenue, Emeryville, CA. http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T06019703624 (accessed January 15).

Report[56] evaluated impacts from chromium, hexavalent chromium, and halogenated VOCs (HVOCs)(including PCE and TCE) in soil and groundwater of this property in the vicinity of former chrome plating vats. The groundwater flow direction at this property was indicated to be towards the west-northwest (towards the southeastern portion of the project site), and concentrations of total chromium (up to 69 micrograms per liter [ug/L]), hexavalent chromium (up to 25 ug/L), PCE (up to 10 ug/L) and TCE (up to 11 ug/L) were detected down-gradient of the former vault. Although the down-gradient extent of impacts was not defined, the SSA Report indicates that dissolved phase HVOC, chromium, and hexavalent chromium concentrations should be considered adequately characterized on the property, and indicates that the detected concentrations of HVOC, chromium, and hexavalent chromium may be a result of off-site sources (specifically the Electro-Coatings Inc. [ECI]property).[57] The ECI property is discussed further, below. An NFA letter was reportedly issued by ACDEH for the former chromium vault at the property in 1995;[58] however, this property is still listed as an open case on Geotracker and an NFA letter is not available on Geotracker.

Three 550-gallon USTs (two gasoline and one diesel/motor oil) were removed from near the northern boundary of the Chromex property (approximately 200 feet east-southeast of the project site) in 1995.[59] Significant impacts from petroleum hydrocarbons and associated VOCs (benzene, toluene, ethylbenzene and xylenes [BTEX]) were reported in confirmation soil samples; however, significant impacts from petroleum hydrocarbons and BTEX were not reported in a nearby monitoring well which was sampled in 1996 and 1997.[60] The latest report available on Geotracker for the Chromex property is a 2007 Groundwater Well Redevelopment and Sampling Report [61] which indicates that the groundwater flow direction is towards the south, and no evidence of impacts from petroleum hydro-carbons were reported in monitoring wells at the property. A 2014 directive letter from ACDEH[62] indicates that the monitoring wells at this property may not be down-gradient of the former USTs, and ACDEH requests that further investigation be performed to define the extent of impacts.

Due to the proximity of the Chromex property to the project site, its apparent up-gradient location, and uncertainty regarding the extent of impacts, this property may pose environmental concerns for the project site.

ECI. The ECI property is located at 1401-1402 Park Avenue, across Park Avenue from the Chromex property and approximately 500 feet southeast of the project site. This property is listed on the State Water Board's Geotracker website as both a LUST cleanup site, with COCs including

[56] Alton Geoscience, 1995. *Supplementary Site Assessment Report, Former Chromex Facility, 1400 Park Avenue, Emeryville, California.* May 17.

[57] Ibid.

[58] The Reynolds Group, 2007. *Groundwater Well Redevelopment and Sampling Report, 1400 Park Avenue, Emeryville, California*. January 31.

[59] Aqua Science Engineers Inc., 1996. *Project Report, Underground Storage Tank Removal for Emeryville Properties, 1400 Park Avenue, Emeryville, California.* January 12.

[60] Aqua Science Engineers Inc., 1997. *Groundwater Monitoring Report, March 21, 1997 Sampling at Emeryville Properties, 1400 Park Avenue, Emeryville, California.* April 8.

[61] The Reynolds Group, 2007, op. cit.

[62] Alameda County, 2014. *Request for a Focused SCM and Data Gap Work Plant, Chromex, 1400 Park Avenue, Emeryville, California*. May 23.

chlorinated solvents, gasoline, and chromium.[63] Figures included in the 1995 SSA Report for the Chromex property depict large hexavalent chromium- and TCE-impacted groundwater plumes originating from the ECI property and spreading towards the west-northwest in 1991.[64] The lateral extent of these plumes was not defined, and documents were not available on Geotracker which provide additional information regarding the current environmental condition of this property and the extent of the plumes.[65] Due to the historic presence of large impacted groundwater plumes originating from the ECI property, its apparent up-gradient location from the project site, and uncertainty regarding the current extent of the impacted groundwater plumes, this property may pose environmental concerns for the project site.

Technichem. The Technichem property is located at 4245 Halleck Street, adjacent and south of the southwest corner of the project site. This property is being investigated and remediated under DTSC oversight and the primary COCs are PCE, TCE, and vinyl chloride.[66] An investigation performed in 2013 indicated that impacts were not detected in groundwater monitoring wells located immediately north of this property and within the Successor Agency parcel, and the groundwater flow direction at this property was determined to be towards the south, away from the project site.[67] Based on these findings, this property may not pose an environmental concern for the project site.

b. Regulatory Framework. The following section provides the federal, State, and local regulatory framework for hazardous materials and hazardous waste, hazardous building materials that could be encountered during building pad demolition and building renovation activities and worker health and safety.

(1) Hazardous Materials and Hazardous Waste. The use, storage, and disposal of hazardous materials, including management of contaminated soils and groundwater, is regulated by numerous local, State, and federal laws and regulations. The U.S. Environmental Protection Agency (U.S. EPA) is the federal agency that administers hazardous materials and hazardous waste regulations. State and local agencies include the California EPA (Cal/EPA), which includes the California DTSC, the State Water Board, the California Air Resources Board (ARB), the San Francisco Bay Regional Water Quality Board (Regional Water Board), the Bay Area Air Quality Management District (BAAQMD), and ACDEH. A brief description of each federal, State, and regional/local agency's jurisdiction and involvement in the management of hazardous materials and wastes is provided below.

Federal. The U.S. EPA is the federal agency responsible for enforcement and implementation of federal laws and regulations pertaining to hazardous materials and hazardous waste. The federal regulations are primarily codified in Title 40 of the Code of Federal Regulations (40 CFR). The legislation includes the Resource Conservation and Recovery Act of 1976 (RCRA), the Superfund

[63] State Water Board, 2015e. Geotracker web page for Electro-Coatings Inc., 1401-1402 Park Avenue, Emeryville, CA. http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0600102145 (accessed January 14).

[64] Alton Geoscience, 1995, op. cit.

[65] State Water Board, 2015d, op. cit.

[66] Department of Toxic Substances Control, 2015e. Envirostor web page for Technichem Inc, 4245 Halleck Street, Emeryville, CA. http://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=80001769 (accessed January 15).

[67] URS, 2013, op. cit.

Amendments and Reauthorization Acts of 1986 (SARA), and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). The U.S. EPA provides oversight for certain site investigation and remediation projects, and has developed protocols for sampling, testing, and evaluation of solid wastes.[68]

State. Three State agencies, described below, regulate hazardous materials and waste that may occur on or around the project site.

Department of Toxic Substances Control. In California, DTSC is authorized by the U.S. EPA to enforce and implement federal hazardous materials laws and regulations. California regulations pertaining to hazardous materials are equal to or exceed federal regulation requirements. Most State hazardous materials regulations are contained in Title 22 of the California Code of Regulations (CCR). DTSC generally acts as the lead agency for soil and groundwater cleanup projects that affect public health, and establishes cleanup levels for subsurface contamination that are equal to, or more restrictive than, federal levels. DTSC administers a number of programs designed to aid prospective developers by streamlining the investigation and remediation of former industrial sites (known as "brownfields") such as the California's Land Reuse and Revitalization Act of 2004 (AB 389).

State Water Resources Control Board. The State Water Board enforces, among other statutes and regulations, those regulations pertaining to implementation of UST programs. It also allocates monies to eligible parties who request reimbursement of State funds to clean up soil and groundwater pollution from UST leaks. The State Water Board also enforces the Porter-Cologne Water Quality Act of 1969 through its nine regional boards, including the Regional Water Board, described below.

California Air Resources Board. This agency is responsible for coordination and oversight of State and local air pollution control programs in California, including implementation of the California Clean Air Act of 1988. CARB has developed State air quality standards, and is responsible for monitoring air quality in conjunction with the local air districts.

Regional and Local Agencies. The following regional and local agencies have regulatory authority over the proposed project.

San Francisco Bay Regional Water Quality Control Board. The Regional Water Board can act as lead agency to provide oversight of sites where the quality of groundwater or surface waters is threatened, and has the authority to require investigations and remedial actions. However, for the project site, the DTSC is the lead agency.

Bay Area Air Quality Management District. The BAAQMD has primary responsibility for control of air pollution from sources other than motor vehicles and consumer products (which are the responsibility of U.S. EPA and CARB). BAAQMD is responsible for preparing attainment plans for non-attainment criteria pollutants, control of stationary air pollutant sources, management of VOC-containing soils (District Rule 8-40) and the issuance of permits for activities including asbestos demolition and renovation activities (District Rule 11-2).

[68] U.S. Environmental Protection Agency, 2007. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846.*

Alameda County Department of Environmental Health. ACDEH is the Certified Unified Program Agency (CUPA) for the project site and enforces State and local regulations pertaining to hazardous waste generators and risk management prevention programs in Alameda County. The purpose of the Unified Program is to ensure that facilities properly manage and disclose hazardous materials used to minimize the risk of a hazardous materials release and improve emergency response actions in the event of a release. As established by Cal/EPA, the Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities for the following six environmental and emergency response programs:

- Hazardous Waste Generator Program (Health and Safety Code [H&SC] Chapter 6.5)
- Hazardous Waste Tiered Permitting (H&SC Chapter 6.5)
- USTs (H&SC Chapter 6.7)
- ASTs (H&SC Chapter 6.67)
- Hazardous Materials Business Plans (H&SC Chapter 6.95)
- California Accidental Release Prevention Program (H&SC Chapter 6.95)

ACDEH issues permits for USTs and oversees UST removals, and ensures Spill Prevention Control and Countermeasure (SPCC) Plans are prepared for qualifying ASTs. In addition, the ACDEH Local Oversight Program (LOP) may act as lead agency to ensure proper remediation of LUST sites and other contaminated sites.

Local Policies and Ordinances. The City has local policies that would apply to the proposed project as discussed below.

Emeryville General Plan. The Safety, Conservation, and Noise Element of the City of Emeryville General Plan[69] contains the following goals and policies related to hazardous materials, fire, and emergency response/evacuation that would apply to the project:

- **Goal CSN-G-1 Public health:** A high level of public health and safety.
- **Goal CSN-G-2 Improved air quality:** Local ambient air quality levels that help meet regional attainment status and contain low levels of pollutants.
- **Goal CSN-G-3 Water quality and conservation:** High quality groundwater and surface water resources. Improved water conservation, increased use of recycled water, and reduced per capita water consumption.
- **Goal CSN-G-8 Protection from natural and manmade hazards:** Protection of life, natural environment, and property from natural and manmade hazards due to seismic activity, hazardous material exposure or flood damage.
- Policy CSN-P-4: Dust abatement actions are required for all new construction and redevelopment projects.
- Policy CSN-P-38: Prior to reuse, development sites will be remediated, according to relevant State and Federal Regulations.

[69] Emeryville, City of, 2013. *General Plan.* Adopted October 13, 2009, last amended April 2, 2013.

- Policy CSN-P-39: The City will enforce regulation of local and State laws regarding the production, use, storage, and transportation of hazardous materials and waste.
- Policy CSN-P-40: The City requires abatement of lead-based paint and asbestos prior to structural renovation or demolition, and compliance with all State, Federal, Occupational Safety and Health Administration (OSHA), BAAQMD, Alameda County, and local rules and regulations.
- Policy CSN-P-41: Development on sites with known contamination of soil and groundwater shall be regulated to ensure that construction workers, future occupants, and the environment as a whole, are adequately protected from hazards associated with contamination.
- Policy CSN-P-43: Siting of businesses that use, store, process, or dispose of substantial quantities of hazardous materials shall be carefully restricted in areas subject to very strong levels of ground shaking.
- Policy CSN-P-47: The City will continue to specify minimum water pressure flows to ensure adequate flow in the event of a fire.
- Policy CSN-P-48: San Pablo Avenue, Hollis Street, and Interstate-80 will continue to serve as evacuation routes in case of an emergency.
- Policy CSN-P-49: The City will continue to require minimum roadway widths to ensure access for emergency vehicles.

(2) Lead, Asbestos, and Other Hazardous Building Materials. Prior to 1978, lead compounds were commonly used in exterior and interior paints. Lead is a suspected human carcinogen (i.e., may cause cancer), a known teratogen (i.e., causes birth defects), and a reproductive toxin (i.e., can cause sterility). Prior to the 1980s, building materials often contained asbestos fibers, which are a known human carcinogen. Asbestos, used to provide strength and fire resistance, was frequently incorporated into insulation, roofing, and siding, textured paint and patching compounds used on wall and ceiling joints, vinyl floor tiles and adhesives, and water and steam pipes.

PCBs have been used as coolants and lubricants in transformers, capacitors, heating/cooling equipment, and other electrical equipment. PCBs have not been manufactured in the United States since 1977, but may still be found in older electrical equipment and other building materials, like light ballasts. PCBs have been associated with acne-like skin conditions in adults and changes in the nervous and immune system in children. PCBs are also known to cause cancer in laboratory animals and are probable human carcinogens.[70] PCB or PCB-contaminated items require proper off-site transport and disposal at a facility that can accept such wastes.

Fluorescent lighting tubes and ballasts, computer displays, and several other common items containing hazardous materials (including mercury, a heavy metal) are regulated as "universal wastes" by the State of California. Universal waste regulations allow common, low-hazard wastes to be managed under less stringent requirements than other hazardous wastes. Management of other hazardous wastes is governed by DTSC hazardous waste rules.

(3) Worker Health and Safety. Worker health and safety is regulated at the federal level by the US Department of Labor, OSHA. The Federal Occupational Safety and Health Act of 1970

[70] Agency for Toxic Substances and Disease Registry, 2001. *Toxic FAQs for Polychlorinated Biphenyls*. February.

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, and provides consultant assistance to employers. California standards for workers dealing with hazardous materials are contained in California Code of Regulations (CCR) Title 8 and include practices for all industries (General Industrial Safety Orders), and specific practices for construction, and other industries. Workers at hazardous waste sites (or workers who may be exposed to hazardous wastes that might be encountered during excavation of contaminated soils) must receive specialized training and medical supervision according to the Hazardous Waste Operations and Emergency Response (HAZWOPER) regulations.[71] Additional regulations have been developed for construction workers potentially exposed to lead[72] and asbestos.[73] Cal/OSHA enforcement units conduct on-site evaluations and issue notices of violation to enforce necessary improvements to health and safety practices.

2. Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to hazardous materials that could result from implementation of the proposed project. The section begins with the criteria of significance, which establishes the threshold for determining whether an impact is significant. The latter part of this section presents the impacts associated with implementation of the proposed project and the recommended mitigation measures, if required.

a. Significance Criteria. Development of the proposed project would result in a significant impact related to hazardous materials if it would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset or accident conditions involving the release of hazardous materials into the environment;
- Create a significant hazard to the public or environment through exposure to hazardous materials which may be present in soils, ground water, and/or building materials as a result of historical land uses at the project site or in the project vicinity;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
- 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 create a significant hazard to the public or the environment;
- Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan;

[71] California Code of Regulations, Title 8, Section 5192.

[72] California Code of Regulations, Title 8, Section 1532.1.

[73] California Code of Regulations, Title 8, Section 1529.

- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area; or
- Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

b. Project Impacts. The following discussion describes the potential impacts related to hazardous materials that would results from implementation of the proposed project. The applicant is proposing two potential development options; the potential impacts and mitigation measures discussed below would apply for both of the potential development scenarios (Option A and Option B), unless indicated otherwise.

(1) Routine Transport, Use, or Disposal of Hazardous Materials. The proposed project involves construction of a mixed-use development that would include residential units, commercial spaces, and public open space areas (e.g. parks, pedestrian and bicycle paths). These types of land uses typically do not involve transport, use, or disposal of significant quantities of hazardous materials. Generally, small quantities of hazardous materials, such as paints, cleaning chemicals, and fertilizers, would be used for routine maintenance and landscaping. Existing hazardous materials programs overseen by ACDEH would apply to any significant transport, use, or disposal of hazardous materials. Additionally, the City of Emeryville regulates the planning and permitting of hazardous waste facilities under Title 9, Chapter 5, Article 7 of the Emeryville Municipal Code.[74] These existing programs would ensure protection of human health and the environment during project operations.

During project construction, hazardous materials such as fuel, lubricants, paint, sealants, and adhesives would be transported and used at the project site. As the project site is greater than one acre in area, management of these materials at the project site during construction would be subject to the requirements of the Construction General Stormwater Permit (CGP) in accordance with the National Pollutant Discharge Elimination System (NPDES). Compliance with the CGP would require preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) designed to reduce the risk of spills or leaks from the reaching the environment (please see Section IV.H, Hydrology and Water Quality, for the discussion regarding development of a SWPPP). The SWPPP would also include a Spill Response Plan to address minor spills of hazardous materials.

Compliance with applicable regulations would ensure that potential significant hazards associated with routine transport, use, or disposal of hazardous materials during and after construction would be less-than-significant.

(2) Release of Hazardous Materials. Hazardous materials (e.g., fuels, lubricants, paints, adhesives) would be transported and used on-site for proposed construction and redevelopment activities.

[74] Emeryville, City of, 2014. Municipal Code, Title 9, Chapter 5. Passed September 2.

Impact HAZ-1: The proposed project could result in accidents during construction involving release of hazardous materials into the environment. (S)

Construction vehicles would be used on-site that could accidentally release hazardous materials, such as oils, grease, or fuels. It is likely that the construction contractor(s) would store these hazardous materials and vehicles on-site during the duration of construction activities. Accidental releases of hazardous materials could affect soil, groundwater, and/or surface water quality, or could result in adverse health effects to construction workers, the public, and the environment. The following mitigation measure to reduce the impact to a less-than-significant level is recommended.

> Mitigation Measure HAZ-1: A Spill Response Plan, including emergency preparedness and response procedures, shall be developed by the contractor(s) to establish the procedures to be followed in the event of an accidental spill or other hazardous materials emergency during project site preparation and development activities. These procedures shall include evacuation procedures, notification procedures, spill containment procedures, and required personal protective equipment, as appropriate, in responding to the emergency. In addition, an accurate up-to-date inventor of hazardous materials, including Material Safety Data Sheets, shall be maintained on-site to assist emergency response personnel in the event of a hazardous materials incident. The contractor(s) shall submit the Spill Response Plan to the City for approval prior to demolition or development activities.
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> Compliance with these mitigation measures may occur in coordination with compliance with the Stormwater Pollution Prevention Plan and Best Management Practices required for the proposed project (See Mitigation Measures HYD-1 and HYD-2 for additional detail). Implementation of this mitigation measure would reduce this potential impact to a less-than-significant level. (LTS)

(3) Hazardous Materials Associated with Historic Uses. An analysis of hazardous building materials and hazardous materials in the soil and groundwater related to historic use of the project site is provided below.

Hazardous Building Materials. The existing Building 1-31 on the Sherwin Williams parcel was built prior to the 1970s, and therefore may have lead-based-paint, asbestos-containing materials, and/or other hazardous building materials such as PCB containing transformers, capacitors, heating/cooling equipment, and/or light ballasts, and/or mercury containing fluorescents light bulbs and thermometers. Although the other structures on the Sherwin Williams parcel have already been demolished and only their concrete slabs remain in place, it is possible that hazardous buildings materials may be present in subsurface features that were associated with the former structures, such as asbestos-cement pipes, or asbestos piping insulation.

Although these hazardous materials do not pose a significant threat to public health or the environment in their intact condition, demolition/renovation activities have the potential to break up and release these materials to the air, where they can pose a potential hazard. The City of Emeryville regulates potential airborne emissions of hazardous materials under Title 9, Chapter 5, Article 11 of the Emeryville Municipal Code, which states

> "All existing or proposed uses producing dust, dirt, ash, charred paper, soot, grime, carbon or other noxious material which can or may cause damage to the health of any individual, animal or vegetation, damage to property, or the physical soiling or discoloring of the surfaces of any structure or materials located outside the property lines of the parcel of land from which such emission emanates shall have the source of the contaminant muffled or controlled in a manner that will prevent the issuance, continuance or recurrence of any emission that is, or may be, detectable beyond the property line of the premises. All uses shall comply with the requirements of the Bay Area Quality Management District."[75]

Additionally, Policy CSN-P-40 of the City of Emeryville General Plan indicates that abatement of lead-based paint and asbestos is required prior to structural renovation or demolition, and shall be performed in compliance with all State, Federal, OSHA, BAAQMD, Alameda County, and local rules and regulations.[76]

Any construction that could disturb asbestos is subject to BAAQMD Rule 11-2, Asbestos Demolition, Renovation, and Manufacturing. Section 303.8 of the rule requires a survey of structures for asbestos-containing materials prior to demolition or renovation activities. Section 401 requires BAAQMD notification 10 days prior to demolition where a significant quantity of asbestos may be removed. All abatement is subject to State regulations in Title 8 California Code of Regulations, Sections 341.6-341.14 and 1529.

Compliance with the programs and regulations above would ensure that potential significant hazards associated with the potential release of hazardous building materials during demolition and renovation activities would be less than significant.

Hazardous Materials in Soil and Groundwater. Soil and groundwater beneath the project site have been impacted with hazardous materials due to historic industrial uses of the project site, and additional impacts in groundwater may be present beneath the project site due to migration of impacted groundwater from up-gradient and off-site sources. Although remediation activities at the project site resulted in removal of soil impacted with hazardous materials to an extent that remedial cleanup goals were achieved at the Sherwin-Williams parcel, soil impacted with concentrations of hazardous materials exceeding cleanup goals remains at the Successor Agency parcel. In addition, residual impacts from hazardous materials remain in groundwater and soil gas beneath the Sherwin-Williams parcel and possibly beneath the Successor Agency parcel, and previously unidentified areas of hazardous materials impacted soil and groundwater could be discovered during site redevelopment.

Vapor Intrusion. Soil and groundwater that is impacted with VOCs can present a potential risk of vapor intrusion to indoor air for future site occupants. Residual impacts from VOCs have been detected in soil gas and groundwater beneath the Sherwin-Williams parcel, and VOCs impacted groundwater has been identified in the vicinity of the project site which originated from off-site sources. The LUC for the Sherwin-Williams parcel requires that an evaluation of soil gas conditions and indoor air quality be performed and DTSC approval for be construction obtained prior to

[75] Emeryville, City of, 2014, op. cit.

[76] Emeryville, City of, 2013, op. cit.

construction or other development of the Sherwin-Williams parcel.[77] According to DTSC, the LUC requirement for performing an evaluation of soil gas conditions and indoor air quality would also apply to existing Building 1-31 on the Sherwin-Williams parcel.[78]

Impact HAZ-2: The proposed project could result in exposure of the public or the environment to hazardous materials present in soils, groundwater, and/or building materials as a result of historical land uses at the project site or in the project vicinity. (S)

The following mitigation measure would satisfy the requirements of the LUC and evaluate/mitigate potential impacts from vapor intrusion for the Sherwin-Williams parcel:

> Mitigation Measure HAZ-2a: As a condition of approval for construction permits for the Sherwin-Williams parcel, an evaluation of soil gas conditions and indoor air quality shall be performed on the Sherwin-Williams parcel and Department of Toxic Substances Control (DTSC) review and approval for construction shall be obtained. DTSC may require further investigation and/or implementation of engineering controls to address the potential for vapor intrusion to indoor air, such recommendations shall be implemented prior to occupancy of the proposed structures.

The Land Use Covenant (LUC) only applies to the Sherwin-Williams parcel; however, based on the proximity of the Successor Agency parcel to the Sherwin-Williams parcel and the potential presence of volatile organic compounds (VOCs) impacted groundwater in the vicinity of the project site which originated from off-site sources, vapor intrusion at the Successor Agency parcel may also pose a potential significant hazard for future site occupants if project development proceeds under development Option A, which includes residential housing on the Successor Agency parcel. The following mitigation measure shall be implemented at the Successor Agency parcel to evaluate/mitigate potential impacts from vapor intrusion if development proceeds under Development Option A:

> Mitigation Measure HAZ-2b: As a condition of approval for construction permits for residential housing on the Successor Agency parcel (under development Option A), an evaluation of soil gas conditions and indoor air quality shall be performed on the Successor Agency parcel and DTSC review and approval for construction shall be obtained. DTSC may require further investigation and/or implementation of engineering controls to address the potential for vapor intrusion to indoor air; such recommendations shall be implemented prior to occupancy of the proposed structures.

Compliance with DTSC requirements and the mitigation measures, above, would ensure that potential significant hazards associated with potential vapor intrusion to indoor air at the project site would be less than significant.

[77] Department of Toxic Substances Control, 2012, op. cit.

[78] Bacey, Juanita, 2015. Former Project Manager for Department of Toxic Substances Control. Written correspondence with Baseline Environmental, March 23.

Soil and groundwater impacted with hazardous materials may be disturbed and/or removed as a result of construction-related grading, excavation, drilling, and dewatering activities. These activities have the potential to pose a health risk to construction workers, who would potentially come into direct contact with or inhale dust or vapors from contaminated soil and groundwater, as well as the nearby public, who could be affected by contaminants in fugitive dust or vapors from the project site. Additionally, if impacted soil and groundwater were improperly managed and disposed of during construction, they could be released into the environment and pose a potential risk to future site occupants, other members of the public, and the environment.

Disturbance and management of soil and groundwater at the Sherwin-Williams parcel would be performed in accordance with the restriction and requirements of the LUC[79] and O&M Agreement,[80] which requires development of an SMP prior to soil disturbing activities, and DTSC review and approval of proposed activities that would disturb soil, potentially affect installed remediation features, or extract groundwater from the Sherwin-Williams parcel. These requirements would include DTSC review and approval of the proposed foundation design and construction method because installation of deep foundation features (e.g., drilled piers) could pose a risk of dragging down contaminated soil and/or creating a conduit between contaminated shallow groundwater and deeper groundwater zones. The DTSC requirements of the LUC and O&M Agreement (including preparation of an SMP) only apply to the Sherwin-Williams parcel; however, performing soil and groundwater disturbing activities on the Successor Agency parcel would pose similar potential significant impacts as performing soil and groundwater disturbing activities on Sherwin-Williams parcel due to: 1) the proximity of the Successor Agency parcel to the Sherwin-Williams parcel; 2) the presence of residual impacts from hazardous materials in soil and groundwater beneath the Successor Agency parcel; and 3) the potential for previously unidentified areas of hazardous materials impacted soil and groundwater to be discovered on the Successor Agency parcel. To protect the health and safety of construction workers, the surrounding public, and the environment from potential significant hazards associated with soil and groundwater disturbing activities at the project site, the following mitigation measure shall be implemented:

> Mitigation Measure HAZ-2c: As a condition of approval for construction permits for the Successor Agency parcel, a LUC for the Successor Agency parcel shall be prepared and approved by DTSC. The land use covenant shall define restrictions and requirements intended to prevent potential exposure of construction workers, the public, and the environment to hazardous materials which are present in the subsurface of the Successor Agency parcel. At the discretion of the DTSC, these restriction and requirements may include, but not be limited to:
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> - Prohibiting any use of groundwater for any purpose other than groundwater monitoring.
> - Requiring preparation of a Soil Management Plan (SMP) and DTSC approval prior to performing any activities that will disturb soil on the property or import soil to the property.
> - Prohibiting activities including any drilling, extraction of groundwater, installation of preferential pathways (e.g., utility trenches), or other construction or development activities without written approval from DTSC.

[79] Department of Toxic Substances Control, 2012, op. cit.

[80] Department of Toxic Substances Control, 2013, op. cit.

- Prior to construction or other development of the property, the owner shall submit an evaluation of soil gas conditions and indoor air quality and obtain DTSC approval, and DTSC may require further investigation and/or implementation of engineering controls to address the potential for vapor intrusion to indoor air.
- Allowing access to the property for DTSC personnel for the purpose of performing inspections, monitoring, and other activities.
- Preparing annual inspection reports and submitting them to DTSC to document that the restriction and requirements of the LUC are being followed, and describes the actions to be taken if violations of the LUC are identified.

DTSC may also include preparation of an Operations & Maintenance (O&M) Plan for the Successor Agency parcel as a requirement of the LUC to ensure that remedial features (e.g., barriers preventing exposure to impacted soil) would be maintained. If required by DTSC, an O&M Plan for the Successor Agency parcel shall be prepared and approved by DTSC, and an O&M Agreement for the Successor Agency parcel shall be entered between the City, or any successor property owner and DTSC. The O&M Plan would describe long-term monitoring and reporting activities that would be performed to ensure that the integrity and effectiveness of remedial features are maintained. The O&M Agreement with DTSC would require the City, or any successor property owner, to implement the O&M Plan for the property. The O&M Agreement would indicate that all work performed pursuant to the O&M Agreement is subject to DTSC's review and approval.

Mitigation Measure HAZ-2d: As a condition of approval for construction permits for the Successor Agency parcel and the Sherwin-Williams parcel, a SMP shall be prepared which provides guidelines for soil and groundwater disturbing activities to be performed on the Successor Agency parcel and the Sherwin-Williams parcel. The SMP shall include, but not be limited to, the following elements:

- Dust and vapor controls;
- Storm water controls;
- Excavated soil stockpile management;
- Soil stockpile sampling procedures;
- Soil and/or groundwater transportation and disposal procedures;
- Groundwater dewatering, treatment, and/or discharge;
- Notification and response procedures if previously unidentified subsurface features of environmental concern (e.g., buried tanks, drums, hazardous materials pipelines, or hazardous building materials) are discovered;
- Notification and response procedures if previously unidentified areas of potential soil or groundwater contamination (e.g., soil or groundwater exhibiting discoloration and/or odors, or soil containing rubble or other debris) are discovered;
- Notification and response procedures if previously installed remedial features are inadvertently damaged;
- Importing of clean fill materials; and
- Health and safety requirements.

The SMP shall be reviewed and approved by DSTC prior to conducting soil or groundwater disturbing activities at the project site. The SMP shall be revised if previously unidentified environmental hazardous are discovered which require additional measures to be incorporated into the SMP to ensure protection of construction workers, the surrounding public, and the environment, such as changes in health and safety requirements (e.g., worker training or personal protective equipment [PPE] requirements), material handling/sampling protocol, or air monitoring requirements. Any revisions to the SMP shall be reviewed and approved by DSTC prior to conducting soil or groundwater disturbing activities that would be affected by the revisions to the SMP. (LTS)

Compliance with DTSC requirements and the mitigation measures above would ensure that potential significant hazards associated with the disturbance of soil and groundwater at the project site would be less than significant.

(4) Emit Hazardous Materials Near Schools. There are no existing schools located within a quarter mile of the project site. The nearest existing school is the Pacific Rim International School, which is located approximately 1,500 feet northwest of the project site, and the nearest proposed schools will be located at the Emeryville Center for Community Life, which is currently under construction and located approximately one-third of a mile west of the project site. Therefore, this potential impact is less than significant.

(5) Government Code Section 65962.5. The Sherwin-Williams parcel and the Successor Agency parcel are listed on the DTSC Envirostor database,[81,82] which is one of the lists compiled pursuant to Government Code Section 65962.5. The project site parcels are listed due to the investigation and remediation activities performed under DTSC oversight. DTSC's active oversight of the investigation and remediation of the project site parcels does not create a significant hazard to the public or environment. As described above, DTSC's restrictions and requirements for the Sherwin-Williams parcel and the mitigation measures for the Successor Agency parcel, are designed to prevent such hazards from occurring. Therefore, this impact is less than significant.

(6) Emergency Response/Evacuation Plans. The proposed project would not be expected to impair implementation of or interfere with any emergency response or evacuation plans in the vicinity of the project site. The proposed project would include the addition of new streets and sidewalks/pedestrian paths to accommodate the flow of traffic and pedestrians away from the project site in case of an emergency evacuation and allow access for emergency vehicles and personnel throughout the project site in case of an emergency response. Hubbard Street would be extended (as Hubbard Circle) from the south to the center of the project site, and a new segment of 46th Street would extend from Horton Street into the center of the project site. Access to parking garages would be located internally within the project site, primarily off Hubbard Circle and 46th Street, and at least one additional garage entrance/exit would be located on Sherwin Avenue. Traffic would circulate in one direction around Hubbard Circle, which would reduce congestion in the case of an emergency evacuation. San Pablo Avenue, Hollis Street, and Interstate-80 will continue to serve as evacuation

[81] Department of Toxic Substances Control 2015a, op. cit.

[82] Department of Toxic Substances Control 2015c, op. cit.

routes in case of an emergency, as designated by the Emeryville General Plan.[83] Potential impacts to emergency evacuation routes or emergency response plans from the proposed project are therefore considered to be less than significant.

(7) Aviation Hazards. The project site is located approximately 7 miles northwest of the Oakland International Airport, and is not located near any private use airstrips.[84] The project site is not located within the Airport Influence Area (AIA) of the Oakland International Airport;[85] therefore, the proposed structures at the project site would not be considered a potential obstruction hazard for aircraft using the Oakland International Airport. Potential aviation hazards associated with the proposed project are therefore considered less than significant.

(8) Increased Risk of Exposure to Wildland/Urban Fires. The project site is surrounded by urbanized uses and is located several miles away from the Berkeley/Oakland Hills, which is the nearest mapped wildland fire hazard area.[86] The proposed project would be required to conform to the California Fire Code and Uniform Building Code, Emeryville Building Code, and requirements of the Alameda County Fire Department (which services Emeryville) to reduce the potential for structural fires. Compliance with City and County requirements and building codes would reduce potential impacts from fire hazards, including wildland fires, to a less-than-significant level.

c. Cumulative Impacts. Cumulative impacts occur when impacts from a proposed project combine with similar impacts from other past, present, or reasonably foreseeable projects in a similar geographic area. The geographic context for cumulative hazards and hazardous materials impacts is the project site and adjoining areas that could be affected by releases of hazardous material that could migrate across property lines; such as groundwater.

No impacts were identified that would be compounded by additional projects that may be implemented in the project vicinity. During project construction, multiple construction activities occurring in the same general location would all be subject to the requirements of the City and BAAQMD regulations which are designed to prevent fugitive dust with contaminants from escaping construction sites. Implementation of Mitigation Measures HAZ-1, HAZ-2a, HAZ-2b, and HAZ-2c would further reduce any potential hazards and hazardous materials impacts related to contaminated material during the project demolition and construction activities from affecting adjoining areas. Operation of the project would not result in any significant impacts related to hazards and hazardous materials because no use of hazardous materials (beyond minor quantities of maintenance and cleaning compounds) would occur during the operational phase of the project.

No impacts were identified that would be compounded by additional development because, with the exception of fugitive dust, hazards and hazardous materials impacts are generally limited to the immediate vicinity of the use, storage, disposal, or release of the hazardous materials. Although the development of other projects in Emeryville could result in similar hazardous materials impacts, those

[83] City of Emeryville, 2013, op. cit.

[84] Skyvector, 2015. *San Francisco Sectional Chart.* Website: www.skyvector.com (accessed January 13).

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

[86] Cal Fire, 2008. *Alameda County Very High Fire Hazard Severity Zones in LRA.* September 3.

impacts would not intensify the potential impacts of the proposed project, and the proposed project would not intensify hazardous materials impacts at other locations in the project vicinity. Therefore, implementation of the proposed project would not result in a cumulatively considerable contribution to cumulative impacts regarding hazards and hazardous materials, and the cumulative impact would be less than significant.

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J. CULTURAL RESOURCES

This section describes the baseline conditions for cultural resources in the project site and vicinity, identifies potentially significant impacts to cultural resources that may result from project implementation, and recommends mitigation measures to reduce the severity of potentially significant impacts.

Cultural resources are sites, buildings, structures, objects, and districts that may have traditional or cultural value for their historical significance. Cultural resources include a broad range of resources, examples of which include archaeological sites, historic roadways, landscapes, and buildings of architectural significance. For a cultural resource to be considered a historical resource (i.e., eligible for listing in the California Register of Historical Resources), it generally must be 50 years or older[1] and: (1) be listed in, or determined eligible for listing in, the California Register of Historical Resources by the State Historical Resources Commission; (2) be included in a local register of historical resources, as defined in section 5020.1(k), or identified as part of a survey meeting the requirements of section 5024.1(g) of the Public Resources Code; or (3) be determined by the lead agency as historically significant.

Under CEQA, paleontological resources are a subset of cultural resources and include fossil plants and animals, and evidence of past life such as trace fossils and tracks. Ancient marine sediments may contain invertebrate fossils representing snails, clam and oyster shells, sponges, and protozoa; and vertebrate fossils such as fish, whale, and sea lion bones. Terrestrial sediments may contain fossils that represent such vertebrate land mammals as mammoths, camels, saber tooth cats, horses, and bison.

1. Setting

This section describes the methods used to establish the baseline conditions for cultural resources in the project site; provides a brief historical overview of the project site and surrounding area; describes the cultural resources identified in the project site and vicinity and their significance under CEQA; and presents the State and local legislative regulatory context for cultural resources.

a. Methods. The cultural resources analysis conducted for the project included archival records searches, a literature review, and a field review. The results of these identification tasks are presented in subsequent sections of this chapter.

(1) Records Search. Records searches were conducted to identify cultural resources in and adjacent to the project site. The records searches were conducted at the Northwest Information Center (NWIC) of the California Historical Resources Information System, Sonoma State University, Rohnert Park; the Native American Heritage Commission (NAHC), Sacramento; and the University of California Museum of Paleontology (UCMP), Berkeley. The NWIC, an affiliate of the State of California Office of Historic Preservation, is the official State repository of cultural resources records and reports for Alameda County. The NAHC maintains the Sacred Lands File, which includes locations of Native American cultural or religious significance. The UCMP's database includes information on locations where fossils have been identified, the taxa of fossils found at a particular location, and the geological formations associated with a fossil locality.

[1] CCR Title 14(11.5) Section 4852 (d)(2).

As part of the records search, LSA reviewed the following State of California inventories for cultural resources in and immediately adjacent to the project:

- *California Inventory of Historic Resources*;[2]
- *Five Views: An Ethnic Historic Site Survey for California*;[3] and
- *Directory of Properties in the Historic Property Data File*.[4] The directory includes the listings of the National Register of Historic Places, National Historic Landmarks, the California Register of Historical Resources, California Historical Landmarks, and California Points of Historical Interest.

Northwest Information Center: Recorded Historic Built-Environment Resources. The NWIC records search indicated that the project site includes a contributor to the Emeryville Historic Industrial District (District), Building 1-31.[5] The California Office of Historic Preservation assigned this District a status code of "2S2" in 1990, indicating that the resource has been determined eligible for the National Register of Historic Places by a consensus through the Section 106 process and is listed in the California Register of Historical Resources.[6] The 1990 Architectural Inventory/Evaluation Form for the District identifies 29 structures within the District boundary, including 23 contributors and 6 non-contributors.[7] The buildings that comprise the District were constructed primarily between 1907 and 1930 for manufacturing and warehousing activities. The predominant architectural style is classical, and the predominant exterior material is brick. The District is eligible for listing in the National Register of Historic Places for its association with the industrial/economic development of Emeryville and for its architecture.

Building 1-31, West Elevation, January 2015

An architectural survey completed for the Park Avenue District Plan indicates that Buildings 1-31 are "Tier 1" buildings, which are typically late 19th to early 20th century buildings in Emeryville that are of "high architectural significance."[8]

[2] California Department of Parks and Recreation, 1976. *California Inventory of Historic Resources.* California Department of Parks and Recreation, Sacramento.

[3] California Office of Historic Preservation 1988. *Five Views: An Ethnic Historic Site Survey for California.* California Department of Parks and Recreation, Sacramento.

[4] California Office of Historic Preservation, 2012. California Department of Parks and Recreation, Sacramento. April 5.

[5] Building 1-31 is technically two buildings that are physically connected and operated as a functional unit during Sherwin-Williams use of the property.

[6] California Office of Historic Preservation, 2012. California Department of Parks and Recreation, Sacramento. April 5.

[7] Parks, Bonnie W., and Denise O'Connor, 1990. Architectural Inventory/Evaluation Form for the Emeryville Historic Industrial District. California Department of Transportation, Sacramento.

[8] Emeryville, City of, 2006. *Park Avenue District Plan:* 13-15.

Northwest Information Center: Recorded Archaeological Deposits. There are no previously recorded archaeological deposits within the project site, although archaeological deposits have been identified during monitoring at the project site, as described in the section Northwest Information Center: Previous Cultural Resource Studies, below.

Prehistoric archaeological sites have been identified within 0.5 miles of the project site along Temescal Creek, consisting of CA-ALA-309 (the "Emeryville Shellmound"), CA-ALA-310, CA-ALA-311, CA-ALA-312, CA-ALA-313, and P-01-010873. Although the horizontal and vertical extent of these sites at the time of Euro-American contact is not known, the approximate locations of these sites are depicted on maps included with previous archaeological studies completed in the vicinity.[9,10] Although these sites have been severely impacted by development, portions of these sites may exist intact beneath the disturbance zone; such intact deposits (if present) may be significant. Archaeological preconstruction testing completed west of the project site for the Bay Street development, for example, identified midden to a depth of eight feet below grade, and *in situ* archaeological deposits and Native American burials were identified in excavation profiles.[11] Archaeological monitoring for the Chiron Campus Expansion Program north of the project site identified two *in situ* Native American burials.[12]

A description of recorded archaeological deposits in the vicinity of the project is presented below.

CA-ALA-309. The Emeryville Shellmound was a large prehistoric habitation, burial, resource processing, and ceremonial site north of the mouth of Temescal Creek along the bayshore. It was the largest of up to five mounds along lower Temescal Creek, the other shellmounds represented by the recorded sites CA-ALA-310, -311, -312, and -313, which are described below. Schenck estimated that the Emeryville Shellmound measured 40 feet in height and 300,000 square feet at its base.[13] The Emeryville Shellmound has been the subject of several archaeological investigations during the 20th century. Max Uhle and James Merriam conducted initial documentation and excavation of the site in 1902;[14] Nels C. Nelson supplemented Uhle and Merriam's findings with additional excavation and study of the site in 1906;[15] and Egbert Schenck documented artifacts and burials exposed during the leveling of the site in 1924, when the upper 22 feet of the mound was removed by steam shovel.[16]

[9] Ambro, Richard D., 1992. *Archaeological Cultural Resource Study for the Bay/Shellmound Street Project.* Holman and Associates, San Francisco.

[10] Buss, Margaret, 1982. *Archaeological Survey Report for Proposed High Occupancy Vehicle Lanes from Bay Bridge to Carquinez Bridge.* California Department of Transportation, Oakland.

[11] URS Greiner Woodward Clyde, 1999. *Draft Archaeological Mitigation and Data Recovery Plan for the South Bayfront Project: Archaeological Sites CA-ALA-309 and CA-ALA-310, the Emeryville Shellmound.* URS Greiner Woodward Clyde, Oakland, California.

[12] William Self Associates, 2002. *Report on the Archaeological Monitoring at the Chiron Campus Expansion: Building 12A Parking Structure, Emeryville, CA.* William Self Associates, Orinda, California.

[13] Schenck, W. Egbert, 1926:161-162. The Emeryville Shellmound Final Report. *University of California publications in American Archaeology and Ethnology* 23(3):147-282.

[14] Uhle, Max, 1907. The Emeryville Shellmound. *University of California Publications in American Archaeology and Ethnology* 7(1):1-106.

[15] Nelson, Nels, 1996. *Excavation of the Emeryville Shellmound, 1906: Nels C. Nelson's Final Report.* Archaeological Research Facility.

[16] Schenck, W. Egbert, 1926, op. cit.

Most recently, URS Corporation conducted preconstruction excavations at the site for the South Bayfront Project.[17] Collectively, these excavations have yielded thousands of prehistoric artifacts, faunal remains, and hundreds of human burials. The Emeryville Shellmound is California Historical Landmark #335.

CA-ALA-310. Archaeologist Arnold Pilling prepared a site records for CA-ALA-310 (as well as CA-ALA-311, -312, and -313 [described below]) based on data obtained by Nels Nelson during his survey of Bay Area shellmounds.[18] Pilling describes the site as "at mouth of first creek N. of Bay Bridge approach, North side." CA-ALA-310 is believed to have been leveled in 1871 for construction of a racetrack in Shellmound Park, although preconstruction archaeological excavation completed for the Bayfront Project identified a subsurface component that may represent CA-ALA-310.[19]

CA-ALA-311. Pilling describes the site as, "100 yds. east of Ala-310 and 300 yds. east of mouth of creek." Pilling indicates that a building had been constructed on the site and the mound was "now badly destroyed."

CA-ALA-312. Pilling describes the site as, "200 yds. east of Ala-311 and 600 yds. east of mouth of creek." The mound was leveled along with CA-ALA-310 in 1871, and Pilling described the site as "badly destroyed" with a building constructed at this location.

CA-ALA-313. Pilling describes the site as, "100 yds. east of Ala-312 and 700 yds. east of mouth of creek." The mound was leveled along with CA-ALA-310 and CA-ALA-312 in 1871, and Pilling described the site as "badly destroyed" with buildings and streets constructed at this location.

P-01-010873. Local writer and historian Richard Schwartz recorded this site in 2007 along Horton Street as an area with "dark soil" and "oyster shell in abundance." The recorded location of the site is in close proximity to CA-ALA-313, and it is possible P-01-010978 is an extension of that site or CA-ALA-312 recorded to the west.

Northwest Information Center: Previous Cultural Resource Studies. The NWIC records search indicates that two previous cultural resource studies have been prepared for the project site: a cultural resources assessment to document the project site's sensitivity for cultural resources and an archaeological monitoring report.

William Self Associates, Inc. (WSA), prepared a *Cultural Resources Assessment Report* in 2003 for the Sherwin-Williams soil remediation project. That project included excavation of potentially hazardous soils on the project site for removal and off-site disposal, and WSA's report was prepared to determine the potential for encountering significant cultural resources during project excavation. WSA concluded that the project had "the potential to directly impact cultural resources in the project area," including Native American artifacts, features, and burials, and historic-period artifacts and features associated with post-1840 land use in the area (e.g., the Oakland Trotting Park). To mitigate

[17] URS Greiner Woodward Clyde, 1999, op. cit.

[18] Nelson, Nels, 1909. Shellmounds of the San Francisco Bay Region. *University of California Publications in American Archaeology and Ethnology* 7(4):309-356.

[19] URS Greiner Woodward Clyde, 1999, op. cit.

potential impacts to such resources, WSA recommended preparation of an Archaeological Monitoring and Data Recovery Plan to: (1) establish archaeological monitoring procedures for the project; (2) identify research questions that could be addressed should significant archaeological deposits be identified during construction; and (3) identify data recovery and laboratory methods to be used to recover significant archaeological deposits and human remains.

In 2011, archaeologists with URS monitored soil remediation excavations on the project site (see Figure IV.J-1). The soil remediation activities included excavation to a maximum depth of 25 feet below the ground surface and off-site removal of approximately 90,000 cubic yards of soil; importing backfill soil; breaching and extension of an existing subsurface slurry wall; and removing up to 50 groundwater monitoring wells. URS archaeologists conducted full-time and intermittent "spot" monitoring of project ground disturbance.

Soil Remediation Excavation at Project Site, September 2011

URS identified brick features and two areas of redeposited midden containing shell and faunal bone on the project site. The brick features were interpreted as "likely kiln features" that were associated with mid-20th century industrial use of the project site, including numerous Sherwin-Williams facilities (see Figure IV.J-2). The midden deposits, which did not contain artifacts or human remains, were underlain by fill, indicating the soil was redeposited on the project site and likely originated from one of the nearby shellmound deposits documented along Temescal Creek. URS concluded that neither the historic-period features nor redeposited midden qualify as historical resources or unique archaeological resources under CEQA due to a lack of integrity or inability to answer significant archaeological research questions.

Native American Heritage Commission. On February 2, 2015, LSA faxed a request form describing the project and a map depicting the project site to the NAHC in Sacramento requesting a review of their Sacred Lands File. On February 19, 2015, NAHC Environmental Specialist III, Debbie Pilas-Treadway, responded in a letter to LSA that a review of the Sacred Land File "failed to indicate the presence of Native American traditional cultural resources in the immediate project area."

University of California Museum of Paleontology. LSA completed a fossil locality search of the UCMP online database for a previous development proposal of the project site on December 15, 2004. No known fossil localities are within the project site, although vertebrate fossil localities are recorded within five miles of the project.

(2) Literature Review. Publications and maps were reviewed for archaeological, historical, and environmental information about the project site and vicinity. The purpose of this review was to: (1) identify cultural resources within the project site and their historical context; and (2) identify the potential for the project site to contain such resources.

Prehistoric Archaeological and Paleontological Resources. The mapped surface geology of the project site is composed of Holocene basin (Qhb) deposits.[20] These landforms consist of very fine silty clay to clay deposits occupying flat-floored basins at the distal edge of alluvial fans adjacent to bay mud. Historical development of the project site (see below) has deposited approximately 4 to 22 feet of artificial fill on these Holocene-age deposits.[21] The presence of a Holocene landform and overlying fill has implications for the visibility of intact prehistoric archaeological deposits in the APE.

Meyer's study of the potential for buried prehistoric archaeological sites in the vicinity of the project indicates that the potential for buried sites is greatest in areas: (1) that are 655 feet or less from a natural source of freshwater; (2) that are 655 feet or less from the present or historic margin of the Bay; (3) that are on landforms at elevations of 50 feet or less above modern sea level; and (4) where the present ground surface consists of Holocene-age deposits or artificial fill.[22] Based on these general criteria—and the presence of recorded archaeological sites in the vicinity—the project site has an elevated potential for subsurface prehistoric archeological deposits.

The Holocene-age basin landform and artificial fill underlying the project site are too recent to contain significant paleontological resources (fossils). Underlying these Holocene deposits at an unknown depth are older Quaternary (i.e., Pleistocene) alluvial sediments, which have the potential to contain significant fossils. Locally, these sediments contain invertebrate and extinct vertebrate fossils, many of which are representative of the Rancholabrean land mammal age. Fossils found in alluvium of this age include, but are not limited to, bison, mammoth, ground sloths, saber-toothed cats, dire wolves, cave bears, rodents, birds, reptiles, and amphibians.

Historical Archaeological Resources. An 1852 map of the Vicente Peralta rancho depicts several enclosures along lower Temescal Creek in the vicinity of the project site.[23] These enclosures likely functioned as corrals for cattle, where they were held until butchered for hides and tallow.[24] The U.S. Coast Survey Map from 1856 indicates the project site was situated at the location of two fenced enclosures (Figure IV.J-3). Neither the 1852 nor 1856 maps depict buildings in the project site.

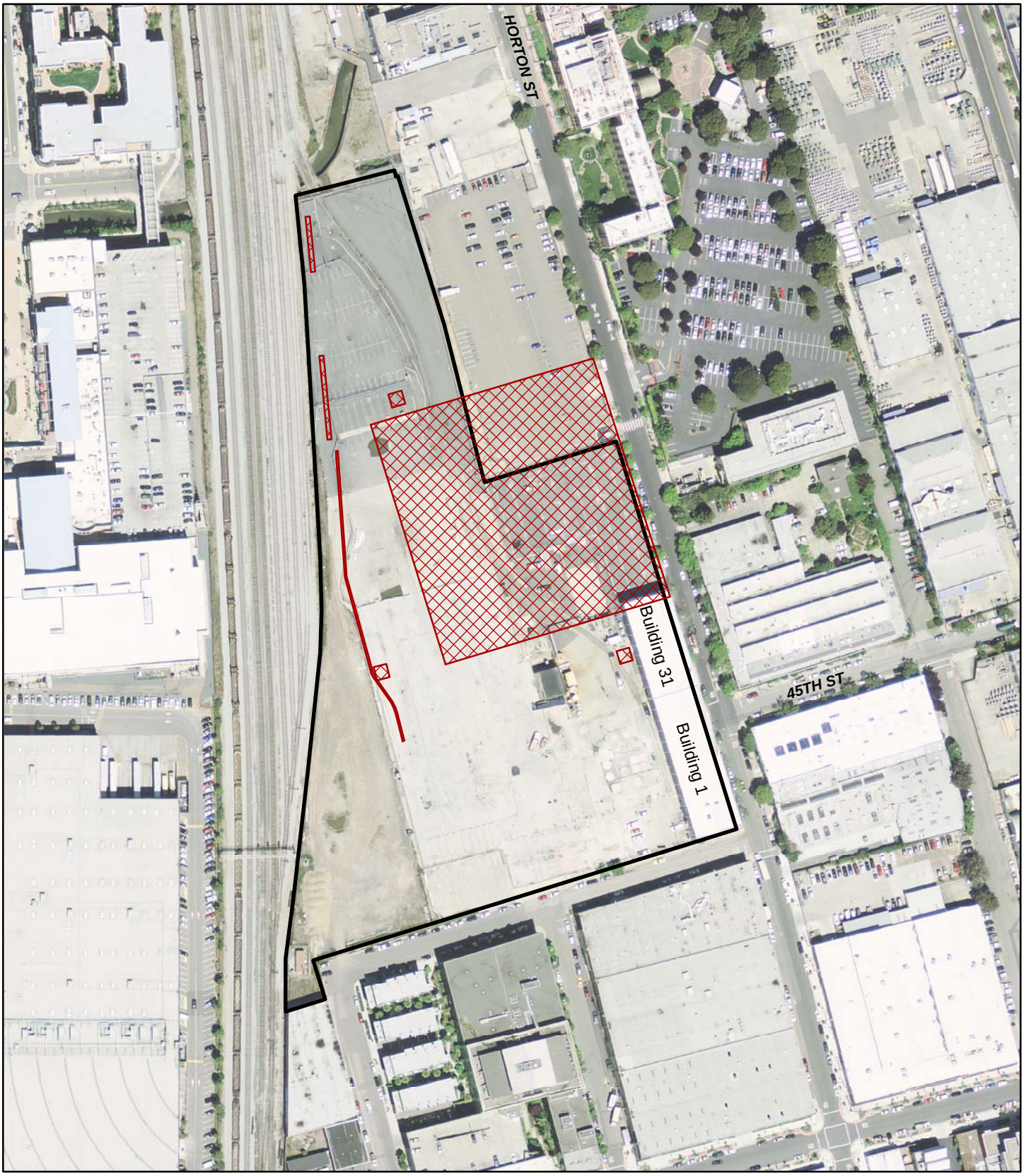
[20] Helley, E.J., and R.W. Graymer, 1997. *Quaternary Geology of Alameda County and Surrounding Areas, California.* U.S. Geological Survey, Washington, D.C.

[21] CDM Smith, 2005:6. *Summary of Geotechnical Results and Conceptual Geotechnical Engineering Recommendations for the Sherwin-Williams Company, Emeryville, CA Manufacturing Facility.* CDM Smith, Bellevue, Washington.

[22] Meyer, Jack, 2011:23. *Buried Archaeological Site Assessment and Extended Phase I Subsurface Explorations for the I-80 Integrated Corridor Mobility Project, Caltrans District 04, Alameda and Contra Costa Counties, California.* Far Western Anthropological Research Group, Inc., Davis, California.

[23] Von Schmidt, A.W., 1852. *Plan of Rancho De San Antonio Claimed by Vicente Peralta and Others.* U.S. Surveyor General, San Francisco.

[24] Ambro, Richard D., 1992:22. *Archaeological Cultural Resource Study for the Bay/Shellmound Street Project.* Holman and Associates, San Francisco.



LSA

FIGURE IV.J-1

LEGEND

Project Site

Previous Archaeological Monitoring (2011)

0 100 200
FEET

SOURCE: URS (04/2012); USGS Orthoimagery (04/2011).

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Sherwin-Williams Project EIR

Area of Previous Archaeological Monitoring

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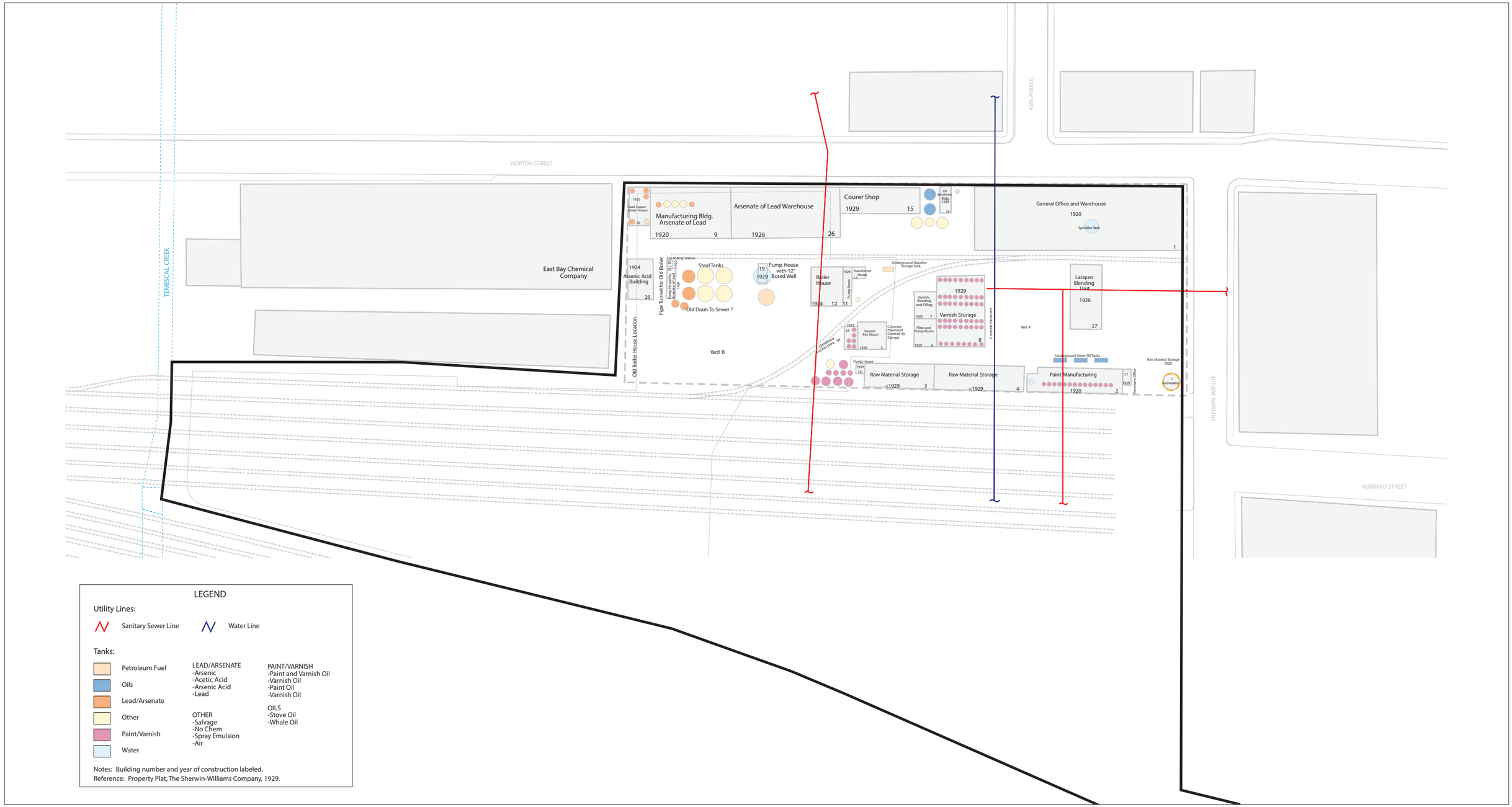

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FIGURE IV.J-2

SOURCE: ENTRIX

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Sherwin-Williams Project EIR

Project Site Property Layout in 1929

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LSA

FIGURE IV.J-3

N

0 1000 2000
FEET

SOURCE: U.S. Coast Survey (1856).

Sherwin-Williams Project EIR

Project Site on 1856 U.S. Coast Guard Survey T-Sheet

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In 1859, Edward Wiard purchased 115 acres of land along the lower reach of Temescal Creek that included the current project site (Figure IV.J-4). By 1871, Wiard had developed this land with the Oakland Trotting Park west of San Pablo Avenue and north of Park Avenue. By 1896, the Oakland Trotting Park was redeveloped and renamed the New California Jockey Club. The 1903 and 1911 Sanborn Fire Insurance maps indicate various buildings and structures in the project site associated with the New California Jockey Club, including a Jockeys' Rooms and Gymnasium (removed by 1911) at the southwest corner of the project site; a Burns & Waterhouse Company stable and dwelling at the approximate current location of Buildings 1 and 31; a forge; a driveway; a passage connecting the Southern Pacific Railroad platform with the New California Jockey Club grandstand; and two kitchen buildings (identified as "Rooms" by 1911) and stables at the northern end of the project site.

By 1920, the Sherwin-Williams Company had purchased land formerly occupied by the New California Jockey Club. By 1929, the Sherwin-Williams Company had constructed over 20 buildings on the project site that were used for office space; paint manufacturing, varnish, and lead-arsenate pesticides; and warehousing and storage (Figure IV.J-2). Only one of these original buildings, Building 1, remains along with the extension of its northern façade (Building 31), constructed in 1938.

(3) Cultural Resources Field Review. An LSA architectural historian and archaeologist completed a field review of the project site in February 2005 as part of a previous development proposal for the project site.[25] The buildings' exteriors and interiors were reviewed and an archaeological surface survey was conducted. Ground visibility at the time of the survey was limited due to buildings and paved areas.

LSA's survey of the project site and evaluation of the Sherwin-Williams complex in 2005 identified four contributing properties to the District: Building 1, the original administration building of the Sherwin-Williams plant constructed in 1920; Building 31, the northern addition to Building 1 constructed in 1938; Building 28, the paint factory constructed in 1936, and Building 2, the early brick paint factory constructed in 1920. All buildings on the project site with the exception of Buildings 1 and 31 were demolished in 2005-2006.

Buildings 1-31 on the corner of Sherwin Avenue and Horton Street functioned as the general office and warehouse. The buildings are connected, and have flat roofs with simple raised pediments, reinforced concrete posts and beams, and brick curtain walls. The primary façade on Sherwin Avenue has three bays; the top two stories each have a central bay with two windows flanked by paired windows and the outer bays each have two windows. The main entrance is located on the first story, with a double set of concrete steps providing access to the modern (1965) glass and aluminum doors, which are flanked by aluminum frame windows, beneath a rectangular canopy. Side elevations on each building feature nine bays. Each first story originally had double wood doors, and now all but one have been replaced with modern roll-up garage type doors. Original fenestration on the building consists of multi-light industrial metal sash with vented windows in the center. All windows on the primary façade have been replaced with aluminum frame windows, as have some of the others on the side elevations. Floors on the interior of the building are reinforced concrete, supported by reinforced concrete pillars.

[25] Marvin, Judith, and Randy Groza, 2005. California Department of Parks and Recreation DPR 523 form record of the Sherwin Williams Company Paint Company.

The archaeological survey identified scatters of deer bone and whole and fragmented *Macoma nasuta* (bent-nosed clam) on the City-owned parcel at the southwest portion of the project site. No midden was observed on the surface. Various modern debris was also noted on surface, including patches of asphalt, areas of fill soils and rocks, and chunks of concrete.

Subsequent to LSA's survey, soil remediation excavations were completed at the project site in 2008 (APN 049-1041-026-16) and 2011 (APNs 049-1041-026-15 and 049-1041-026-16) to remove contaminated soils. The 2008 excavation extended to a maximum depth of 1 to 7 feet below ground surface, and the 2011 excavation extended to a maximum depth of 25 feet below ground surface. Prehistoric and historical archaeological deposits were unearthed during archaeological monitoring of the 2011 soil remediation excavation (Figure IV.J-1). (Please refer to the "Northwest Information Center: Previous Cultural Resource Studies" section above for a description of these deposits.)

b. Cultural Resources Overview. This subsection briefly describes the prehistory and ethnography, history, and paleontology of the project site vicinity as determined by the records searches and literature review described above.

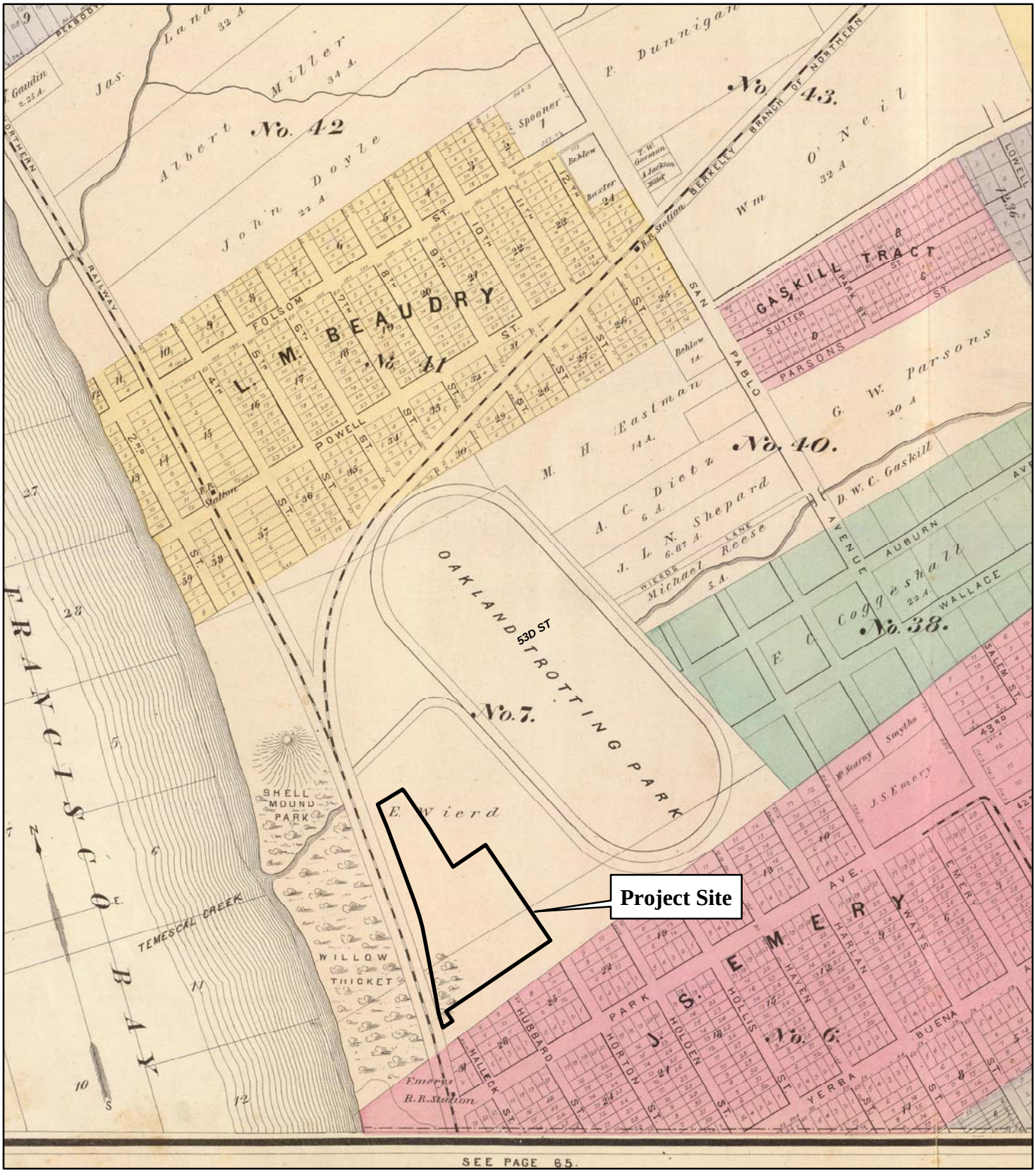
(1) Prehistory and Ethnography. The Archaic-Emergent cultural sequence developed by Fredrickson,[26] recalibrated by Milliken et al.,[27] is commonly used to interpret the prehistoric occupation of the San Francisco Bay Area. The recalibrated sequence is broken into two broad periods: the Archaic Period, consisting of the Early Holocene Lower Archaic (8000-3500 cal B.C.), Middle Archaic (3500-500 cal B.C.), Initial Upper Archaic (500 cal B.C.-cal A.D. 430), and Late Upper Archaic (cal. A.D. 430-1050); and the Emergent Period, consisting of the Lower Emergent Period (cal A.D. 1050-1550), and Terminal Late (or Upper Emergent) Period (cal. A.D. 1550-historic).

The Early Holocene is characterized by "a generalized mobile forager pattern," as indicated by assemblages containing millingslabs and handstones and large wide-stemmed and leaf-shaped projectile points.[28] Although local variations occur, the Early Period is generally marked by increased sedentism, regional trade, and symbolic integration. *Olivella* and *Haliotis* shell ornaments and the mortar and pestle first appear in the local archaeological record during this period. An evolution in symbolic integration systems and technology is witnessed in the Lower Middle Period, with the introduction of new shell bead styles and bone tools, including split-beveled and small saucer *Olivella* beads, barbless fish spears, elk femur spatula, bone tubes and whistles, and basketry awls. Culturally distinct traits appear during the Upper Middle Period, suggesting migration of a new population. This new population, referred to as the Meganos Aspect, appears to have spread from the San Joaquin Delta to the East Bay during the Upper Middle Period and is primarily characterized by its mortuary complex, which typically includes extended burial posture. The Initial Late Period represents the ethnographically documented cultures present at the time of European contact.

[26] Fredrickson, David A., 1974. Cultural Diversity in Early Central California: A View from the North Coast Ranges. *Journal of California Anthropology* 1(1):41–53.

[27] Milliken, Randall, et al., 2007. Punctuated Culture Change in the San Francisco Bay Area. In *California Prehistory*, edited by Terry L. Jones and Kathryn A Klar, pp 99–124. Rowman and Littlefield Publishers, Inc, Lanham, Maryland.

[28] Milliken, Randall, et al., 2007:114, op. cit.



LSA

FIGURE IV.J-4

0 350 700
FEET

SOURCE: Thompson & West (1878).

Sherwin-Williams Project EIR
Project Site on 1878 Thompson & West Alameda County Atlas

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This period is marked in part by increased sedentism; status ascription and social stratification observed in burial practices; and the emergence of the Kuksu Cult, a ceremonial system that unified several language groups in Central California at the time of European contact. New technology was also introduced during this period, notably the bow-and-arrow, which is evidenced in the archaeological record by small, dart-sized projectile points.

Early Holocene archaeological sites are rare, although this may in part be an issue of visibility, with these ancient deposits likely underlying several feet of sediment or having been submerged as a result of sea-level rise. Early Holocene sites have been identified in the East Bay interior at Los Vaqueros Reservoir, where a radiocarbon date of 9,870 cal BP (7920 cal B.C.) was obtained from charcoal beneath an inverted millingslab associated with a deeply buried component.[29] Prehistoric archaeological resources along the East Bay plain date to at least the Middle Holocene (Middle Archaic Period), as documented at the West Berkeley (CA-ALA-307) and Ellis Landing (CA-CCO-295) shellmounds.[30]

Present-day Emeryville is within territory once occupied by Costanoan (also commonly referred to as Ohlone) language groups. Eight Ohlone languages were spoken in the area from the southern edge of the Carquinez Strait to portions of the Big Sur and Salinas rivers south of Monterey Bay, to approximately 50 miles inland from the coast.[31] The project site is within ancestral territory of the Chochenyo language group of Ohlone.

Ohlone territories were comprised of one or more land holding groups that anthropologists refer to as "tribelets." The tribelet, a nearly universal characteristic throughout native California, consists of a principle village occupied year round, and a series of smaller hamlets and resource gathering and processing locations occupied intermittently or seasonally. Populations of tribelets ranged between 50 and 500 persons and were largely determined by the carrying capacity of a tribelet's territory. The closest known tribelet to the project area was *Huchiun*, whose territory extended from Temescal Creek, north to lower San Pablo and Wildcat Creek drainages.[32] Members of the *Huchiun* are noted on Mission San Francisco registers beginning in 1794.[33]

(2) History. On August 3, 1820, Luis Maria Peralta was granted Rancho San Antonio for his service to the Spanish government. His 44,800-acre rancho comprised what were to become the cities of Emeryville, Albany, Oakland, Berkeley, Alameda, part of San Leandro, and a part of Piedmont. Peralta's son Vicente received the southwestern portion of the rancho lands, which included present-day Emeryville, Piedmont, and central and north Oakland.

[29] Meyer, Jack, and Jeffrey Rosenthal, 1997:III.64-III65. *Archaeological and Geoarchaeological Investigations at Eight Prehistoric Sites in the Los Vaqueros Reservoir Area, Contra Costa County, California.* Anthropological Studies Center, Rohnert Park, California.

[30] Milliken, Randall, et al., 2007:115, op. cit.

[31] Shipley, William F., 1978. Native Languages of California. In *California*, edited by Robert F. Heizer, pp. 80-90. Handbook of the North American Indians, Vol. 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

[32] Milliken, Randall, 1995:243. *A Time of Little Choice: The Disintegration of Tribal Culture in the San Francisco Bay Area, 1769-1810*. Ballena Press, Menlo Park, California.

[33] Ibid.

Vicente built an adobe house, a chapel, corrals, storerooms, and other buildings in what is now the Temescal neighborhood of Oakland. The Gold Rush brought opportunistic settlers to the East Bay, and Peralta sold or surrendered most of his land to squatters by 1853.

Significant development of the project area and vicinity did not occur until Edward Wiard purchased a 115-acre tract of land from Joseph Emery in 1859. This tract would be developed as the Oakland Trotting Park in the late 1860s, which was situated just east of the project site (Figure IV.J-4). The one-mile oval track, which measured 2,000 feet long and 900 feet wide, was completed in 1871.[34] The track complex included a two-story hotel, stables, a grandstand, tack rooms, and a jockey club. The area surrounding the track housed saloons, hotels, restaurants, and bordellos.

Construction of the Northern Railway tracks in the 1870s bisected Wiard's property. Wiard leased land west of the railroad to Captain L. Seibe, who developed Shell Mound Park at the site of the Emeryville Shellmound. Seibe would construct a dance pavilion atop the mound; other amenities were constructed nearby, including a merry-go-round, a grandstand, a bowling alley, and a shooting range.[35]

By the 1880s, Wiard lost ownership of the racetrack due to financial difficulties, and in 1886, James Mee of San Francisco assumed the $81,000 mortgage and continued operation of the Oakland Trotting Park until his death in 1894.[36] Thomas H. Williams leased the track from Mee's estate and initiated several improvements to the track and grounds, replacing the stables, paddocks, barns, jockey club, and grandstand. The track was renamed the New California Jockey Club and reopened to the public in 1896.

The last race at the track occurred in 1911, and the track was used by barnstorming aviators until 1915. In 1915, Mee's estate dismantled the track and grounds to subdivide the property for industrial use. Water mains, streets, and spur tracks were built on the former race track grounds. Various industries, including PG&E and Sherwin-Williams, would develop on the site in the 1920s.

The Sherwin-Williams Company.[37] The project site was part of the early wave of industrial development in Emeryville. The Sherwin-Williams Company constructed their plant beginning in 1919 on 3 acres, and by 1923 had increased their property to 6 acres. By 1929, 25 buildings had been constructed for general warehouse, paint and lead arsenate manufacturing, blending, and storage. A railroad spur was located in the center of the complex, while seven sets of tracks ran west of and adjacent to the facility providing easy access to western markets (Figure IV.J-2). A production well to furnish water for the sprinkler system was located in the north-central portion of the Sherwin-Williams property.

[34] Hausler, Donald, 1994:5. History of the Emeryville Horse Race Track. *Journal of the Emeryville Historical Society* 5(1):5-14.

[35] Sanborn Map Company, 1903. *Insurance Maps of Oakland, California.* Sanborn Map Company, New York.

[36] Hausler, Donald, 1994:7, op. cit.

[37] Portions of this section adapted from the *Sherwin Williams Company Remedial Action Plan, Emeryville, California,* prepared by CDM (June 11, 2010).

In the mid to late 1940s, lead-arsenate production and storage ceased, and only oil-based paints and varnishes were manufactured. By 1956, several of the older buildings on the project site, and the railroad tracks immediately to the west, were removed. New buildings were constructed over the footprint of demolished buildings, and storage tanks were installed to store alcohols and acetates. These chemicals were used in the production of lacquer.

In 1956, the solvents used in the manufacturing process were naphtha and kerosene. Through the 1970s, several types of solvents were used, such as naphtha, styrene, xylene, toluene, ketones, and acetone. Acetone was used as a low-boiling point thinner used in resins, enamels, and lacquers. Nitrocellulose was a binder being used in the early 1970s in the production of lacquers. Toluene and xylene were thinners commonly used in the late 1970s. The liquids were usually stored in aboveground storage tanks.

By 1964, the Sherwin-Williams Company purchased the adjacent property to the west from the Southern Pacific Railroad. A large portion of this property was developed into a warehouse (Building 35—no longer extant) that was converted into manufacturing in 1987.

In 1987, the Sherwin-Williams Company switched from oil-based to water-based paint products, a change that was reflected by the following changes at the project site:

- Dismantling of the solvent tank farm and the removal of most of the solvents and oil;
- Removal of varnish production and storage facilities;
- Removal of the lacquer plant;
- Expansion of the latex and latex-product storage tanks; and
- Expansion of water-based paint manufacturing into Building 35.

Paint manufacturing operations ceased in December 2006, and the plant was decommissioned. The Sherwin-Williams Company initiated plant demolition activities in August 2007, which were completed in November 2007. Remediation activities were conducted at the project site between March 2011 and April 2012 to remove arsenic, lead, and other organic contaminants from vadose zone soils and underground utilities to support future residential development.[38]

c. Regulatory and Legislative Context. CEQA, sections of the California Public Resources and Health and Safety codes, the City's General Plan, and the Park District Plan comprise the regulatory framework for cultural resources on the project site, and each of these are described below.

(1) CEQA Requirements. CEQA applies to all discretionary projects undertaken or subject to approval by public agencies. Under the provisions of CEQA, "a project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment" (CEQA Guidelines Section 15064.5(b)).

[38] CDM, July 25, 2012. *Remedy Implementation Completion Report: The Sherwin-Williams Company, 1450 Sherwin Avenue, Emeryville, California.* CDM Smith, Inc., Walnut Creek, California.

CEQA Guidelines Section 15064.5(a) defines an "historical resource" as a resource that meets one or more of the following criteria:

- Listed in, or eligible for listing in, the California Register of Historical Resources;
- Listed in a local register of historical resources (as defined at Public Resources Code (PRC)Section 5020.1(k));
- Identified as significant in an historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code; or
- Determined to be an historical resource by a project's lead agency (CCR Title 14(3) Section 15064.5(a)).

A historical resource consists of:

> "Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California…. Generally, a resource shall be considered by the lead agency to be 'historically significant' if the resource meets the criteria for listing on the California Register of Historical Resources" CEQA Guidelines Section 15064.5(a)(3).

In accordance with *CEQA Guidelines* Section 15064.5(b), a substantial adverse change in the significance of a historical resource is a significant effect on the environment. A substantial adverse change in the significance of a historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired.

(2) Public Resources Code 5024.1: California Register of Historical Resources. Section 5024.1 of the PRC established the California Register. Generally, a resource is considered by the lead agency to be 'historically significant' if the resource meets the criteria for listing on the California Register (California Code of Regulations [CCR] Title 14(3) Section 15064.5(a)(3)). For a cultural resource to qualify for listing in the California Register it must be significant under one or more of the following criteria:

Criterion 1: Associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

Criterion 2: Associated with the lives of persons important in our past;

Criterion 3: Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

Criterion 4: Has yielded, or may be likely to yield, information important in prehistory or history.

In addition to being significant under one or more of these criteria, a resource must retain enough of its historic character and appearance to be recognizable as a historical resource and be able to convey the reasons for its significance (CCR Title 14 Section 4852(c)). Generally, a cultural resource must be 50 years or older to be eligible for the California Register.

(3) Health and Safety Code 7050.5: Human Remains. Section 7050.5 of the California Health and Safety Code states that in the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the remains are discovered has determined whether or not the remains are subject to the coroner's authority. If the human remains are of Native American origin, the coroner must notify the Native American Heritage Commission within 24 hours of this identification.

(4) Public Resources Code 5097.98: Notification of MLD. Section 5097.98 of the California Public Resources Code states that the NAHC, upon notification of the discovery of Native American human remains pursuant to Health and Safety Code §7050.5, shall immediately notify those persons (i.e., the Most Likely Descendent or "MLD") it believes to be descended from the deceased. With permission of the landowner or a designated representative, the MLD may inspect the remains and any associated cultural materials and make recommendations for treatment or disposition of the remains and associated grave goods. The MLD shall provide recommendations or preferences for treatment of the remains and associated cultural materials within 48 hours of being granted access to the site.

(5) Emeryville General Plan. The Conservation, Safety, and Noise chapter of the Emeryville General Plan includes Goal CSN-G-7, which encourages the "Protection of historic, cultural, and archaeological resources for the educational, aesthetic, environmental, and economic contribution that they make to Emeryville's identity and quality of life." Policies associated with this goal that are relevant to the project are listed below.

- Policy CSN-P-26: The City encourages developers to reuse existing historic or architecturally significant structures.
- Policy CSN-P-27: Development that proposes to demolish identified historic resources shall be reviewed on a case by case basis to determine if the benefit of preserving the resource is outweighed by benefit of the new development;
- Policy CSN-P-29: New development adjacent to historic and architecturally significant structures shall be reviewed for compatibility with the character of the structure and the surrounding neighborhood;
- Policy CSN-P-30: Archaeological sites and resources shall be protected from damage. Areas found to contain significant indigenous artifacts shall be examined by a qualified archaeologist for recommendations concerning protection and preservation.

(6) Park Avenue District Plan. The project site is situated in the Park Avenue District Plan area. The 2006 update to the District Plan seeks to establish incentives and development guidelines for the preservation of the Emeryville Historic Industrial District and development of mixed uses in the overlay District. One of the outcomes of the District Plan was identification of architecturally significant buildings, classified as exhibiting "high architectural significance" (Tier 1) and "moderate architectural significance" (Tier 2), within the District. One of the District Plan's policies is to preserve Tier 1 and Tier 2 buildings. Potential incentives identified in the District Plan to encourage this preservation include (1) use of City façade grants and toxic cleanup programs to encourage adaptive reuse; (2) use of federal tax credits for renovation of buildings deemed eligible for listing in

the National Register of Historic Places; and (3) zoning incentives, such as parking credits, to encourage rehabilitation of historical buildings.[39]

2. Impacts and Mitigation Measures

The following section describes potentially significant project impacts to cultural resources. This section first lists the criteria that establish the thresholds to determine if an impact is significant. The latter part of this section presents the impacts associated with implementation of the proposed project and recommends mitigation measures, if required.

a. Criteria of Significance. Implementation of the proposed project would have a significant impact on cultural resources if it would:

- Cause a substantial adverse change to the significance of a historical resource, defined as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the historical resource would be materially impaired (CEQA Guidelines, Section 15064.5);
- Cause a substantial adverse change to the significance of an archaeological resource;
- Directly or indirectly destroy a unique paleontological resource; or
- Disturb any human remains, including those interred outside of formal cemeteries.

b. Project Impacts. The following section describes the project's potential impacts to cultural resources. Potential impacts discussed below apply to both Option A and Option B, unless otherwise identified.

(1) Historical Resources. The proposed project would have a significant effect on the environment if it would cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5. As described above in Records Search Results, the project site includes one historical resource, Building 1-31. The City has identified Building 1-31 as a Tier 1 resource (high architectural significance). Building 1-31 is also a contributor to the Emeryville Historic Industrial District (District), a historical resource that is eligible for listing in the National Register of Historic Places and is listed in the California Register of Historical Resources.

The District would sustain indirect impacts from the project. Under Option A and Option B, the setting and feeling of the District will be impacted by the addition of five new buildings, the tallest of which would be 100 feet in height (Parcel D). The addition of these buildings are part of a larger transition of the project area and vicinity from industrial uses to residential, commercial, and research, as evidenced by recent construction adjacent to the project site associated with condominiums, the Bay Street development, and the Chiron (now Novartis) campus.

Construction of the project would not cause a substantial adverse change to the District under CEQA. To cause substantial adverse change, the significance of a historical resource must be materially impaired. "The significance of a historical resource is materially impaired when a project demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that

[39] Emeryville, City of, 2006. *Park Avenue District Plan.*

convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources" (CCR Title 14(3) §15064.5(b)(2)(A)). Since the District's eligibility for listing in the California Register will not be impeded by project build-out under either Option A or Option B, the impact to the resource is not significant.

Archaeological sites may also qualify as historical resources under CEQA (CEQA Guidelines Section 15064.5(c)(1)). For purposes of the current analysis, potential impacts to archaeological sites are described under Archaeological Resources (Section 2(b)(2)).

Impact CULT-1: Renovation and reuse of Building 1-31 has the potential to result in material impairment to a historical resource under CEQA. (S)

Building 1-31, a Tier 1 architecturally significant building in Emeryville and a contributing element to the District, would not be demolished or otherwise removed by the project. One of the project objectives is to "preserve, renovate, and reuse" Building 1-31 for office use. Renovation and reuse of this building has the potential to result in material impairment of a historical resource should such work remove or alter the building's character-defining elements.

To ensure the renovation and reuse of historic buildings do not result in significant impacts, the National Park Service has established rehabilitation standards, as described in the *Secretary of the Interior's Standards for the Treatment of Historic Properties*. The ten rehabilitation standards consist of:

- **Standard 1:** A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.
- **Standard 2:** The historic character of a property will be retained and preserved. The removal of distinctive materials or alterations of features, spaces, and spatial relationships that characterize the property will be avoided.
- **Standard 3:** Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historical properties, will not be undertaken.
- **Standard 4:** Changes to a property that have acquired significance in their own right will be retained and preserved.
- **Standard 5:** Distinctive materials, features, finishes and construction techniques or examples of craftsmanship that characterize a property will be preserved.
- **Standard 6:** Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.
- **Standard 7:** Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
- **Standard 8:** Archaeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

- **Standard 9:** New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale, proportion, and massing to protect the integrity of the property and environment.
- **Standard 10:** New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

Under CEQA, a project that complies with the rehabilitation standards is considered to be mitigated to a level of less-than-significant impact on a historical resource (CEQA Guidelines Section 15064.5(b)(3)). To ensure compliance with the Secretary of the Interior's Standards, Mitigation Measure CULT-1 will be implemented. Implementation of Mitigation Measure CULT-1 would reduce any potential impacts to Building 1-31 to a less-than-significant level for development Option A and Option B.

> Mitigation Measure CULT-1: Any renovation or alteration of Building 1-31 shall be conducted in accordance with the Secretary of the Interior's *Standards for Rehabilitation* (Standards) and undertaken with the assistance of a historic preservation architect meeting the Secretary of the Interior's *Professional Qualifications Standards.* The City shall confirm that the architectural firm responsible for overseeing the renovation of Building 1-31 has retained a qualified historic preservation architect. Renovation plans of Building 1-31 shall be reviewed by the preservation architect to ensure compliance with the Standards and to make changes to the plans to ensure compliance, as appropriate. The historic preservation architect shall regularly evaluate the ongoing renovation to ensure it continues to satisfy the Standards. The historic preservation architect shall submit status reports to the City Planning Department describing the renovation's compliance with the Standards and recommended measures to ensure compliance if corrective measures are necessary. These reports shall be submitted to the City according to a schedule agreed upon prior to commencement of the renovation. The City shall be responsible for ensuring that the recommendations of the preservation architect are implemented as a condition for project approval. (LTS)

(2) Archaeological Resources. The proposed project would have a significant effect on the environment if it would cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.

Impact CULT-2: Ground-disturbing activities associated with project construction could adversely affect archaeological resources. (S)

Project ground-disturbing activities would require excavation to the following depths: 5 feet maximum for mass grading, 8 to 10 feet for utility trenching on the Sherwin-Williams parcel (APN 049-1041-026-15), and 3 to 5 feet for utility trenching on the City-owned parcel (APN 049-1041-026-16). These activities have a high potential to encounter buried prehistoric and historical archaeological deposits in those areas not previously excavated for soil remediation activities (Figure IV.J-1). This assessment is based on: (1) the presence of extensive prehistoric archaeological deposits along lower Temescal Creek; (2) the high potential for unearthing buried prehistoric archaeological deposits beneath fill and associated with Holocene landforms; (3) identification of redeposited prehistoric archaeological material in the project site by LSA in 2005 and URS in 2011; and (4) Euro-American

use of the project site and vicinity dating from at least 1852 for ranching, recreational, and industrial activities that may include associated subsurface historical archaeological deposits (e.g., structural remains—as identified by URS during monitoring in 2011—or artifact collections in hollow-filled features, such as foundations or wells).

The proposed project has the potential to cause a substantial adverse change to subsurface archaeological resources by materially impairing the significance of these deposits. The partial or total destruction of archaeological resources by the project would impair the ability of such resources to convey important scientific and historical information. Implementation of Mitigation Measure CULT-2 would reduce potential impacts to prehistoric and historic-period archaeological resources to a less-than-significant level for development Option A and Option B by collecting, analyzing, and documenting important information associated with such resources.

> Mitigation Measure CULT-2: Archaeological monitoring shall be conducted for construction-related ground disturbance. Project ground disturbance shall cease within 25 feet of an archaeological discovery or discovery of human remains. The archaeological deposit shall be evaluated in accordance with an Archaeological Monitoring and Evaluation Plan (AMEP) prepared and implemented for the project. The purpose of the AMEP is to ensure that significant archaeological deposits discovered during construction are identified, evaluated, and appropriately treated through the use of a pre-established research design and field evaluation strategy, consistent with the requirements of CEQA Guidelines §15126.4 (b)(3)(C). The AMEP shall be approved by the City well in advance of construction, and its implementation shall be made a condition of the issuance of a grading or building permit for the project. The AMEP shall be prepared by professionals who meet or exceed the Secretary of the Interior's *Professional Qualifications Standards* in archeology.
>
> The AMEP shall include a construction monitoring component and an evaluation component. The monitoring component of the AMEP shall describe the specific methods and procedures for archaeological monitoring, including the frequency of such monitoring and notification procedures in the event archaeological deposits are identified. The evaluation component of the AMEP would guide fieldwork if archaeological resources or human remains are identified during monitoring. The purpose of this component is to establish the procedures and methods to evaluate the significance of discoveries made during archaeological monitoring, as well as the recovery and analysis of significant discoveries. The treatment of human remains during the evaluation process shall be addressed, including the respectful treatment of such remains in consultation with appropriate descendant communities. (LTS)

(3) Paleontological Resources. The proposed project would have a significant effect on the environment if it directly or indirectly destroys a unique paleontological resource or site or unique geologic feature.

Impact CULT-3: Ground-disturbing activities associated with project construction could adversely affect paleontological resources. (S)

There are no recorded paleontological resources (fossils) within the project site, nor does the project site contain a unique geological feature. As described above in Literature Review Results, the project site is underlain by Holocene-age landforms, which are too recent to contain significant fossils. However, underlying these Holocene deposits at an unknown depth are older Quaternary (i.e.,

Pleistocene) deposits that have a potential to contain significant fossils, including bison, mammoth, ground sloths, saber-toothed cats, dire wolves, cave bears, rodents, birds, reptiles and amphibians.

Project excavation would occur to depths of up to 10 feet. The potential for encountering older Quaternary fossiliferous deposits at these depths—while not likely—cannot be ruled out. Should project construction encounter paleontological resources, a substantial adverse change in their significance (e.g., their disturbance or destruction) would constitute a significant impact under CEQA. Implementation of Mitigation Measure CULT-3 would reduce any potential impacts to paleontological resources to a less-than-significant level for development Option A and Option B by collecting, analyzing, and documenting important information associated with such resources.

> Mitigation Measure CULT-3: Should paleontological resources be encountered during project subsurface construction activities, all ground-disturbing activities within 25 feet shall be stopped and a qualified paleontologist contacted to assess the situation, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. If found to be significant, and project activities cannot avoid the paleontological resources, adverse effects to paleontological resources shall be mitigated. Mitigation may include monitoring, recording the fossil locality, data recovery and analysis, a final report, and accessioning the fossil material and technical report to a paleontological repository. Public educational outreach may also be appropriate. Upon completion of the assessment, a report documenting methods, findings, and recommendations shall be prepared and submitted to the City for review, and, if paleontological materials are recovered, a paleontological repository, such as the University of California Museum of Paleontology.
>
> The applicant shall inform its contractor(s) of the sensitivity of the project area for paleontological resources and shall include the following directive in the appropriate contract documents. The City shall verify that the following directive is included in the appropriate contract documents:
>
> > "The subsurface of the construction site may be sensitive for paleontological resources. If paleontological resources are encountered during project subsurface construction, all ground-disturbing activities within 25 feet shall be redirected and a qualified paleontologist contacted to assess the situation, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. Project personnel shall not collect or move any paleontological materials. Paleontological resources include fossil plants and animals, and such trace fossil evidence of past life as animal tracks." (LTS)

(4) Human Remains. The proposed project would have a significant effect on the environment if it results in disturbance to human remains, including those interred outside of formal cemeteries.

Impact CULT-4: Ground-disturbing activities associated with project construction could unearth Native American human remains. (S)

Although there are no human remains recorded in the project site, as described in this section, the project site and vicinity are sensitive for the presence of prehistoric archaeological resources, which frequently contain Native American skeletal and cremated remains. Such remains have been identified during excavation of the Emeryville Shellmound and during monitoring for the Novartis Campus

Expansion Program north of the project site. In some instances, implementation of Mitigation Measure CULT-4 would reduce any potential impacts to Native American human remains to a less-than-significant level for development Option A and Option B by ensuring treatment of such remains would be done in consultation with appropriate descendants and in accordance with State law. In other instances, however, descendants may prefer that remains remain *in situ* and not excavated or otherwise removed by the project. Due to the profound importance that ancestral remains have for the local Ohlone community, removal of such remains may represent a significant unavoidable impact even after implementation of Mitigation Measure CULT-4 and, therefore, this impact is considered to be significant and unavoidable.

> Mitigation Measure CULT-4: The treatment of human remains and of associated or unassociated funerary objects discovered during project ground disturbance shall comply with applicable State laws. This shall include immediate notification of the County Coroner, and in the event of the Coroner's determination that the human remains are Native American remains, notification of the California State Native American Heritage Commission (NAHC) who shall appoint a Most Likely Descendant (MLD) (Public Resources Code Section 5097.98). The archeological consultant, project sponsor, and MLD shall make all reasonable efforts to develop an agreement for the treatment of, with appropriate dignity, human remains and associated or unassociated funerary objects (CEQA Guidelines Section 15064.5(d)). The agreement shall take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. (SU)

c. Cumulative Impacts. The proposed project would have a significant effect on the environment if it – in combination with other past, current, or reasonably feasibly foreseeable projects under review by the City – contributes to a significant cumulative impact on cultural resources. A cumulatively significant impact could occur, for example, if other closely related projects would impact the District. For purposes of this analysis a list approach was used to identify reasonably foreseeable projects within a close proximity to the project site.

Based on documentation available on the City's Planning Division website and on-file at LSA, no recent past, current, or reasonably foreseeable project in the City has or would result in a significant impact on a built-environment historical resource. The documentation indicates that either no historical built-environment resources have been identified for the projects considered for this analysis or the project was considered exempt from further environmental review under CEQA (e.g., the MAZ building within the 3800 San Pablo Mixed-Use Project area). The current project would not demolish nor otherwise result in indirect effects to Building 1-31, a historical resource under CEQA. The project would, therefore, not contribute to a significant cumulative impact to the local historical built environment.

The current project and other projects in Emeryville (e.g., the Hyatt Place Hotel at Bay Street) are situated in areas that have a potential for containing archaeological deposits that may qualify as either historical resources or unique archaeological resources under CEQA, and human remains. Such resources and remains may be unearthed during project ground disturbance, which would adversely affect cultural resources through their destruction or disturbance. Before mitigation, therefore, developments within the City have the potential to cause adverse cumulative impacts to cultural resources due to their destruction or loss of historical integrity.

It should be noted, however, that each development that the City oversees would undergo environmental review, consistent with the City's current procedures, and would likely be subject to similar mitigation measures as those recommended above or other applicable standard mitigation measures or conditions of approval. Therefore, implementation of project-specific mitigation measures described herein and appropriate project-specific conditions required by the City to protect cultural resources would reduce any potential cumulative impacts related to cultural resources to a less-than-significant level.

K. PUBLIC SERVICES AND RECREATION

This section evaluates the effects of the proposed project on public services, including: fire protection; police services; schools; open space; and recreation facilities. Potential impacts to public services and recreation that could result from implementation of the project are identified, and mitigation measures are recommended, as appropriate.

1. Setting

This section discusses existing service locations, capacities, and planned expansions relating to public services, and recreation.

a. Fire Protection. The Alameda County Fire Department (ACFD) provides comprehensive fire services for the City of Emeryville, including the project site. The ACFD provides "all-risk" services to address fire, injury, illness, entrapment, hazardous materials, storm, human-caused calamity, and natural disaster. Emeryville is served by two fire stations. The closest fire station to the project site is Alameda County Fire Station 35 (previously Emeryville Station 2) located at 6303 Hollis Street, approximately 0.7 miles north of the project site. Alameda County Fire Station 34 (previously Emeryville Station 1) is located at 2333 Powell Street and is 1.5 miles northwest of the site. The Emeryville Fire Prevention administrative office is located at 1333 Park Avenue in Emeryville. A total of six personnel are on duty at all times at the two stations including a minimum of two paramedics.

The ACFD serves unincorporated areas within Alameda County, the cities of San Leandro, Dublin, Newark, Union City, and Emeryville, the Lawrence Berkeley National Laboratory, and the Lawrence Livermore National Laboratory. ACFD operates 30 Fire Stations under four Battalions. The department is comprised of 450 authorized positions that consist of 26 Engine companies, seven ladder truck companies, and one heavy rescue vehicle. The specialized equipment used by the ACFD includes air/light support units, three zodiac boats, a 2,500-gallon water tender, one dozer, and a hazardous material response vehicle. The specialized response teams include hazardous materials, urban search and rescue, and water rescue. The ACFD consists of four organizational branches including operations, communication and special operations, administrative support services, and fire protection. In 2014, ACFD received 2,227 calls within the Emeryville area. The emergency response time for the first unit on the scene was under 7 minutes, and the remaining units arrived within 11 minutes. [1]

b. Police Services. The Emeryville Police Department (EPD) headquarters are located at 2449 Powell Street, approximately 1.4 miles northwest of the project site. The EPD provides the following services: patrol; community-oriented policing; public safety presentations; criminal investigations; school resources officer program; and youth diversion program. The EPD is comprised of command staff and three other service section including field services and professional services. The field services division's primary responsibilities include patrol, traffic control and traffic law enforcement, crime analysis and information technology, and crisis negotiation team. The patrol section consists of

[1] Terra, Bonnie, 2015. Division Chief/Fire Marshal, Alameda County Fire Department. Written communication to LSA Associates, Inc. August 8.

five teams as well as bicycle and canine units. Professional services division consists of administrative services, records and communication, and criminal investigations sections.

The EPD currently has 34 sworn officers, 14 other staff positions, and one volunteer. The EPD is authorized to have 38 sworn officers and plans to add two positions for Police Officer Trainees in the near future. The EPD's average response times are 2 minutes for emergency calls and 6 minutes for non-emergency calls. Primary law enforcement issues for Emeryville were identified as theft, stolen cars, and auto burglary. In 2014, the Police Department dispatch center processed approximately 40,959 calls for service.[2]

The project site is within Emeryville Police Department Crime Analysis Unit District 6.[3] District 6 is defined by Powell Street to the north, 40th Street to the south, Hollis to the east, and the UPRR tracks to the west. The majority of reported crimes in District 6 included thefts, burglaries, and stolen vehicles. Compared to the rest of Emeryville, this area typically has relatively low crime levels, comprising 1.8 percent of the total reported crimes in the City in 2014. The highest proportional totals of crimes in this area are vehicle burglaries (30 percent of total). Districts 5 and 9 have some of the highest crime levels in Emeryville. District 5 is across the railroad tracks to the west and consists of a much larger area than District 6 and District 9 is southeast of District 6.

c. Schools. The Emery Unified School District (EUSD) operates two schools and serves students in grades K-12. Emery Unified owns additional property at 1275 61st Street, previously called the Ralph Hawley School and prior to that the Emery Middle School Academy. This site closed for regular school operations in 2003. Anna Yates Elementary School serves K-8 students and is located at 1070 41st Street in Emeryville, 0.7 miles from the project site. As shown in Table IV.K-1, Anna Yates Elementary School's enrollment totaled 506 students for the 2013-2014 school year. Emery Secondary School serves students in grades 9-12 and had a total enrollment of 219 students for the 2013–2014 school year. Emery Secondary School is located at 915 54th Street in Oakland approximately 0.6 miles from the project site. These schools are located on the Oakland/Emeryville border and accept students who live outside the EUSD boundary through an inter-district transfer. Students are given priority for an inter-district transfer if they are returning students, siblings of current students, or if their parents or guardians are employed in Emeryville. Currently, 20 to 50 percent of students are inter-district transfers, depending on grade level. Emery Unified operates a small school district and the inter-district transfers allow the District to be flexible and adjust enrollment for potential increases in Emeryville population.

[2] Dauer, Fredrick, 2015. Captain, Emeryville Police Department. Written Communication to Miroo Desai, City of Emeryville Planning Department. November 10.

[3] Ibid.

Table IV.K-1: Emery Unified School District 2013-2014 Enrollment

School	Total Enrollment	Capacity	Excess Capacity
Anna Yates Elementary School	506	585	79
Emery Secondary School	219	594	375
Emery Unified School District	725	1,179	454

Source: California Department of Education, 2014 & *Emeryville General Plan Draft EIR*, 2009

EUSD has a current maximum classroom student-to-teacher ratio of 20:1 for K-3 grades, 30:1 for 4-8, and 31 for grades 9-12. In 2013-2014, the Emery Unified School District operated at approximately 61 percent capacity. New development is required to provide funding for the school system, as determined by applicable State-mandated development impact fees. The proposed project would be subject to a $2.97 fee per square foot for residential and $0.47 per square foot of commercial for EUSD.

Emeryville Center of Community Life. The Emeryville Center of Community Life (ECCL) is a collaboration between Emeryville Unified School District and the City of Emeryville that started in 2001. The ECCL project site is located at the previous Emery Secondary School Site on San Pablo between 53rd Street and 47th Street, approximately 0.6 miles from the project site. Once construction is completed, the ECCL would serve students associated with the proposed project.[4] The ECCL will be shared between the City and the EUSD and is designed to be used constantly not just during school hours. The 150,000 square foot project consists of classrooms for students in K-12, a family wellness center, library, job training and college classroom space, community commons, multifunction cafeteria space, community kitchen, and athletic facilities. Approximately 1,200 students will be served by the project at its completion. The ECCL will replace Anna Yates Elementary School and Emery Secondary School, which relocated to Santa Fe Elementary in Oakland in 2014 during the ECCL planning and construction process.

d. Parks and Recreation. The City of Emeryville owns and operates six public parks. Marina Park is Emeryville's largest park at 7.56 acres and is located at 3310 Powell Street. Marina Park amenities include a picnic area with BBQ grills, restrooms, and shoreline trails. Stanford Avenue Park consists of 1.74 acres and includes a playground, picnic area, and basketball courts. Doyle Hollis Park was recently built in 2009 and consists of a playground, picnic area, restrooms, and basketball courts. Temescal Creek Park, 61st Street Mini-Park, and Christie Avenue Park are all less than 1.0 acre.

The East Bay Regional Park District (EBRPD) has 65 parks and 29 regional trails covering more than 119,000 acres in Alameda and Contra Costa counties. The closest regional park facility to the site is the McLaughlin Eastshore State Park, located approximately 1 mile northeast of the project site. Within 5 miles of the project site are the Point Isabel, Crown Beach regional shoreline, Tilden Regional Park, Claremont Canyon, Sibley and Huckleberry Regional Preserves, and Temescal Regional Recreation Area. Within a 7.5 mile radius of the project site are the Miller Knox and Martin Luther King Regional Shorelines, Brooks Island and Leona Heights Open Space Regional Preserves, and Redwood and Chabot Regional Parks.

[4] Rubio, John, 2015. Superintendent Emery Unified School District. Written Communication to LSA Associates, Inc. November 16.

e. Regulatory Framework. This section describes applicable State and regional plans, and local policies and regulations that pertain to public services.

(1) State and Regional Policies. Relevant State and regional plans and policies are described below.

The Quimby Act. Section 66477 of the Government Code (the Quimby Act) authorizes jurisdictions to establish ordinances requiring developers of residential subdivisions to dedicate parkland or pay in-lieu fees for park and recreation purposes. This provision of the State Subdivision Map Act enables cities and counties to require the dedication of land and/or payment of in-lieu fees for parks and recreation purposes as a condition of approval of a tentative map or parcel map subdivision. AB 1600 amended the Quimby Act in 1982 to hold local governments more accountable for imposing park development fees. The AB 1600 amendment requires agencies to clearly show a reasonable relationship between the public need for the recreation facility or park land and the type of development project upon which the fee is imposed. Cities and counties are required to show a strong direct relationship, or nexus, between the park fee exactions and the proposed project. Local ordinances must include definite standards for determining the proportion of the subdivision to be dedicated and the amount of the fee to be paid by the developer. AB 2936 was adopted as an amendment to the Quimby Act in 2002, and allows counties and cities to spend up to 10 percent of their Quimby Act fees to prepare master plans for park and recreation facilities every three years.

(2) Emeryville General Plan. The following General Plan policies relate to public services and recreation.

- **Goal PP-G-1 – A comprehensive open space system:** A system that provides a diverse range of active and passive recreation and open space opportunities for residents, workers, and visitors.
- **Goal PP-G-2 – New public spaces:** A public realm and new public parks and plazas that serve as focal points of the community.
- **Goal PP-G-3 – Integration of parks and open space:** Parks that coordinated with surrounding developments to form unified urban compositions and that are integrated into the redevelopment of underutilized areas.
- **Goal PP-G-4 – Sunlit parks:** Public parks, plazas, and other open spaces that enjoy maximum sunlight access.
- **Goal PP-G-5 – Sustainable design:** Park designs that are consistent with sustainable design principles and practices, and efficient use of open space.
- **Goal PP-G-6 – Locally accessible parks:** At least one park located within a five-minute walk of all residences.
- **Goal PP-G-7 – An accessible waterfront:** Connections from the waterfront to the rest of Emeryville east of the freeway.
- **Goal PP-G-8 – A safe, nurturing and enriching environment:** An environment in which children and youth can flourish and become contributing members of society. The foundation of this vision is a strong and active partnership among the City, School District, and all segments of the community, so that powerful learning from the earliest years is a citywide experience and responsibility.
- **Goal PP-G-11 – Public safety:** Police and fire services that are responsive to the citizens' needs to ensure a safe and secure environment for people and property in the community.

- **Goal PP-G-12 – Adequate public facilities:** Utilities and infrastructure systems that provide safe, reliable, and adequate services.
- Policy PP-P-1**.** Increase park acreage to serve the needs of the growing population and address current deficiencies in park and open space standards. Maintain a standard of three new acres of parkland per 1,000 new residents, and 0.25 acres per 1,000 new employees.
- Policy PP-P-2**.** Two new large parks (five acres or larger), one each north and south of Powell Street, shall be provided. Active recreation uses will be a component of these parks. The northern park site is bounded by 61st, 64th, Hollis, and Doyle streets. There are two potential southern park sites:
    - One potential southern park site is shown on the PG&E site on Hollis Street, between 45th and 53rd Streets. On this site, consideration shall be given as to how to incorporate the existing buildings, which are rated Tier 1 and Tier 2 in the Park Avenue District Plan, into future park uses.
    - The second potential southern park site is located at the AC Transit bus yard between 45th and 47th streets, adjacent to the proposed Center of Community Life. Should this site become available, the City shall explore the possibility of a public park—along with other public uses. If a large park at this site is feasible and is considered desirable, all or part of the PG&E site may no longer be needed for a public park.
- Policy PP-P-3**.** New smaller open spaces—including public plazas and places, community gardens, and pocket parks—will provide local focus points and diversify the built environment. These should be developed through the identification of underutilized and strategically located parcels, and the redevelopment of larger sites.
- Policy PP-P-4**.** Locate "other park opportunities" (whose locations are generalized on Figure 4-1) to maximize accessibility for residents, such that every resident in the City has access to a park within a five-minute walk from their residence. Parks shall be located outside the 65 dbl noise contour (Figure 6-10).
- Policy PP-P-5. A system of greenways and Green Streets, as tree-lined open spaces will be developed as continuous recreational paths for bicyclists, joggers, and pedestrians, linking parks and activity centers.
- Policy PP-P-6. The north-south Emeryville Greenway will be expanded, enhancing its role as an open space corridor and connector across the City, and a source of inspiration and community pride. The City will support the expansion of a park at the Sherwin Williams site, in coordination with the development of Horton Landing Park and the Greenway.
- Policy PP-P-7. An east-west greenway located generally along the path of Temescal Creek will be created. This will include water features to celebrate the creek and improvements to the riparian corridor, where feasible, while maintaining existing drainage capabilities.
- Policy PP-P-8. Locate a series of small parks and plazas along Christie Avenue to create a continuous open space network throughout the district.
- Policy PP-P-9. Shading of parks and green streets by buildings will be minimized.
- Policy PP-P-10. Efficient use of open space will be achieved through techniques such as rooftop play courts and gardens, joint use of sports and recreation facilities at schools, co-location of parks with child care facilities, and possible use of underground parking below new plazas and parks.
- Policy PP-P-11. All large new residential developments shall include a combination of private and common open space.
- Policy PP-P-12. Design, landscaping, lighting, and traffic calming measures will be employed to create safe parks and open spaces.

- Policy PP-P-13. Open spaces that have deteriorated, have design features that limit access and use opportunities, and/or are in need of activity shall be revitalized.
- Policy PP-P-14. Efforts by Emery Unified School District and childcare service providers to establish, maintain, and improve educational facilities and services will be supported. Encourage a range of child care facilities, including family day care homes, public and private centers, preschool programs, and before and after school programs.
- Policy PP-P-15. A strong relationship and communication between City and Emery Unified School District will be maintained.
- Policy PP-P-16. The City will continue to partner with Emery Unified School District to optimize the joint-use of school facilities for community use.
- Policy PP-P-17. The City will support the development of the Emeryville Center of Community Life.
- Policy PP-P-18. Student engagement and learning will be facilitated through expanded programs and activities.
- Policy PP-P-22. Crime will be deterred through physical planning and community design.
- Policy PP-P-23. There will be adequate police and fire staff to provide timely response to all emergencies and maintain the capability to have minimum average response times.
- Policy PP-P-24. The City will support community involvement in disaster preparation and response through the Fire Department's Community Emergency Response Training program.

(3) Parks and Recreation Strategic Plan. The Parks and Recreation Strategic Plan was adopted on January 18, 2011, and establishes a plan of action to promote health and environmental conservation through a system of parks and recreational programs. The Plan describes existing park conditions in Emeryville, recommends projects and program enhancements for the future, and presents a plan of action. The Plan also includes implementation methods including project prioritization and funding strategies. [5]

2. Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to public services and recreation that could result from implementation of the proposed project. The section begins with the criteria of significance, which establish the thresholds to determine if an impact is significant. The latter part of this section presents the impacts associated with implementation of the proposed project and the recommended mitigation measures, if required. Cumulative impacts are also addressed.

a. Criteria of Significance. Development of the proposed project would result in a significant impact related to public services and recreation if it would:

[5] Emeryville, City of, 2011. *Parks and Recreation Strategic Plan*. January 18.

- 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 following public services: fire protection; police protection; schools; or parks;
- 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; or
- Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

b. Project Impacts. The following discussion describes the potential impacts related to public services and recreation that would result from implementation of the proposed project. This evaluation relates to both Option A and Option B unless otherwise stated.

(1) Fire Protection. The proposed project would result in an increase the Emeryville's population by approximately 923 residents. The proposed project would result in an incremental increase in demand for fire and emergency services within the City of Emeryville. The increase in demand for these services would be met by existing facilities and the increased demand would not require the construction of any new facilities (i.e., new fire stations) to provide adequate fire protection beyond the improvements proposed as part of the project (i.e. fire hydrants). Any emergency access issues associated with the project would be addressed through the plan check process, which includes Fire Department review.[6]

There are a number of requirements related to fire safety that are mandatory for new development, in order to ensure the safety of the residents, public, and firefighters. The project applicant would also be required to meet Fire Department standards related to fire hydrants, waster fire flow requirements, spacing of hydrants, sprinkler systems, and other fire code such as required in the Uniform Building Code (UBC) and other Fire Code standards.

In addition, the California Fire Code (CFC) requires that no overhead power utility cables, phone lines, data, or communication cables be located along public rights of way that serve this project site or adjacent buildings. The presence of these overhead lines would impair, and cause undue hazards to, fire crew access to building openings. As such, all utility lines would be required to be underground. The CFC further requires that all access roads to the site be accessible at all times. The project design would be required to comply with all of these requirements.

Since the proposed project would not require the construction of new fire facilities, and because the project would be required to comply with the above mentioned Fire Code standards, the project would have a less-than-significant impact on fire services. In addition, the proposed project would further enhance emergency response and fire-fighting capabilities on the project site and in the area through the following:

[6] Terra, Bonnie, 2015, op. cit.

(2) Police Services. As noted above, the proposed project would add approximately 923 new residents to the City. In addition, the project could lead to indirect population growth through the 320 jobs. The proposed project would result in an incremental increase in demand for police services. The City generally maintains approximately three officers per 1,000 residents.

Given that officers are not assigned to specific Beats and Beat 6 consists of approximately 1.6 percent of all crime within the City, the proposed project would not result in a significant increased demand to police staff. In addition, EPD is allowed four additional sworn officers and plans to make two additional hires in the near future. The addition of these personnel would not require the alteration of existing police facilities that could cause secondary environmental impacts. In addition, an incremental increase in demand for police services would not significantly impact EPD's ability to maintain response time standards. Therefore, the proposed project would result in a less-than-significant impact to police services.

(3) Schools. EUSD does not have an adopted student generation rate. For the purpose of this analysis, the generation rate, or enrollment factor, that was used in the Emeryville General Plan EIR will be used to evaluate impacts to the school district. Using the Emeryville General Plan EIR's enrollment factor of 0.15 students per dwelling unit, the project could generate approximately 81 students in kindergarten through grade 12. School-aged children generated by the project would result in increased demand for services at Emeryville schools. As previously described, The ECCL is in the process of being constructed and once completed would serve approximately 1,200 students in grades K-12. The ECCL would have sufficient capacity to serve the additional increase in students in grades 1-12 generated by the proposed project.[7] The increase in demand would not require the construction of new school facilities. However, if the proposed project results in additional students at the incoming transitional kinder or kindergarten levels, EUSD, may have to add additional classrooms to accommodate the increase in enrollment. The need for additional classrooms would be dependent on future grade level configuration of the ECCL and the availability of classrooms on District properties.[8]

New development projects are subject to statutory fees established by the State. These fees, known as school impact fees, would provide funding for planned school projects. The project applicant would be required to pay a school impact fee of $2.97 per square foot of residential development and $0.47 per square foot of commercial development. The proposed project would result in approximately 621,000 square feet of residential development and 94,600 square feet of commercial development. Therefore, the project would be required to pay approximately $1,888,832 in school impact fees. However, the final fee would be determined based upon the final square footage of the project. School impact fees are deemed by statute to constitute full mitigation to reduce the impact of development projects on school facilities. These fees would reduce the proposed impacts on Emeryville schools to a less-than-significant level.

(4) Parks and Recreation. The proposed project would introduce approximately 923 new residents and approximately 320 new jobs that would use both neighborhood and community parks in the area. The proposed project includes approximately 2.08 acres of zoned open space on the

[7] Rubio, John, 2015. Superintendent Emery Unified School District. Written Communication to LSA Associates, Inc. November 16, 2015.

[8] Ibid.

Sherwin-Williams parcel and the approximately 1.46 acres of open space on the Successor Agency parcel. The open space on the Sherwin-Williams parcel would be privately owned but open to the general public. The Sherwin-Williams open space would be located primarily in the northern portion of the project site and includes a children's play area, adult fitness area, and sports courts. The Successor Agency parcel would include land for the extension of the bicycle/pedestrian trail to Halleck Street, a meadow for flexible recreational and open space activities and a portion of land identified for a dog park. The interior of Hubbard Circle would include a 0.56-acre central green area. A variety of materials would be used in this area, including potentially renewable hardwood decking, hand-tight stone paving, and panels of turf grass

The City of Emeryville General Plan establishes standards for parkland of 3 acres of neighborhood parks per 1,000 new residents and .35 acres per 1,000 new employees. The City proposes approximately 22 acres of new neighborhood parks to accommodate the expected growth through the planning period of the General Plan. The General Plan also sets the standard of locating at least one park within a five-minute walk of all residences. The proposed project would result in approximately 2.08 acres of new neighborhood parkland for its 923 residents and 320 new employees. The proposed allocation of open space meets the General Plan standard park ratio standards for new residents and employees. Additionally, the new public open space would be within a five-minute walk of new residents as well as residents within the Park Avenue District Plan area. The additional parkland would represent approximately 9.5 percent of the park acreage proposed by the City to accommodate the buildout of the General Plan. As such, the proposed project would have a less-than-significant impact on park and recreation facilities.

c. Cumulative Impacts. Cumulative development in the City of Emeryville, including past, present, and reasonably probable future projects, would increase the need for additional City police and City fire protection services, and could affect response times, eservice levels, and the need for additional facilities. Cumulative demand for these services would be mitigated to a less-than-significant levels through individual project planning, design, and approvals, and if necessary, through the expansion of fire protection and police services to accommodate growth.

Cumulative Impacts associated with school services, would be limited to within the EUSD boundaries. As expected residential and non-residential growth occurs within the EUSD boundaries, increased demand for schools is also expected to increase. However, with the construction of the ECCL, the proposed project and other cumulative development within the City would not result in a potentially significant cumulative impact on schools. Development associated with the proposed project, or other development proposed within the school district, would be required to contribute school impact fees in conformance with State law and District requirements. School impact fees are deemed by statute to constitute full mitigation to reduce the impact of development projects on school facilities. Therefore, impacts of development on EUSD facilities, in combination with other past, present, and reasonably probable future projects, would not be cumulatively significant. This cumulative impact would be less than significant.

New residential and commercial development within the City of Emeryville could result in cumulative impacts on the provision of parks and recreation services. However, the City would require all new development to conform to the City established park ratio standards, and compliance with these standards would ensure that any cumulative impacts associated with parks and recreation would be reduced to a less-than-significant level.

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L. UTILITIES AND INFRASTRUCTURE

This section describes the utility systems (water, wastewater, solid waste, energy, and telecommunications) serving the project site and identifies the potential impacts to utilities that could result from implementation of the proposed project. Impacts to the stormwater system are discussed in Section IV.G, Hydrology and Water Quality.

1. Setting

This section addresses the following utilities: water supply, treatment, and distribution; wastewater collection, treatment, and disposal; solid waste; and energy and telecommunications.

a. Water Service. The following discussion provides background information on water supply, water treatment facilities, and the water distribution system. Most of the information in this section is based on the East Bay Municipal Utility District's (EBMUD) Urban Water Management Plan 2010[1] and the Water Supply Assessment (WSA) for the Sherwin-Williams Project[2] prepared for and approved by EBMUD. The letter of satisfaction from EBMUD for the WSA is included in Appendix E of this document.

(1) Water Supply. EBMUD service area contains 332 square miles including 20 cities and 15 unincorporated communities in Alameda and Contra Costa Counties, including the City of Emeryville. EBMUD collects, transmits, treats, and distributes high-quality potable water to approximately 1.34 million people customers through a network of aqueducts, reservoirs, water treatment plants, and pumping stations.

The primary water source for EBMUD is the Mokelumne River located in the Sierra Nevada. The Mokelumne River watershed supplies water to the Pardee Reservoir which is located 38 miles northeast of Stockton. Water flows by gravity approximately 91 miles from the Pardee Reservoir through the Mokelumne Aqueducts which terminate in Walnut Creek and is then conveyed to a water treatment plant or a terminal reservoir.[3]

The five EBMUD terminal reservoirs are: Briones; Chabot; Lafayette; San Pablo; and Upper San Leandro reservoirs. These terminal reservoirs are used for water that is not immediately transported to Water Treatment Plants (WTP) and delivered to EBMUD customers. The combined maximum capacity of these reservoirs is 151,670 AF. The San Pablo, Upper San Leandro, and Briones reservoirs are accessible year-round to provide additional water to EBMUD's customers while Lake Chabot and Lafayette Reservoir provide emergency standby supply.

The EBMUD holds State Water Resources Control Board License 11109 which allows for 200 million gallons per day (MGD) to be diverted from the Mokelumne River and stored in the Pardee Reservoir. Permit 10478 also from the State Water Resources Control Board supplements this license

[1] East Bay Municipal Utility District, 2011. *Urban Water Management Plan 2010.* July.

[2] East Bay Municipal Utility District. 2015. Letter Subject: *Satisfaction of Water Supply Assessment for the Sherwin-Williams Project, Emeryville.* May 13.

[3] East Bay Municipal Utility District, 2011, op. cit.

and allows 125 MGD to be diverted from the Mokelumne River and stored in Pardee and Camanche Reservoirs.[4] Therefore, EBMUD's current water rights allow for the total delivery of up to 325 MGD from the Mokelumne River watershed. However, this allocation is subject to the availability of Mokelumne River runoff and to the senior water rights of other users, downstream fishery flow requirements, and other Mokelumne River water uses. EBMUD also relies on local runoff from the East Bay area watersheds as a secondary water source. The availability of water from local runoff is dependent on hydrologic conditions and terminal reservoir storage availability.[5]

Recycled water is also an additional water source for EBMUD. Wastewater is treated to produce recycled water at EBMUD's wastewater treatment plant, located at the foot of the Bay Bridge. EBMUD stores the recycled water in a 1.5 million gallon storage tank and uses an additional 2.4 MGD for onsite processes and landscape irrigation. A detailed description of recycled water in Emeryville is located in the wastewater section below.

The EBMUD operates two supplemental water supply facilities to provide additional water during droughts. The Freeport Regional Water Facility is operated by the Freeport Regional Water Authority, a collaboration between the Sacramento County Water Agency and EBMUD. In 2011 the Freeport Regional Water Facility became operational and is used to divert, treat, and distribute water from the Sacramento River to EBMUD customers during dry years. Sacramento County uses the Freeport Regional Water Facility year-round regardless of drought conditions. Based on its Long Term Renewal Contract with the United States Bureau of Reclamation, EBMUD is permitted to use up to 133,000 AF in a single dry-year, but cannot exceed a total of 165,000 AF in three consecutive dry-years.[6]

In 2010, EBMUD's Bayside Groundwater Facility became operational to store potable drinking water in the deep aquifer of the South East Bay Plain Groundwater Basin (SEBPB) during wet years and recover water for treatment and use during times of drought. This facility consists of a water treatment plant and monitoring systems for groundwater wells. The project has an average annual production capacity of 1 MGD or 1,120 acre-feet per year.[7] The project will supply water to EBMUD customers only when supplemental water is needed in drought conditions.

The 2010 Urban Water Management Plan concludes that EBMUD has, and will have, adequate water supplies to serve existing and projected demand within the Ultimate Service Boundary (that includes the City of Emeryville) during normal and wet years but that deficits are projected for drought years. EMBUD's Drought Management Program Guidelines establish the level of water use restrictions that EBMUD may consider based on the projected total system storage at the end of the water year. During times of drought, EBMUD then requires water use reduction goals across the entire service area. On April 14, 2015, EBMUD declared a Stage 4 Drought and a mandatory EBMUD-wide water use reduction goal of 20 percent and adopted revised regulations regarding mandatory water use prohibitions and restrictions. This 20 percent conservation goal is consistent with the California State

[4] East Bay Municipal Utility District is currently going through an extension application process for Permit 10478.

[5] East Bay Municipal Utility District, 2011, op. cit.

[6] Ibid.

[7] Ibid.

Governor's April 1, 2015 Drought Emergency Order and with an April 7, 2015 California State Water Resources Control Board proposed rulemaking which specifically identifies a 20 percent water reduction goal for EBMUD.[8]

(2) Water Treatment Facilities. EBMUD's water treatment plants include: 1) Walnut Creek WTP; 2) Lafayette WTP; 3) Orinda WTP; 4) Upper San Leandro WTP; 5) San Pablo WTP; and 6) Sobrante WTP. Walnut Creek WTP, Lafayette WTP, and Orinda WTP receive water directly from the Mokelumne Aqueducts and Upper San Leandro WTP, San Pablo WTP, and Sobrante WTP receive water from EBMUD's terminal reservoirs. The six plants have a combined treatment capacity of over 375 MGD. Walnut Creek WTP and Lafayette WTP serve the area east of the Oakland-Berkeley Hills while Orinda WTP serves the central parts of the service area and the area west of the Oakland-Berkeley Hills. The Orinda Water Treatment Plant serves Emeryville and has the largest output with a capacity of 200 MGD. Water at the Orinda WTP is filtered through sand and anthracite, or carbon treatment and plants provide disinfection, fluoridation and corrosion control.[9]

(3) Water Distribution System. EBMUD's service area is divided into more than 120 pressure zones which range in elevation from sea level to 1,450 feet. Approximately 50 percent of water treated at one of the WTPs is distributed to customers by gravity while the remainder involves use of pumping stations. The water distribution network includes 4,100 miles of pipes, 140 pumping stations, and 170 neighborhood reservoirs with a total capacity of 830 million gallons. Neighborhood reservoirs are tanks that store potable water.[10] The project site is located within EBMUD's Central Pressure Zone, which provides water service to customers within an elevation range of 0 to 100 feet.

b. Wastewater. The following discussion provides background information on wastewater treatment facilities and collection systems serving the City, including the project area.

(1) Wastewater System. EBMUD as well as other wastewater utilities collect and treat wastewater within the EBMUD's service area. The City of Emeryville is located in the EBMUD's wastewater service district known as Special District No. 1, or SD-1, which consists of an 88 square mile area made up of the cities of Alameda, Albany, Berkeley, Oakland, Piedmont, El Cerrito, Kensington and part of Richmond. Special District No. 1 communities each operate a sewer collection system that gets transferred to one of five EBMUD's sewer interceptors. The City of Emeryville's sewer collection system consists of approximately 15 miles of pipe ranging in size from 6 to 30 inches, and one pumping station and forced main at the Emeryville Marina. The Emeryville sewer collection system is primarily gravity-fed and flows into EBMUD's North sewer interceptor which runs east of I-80. The interceptor transports wastewater to the Main Wastewater Treatment Plant (MWWTP) at the base of the Bay Bridge in Oakland. EBMUD's collection interceptor system consists of 29 miles of reinforced concrete pipes. EBMUD's MWWTP provides secondary treatment for a maximum flow of 168 MGD. Primary treatment is provided for up to 320 MGD. Storage basins

[8] East Bay Municipal Utility District. 2015. op. cit.

[9] East Bay Municipal Utility District, 2013a. *Water Treatment*. Website: www.ebmud.com/our-water/water-quality/water-treatment-plants (accessed August 27, 2013).

[10] East Bay Municipal Utility District, 2011, op. cit.

provide plant capacity for a short-term hydraulic peak of 415 MGD. On average, about 63 million gallons of wastewater is treated every day.

(2) Wastewater Treatment and Disposal. Treatment processes at EBMUD's MWWTP include prechlorination, screening, grit removal, scum disposal, primary sedimentation, secondary treatment using high purity oxygen activated sludge, final clarification, sludge digestion, and power cogeneration utilizing digester gas. Treated affluent is discharged through a deep-water outfall one mile off the East Bay shore into the San Francisco Bay or it is recycled. In 2014, approximately 932 million gallons were recycled and the remainder was discharged into the Bay.

(3) Recycled Water. In EBMUD's service area, four of the wastewater treatment facilities provide recycled water to EBMUD customers, including EBMUD's MWWTP, San Leandro Water Pollution Control Plant, North Richmond Water Reclamation Plant, and Dublin San Ramon Services District. Recycled water is critical to reduce demand for high-quality potable water and is essential to EBMUD's water supply management policies. EBMUD's MWWTP and the Water Recycling Plant supplies water for the following projects: East Bayshore Recycled Water Project; Recycled Water Truck program which includes construction water needs, sewer flushing, and other non-potable uses; and on the EBMUD site for in-plant processes and landscape irrigation. The East Bayshore Recycled Water Project includes a recycled water pipeline that runs along Horton Street in Emeryville. Recycled water from the East Bayshore Recycled Water Project is used for industrial facilities, landscape irrigation, and toilet flushing in dual-piped commercial buildings. In 2014, the East Bayshore Recycled Water Project offset the need for 56 million gallons of potable water.[11]

c. Solid Waste. The following section describes non-hazardous and household hazardous waste disposal services and capacity in Emeryville.

(1) Non-Hazardous Solid Waste. Waste Management of Alameda County (WMAT) is the exclusive provider of residential and commercial recycling, composting, and trash collection services for the City of Emeryville. Non-hazardous solid waste is transported to the Davis Street Transfer Station and Resource Recovery Complex in San Leandro and then hauled to the Altamont Landfill and Resource Recovery Facility, approximately 43 miles southeast of the site. The Davis Street facility has a permitted maximum daily throughput of 5,600 tons and a permitted capacity of 9,600 tons per day.

The Altamont Landfill facility has a total estimated capacity of 62 million cubic yards. As of 2014, the landfill's total estimated used capacity was approximately 19.6 million cubic yards, or 31.6 percent of the landfill's total capacity.[12] The landfill has a permitted throughput of 11,500 tons per day and is anticipated to have sufficient capacity until 2025, its expected closure date. [13]

[11] East Bay Municipal Utility District, 2014. *East Bayshore Recycled Water Project Fact Sheet.* Available online at: www.ebmud.com/sites/default/files/pdfs/ebrwp-fact-sheet-map-oct-2014_0.pdf (accessed February 18, 2015).

[12] Waste Management, 2014. *Altamont Landfill and Resource Recovery Facility Fact Sheet.* Available online at: www1.wmsolutions.com/pdf/factsheet/Altamont_Landfill.pdf (accessed February 18, 2015).

[13] California Department of Resources Recycling and Recovery, 2012. *Solid Waste Information System Facility/Site Listing*. Website: www.calrecycle.ca.gov/SWFacilities/Directory/01-AA-0009/Detail (accessed February 18, 2015).

Construction and demolition debris generated in Emeryville are transported, typically by private haulers or contractors, to either asphalt or concrete recycling facilities in the East Bay or to the Vasco Road Landfill. The Vasco Road Landfill is located in Livermore, approximately 40 miles southeast of the site. Cal Recycle estimates Vasco Road Landfill will remain open until 2022 as it was at 75 percent capacity in 2014.[14]

In 2013, the City sent approximately 17,973 tons of solid waste to the landfill and achieved a total solid waste diversion rate of 70 percent, which falls short of the 75 percent goal.[15] The California Department of Resources Recycling and Recovery (CalRecycle), formally known as the California Integrated Waste Management Board, implemented new targets that establish daily per-capita disposal rates, and replaces the historical diversion rate measurement that was used prior to 2006. The Alameda County Waste Management Authority approved a Mandatory Recycling Ordinance in 2012. This Ordinance 2012-01 requires businesses, institutions, and multi-family properties with five or more units to sort their recyclables from their trash. Multi-family property owners as well as businesses and institutions that generate food waste must also sort compostable from their trash. The City of Emeryville is obligated to conform to this Ordinance as it falls within the jurisdiction of the Alameda County Waste Management Authority. [16] Recyclable materials include the following: glass, aluminum and tin, motor oil, cardboard, magazines and newsprint, and plastic. Recyclable materials are processed at the Davis Street Transfer Station and Resource Recovery Complex.

(2) Hazardous Household Solid Waste. Residents in Emeryville can dispose of hazardous materials at a variety of drop-off locations. Emeryville promotes the Paint Care Program which lists safe disposal drop-off locations for paints and stains. The closest Paint Care Program location is Kelly Moore located at 4917 International Blvd. in Oakland. Stopwaste.org hosts household hazardous waste events that allow residents to properly dispose of household hazardous materials. See Section IV.I, Hazards and Hazardous Materials for a discussion of hazardous materials at the project site.

d. Energy and Telecommunications. The following section describes energy and telecommunications services in Emeryville.

(1) Energy. Pacific Gas and Electric Company (PG&E) is a private utility that provides electricity and natural gas service to Emeryville. PG&E customers pay connection and user fees for new developments and sliding rates for service based on use.

Gas supplies in northern California come primarily from gas fields in the Sacramento Valley.[17] The PG&E gas transmission pipeline system serves approximately 4.2 million gas customers in northern and central California. However, PG&E produces much of its energy from renewable sources and has

[14] Ibid.

[15] StopWaste.org, 2014. *Disposal Tonnages by Jurisdictions and Diversion Rates by Jurisdictions.* Available online at: www.stopwaste.org/sites/default/files/Disposal%20Diversion%20Web%2012-18-14.pdf (accessed February 18, 2015).

[16] Recycling Rules Alameda County, 2012. *Mandatory Recycling Ordinance of Alameda County- Ordinance 2012-1.* Available online at: www.recyclingrulesac.org/wp-content/uploads/2014/04/ordinance_2012-1_mandatory_recycling-executed.pdf (accessed February 18, 2015).

[17] Pacific Gas & Electric Company, 2014. *2014 California Gas Report.* Available online at: www.pge.com/pipeline_resources/pdf/library/regulatory/downloads/cgr14.pdf (accessed February 18, 2015).

plans in place to increase reliance on renewable energy sources. Of the energy provided to PG&E customers in 2012, approximately 19 percent came from renewable resources. In 2012, 21 percent of energy provided to PG&E customers came from nuclear generation; 21 percent was from unspecified sources; 27 percent was from natural gas; 11 percent was from large hydroelectric facilities; and 19 percent was from renewable resources (e.g., wind, geothermal, biomass, small hydroelectric sources, and solar).[18] Because many agencies in California have adopted policies seeking increased use of renewable resources (and have established minimum standards for the provision of energy generated by renewable resources), it is expected that PG&E will continue to meet future demand for energy via an increasing reliance on renewable resources, including small-scale sources such as photovoltaic panels and wind turbines, in addition to larger-scale facilities, such as wind farms.

Regulatory requirements for efficient use of electricity and gas are contained in Title 24, Part 6, of the California Code of Regulations, entitled "Energy Efficiency Standards for Residential and Non-residential Buildings." These regulations specify the State's minimum energy efficiency standards and apply to new construction of both residential and nonresidential buildings. The standards regulate energy consumed for heating, cooling, ventilation, water heating, and lighting. Compliance with these standards is verified and enforced through the local building permit process.

(2) Telecommunications. The following discussion provides background information on the City's existing telephone, cable, and internet service providers.

Comcast is listed as the City's franchised cable television provider. Comcast also provides internet and telephone services within the City of Emeryville. Residents in Emeryville also have the option of selecting an alternative service provider.

The California Public Utilities Commission requires that Comcast anticipate and serve new growth. To meet this requirement, Comcast continually upgrades its facilities and infrastructure, adding new facilities and technology to remain in conformance with California Public Utilities Commission tariffs and regulations and to serve customer demand in the City.

Additions to the City's infrastructure and proposals for development would result in a need for expansion or changes to Comcast's infrastructure, which would involve suitable siting for equipment placement. Suitable sites must meet requirements for the physical transmission of telecommunication services and conform to the City's guidelines. Comcast also works with the City to ensure that construction of new facilities does not interfere with any new or newly paved streets.

e. Regulatory Framework. The following section describes the federal, State, and local regulatory framework related to water, solid waste management, and other utilities.

(1) Federal Regulations. The following describes federal regulations concerning utilities.

[18] Pacific Gas & Electric Company, 2012. *Clean Energy Solutions*. Website: www.pge.com/mybusiness/environment/pge/cleanenergy/index.shtml (accessed February 18, 2015).

Safe Drinking Water Act. The Safe Drinking Water Act (SDWA) of 1974 gave the United States Environmental Protection Agency (U.S. EPA) the authority to set standards for contaminants in drinking water supplies. The U.S. EPA was required to establish primary regulations for the control of contaminants that affected public health and secondary regulations for compounds that affect the taste, odor, and aesthetics of drinking water. Under the provisions of SDWA, the California Department of Health Services (DHS) has the primary enforcement responsibility. Title 22 of the California Administrative Code establishes DHS authority, and stipulates State drinking water quality and monitoring standards.

National Pollutant Discharge Elimination System. Treated wastewater is closely regulated for health and environmental concerns, and is included in the National Pollutant Discharge Elimination System (NPDES) program. The San Francisco Bay RWQCB regulates operations and discharges from sewage systems through the NPDES permit adopted on October 14, 2009. The permit provides a uniform standard for wastewater and stormwater discharges for the counties and agencies surrounding the San Francisco Bay. Emeryville is mandated to comply with the NPDES Permit by State and federal laws, statutes, and regulations. In 2014, EBMUD and tributary agencies (including Emeryville) entered into a Consent Decree (CD) with U.S. EPA, the State Water Resources Control Board (SWRCB), and San Francisco Bay RWQCB with a directive to eliminate discharges from wet-weather facilities over an approximate 20-year period by eliminating infiltration and inflow from entering the sewer collection systems.

Energy Act 1992. The Federal Energy Regulatory Commission (FERC) regulates the transmission and sale of electricity in interstate commerce (including interstate gas pipelines that serve California), licensing of hydroelectric projects, and oversight of related environmental matters. As part of the license application process, environmental analysis pursuant to the National Environment Policy Act (NEPA) must be conducted. FERC acts under the legal authority of the Federal Power Act of 1935, the Public Utility Regulatory Policies, and the Energy Act of 1992, in addition to several other federal acts. The Energy Act of 1992 addresses energy efficiency, energy conservation and energy management, natural gas imports and exports, and alternative fuels (including as used in motor vehicles). It amended parts of the Federal Power Act of 1935.

(2) State Regulations. The following describes State regulations concerning utilities.

Urban Water Management Planning Act. In 1983, the California Legislature enacted the Urban Water Management Planning Act (Water Code Sections 10610–10656). The act requires that every urban water supplier that provides water to 3,000 or more customers or that provides over 3,000 AFY, prepare and adopt an Urban Water Management Plan (UWMP). Water suppliers are to prepare a UWMP within a year of becoming an urban water supplier and update the plan at least once every 5 years. The act also specifies the content that is to be included in an UWMP. It is the intention of the legislature to permit levels of water management planning commensurate with the number of customers served and the volume of water supplied. The act states that urban water suppliers should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple-dry years. The act also states that the management of urban water demands and the efficient use of water shall be actively pursued to protect both the people of the state and their water resources.

Senate Bill 610 and SB 221. In 2003, Senate Bill (SB) 610 and SB 221 were signed into law by Governor Gray Davis. SB 610 requires public water systems that supply water to proposed projects determine whether the projected water demand (associated with the proposed project) could be met when existing and planned future uses are considered. For the purposes of SB 610, Water Code Section 10912 (a)(2) requires all projects with a water demand equivalent to 500 or more dwelling units, or which include over 250,000 square feet of commercial office building, to obtain a Water Supply Assessment (WSA). In addition, SB 610 requires a quantification of water received by the water provider in prior years from water rights, water supply entitlements, and water service contracts. Under SB 221, approval by a city or county of certain residential subdivisions requires an affirmative written verification of sufficient water supply.

The Water Conservation Act of 2009 (Senate Bill x7-7 (2009). Senate Bill x7-7 (SBx7-7) requires all water suppliers to increase water use efficiency. SBx7-7 mandates the reduction of per capita water use and agricultural water use throughout the State by 20 percent by 2020.

California Integrated Waste Management Act (AB 939). In 1989, the California Legislature enacted the California Integrated Waste Management Act (AB 939), which requires the diversion of waste materials from landfills in order to preserve landfill capacity and natural resources. Cities and counties in California were required to divert 25 percent of solid waste by 1995, and 50 percent of solid waste by the year 2000. AB 939 further requires every city and county to prepare two documents demonstrating how the mandated rates of diversion will be achieved. The Source Reduction and Recycling Element (SRRE) must describe the chief source of the jurisdiction's waste, the existing diversion programs, and current rates of waste diversion and new or expanded diversion programs. The Household Hazardous Waste Element (HHWE) must describe each jurisdiction's responsibility in ensuring that household hazardous wastes are not mixed with non-hazardous solid wastes and subsequently deposited at a landfill.

California Public Utilities Commission. The California Public Utilities Commission (CPUC) regulates privately owned telecommunication, electric, natural gas, water, railroad, rail transit, and passenger transportation companies. General Order 121-d gives the CPUC permitting authority over construction of new and expanded power plants, electric transmission lines, and substations. Pursuant to CEQA, an environmental analysis must be conducted before issuance of construction permits by CPUC. CPUC Decision 95-08-038 contains the rules for the planning and construction of new transmission facilities, distribution facilities, and substations. The CPUC also regulates local natural gas distribution facilities and services, as well as interstate pipelines.

California Energy Commission. The California Energy Commission (CEC) is the State's primary energy policy and planning agency. The CEC was created by the Legislature in 1974 and is responsible for the following: forecasting future energy needs and keeping historical energy data; licensing thermal power plants 50 megawatts or larger; promoting energy efficiency by setting the State's appliance and building efficiency standards; supporting public interest energy research that advances energy science and technology; supporting renewable energy by providing market support to existing, new, and emerging renewable technologies; developing and implementing the State Alternative and Renewable Fuel and Vehicle Technology Program to reduce the State's petroleum dependency and help attain the State climate change policies; administering more than $300 million in American Reinvestment and Recovery Act funding through State programs; and planning for and directing the State response to energy emergencies.

(3) Local Policies. The following describes local policies concerning utilities.

East Bay Municipal Utility District Urban Water Management Plan 2010. Updated every five years in accordance with California's Urban Water Management Act, the EBMUD Urban Water Management Plan provides an overview of water supply and usage, wastewater, and recycled water. The most recent plan is the Urban Water Management Plan 2010 which was adopted in July 2011.

Emeryville General Plan. The Parks, Open Space, Public Facilities, and Services Element and the Conservation, Safety, and Noise Element of the General Plan contains policies related to water quality, conservation and other utilities, as listed below:

- Policy PP-P-25: The City will continue to coordinate with Pacific Gas & Electric to ensure gas and electricity access to new development sand high quality service to all customers.
- Policy PP-P-26: The City will continue to operate and maintain the City-owned wastewater collection conveyance system and coordinate with EBMUD on the transfer and treatment of wastewater.
- Policy PP-P-27: The City will continue to cooperate with EBMUD, the Regional Water Quality Control Board, and other relevant agencies to adopt and implement programs and policies to further reduce inflow and infiltration (I&I) of storm water in the City's wastewater collection system and private sewer laterals during wet weather events.
- Policy PP-P-28: The City will continue to require development projects to replace or upgrade as needed, sanitary sewer systems serving the development site to reduce inflow and infiltration (I&I) of storm water in the City's wastewater collection system and private sewer laterals during wet weather events.
- Policy CSN-P-7: New commercial and industrial activities, as well as construction and demolition practices, shall be regulated to minimize discharge of pollutant and sediment concentrations into San Francisco Bay.
- Policy CSN-P-8: The City will continue to support regional watershed conservation through local land use planning, open space policies, and water quality conservation efforts.
- Policy CSN-P-9: The City will continue programs to inform residents of the environmental effects of dumping household waste, such as motor oil, into storm drains that eventually discharge into San Francisco Bay.
- Policy CSN-P-10: New development is required to incorporate source control, site design, and storm water treatment to reduce pollutants in stormwater runoff.
- Policy CSN-P-11: Exterior uses of water for landscaping and other purposes shall be reduced to minimize or eliminate runoff and water waste.
- Policy CSN-P-12: The City promotes use of recycled water on landscaping and other nonfood source plantings.
- Policy CSN-P-13: The City promotes construction and incorporation of cisterns, green roofs and other rainwater harvesting methods in existing, new and rehabilitation projects.
- Policy CSN-P-14: The City will allow homeowners to divert untreated rainwater for non-potable uses, such as outdoor irrigation and toilet flushing, through use of rainwater barrels or similar methods.
- Policy CSN-P-15: The City shall consider revising plumbing and building code requirements, as necessary, to allow for graywater and rainwater harvesting systems.

- Policy CSN-P-16: The City will continue to support the use of recycled water in new and rehabilitation projects, through the development process.
- Policy CSN-P-17: The City supports public education initiatives to encourage conservation of potable water.
- Policy CSN-P-42: The City supports public awareness and participation in household waste management, control, and recycling.

City of Emeryville Climate Action Plan. The City of Emeryville adopted a Climate Action Plan in 2010 to develop policies and criteria for reducing greenhouse gas emissions on a city-wide level. Part of the plan is a greenhouse gas emission inventory that dictates the current greenhouse gas emissions within the City. There are 35 measures in the Climate Action Plan that will help to reduce greenhouse gas emissions by 50 percent of 1990 levels by 2025.

City of Emeryville Municipal Code. Emeryville Municipal Code Section 9-4.6, Water Use, implements State policies requiring the use of recycled water for non-potable water uses within the designated recycled water use area when the City determines that there is not an alternative higher or better use for the recycled water, its use is economically justified, and its use is financially and technically feasible for a project. This Section also requires the use of Bay-Friendly Landscape practices on all municipal properties and private developments with a landscape area equal or greater than 1,000 square feet. The purpose of this section is to foster efficient water use and prevent water waste while ensuring high quality landscapes.

Chapter 8 of the Municipal Code discusses Emeryville's Wastewater Collection System including fees, connections, and usage regulations. The Construction Waste and Demolition Ordinance located in Section 8-19, is required for projects that are greater than 1,000 square feet and includes the submittal and approval of a Waste Management Plan.

Alameda County Waste Reduction and Recycling Act 1990. Through the Waste Reduction and Recycling Act 1990 (Measure D), Alameda County adopted waste reduction goals above AB 939 in 2010 to reduce total tonnage of landfill materials generated in the County by 75 percent.

Alameda County Mandatory Recycling Ordinance 2012. The Alameda County Waste Management Authority approved a Mandatory Recycling Ordinance in 2012. This Ordinance 2012-01 requires businesses, institutions, and multi-family properties with five or more units to sort their recyclables from their trash. Multi-family property owners as well as businesses and institutions that generate food waste must also sort compostable from their trash. The City of Emeryville is obligated to conform to this Ordinance as it falls within the jurisdiction of the Alameda County Waste Management Authority.[19]

[19] Recycling Rules Alameda County, 2012. *Mandatory Recycling Ordinance of Alameda County- Ordinance 2012-1*. Available online at: www.recyclingrulesac.org/wp-content/uploads/2014/04/ordinance_2012-1_mandatory_recycling-executed.pdf (accessed February 18, 2015).

2. Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to utilities and service systems that could result from implementation of the proposed project. The section begins with the criteria of significance, which establish the thresholds to determine if an impact is significant. The latter part of this section presents the impacts associated with implementation of the proposed project and the recommended mitigation measures, if required. Cumulative impacts are also addressed.

a. Criteria of Significance. Development of the proposed project would result in a significant impact related to utilities and infrastructure if it would cause:

- Water demand to exceed available supply or distribution capacity;
- Wastewater treatment to exceed requirements of the East Bay Municipal Utility District.
- Construction of new water or wastewater treatment facilities or storm water drainage facilities, or expansion of such existing facilities, the construction of which could cause significant environmental effects;
- Solid waste levels to exceed available disposal capacity; or
- Solid waste levels in non-compliance with federal, state, or local regulations related to solid waste (e.g., recycling requirements).

b. Project Impacts. The following discussion describes the potential impacts related to utilities and infrastructure that would result from implementation of the proposed project. The applicant is proposing two potential development options; however, given that the total housing units and square footage of commercial space remains the same in both options they will not be analyzed individually. Therefore, the impacts described in the following section would result from the implementation of both Option A and Option B of the proposed project.

(1) Water Supply Availability. In order to determine if there was sufficient water supply available for the proposed project and reconfirm the Water Supply Assessment prepared by EBRPD in March 2005 that indicated that there was a sufficient supply,[20] the City of Emeryville submitted a letter request to EBMUD in March 2015 (see Appendix E). EBMUD responded in a letter dated May 13, 2015[21] (See Appendix E). The 2015 letter from EBMUD states the following:

> "The estimated demand for the Sherwin-Williams Emeryville Site Redevelopment Project consisting of 577 dwelling units and 35,000 square feet of commercial space in the approved WSA was about 110,000 gallons per day (gpd). Since the overall project demand decreased, EBMUD concludes that the WSA approved on March 10, 2005 is still valid, and a second WSA in not required for the Sherwin-Williams Development Project.

[20] Kirkpatrick, William. Manager of Water Distribution Planning Division, EBRPD. 2005. Letter Subject: Water Supply Assessment – Sherwin-Williams Site Redevelopment Project. March 10.

[21] East Bay Municipal Utility District, 2015, op. cit.

> The 2010 Urban Water Management Plan (UWMP) concludes that EBMUD has, and will have, adequate water supplies to serve existing and projected demand within the Ultimate Service Boundary during normal and wet years but that deficits are projected for drought years.…The Sherwin-Williams Development Project will be subject to the same drought restrictions that apply to all EBMUD customers."

The revised development plans that are analyzed in this EIR include 540 dwelling units, 94,600 square feet of commercial space, and 90,605 square feet of open space. EBMUD estimates water demand for the currently proposed level of development to be 106,000 gpd (approximately 0.17 MGD). The anticipated daily water demand that would result from implementation of the proposed project represents approximately 0.06 percent of average daily water demand within the EBMUD service area. As described above, EBMUD has adequate water supplies to serve the proposed project, and in times of water deficits, EBMUD would subject the proposed project to the same water use restrictions that are applied to all EBMUD customers, and therefore the potential impact associated with the project causing water demand to exceed the available supply would be less than significant.

The proposed project would be outfitted with water-conserving fixtures, as required by the Uniform Building Code. All landscaping would be irrigated and plumbed with purple pipes for the use of recycled water. In addition, landscaping will comply with the Bay-Friendly Landscape practices presented in Emeryville Municipal Code Section 9-4.6. EBMUD representatives have given a preliminary indication that they can service this project's water demand.[22]

Anticipated daily water demand that would result from implementation of the proposed project represents less than 0.06 percent of the treatment capacity of the EBMUD or Water Treatment plant. Sufficient water treatment capacity exists within the EBMUD system to accommodate water demand generated by the proposed project. Therefore, implementation of the proposed project would not require expansion of the existing water treatment system.

Adequate capacity of existing water mains to accommodate increased demand generated by the proposed project would be evaluated prior to approval of final construction plans. If line improvements are required due to the age and condition of the existing lines, upgrades would be made by the project applicant in coordination with the City and EBMUD prior to project construction. Increased water deliveries to the project site would not require additional storage or pumping capacity or require substantial modifications to the existing water lines located within the project site. As such the proposed project would have a less-than-significant impact on water distribution infrastructure.

Since EBMUD has adequate supplies to serve the proposed project and projected water demand would not exceed EBMUD treatment capacity or the capacity of the water supply distribution system, the project would have a less-than-significant impact on water services.

(2) Wastewater. Development of the proposed project would result in new commercial space and residential units on the site, each with associated bathrooms, washrooms, kitchens, and other water-using facilities. The project is located in EBMUD Special District 1, and wastewater from the proposed project would be treated at the EBMUD Main Wastewater Treatment Plant (MWWTP)

[22] Ibid.

in Oakland. The EBMUD MWWTP operates in compliance with all relevant San Francisco Bay Regional Water Quality Control Board Requirements. EBMUD provides secondary treatment for a maximum flow of 168 million gallons per day (MGD). Primary treatment is provided for up to 320 MGD. Storage basins provide plant capacity for a short-term hydraulic peak of 415 MGD. On average, about 63 million gallons of wastewater is treated every day.[23] The proposed project would generate an average sewage flow of 85,060 gallons per day.[24] The wastewater generated by the proposed project would comprise 0.08 percent of the remaining secondary treatment capacity at the MWWTP and would not exceed the remaining secondary or primary treatment capacity at the plant; therefore, construction of new treatment facilities would not be required, and impacts associated with wastewater treatment would be considered less than significant.

(3) Storm Drainage. The project site is located near two existing storm drainage basins. The southern portion of the site drains to the existing storm drain on Halleck Street. The northern portion of the site drains to the Temescal Creek Flood Control Channel. New storm drains will be required on Sherwin Avenue and on Horton Street to accommodate deficient storm drainage which will be directed to the Halleck Street basin. The Halleck Street storm drain basin is near capacity; therefore, the majority of the project site including roof runoff would be directed to the north to the Temescal Creek drainage basin.

The applicant is required to incorporate Low Impact Development (LID) measures for storm drainage facilities on the project site to comply with the City's Stormwater ordinance and the Municipal Regional Permit requirements issued by the San Francisco Bay Regional Water Quality Control Board. Also, as called for by the DTSC, the site shall be graded and the stormwater collection system shall be designed to minimize ponding and limit infiltration to groundwater to 3.75 inches per year. Flow-through water quality treatment would be provided for roof-top areas – in a decentralized manner within each of the parcels in rear or side yard areas – and in at-grade or above-grade planters. In some of the open space areas additional water quality treatment flow-through planters would be needed for hardscape areas and impervious surfaces, such as the children's playground/adult fitness area and sports courts. Native and drought-tolerant plant materials would be selected for the water quality treatment areas. The water quality treatment areas would also include irrigation to maintain the health of the plant materials during dry seasons of the year. Treatment areas to accommodate street run-off would be located curbside away from pedestrian crossings and parking areas and separated from street trees. Four water quality treatment areas would be located along the length of Hubbard Circle on both sides of the street: one water quality treatment area would be located on either side at the extension of Hubbard Street immediately to the north of Sherwin Avenue; and another water quality treatment area would be located at the west end of the new 46th Street on either side of the street adjacent to parcel B-1 and B-2. With these project improvements, impacts to storm drainage facilities would be less-than-significant. See also the discussion of storm drainage requirements in Section IV.H, Hydrology and Water Quality.

[23] East Bay Municipal Utility District , 2015. *Wastewater Treatment.* Website: www.ebmud.com/wastewater/collection-treatment/wastewater-treatment (accessed November 17, 2015).

[24] BKF, 2015. *Memorandum: Sherwin-Williams – Sewer Capacity.* November 12.

(4) Solid Waste. The proposed project would be served by landfills with the capacity to handle solid wastes generated by both the proposed project. Waste Management of Alameda County (WMAT) is the exclusive provider of residential and commercial recycling, composting, and trash collection services for the City of Emeryville. Non-hazardous solid waste is transported to the Davis Street Transfer Station and Resource Recovery Complex in San Leandro and then hauled to the Altamont Landfill and Resource Recovery Facility. The Davis Street facility has a permitted maximum daily throughput of 5,600 tons and a permitted capacity of 9,600 tons per day. The Altamont Landfill facility has a total estimated capacity of 62 million cubic yards. As of 2014, the landfill had a remaining 68.4 percent capacity.[25] The landfill has a permitted throughput of 11,500 tons per day.[26]

Table IV.L-1 shows the estimated waste generation for the proposed development. The California Integrated Waste Management Board (CIWMB) provides a list of waste generation rates for commercial, residential, and service establishment which have been extracted from various municipalities throughout California.[27] The estimated rates for multi-family residential uses are estimated at 3.6 to 8.6 pounds per unit per day while commercial and office uses range from 0.005 to 0.046 pounds per day. These generation rates estimate the total amount of waste created and includes all discarded materials, whether or not they are later recycled or disposed in a landfall. Using these estimated waste generation rates, the proposed project would potentially generate 9,905 pounds of solid waste per day, or approximately 4.95 tons per day. This represents 0.04 percent of the permitted throughput of the Altamont Landfill. The proposed project would adhere to all required State and local waste management ordinance requirements including Alameda County's Mandatory Recycling Ordinance. Therefore, the project would not result in a significant solid waste impact.

Table IV.L-1: Project Development Estimated Waste Generation

Project Development Programming		Waste Generation Rates in Pounds per Day	Project Waste Generation Rates in Pounds per Day
Residential	540 units	8.6 per unit	4,644
Restaurant	5,000 square feet	0.005 per square foot	25
Commercial Retail	10,000 square feet	0.046 per square foot	460
Office	79,600 square feet	0.006 per square foot	4,776
Total			**9,905**

Source: ROMA Design Group, November 2014 and CIWMB 2011.

[25] Waste Management, 2014. *Altamont Landfill and Resource Recovery Facility Fact Sheet.* Available online at: www1.wmsolutions.com/pdf/factsheet/Altamont_Landfill.pdf (accessed February 18, 2015).

[26] California Department of Resources Recycling and Recovery, 2012. *Solid Waste Information System Facility/Site Listing*. Website: www.calrecycle.ca.gov/SWFacilities/Directory/01-AA-0009/Detail (accessed February 18, 2015).

[27] California Integrated Waste Management Board, 2011. Website: www.calrecycle.ca.gov/WasteChar/WasteGenRates/Residential.htm (accessed March 3, 2015).

c. Cumulative Impacts. Development of the proposed project and other projects would increase demand for water, wastewater service, solid waste disposal, and electricity/gas on a regional level. As noted above, the WSA concluded that adequate water supply is available to serve the project site and proposed project. Therefore, project related impacts related to water supply would be less-than-significant. The City of Emeryville comprises less than 1 percent of EBMUD's customer base. As a result, the proposed project in combination with other past, present, and reasonably probable future projects within Emeryville would not result in a cumulatively considerable impact to water supply resources. The project would connect to existing water infrastructure lines. As additional projects are proposed and reviewed, site specific analysis would be undertaken to identify and rectify any water or wastewater infrastructure shortages. The Altamont Landfill is expected to remain in operation until 2025 and would have capacity to accommodate solid waste from cumulative development. The proposed project, in combination with other past, present, and reasonably probably future projects, would not result in any significant cumulative utility impacts. This impact, therefore, would be less than significant.

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M. VISUAL RESOURCES

This section evaluates the effects of the proposed project on visual resources and public views within and in the vicinity of the project site as well as shade/shadow impacts. The analysis considers the visual quality of the project site, as well as the views to and from the project site. Public views are defined as views from public locations, such as roadways, scenic vista areas, parks, schools or other public buildings. This section identifies potential impacts to visual resources and mitigation measures to reduce significant impacts, as necessary.

This section is based on: 1) a field survey of the project site that was conducted by LSA in January 2015; 2) review of aerial photographs of the project site and vicinity; 3) data provided by the project applicant including conceptual site plans; 4) visual simulations that show "before and after" representations of the proposed project prepared by Environmental Vision; and 4) shade/shadow simulations of proposed buildings prepared by Environmental Vision.

1. Setting

The following section describes the visual quality of the project site and views of the project site from surrounding areas, in addition to existing shade and shadow conditions in the project area.

a. Local Context. The project site is located in an urban area that is characterized by a mix of land uses and building types. The Union Pacific Railroad (UPRR) tracks lie directly west of the project site and multi-story retail and residential buildings within the Bay Street Mall are further west of those tracks. The Novartis Research Center and Grifols diagnostics (research and development facilities) are located to the north and east. The Novartis Research Center is a campus style development with modern-style buildings that range from two- to six- stories in height. A mix of surface and structure parking lots serves the campus, including one surface parking lot that is immediately adjacent to the project site to the northeast.

The project site is within the Park Avenue District (District) which is characterized by light industrial, historic brick buildings that have been adapted for residential, commercial, or office use. Land use on and surrounding the project site are described in Section IV.A, Land Use, and the historical context of the area is described in Section IV.J, Cultural Resources.

b. Visual Character of the Project Site. The project site is comprised of the Sherwin-Williams parcel (approximately 8.59 acres) and the Successor Agency parcel (approximately 1.46 acres). Building 1-31 is the only remaining structure on the Sherwin-Williams parcel. Building 1-31is located at the property line along Horton Street and Sherwin Avenue with no setbacks, which is common within the District. The primary façade on Sherwin Avenue has strong architectural articulation common to the 1930s, as described in Section IV.J, Cultural Resources. The main entrance is located on the first story and was updated in a 1960s modern style with glass and aluminum doors, flanked by aluminum frame windows, beneath a rectangular canopy. Street trees and utility poles with street lighting line Horton Street.

All other buildings on the Sherwin-Williams parcel were demolished as part of remediation activities. The vacant portion of the parcel is covered in gravel, dirt, or overgrown grasses. Several building pads remain on the site (at approximately 5 feet above street level) as well as remnants of remediation activities. The site appears "vacant" and expansive beyond the existing structure.

The Successor Agency parcel is located at the southwest portion of the site along Sherwin Avenue and is separated from the Sherwin-Williams parcel by a chain-link fence. The site is accessible at street level and is currently undeveloped. Dirt, gravel, and grass cover the vacant parcel. No sidewalks exist on Sherwin Avenue in front of the Successor Agency parcel. Sidewalks are located along the project frontages at Hubbard Street. Limited landscaping exists on Sherwin Avenue, except for three trees on the north side of the street.

c. Visual Character of the Surrounding Area. The project site is located in the District which is defined by historic brick and concrete factory buildings with light industrial, residential, office, and commercial uses. The District's historic industrial character is unique within Emeryville and has identifiable building articulation and a strong interface with the street (e.g., similar to Building 1-31). The District has relatively small parcel and block sizes which aid to its walkability and define its scale. Streets typically have both pedestrian and street lighting and are landscaped with street trees and planters. Most of the District's buildings are one- to two-stories in height; however, new construction in the area tends to be four- to eight-stories tall. The Emeryville Warehouse Lofts is the tallest building in the District at 73 feet and is located on the southwest corner of Sherwin Avenue/Hubbard Street intersection, across the street from project site.

d. Views from the Project Site. Views from the project site are generally limited to the immediate vicinity due to its location in a generally flat and developed area of the City. There are no scenic vistas or scenic views (such as unobstructed views of the Easy Bay Hills or the San Francisco Bay) visible from the project site. Intermittent views of the East Bay Hills are available from the site in limited areas. The primary views to the east include the residential and light industrial buildings that border the site. The primary structures visible to the north of the site include an eight-story parking structure for research and development facilities, the Hyatt Hotel (a multi-story building), Emeryville Market Place, and glimpses of Pacific Park Condominiums. Views to the west of the site are dominated by the eight-story Bay Street retail and residential development as well as the two-story Ikea building. These views consist of parking garages and unarticulated building facades. As a result, views of the San Francisco Bay and skyline are obstructed and cannot be seen from the project site. The entrance on-ramp to I-80 eastbound is visible further west. Limited views of the Oakland Civic Center to the south are available from northern portions of the project site. Immediate views to the south are dominated by modern residential and office development and an unarticulated industrial building along Sherwin Avenue.

e. Existing Views of the Project Site. The project site is visible from a limited number of public roadways and private properties in the immediate vicinity. The site is adjacent to the UPRR tracks and is generally surrounded by development; therefore, views from distant public streets are only available to motorists for a short duration (i.e., 40th Street and Powell Street). The Bay Street Mall and the Novartis campus provide adjacent visual landmarks and help identify the project site from a distance. Horton Street, Hubbard Street, 45th Street, and Halleck Street provide close and medium-range views of the project site.

The existing Sherwin-Williams Building 1-31 is the only view of the site visible from 45th Street due the height of the building and the flat topography of the area. The project site is visible from the I-880 to I-80 overcrossing, the 40th Street Bridge, and the Powell Street Bridge. None of the public roadways in the vicinity of the project site are designated as State or local scenic routes.

Viewpoints of the project site are described below. Figure IV.M-1 shows the locations of the viewpoints. Figures IV.M-2 through IV.M-5 show simulations of Option A development with existing conditions and Figures IV.M-6 through IV.M- 9 show Option B development with existing conditions. All figures show both before and after views of the massing of the proposed project from select viewpoints.

(1) Viewpoint 1. This viewpoint, shown in Figures IV.M-2 (Option A) and IV.M-6 (Option B), is from the 40th Street Bridge, looking north towards the project site. The UPRR tracks run under the bridge and continue north. Landscaping and lighting buffers views of the Ikea building and structured parking lot along the western edge of the tracks. The Bay Street Mall parking structure frames the view beyond the landscaping. The East Bay Hills are visible in the background. The Novartis campus, including the structured parking lot and various multi-story buildings, is shown within this viewpoint and blocks portions of the view of the East Bay Hills. Foreground views, east of the tracks, includes single-story industrial development within the District, palm trees along Park Avenue, and a cell tower.

(2) Viewpoint 2. This viewpoint, shown in Figures IV.M-3 and IV.M-7, is from Hubbard Street south of Sherwin Avenue looking northwest. The Emeryville Warehouse Lofts and a single-story industrial building are located on either side to the street. The two-lane street is lined with parked cars on both sides of the street and includes street trees and pedestrian lighting on the west side of the street. Above ground utilities run along the industrial building in the foreground. Views of development, through the project site and located further north are unobstructed. The multi-level Bay Street Mall, including residential units above structured parking, is visible to the north as well as portions of the multi-story Hyatt Hotel and Emeryville Market Place. The Pacific Park Condominiums is visible beyond the Bay Street Mall. The Novartis campus is visible directly through the project site including the parking structure and office complex.

(3) Viewpoint 3. This viewpoint, shown in Figures IV.M-4 and IV.M-8, is from Sherwin Avenue at Halleck Street looking north. The foreground consists primarily of the vacant Successor Agency parcel which is covered with gravel and overgrown grass. UPRR signal infrastructure is located to the west of the Successor Agency parcel (over the UPRR tracks) and blocks a portion of the view of Bay Street Mall. A multi-story residential development is visible in the background at Powell Street east of the UPRR tracks. Existing building pads and remnants from remediation activities are visible on the site. The Novartis campus is visible beyond the project site including the parking structure and multi-story campus facilities as well as landscaping from the campus and landscaping along Horton Street. Views of the East Bay Hills are visible east of the Novartis campus in the background.

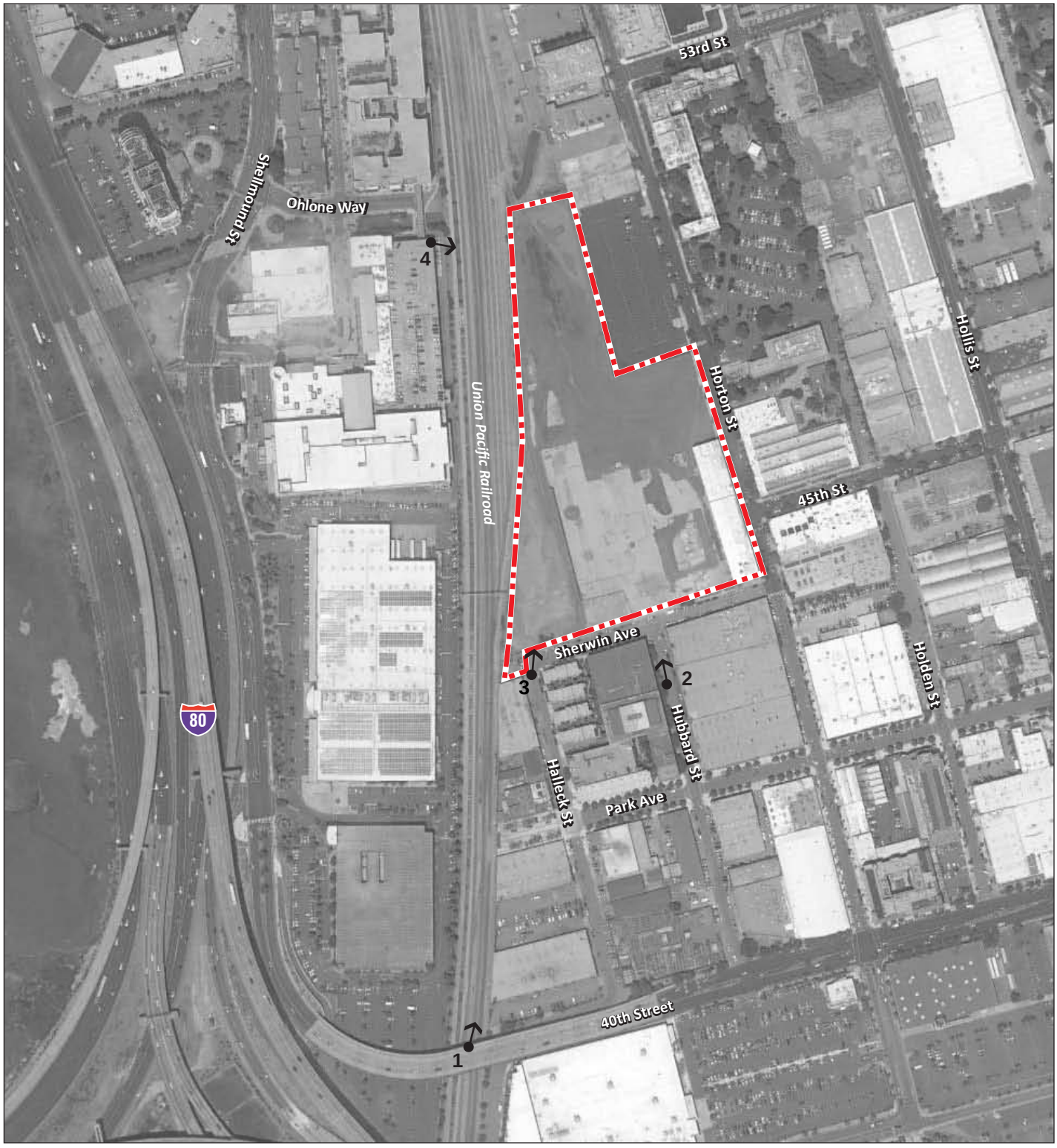
(4) Viewpoint 4. This viewpoint, shown in Figures IV.M-5 and IV.M-9, is from the Bay Street Mall parking garage looking southeast. Due to the location of the UPRR tracks and the tall, continuous development adjacent to the tracks, views of the project site from the northwest are limited to private residences and the Bay Street parking garages. From this viewpoint, overgrown grass, the existing building pads, remnants of remediation activities, and Building 1-31 are visible. The middle ground includes the Novartis surface parking lot and development within the District, notably the Emeryville Warehouse Lofts (the tallest building in the District). Oakland Civic Center and views of the East Bay Hills can be seen in the background.

f. Regulatory Setting. The following section describes applicable visual resource regulations including Emeryville General Plan policies, the Emeryville Municipal Code light and glare standards, and the Park Avenue District Plan policies.

(1) Emeryville General Plan. The General Plan's goals and policies that relate to visual resources are included in the Urban Design, Land Use, Open Space, and Conservation Elements.

Urban Design Element

- UD-G-11 Sky Exposure – Building form and massing that furthers sky exposure for adjacent sidewalks and public spaces, especially in gathering places such as the core and neighborhood centers.
- UD-G-12 Uninterrupted sunlight – During designated periods on all major parks.
- UD-P-3: Parks and open space shall be accessible and available to the public through site design standards for minimum size/dimensions, visibility, and location along public rights-of-way, particularly Green Streets (See Figure 5-3 of the General Plan).
- UD-P-10: In the Industrial District, transitions will be designed between industrial and residential uses, creating visual continuity through building materials and design, while allowing landscaping or other buffers between uses. Increased fenestration and ground floor entries will be required to maximize pedestrian safety and visibility.
- UD-P-13: The Park Avenue District Plan will continue to guide development in the Park Avenue District, honoring its unique civic, arts, and cultural amenities.
- UD-P-29: Public views of the San Francisco Bay and the East Bay hills shall be maintained.
- UD-P-30: Streetscape features should not block public views.
- UD-P-31: In the neighborhood centers and city parks flexibility should be provided in building massing so that sunlight is not blocked.
- UD-P-32: Buildings with light-colored finishes shall be encouraged, especially on upper floors and along narrow corridors such as Hollis Street. Standards for building reflectivity shall be maintained to maximize day-light on sidewalks and streets without causing glare.
- UD-P-33: Bulky and monolithic buildings shall be prevented through:
    - Vertical articulation, such as step backs at higher floors, and less floor area as heights increase to reduce the apparent bulk of buildings.
    - Horizontal articulation, such as varied setbacks, recessions/projections, change in materials, and building transparency, especially in Pedestrian Priority Zones.
- UD-P-37: Development of a finer-grain scale and texture shall be promoted citywide and required in portions of the North Hollis, Park Avenue, and San Pablo Avenue Districts, and around neighborhood centers.
- UD-P-39: New development should not cast significant shadow over existing development.
- UD-P-63: Motor vehicles and interior lighting should not be visible from the exterior of parking garages.



LSA

FIGURE IV.M-1

1 Visual Simulation Viewpoint Location and Direction

Project Site

N

0 200 400

FEET

Sherwin-Williams Project EIR

Visual Simulation Viewpoint Locations

SOURCES: ENVIRONMENTAL VISION; GOOGLE EARTH, APRIL 2015.

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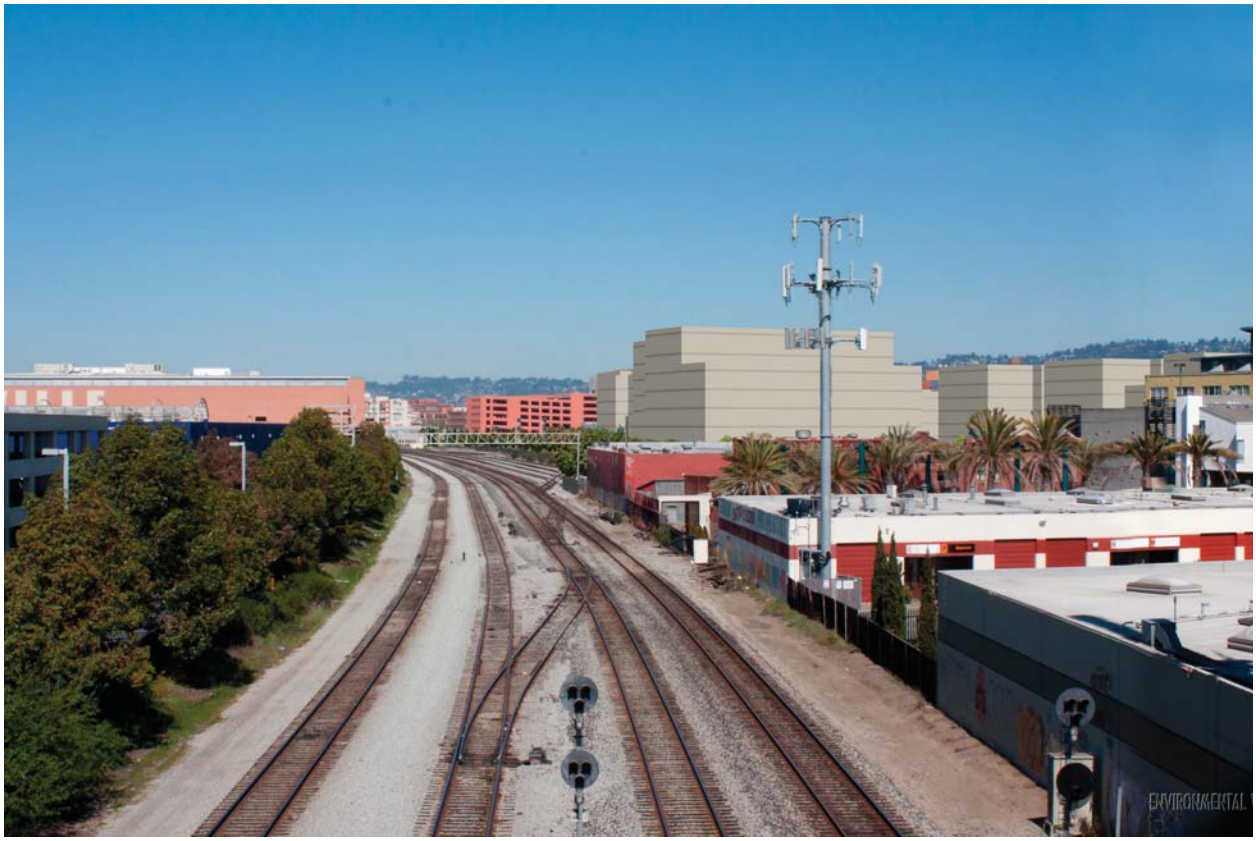
Viewpoint 1: Existing view from 40th Street Bridge, looking north



Visual simulation of Proposed Project - Option A

LSA

FIGURE IV.M-2

Sherwin-Williams Project EIR

Option A - Viewpoint 1:
40th Street Bridge, Looking North

SOURCE: ENVIRONMENTAL VISION, APRIL 16, 2015.

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Viewpoint 2: Existing view from Hubbard Street near Sherwin Avenue, looking northwest

Visual simulation of Proposed Project - Option A

LSA

FIGURE IV.M-3

Sherwin-Williams Project EIR

Option A - Viewpoint 2:
Hubbard Street Near Sherwin Avenue, Looking Northwest

SOURCE: ENVIRONMENTAL VISION, APRIL 16, 2015.

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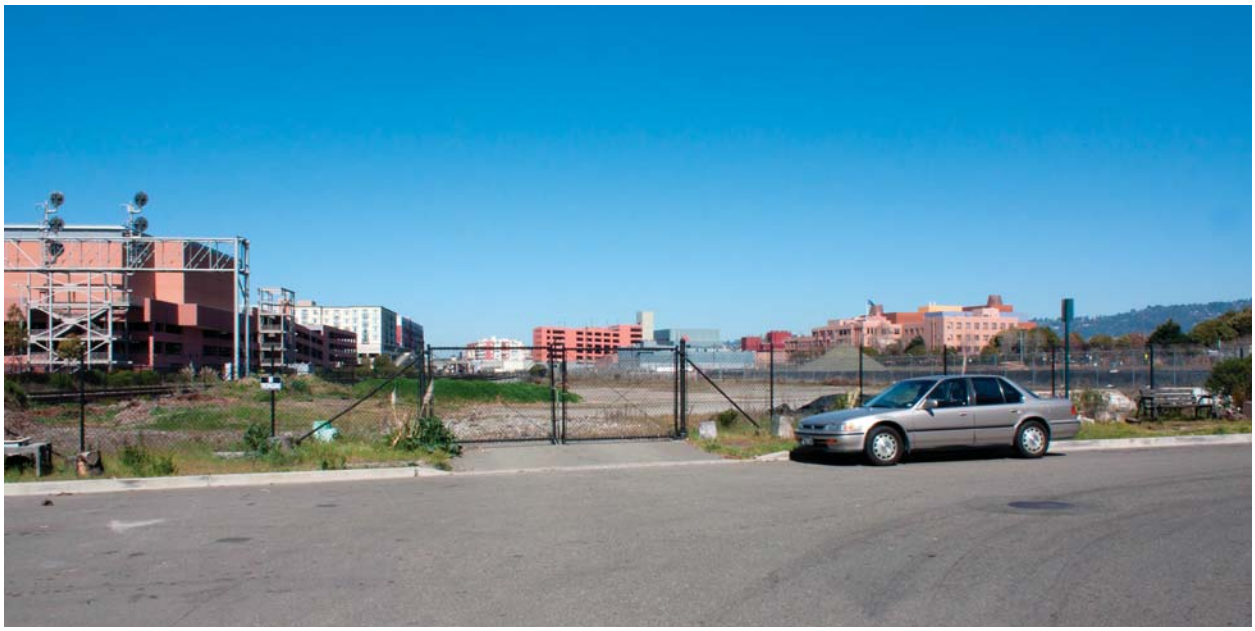

Viewpoint 3: Existing view from Halleck Street at Sherwin Avenue, looking north

Visual simulation of Proposed Project - Option A

LSA

FIGURE IV.M-4

Sherwin-Williams Project EIR

Option A - Viewpoint 3:
Halleck Street at Sherwin Avenue, Looking North

SOURCE: ENVIRONMENTAL VISION, APRIL 16, 2015.

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Viewpoint 4: Existing view from Bay Street Mall parking garage, looking southeast

Visual simulation of Proposed Project - Option A

LSA

FIGURE IV.M-5

Sherwin-Williams Project EIR

Option A - Viewpoint 4:
Bay Street Mall Parking Garage, Looking Southeast

SOURCE: ENVIRONMENTAL VISION, APRIL 16, 2015.

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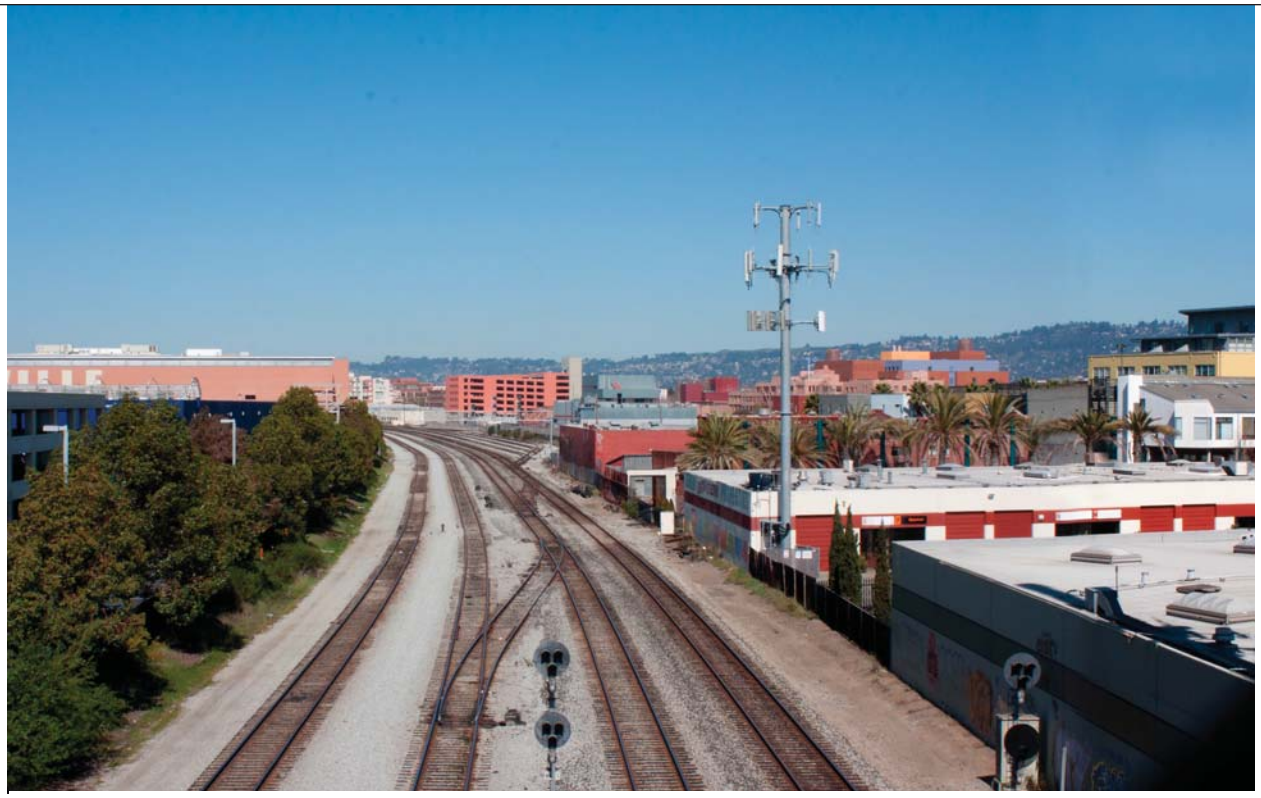
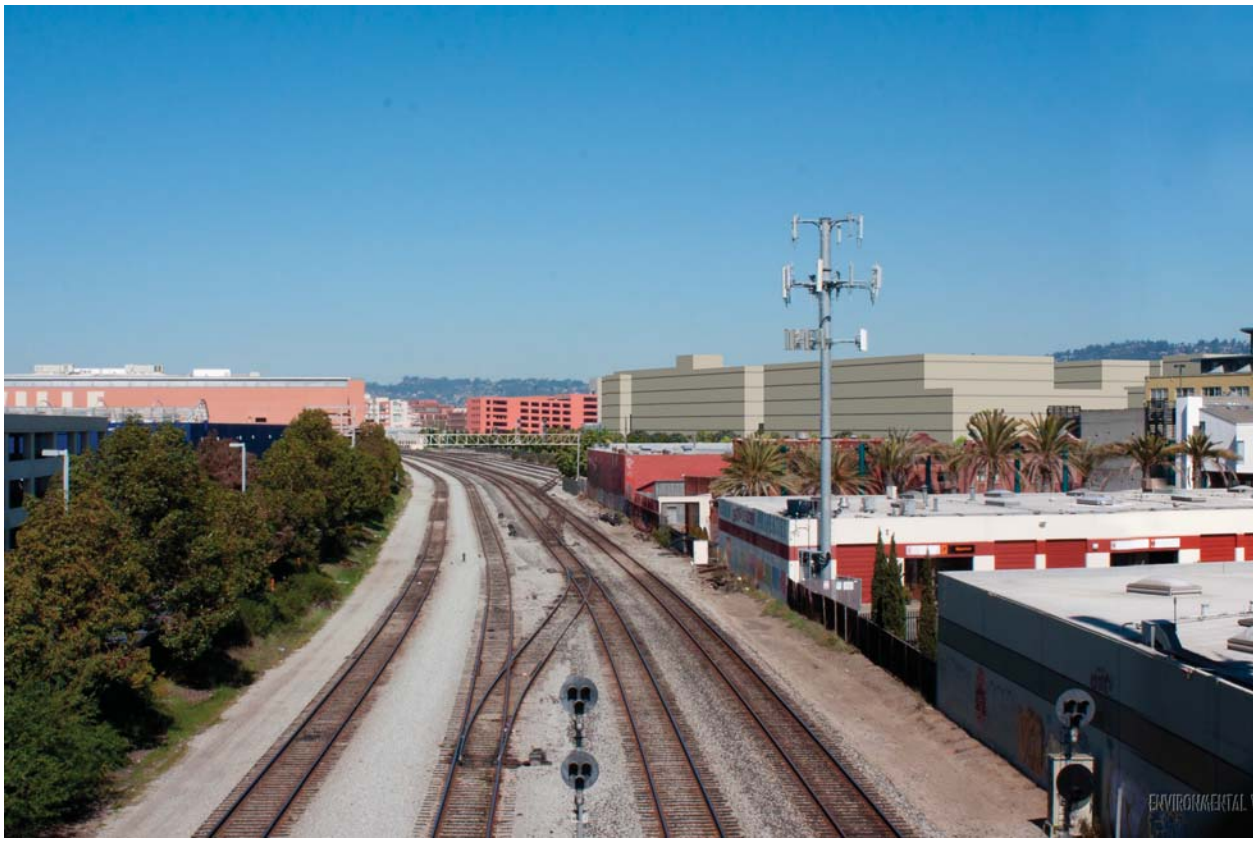


Viewpoint 1: Existing view from 40th Street Bridge, looking north



Visual simulation of Proposed Project - Option B

LSA

FIGURE IV.M-6

Sherwin-Williams Project EIR

Option B - Viewpoint 1:
40th Street Bridge, Looking North

SOURCE: ENVIRONMENTAL VISION, APRIL 16, 2015.

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Viewpoint 2: Existing view from Hubbard Street near Sherwin Avenue, looking northwest

Visual simulation of Proposed Project - Option B

LSA

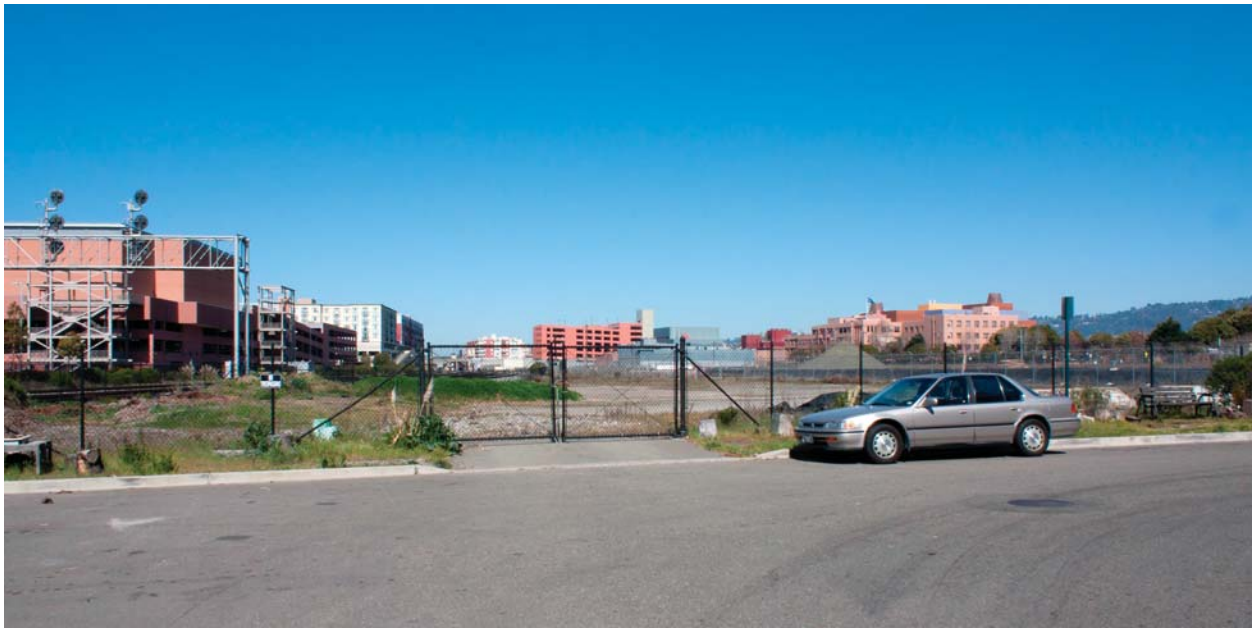
FIGURE IV.M-7

Sherwin-Williams Project EIR

Option B - Viewpoint 2:
Hubbard Street Near Sherwin Avenue, Looking Northwest

SOURCE: ENVIRONMENTAL VISION, APRIL 16, 2015.

I:\CEM1404 sherwin-williams\figures\Figures_IVM6-9-Option B.indd (5/13/15)



Viewpoint 3: Existing view from Halleck Street at Sherwin Avenue, looking north

Visual simulation of Proposed Project - Option B

LSA

FIGURE IV.M-8

Sherwin-Williams Project EIR

Option B - Viewpoint 3:
Halleck Street at Sherwin Avenue, Looking North

SOURCE: ENVIRONMENTAL VISION, APRIL 16, 2015.

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Viewpoint 4: Existing view from Bay Street Mall parking garage, looking southeast

Visual simulation of Proposed Project - Option B

LSA

FIGURE IV.M-9

Sherwin-Williams Project EIR

Option B - Viewpoint 4:
Bay Street Mall Parking Garage, Looking Southeast

SOURCE: ENVIRONMENTAL VISION, APRIL 16, 2015.

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Land Use Element

- LU-G-8: Uninterrupted sunlight in key areas – during designated periods on all major parks. Adequate sunlight on sidewalks and streets, especially in Neighborhood Centers and other key public gathering areas.
- LU-G-10: Maximum sky exposure – for streets and public spaces, and minimal view disruptions.

Parks, Open Space, Public Facilities, and Services Element

- PP-G-4: Sunlit parks—Public parks, plazas, and other open spaces that enjoy maximum sunlight access.
- PP-P-9: Shading of parks and green streets by buildings will be minimized.

Conservation, Safety, and Noise

- CSN-P-25: In order to reduce light pollution and use less energy, lighting (including on streets, recreational facilities, and in parking areas) should be designed to prevent artificial lighting from illuminating natural resources or adjacent residential neighborhoods.

(2) Emeryville Municipal Code. The Emeryville Municipal Code regulates lighting and illumination for new development. The policies listed below apply to the project and are considered standard conditions of approval.

9-4.705 Lighting and Illumination

- All exterior lighting shall be designed to confine direct rays to the premises. Not light fixture shall emit any direct light above a horizontal plane through the fixture. No spillover beyond the property line shall be permitted, except onto public thoroughfares; provided, however, that no such light shall cause a hazard to motorists.
- Exterior light fixtures attached to a building shall be designed as an integral part of the building and may highlight building forms and architectural details.
- All exterior lighting on a non-residential property shall be on a time clock or photo-sensory systems so as to be turned off during daylight hours and during any hours when the facility is not in use and the lighting is not required for security.
- All lighting shall meet any applicable energy efficiency requirements of the building regulating in Title 8.
- Outdoor lighting shall not include flickering or flashing lights.

9-5.1107 Light and Glare

- All lighting, reflective surfaces or any other sources of illumination shall be utilized in a manner which produces no glare on public streets or on any other parcel. Lights shall be shielded so as not to be directly visible from an adjoining residential property, except for low level lighting such as interior lights and porch lights.

(3) Park Avenue District Plan. The Park Avenue District is defined as Emeryville's historic center and is bound by 40th Street to the south, development along 45th Street to the north, the UPRR tracks to the west, and Emery Street to the east. The Park Avenue District Plan establishes goals and policies to create a vibrant neighborhood and preserve the District's identity. Policies related to visual resources project are provided below:

Urban Design

- Preserve buildings of moderate architectural significance (Tier 2) and especially buildings of high architectural significant (Tier 1).
- Maintain the existing height limits, except at the northern edge of the Sherwin Williams site, where taller buildings may be appropriate.
- Maintain the existing pattern of small land parcels and encourage the breaking up of larger blocks.
- Ensure that new buildings are compatible with the architectural patterns of the older brick and concrete industrial buildings.
- Encourage building design that promotes the creation of highly walkable and attractive places.

District Streets

- Provide sidewalks on all District streets.
- Place utilities, transformers, and other boxes underground wherever possible. Where this is not possible, boxes should be sited out of pedestrian paths and be compatible with building designs.
- Design lighting for pedestrian comfort and safety.
- Plant trees to improve the pedestrian environment.
- Provide unified family of street furniture.
- Provide amenities, such as bike parking, benches, and bus stops with shelters.
- Ensure any encroachments help make the street attractive, functional and social while leaving ample space for walking.
- Include art in design of District infrastructure (such as sidewalks, building walls, benches, bus shelters).

Open Space

- Provide a park or parks north of Sherwin Avenue and west of Horton Street.

2. Impacts and Mitigation Measures

The following section presents a discussion of the visual resources impacts that could result from implementation of the proposed project. The section begins with the criteria of significance, which establish the thresholds to determine if an impact is significant. The latter part of this section presents the impacts associated with implementation of the proposed project and the recommended mitigation measures, if required.

a. Criteria of Significance. Development of the proposed project would result in a significant impact related to visual resources if it would:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway;
- Substantially degrade the existing visual character or quality of the site and its surroundings; or
- Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area; or
- Create new shadow in a manner that substantially affects outdoor recreation facility or other public areas.

b. Project Impacts. The following discussion describes the potential impacts related to existing visual resources that would result from implementation of the proposed project. The applicant is proposing two potential development options (Option A and Option B) and given that the massing and height for the new buildings would be different, the analysis for visual and shadow impacts has been separated into discussions for the two options where appropriate.

(1) Scenic Vistas The project site is generally flat and is completely surrounded by urban development, which generally includes modern multi-story mixed-use buildings, historic industrial buildings, and railroad tracks. The City's Urban Design element identifies views of the Bay and East Bay Hills as important because they provide visual context within the City and a sense of expansiveness within its urban environment. The East Bay Hills are somewhat visible from views within the surrounding vicinity. Viewpoints 1, 3, and 4 depict existing views through the site that include portions of the East Bay Hills. Viewpoint 1 (Shown in Figures IV.M-2 (Option A) and IV.M-6 (Option B)) depicts the existing view from 40th Street Bridge looking north. Although obstructed by the Novartis campus, distant views of the East Bay Hills are visible from Viewpoint 1 between Bay Street Mall and the Emeryville Lofts. Viewpoint 3 (Shown in Figures IV.M-4 and IV.M-8) depicts the site at the intersection of Halleck Street and Sherwin Avenue. Very limited views of the East Bay Hills are visible at ground level to the west of the Novartis campus from Viewpoint 3. Viewpoint 4 (Shown in Figures IV.M-5 and IV.M-9) depicts views of the site from the Bay Street Mall parking garage looking southeast which shows views of a small portion of the East Bay Hills beyond the project site.

Option A. Views of the East Bay Hills from the Viewpoint 1, Viewpoint 3, and Viewpoint 4 would be impacted by the proposed Option A development. Option A would partially obstruct views of the East Bay Hills from Viewpoint 1, 40th Street Bridge. More limited views of the hills would be

available from this viewpoint after project construction. Views of the East Bay Hills depicted in Viewpoint 3 would be entirely blocked by the proposed project. The proposed development would also block views of the East Bay Hills that currently exist at Viewpoint 4, Bay Street Mall. While intermittent views of the East Bay Hills would be available around the perimeter of the property and from within the development, given the massing and height constructed with the structure, views to the East Bay Hills would be reduced.

Option B. Views of the East Bay Hills from the Viewpoint 1, Viewpoint 3, and Viewpoint 4 would be impacted by the proposed development. Option B would partially obstruct views of the East Bay Hills from Viewpoint 1, 40th Street Bridge. Limited views of the hills would be available from this viewpoint. Views of the East Bay Hills depicted in Viewpoint 3 would be entirely blocked by the proposed project. The proposed development would block views of the East Bay Hills that currently exist in Viewpoint 4, Bay Street Mall. While intermittent views of the East Bay Hills would be available around the perimeter of the property and from within the development, given the massing and height constructed with the structure, views to the East Bay Hills would be reduced.

In all of these views, the small portion of the East Bay Hills that can be seen would be slightly (in the case of Viewpoint 1) to severely (in the case of Viewpoints 3 and 4) obstructed by proposed development under Option A or Option B. However, because views of the East Bay Hills are already very limited from these viewpoints by existing development and public views of the hills would continue to be readily available from streets and parks in the vicinity of project, this impact is considered less-than-significant.

(2) Scenic Resources. No officially designated State Scenic Highways is located within Emeryville.[1] The closest State designated Scenic Highway is a portion of I-580 that runs from San Leandro city limit to State Route 24 in Oakland. Although, the I-580 Scenic Route is located 1.34 miles away from the project site, no portions of the proposed development (either Option A or B) would be within the viewshed of a State Scenic Highway. Therefore, development of the proposed project would not damage scenic resources within a State Scenic Highway and no impact would result.

(3) Visual Character. The following analysis is applicable to both development options and the identified impacts could result from either project option. Development of the proposed project would alter the visual character of the project site through the construction of five new buildings and associated open spaces and roadways. The project site is located within the District which is defined by historic industrial buildings and narrow, tree-lined streets.

Although once developed as an industrial manufacturing complex, the project site now consists primarily of vacant land. The Sherwin-Williams Building 1-31 is the only existing structure on the site and is located in the eastern portion of the site along Horton Street and Sherwin Avenue. Existing foundation slabs from buildings that were previously demolished remain and can be seen on the site. The proposed development would be within the scale and form of the more recent development within the area including Bay Street Mall and the Emeryville Warehouse Lofts to the west. The

[1] California Department of Transportation, 2011. California Scenic Highway Program. Website: www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm

rehabilitation of the Sherwin-Williams Building 1-31 into offices would be consistent the District character and scale.

Development of the proposed project would result in the addition of residential, commercial, and office uses replacing underutilized land and the rehabilitation and reuse of a vacant industrial building. The addition of five new buildings and the rehabilitation of the existing Sherwin-Williams Building 1-31 would not degrade the existing visual characteristics of the area, and would improve the visual character of the site.

The new residential population added to the site would increase pedestrian activity and vibrancy of the neighborhood. The proposed project includes landscaping, development of a central plaza and a park with sports courts, adult fitness, and a children's playground all of which would improve pedestrian activity and the aesthetic character of the project site. Additionally, a bicycle and pedestrian path is proposed to run adjacent to the railroad tracks which would be screened by a row of trees. While the proposed development would alter the visual character of the site, either project option would not degrade the existing visual character and quality of the site, as the development is compatible in scale and style with new development in the District and local vicinity. The proposed project would result in a less-than-significant impact related to visual character.

(4) Light and Glare. The following analysis is applicable to both development options of the proposed project. The proposed development would include both indoor and outdoor lighting for the five new buildings and improve outdoor lighting for the existing building for safety purposes. The proposed roadways, central plaza, recreational facilities, and parks and pathways would also include outdoor lighting for safety purposes. These new sources of light would be visible from a distance at night; however the addition of new light sources associated with the proposed project would be consistent with existing lighting found in surrounding development. The proposed project would be required to comply with Section 9-4.705 of the Municipal Code prior to building permit issuance which would ensure that light and glare created by the proposed development would be minimized and would be consistent to that of surrounding development. Compliance with existing lighting standards would reduce the proposed project's light and glare impacts to a less-than-significant level.

(5) Shade and Shadow. Shade and shadow impacts occur when a structure's height or its width (or combination of these two characteristics) reduces the access to sunlight from a public open space area. It should be remembered that in a built environment like the project area, nearly all land use creates shade for others and, in turn, are subject to shade and shadows from neighboring structures.

Development of the proposed project would result in the construction of five new buildings. The building heights of the existing and proposed structures are shown in Table IV.M-1 and range from 42 feet to 100 feet in height. The first part of this subsection describes where new shadow may occur during various times and days throughout the year. The following section provides a shadow analysis that identifies potential impacts to the following two areas most sensitive to shadow:

Table IV.M-1: Project Building Heights

Parcel	Height (in feet)
Parcel A (Existing Building 1 and 31)	42
Parcel B-1	75 (55 at Sherwin Avenue Frontage)
Parcel B-2	75 (55 at Horton Street Frontage)
Parcel C-1	75 (55 at Sherwin Avenue Frontage)
Parcel C-2	75
Parcel D	100

Source: Roma Design Group, November 2014.

open spaces and solar collectors. Refer to Figures IV.M-10 through IV.M-18 for Option A and Figures IV.M-19 through IV.M-27 for Option B diagrams of the shadow analysis.

Shadow pattern simulations (Figures IV.M-10 through IV.M-27) depicting existing conditions surrounding the project site were prepared by Environmental Vision for the following dates: June 21 (the summer solstice when the sun is at its highest point in the sky); December 21 (the winter solstice, when the sun is at its lowest point in the sky); September 21 (the fall equinox, when the day and night are approximately the same lengths). A shadow pattern simulation for March 21(the spring equinox) was not prepared because the shadows on this day are comparable to shadows on September 21. Therefore, September 21 and March 21 are grouped and analyzed together. Simulations were prepared for three times during each day: 9:00 a.m. (morning); 12:00 p.m. (noon); and 3:00 p.m. (afternoon). The shadow simulations assume sunny conditions, and do not take into account fog or overcast conditions.

Existing shadows in the vicinity of the project site are cast from the two- to eight- story residential, industrial, and mixed-use buildings that surround the project site.

- **June 21**. On June 21, shadows cast by existing buildings in the vicinity of the project site are the most limited of the four seasonal periods examined since the sun is at its highest location in the sky. No shadows from existing buildings in the vicinity fall on parks or public open space.
- **September 21/March 21**. On September 21 and March 21, shadow length cast by the existing buildings in the vicinity of the project site are average in size. No shadows from existing buildings in the vicinity fall on parks or public open space.
- **December 21**. On December 21, shadows cast by existing buildings in the vicinity of the project site cover a large portion of the area in the morning and afternoon. Existing shadows from Sherwin-Williams Building 31-1 fall on the Artist Co-op building during the afternoon.

LSA

FIGURE IV.M-10

Project Buildings

Project Boundary

Existing Shadow

Net New Project Shadow

0 100 200
FEET

Sherwin-Williams Project EIR

Project Shadow Patterns - Option A

June 21, 9:00 a.m. PDT

SOURCE: ENVIRONMENTAL VISION, APRIL 20, 2015.

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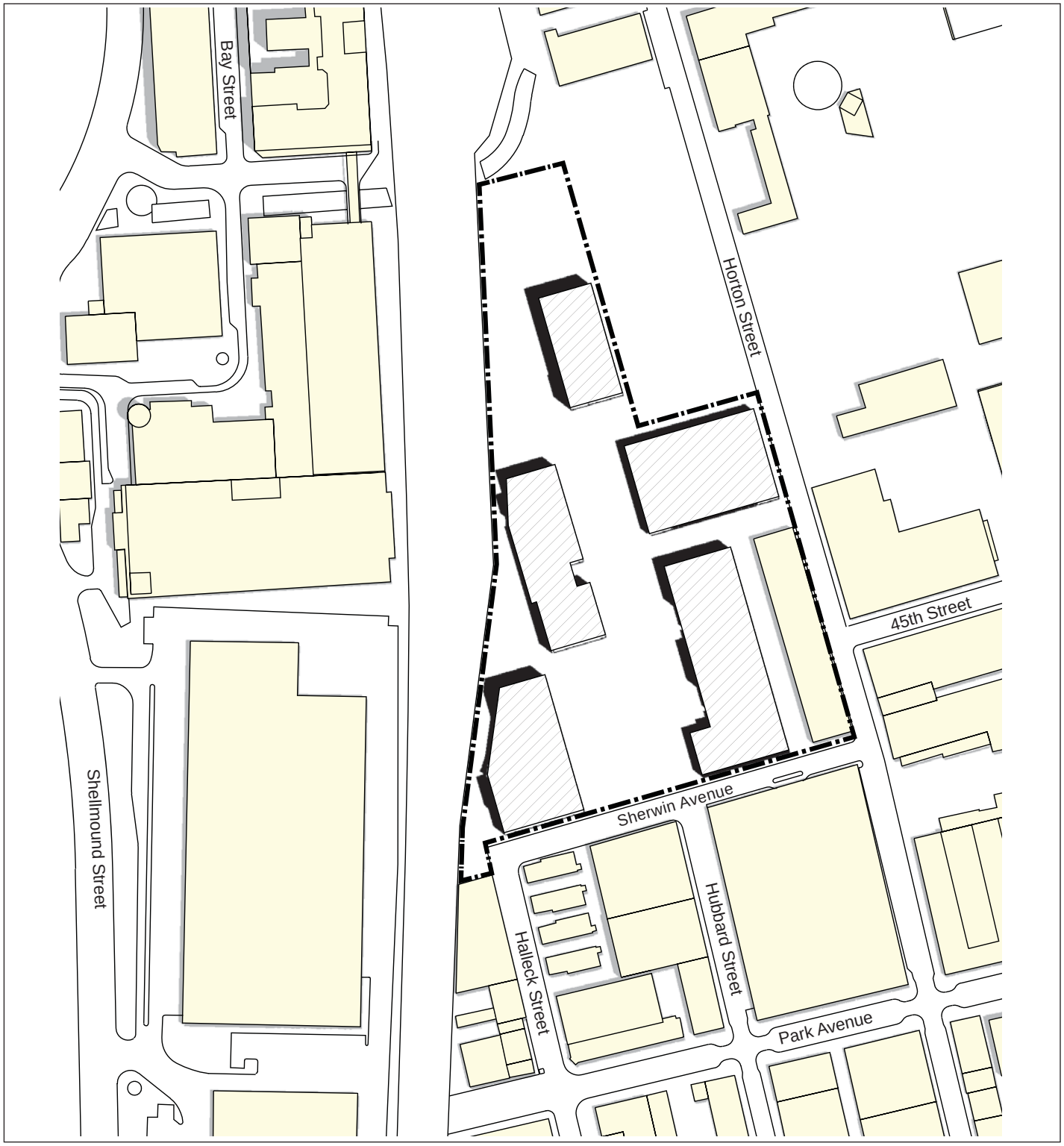


LSA

FIGURE IV.M-11

Project Buildings

Project Boundary

Existing Shadow

Net New Project Shadow

0 100 200
FEET

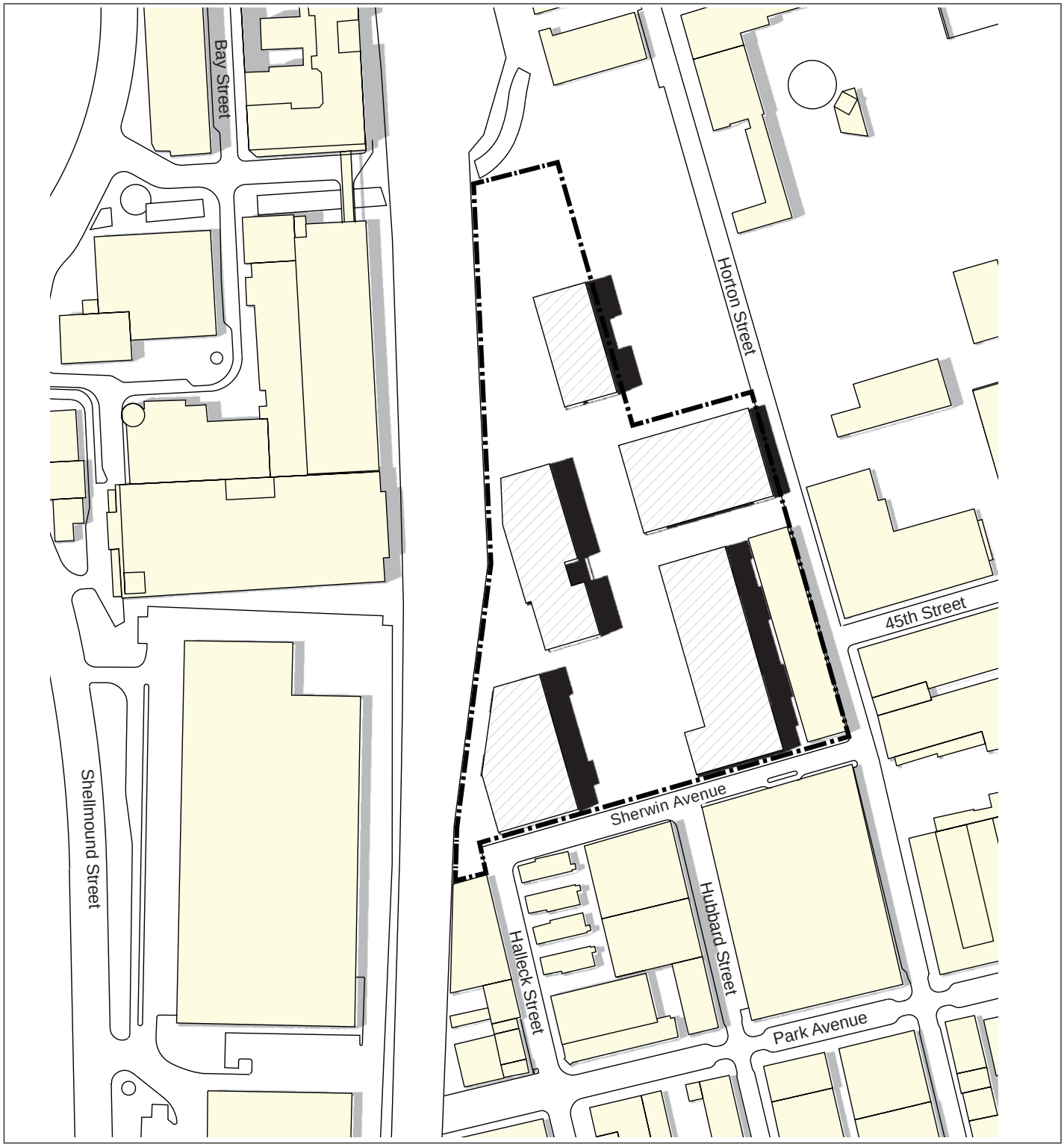
Sherwin-Williams Project EIR

Project Shadow Patterns - Option A

June 21, 12:00 noon PDT

SOURCE: ENVIRONMENTAL VISION, APRIL 20, 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVM11.ai (5/13/15)



LSA

FIGURE IV.M-12

Project Buildings

Project Boundary

Existing Shadow

Net New Project Shadow

N

0 100 200
FEET

Sherwin-Williams Project EIR

Project Shadow Patterns - Option A
June 21, 3:00 p.m. PDT

SOURCE: ENVIRONMENTAL VISION, APRIL 20, 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVM12.ai (5/13/15)

LSA

FIGURE IV.M-13

Project Buildings

Project Boundary

Existing Shadow

Net New Project Shadow

N

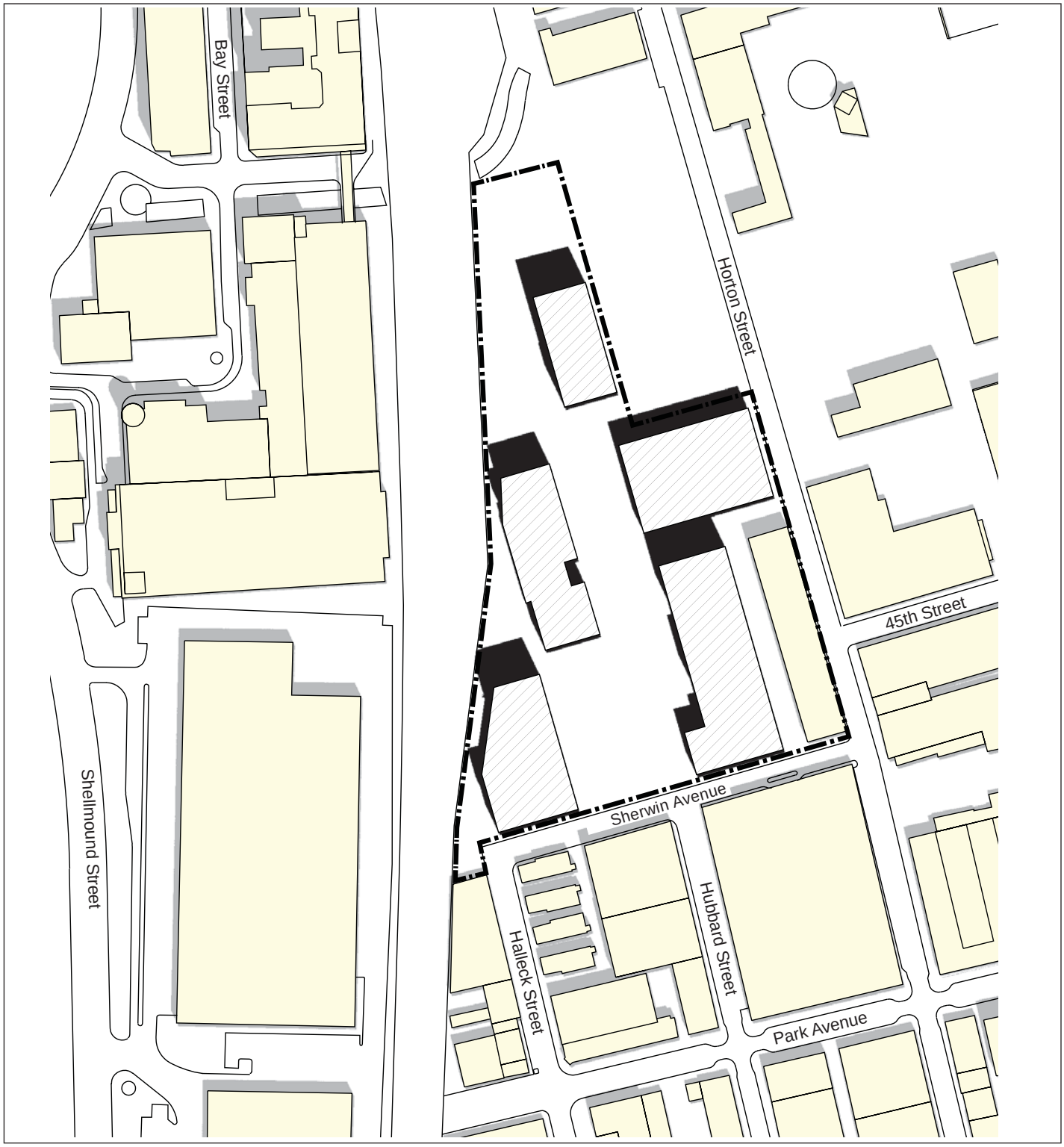
0 100 200
FEET

Sherwin-Williams Project EIR

Project Shadow Patterns - Option A
September 21, 9:00 a.m. PDT

SOURCE: ENVIRONMENTAL VISION, APRIL 20, 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVM13.ai (5/13/15)



LSA

FIGURE IV.M-14

Project Buildings

Project Boundary

Existing Shadow

Net New Project Shadow

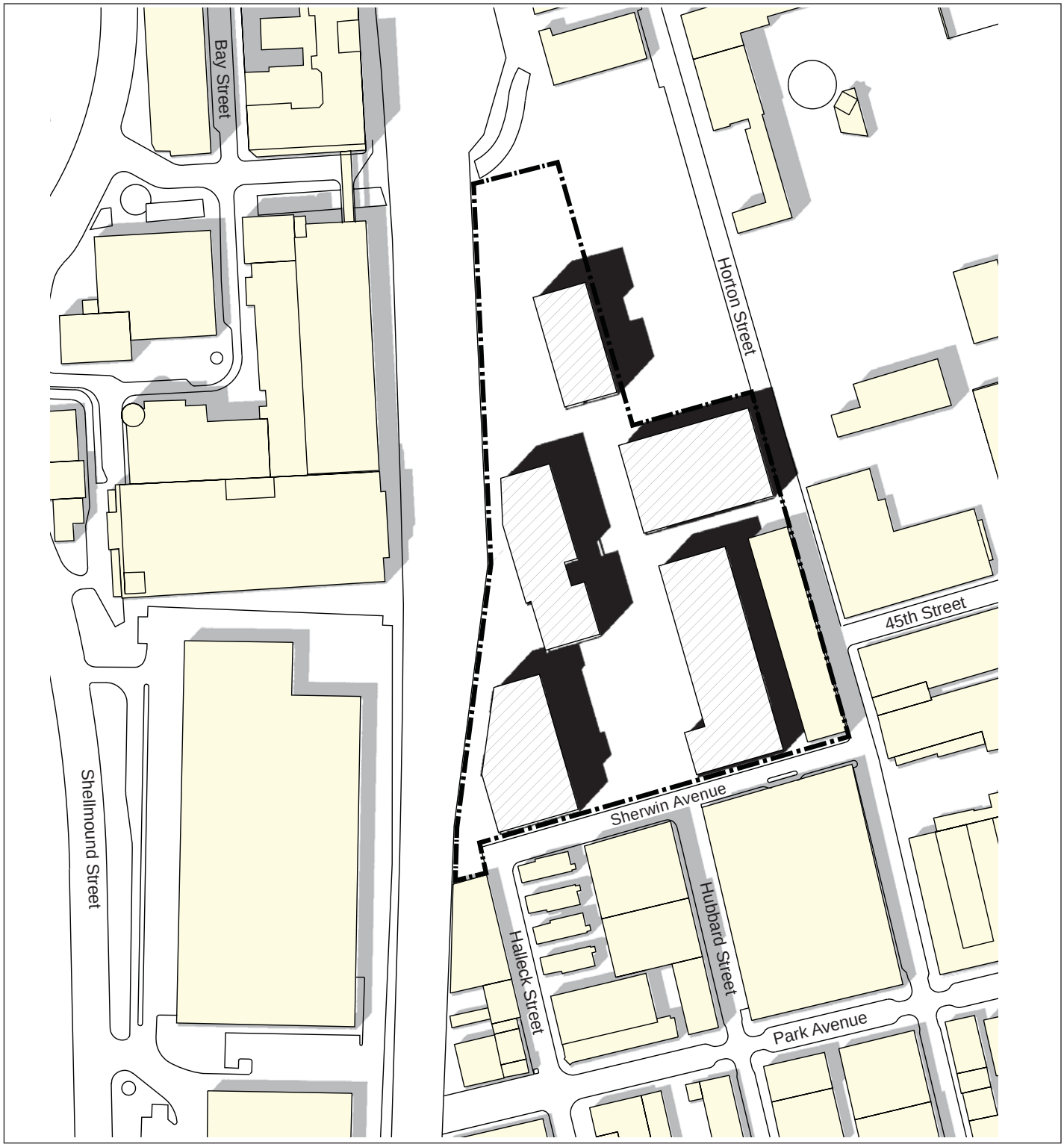
0 100 200
FEET

Sherwin-Williams Project EIR

Project Shadow Patterns - Option A
September 21, 12:00 noon PDT

SOURCE: ENVIRONMENTAL VISION, APRIL 20, 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVM14.ai (5/13/15)



LSA

FIGURE IV.M-15

Project Buildings

Project Boundary

Existing Shadow

Net New Project Shadow

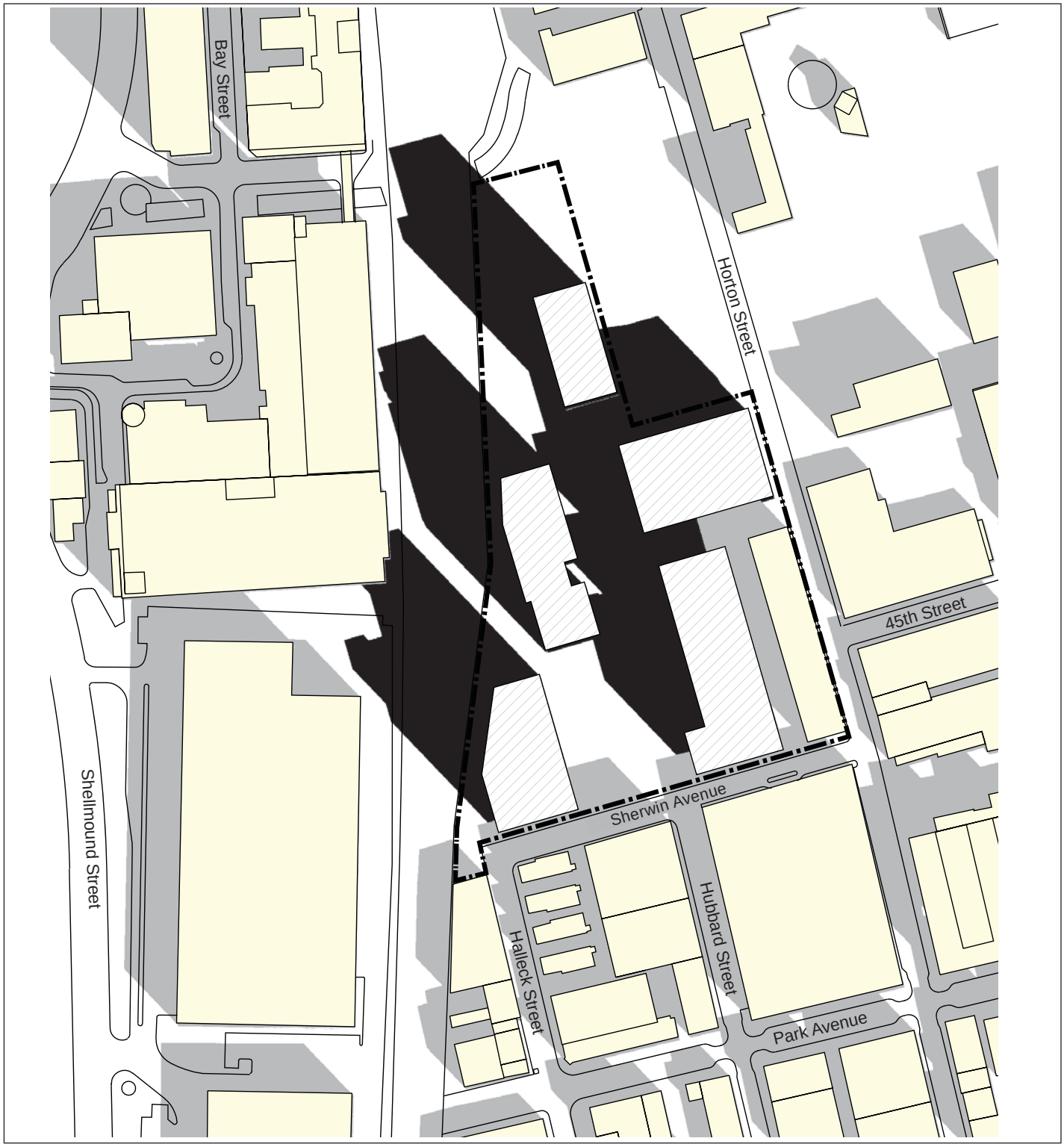
0 100 200
FEET

Sherwin-Williams Project EIR

Project Shadow Patterns - Option A
September 21, 3:00 p.m. PDT

SOURCE: ENVIRONMENTAL VISION, APRIL 20, 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVM15.ai (5/13/15)



LSA

FIGURE IV.M-16

Project Buildings

Project Boundary

Existing Shadow

Net New Project Shadow

N

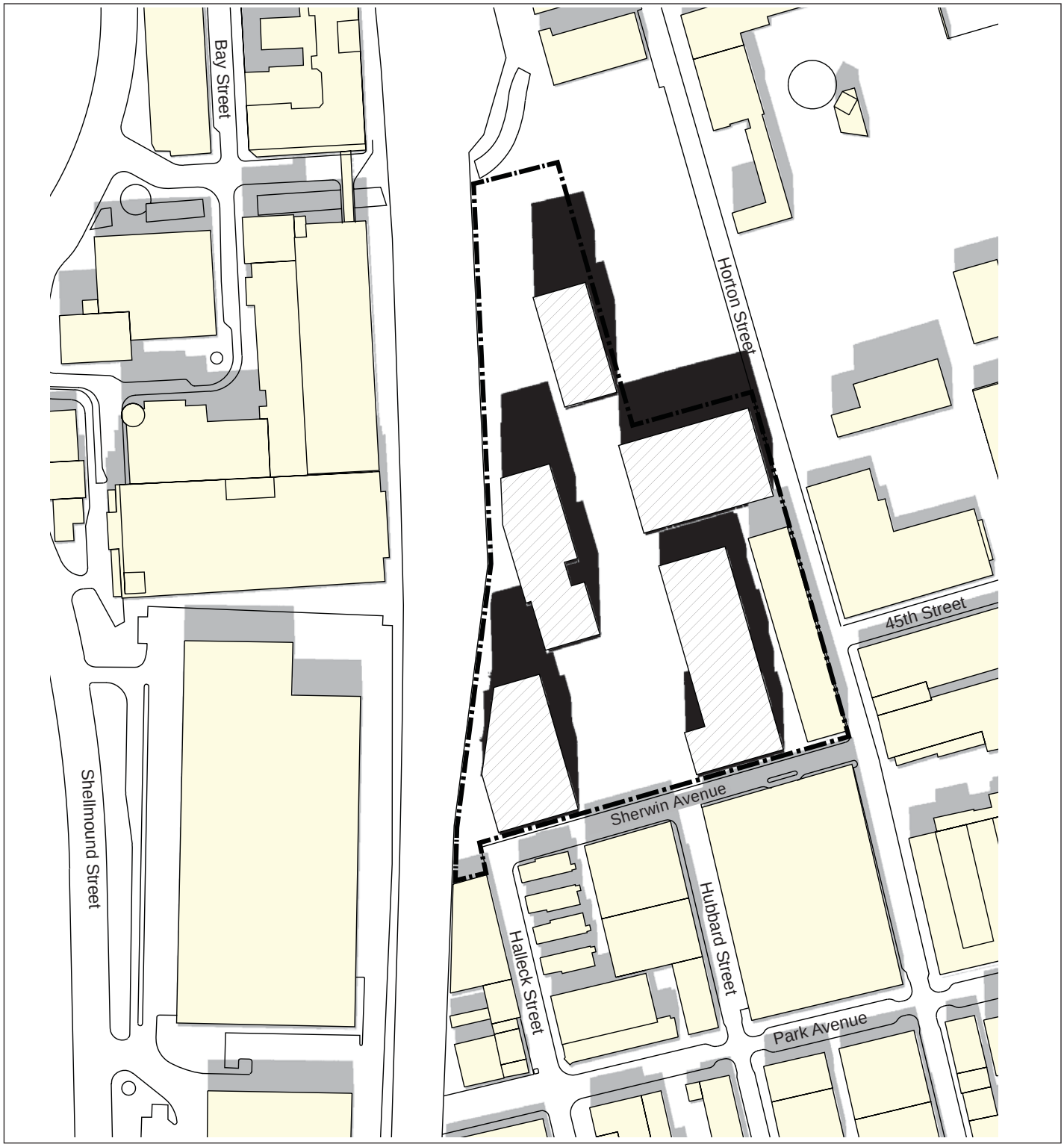
0 100 200
FEET

Sherwin-Williams Project EIR

Project Shadow Patterns - Option A
December 21, 9:00 a.m. PDT

SOURCE: ENVIRONMENTAL VISION, APRIL 20, 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVM16.ai (5/13/15)



LSA

FIGURE IV.M-17

Project Buildings

Project Boundary

Existing Shadow

Net New Project Shadow

0 100 200
FEET

Sherwin-Williams Project EIR

Project Shadow Patterns - Option A
December 21, 12:00 noon PDT

SOURCE: ENVIRONMENTAL VISION, APRIL 20, 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVM17.ai (5/13/15)

LSA

FIGURE IV.M-18

Project Buildings

Project Boundary

Existing Shadow

Net New Project Shadow

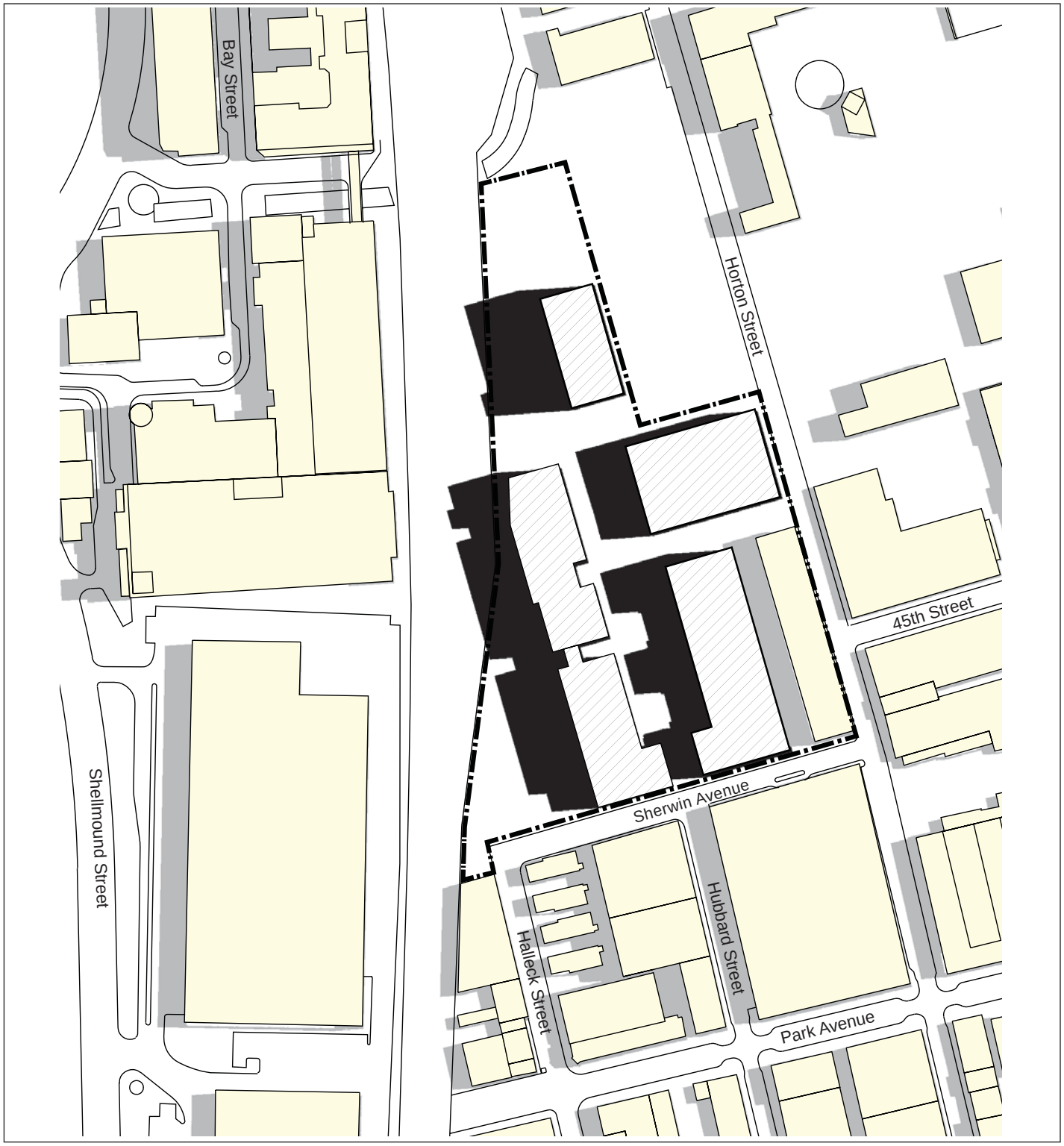
0 100 200
FEET

Sherwin-Williams Project EIR

Project Shadow Patterns - Option A
December 21, 3:00 p.m. PDT

SOURCE: ENVIRONMENTAL VISION, APRIL 20, 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVM18.ai (5/13/15)



LSA

FIGURE IV.M-19

Project Buildings

Project Boundary

Existing Shadow

Net New Project Shadow

0 100 200
FEET

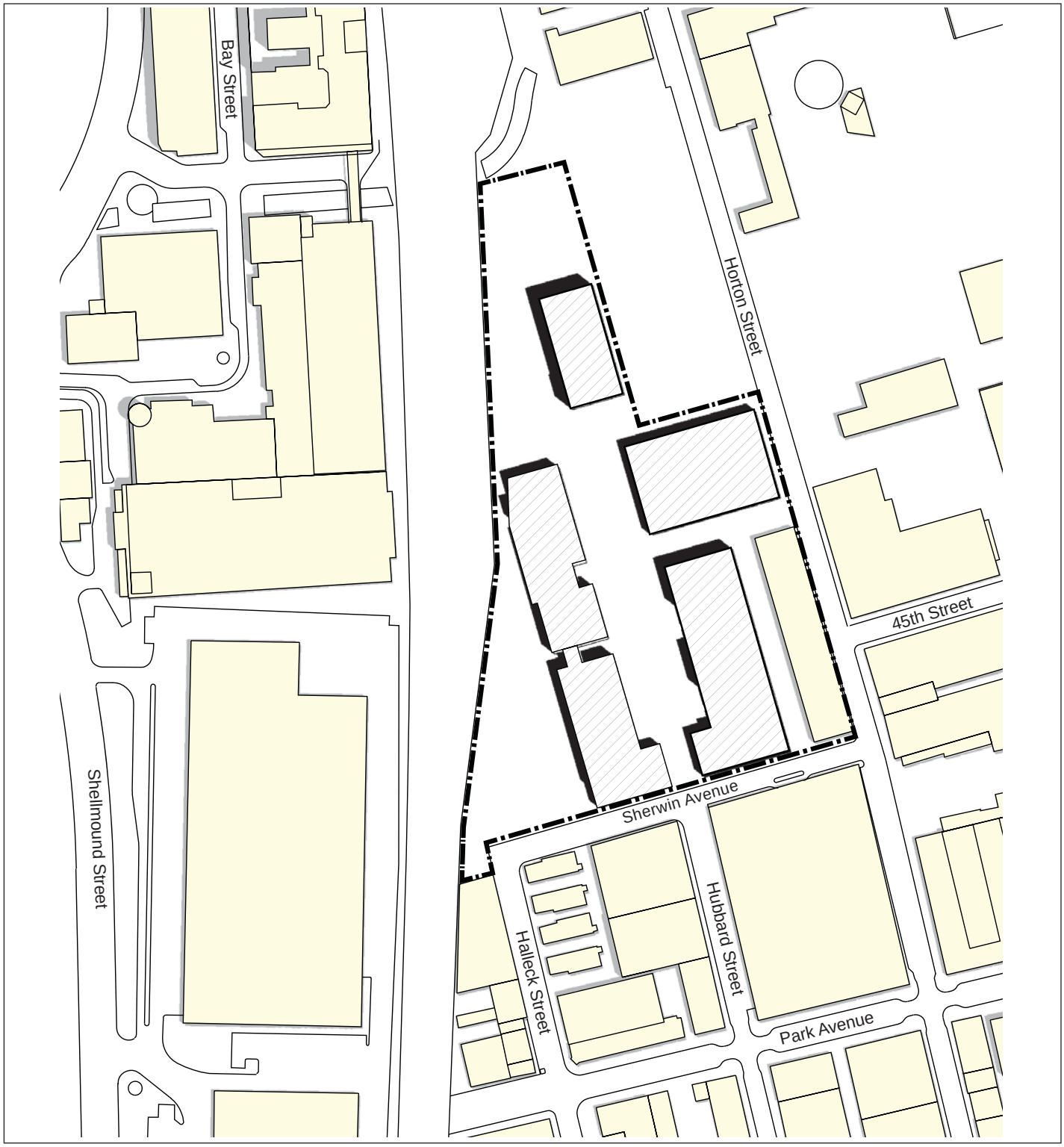
Sherwin-Williams Project EIR

Project Shadow Patterns - Option B

June 21, 9:00 a.m. PDT

SOURCE: ENVIRONMENTAL VISION, APRIL 20, 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVM19.ai (5/13/15)



LSA

FIGURE IV.M-20

Project Buildings

Project Boundary

Existing Shadow

Net New Project Shadow

0 100 200
FEET

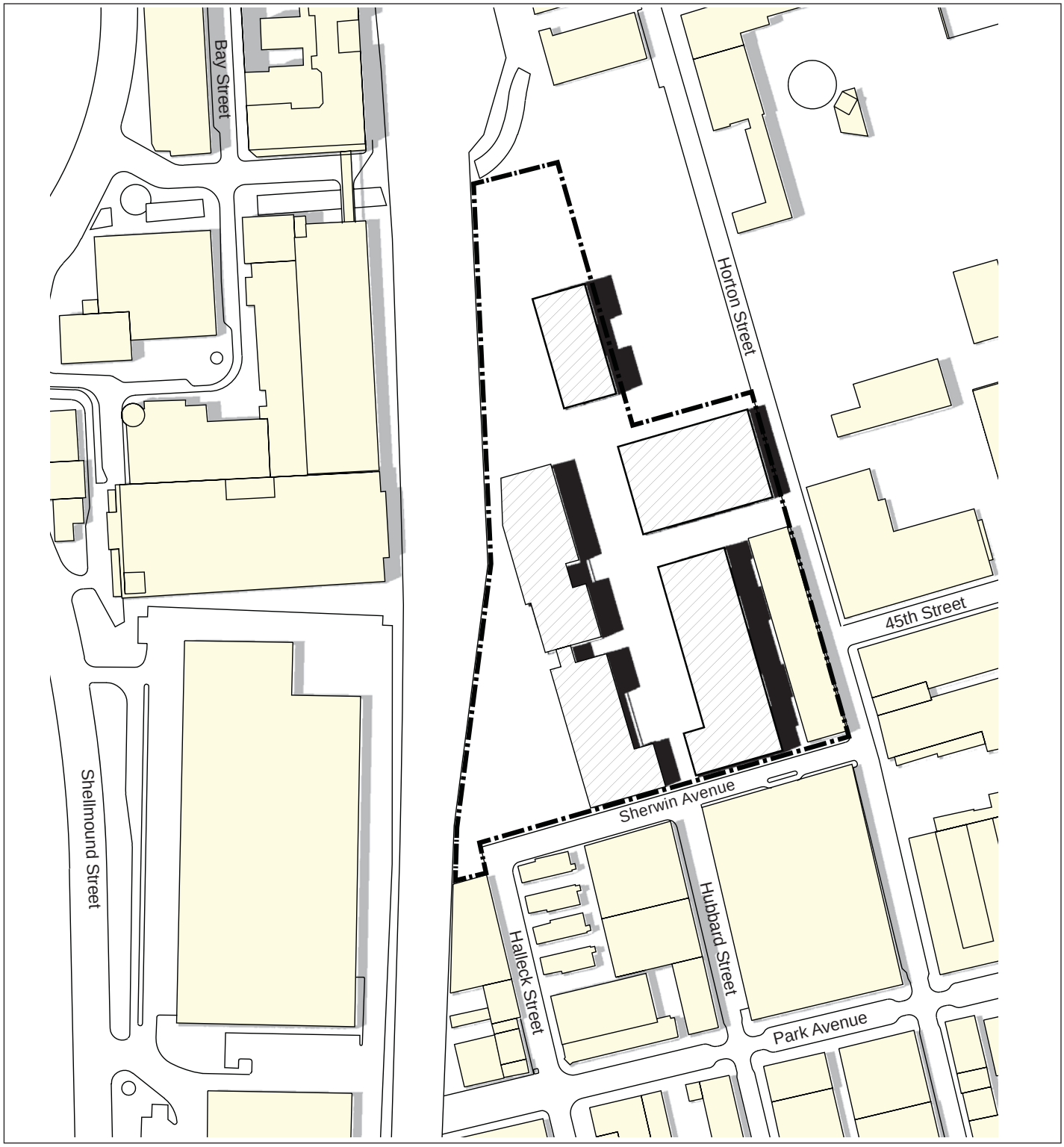
Sherwin-Williams Project EIR

Project Shadow Patterns - Option B

June 21, 12:00 noon PDT

SOURCE: ENVIRONMENTAL VISION, APRIL 20, 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVM20.ai (5/13/15)



LSA

FIGURE IV.M-21

Project Buildings

Project Boundary

Existing Shadow

Net New Project Shadow

0 100 200
FEET

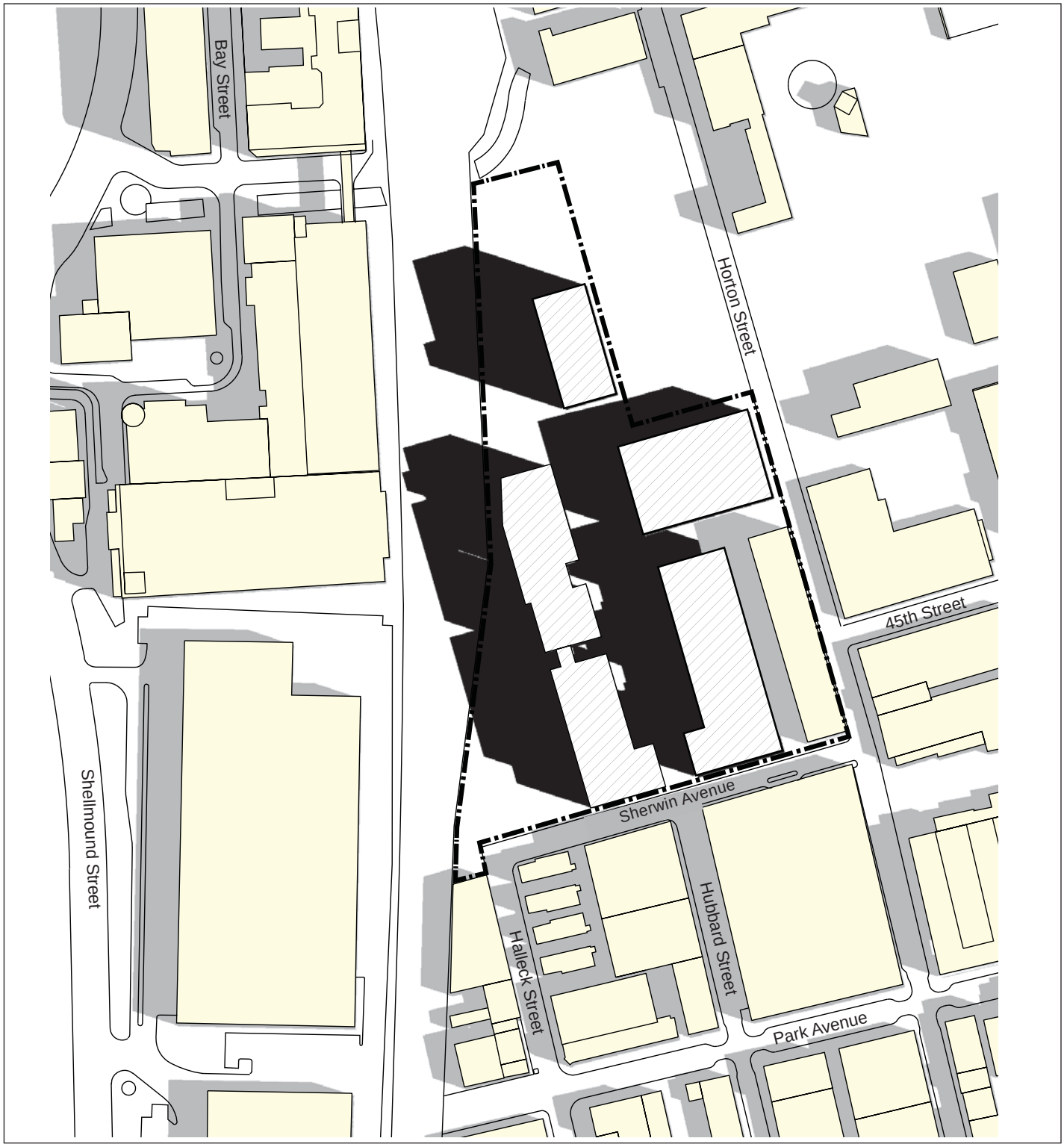
Sherwin-Williams Project EIR

Project Shadow Patterns - Option B

June 21, 3:00 p.m. PDT

SOURCE: ENVIRONMENTAL VISION, APRIL 20, 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVM21.ai (5/13/15)



LSA

FIGURE IV.M-22

Project Buildings

Project Boundary

Existing Shadow

Net New Project Shadow

N

0 100 200
FEET

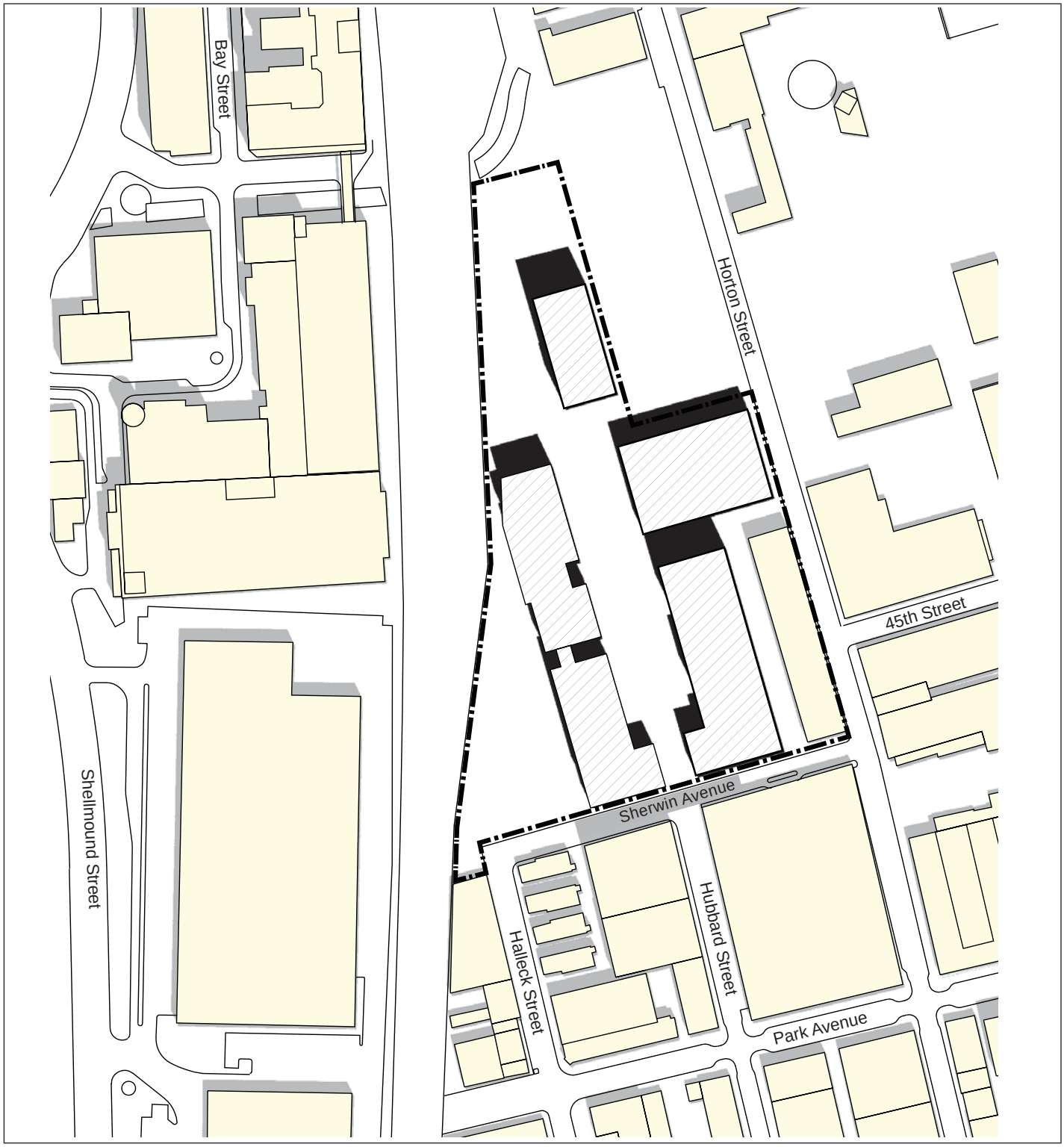
Sherwin-Williams Project EIR

Project Shadow Patterns - Option B

September 21, 9:00 a.m. PDT

SOURCE: ENVIRONMENTAL VISION, APRIL 20, 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVM22.ai (5/139/15)



LSA

FIGURE IV.M-23

Project Buildings

Project Boundary

Existing Shadow

Net New Project Shadow

N

0 100 200

FEET

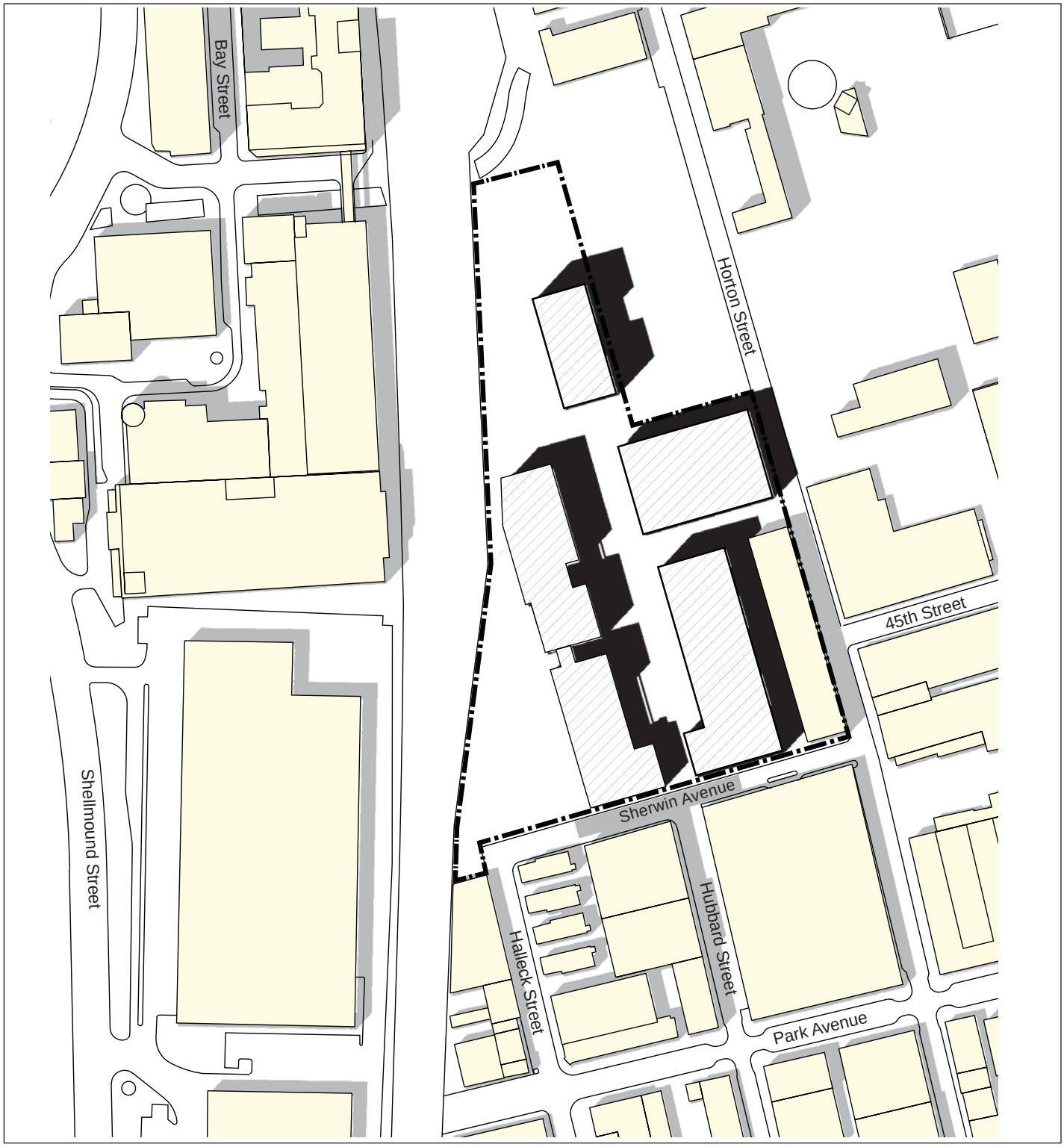
Sherwin-Williams Project EIR

Project Shadow Patterns - Option B

September 21, 12:00 noon PDT

SOURCE: ENVIRONMENTAL VISION, APRIL 20, 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVM23.ai (5/13/15)



LSA

FIGURE IV.M-24

Project Buildings

Project Boundary

Existing Shadow

Net New Project Shadow

N

0 100 200

FEET

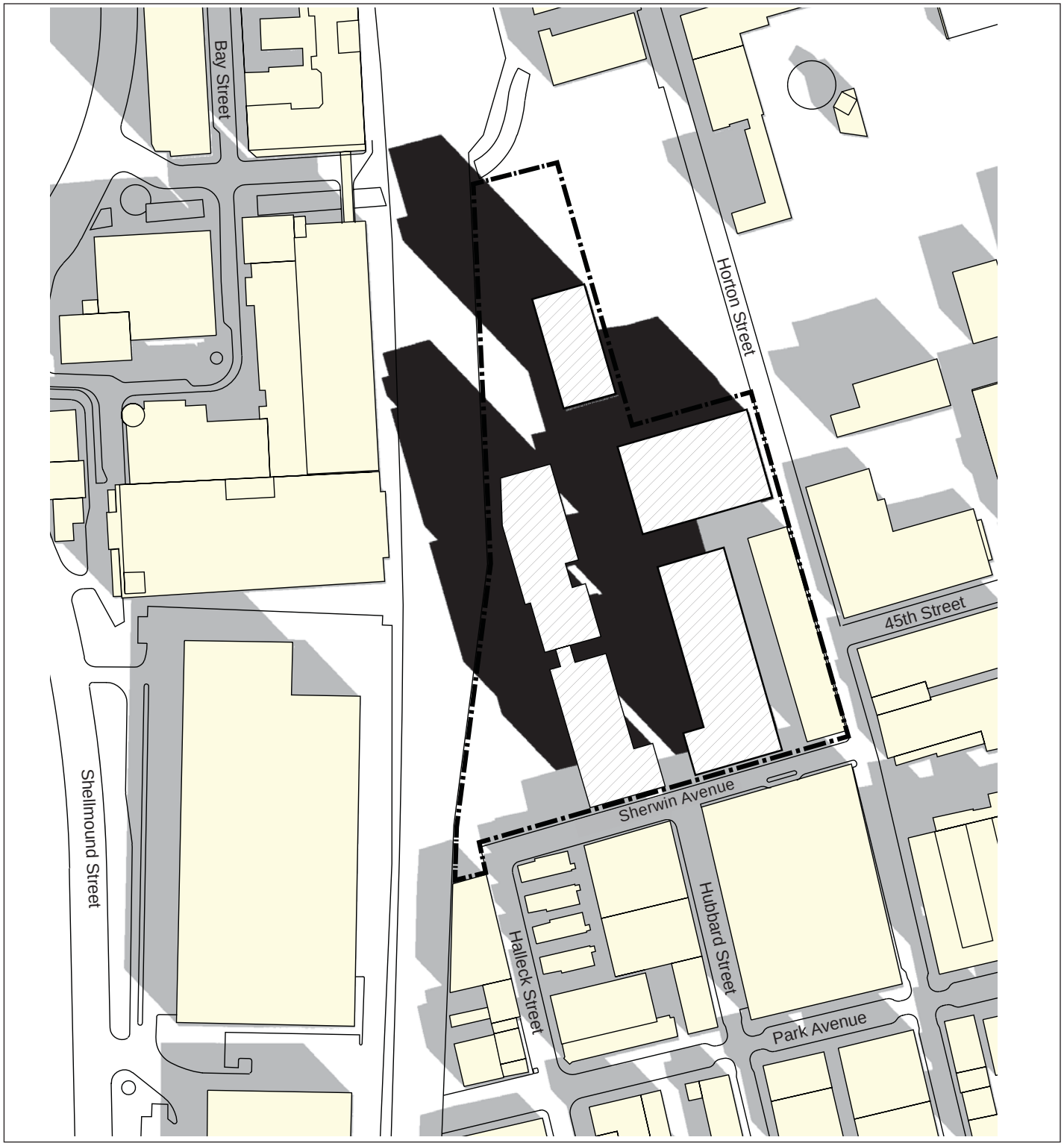
Sherwin-Williams Project EIR

Project Shadow Patterns - Option B

September 21, 3:00 p.m. PDT

SOURCE: ENVIRONMENTAL VISION, APRIL 20, 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVM24.ai (5/13/15)



LSA

FIGURE IV.M-25

Project Buildings

Project Boundary

Existing Shadow

Net New Project Shadow

N

0 100 200
FEET

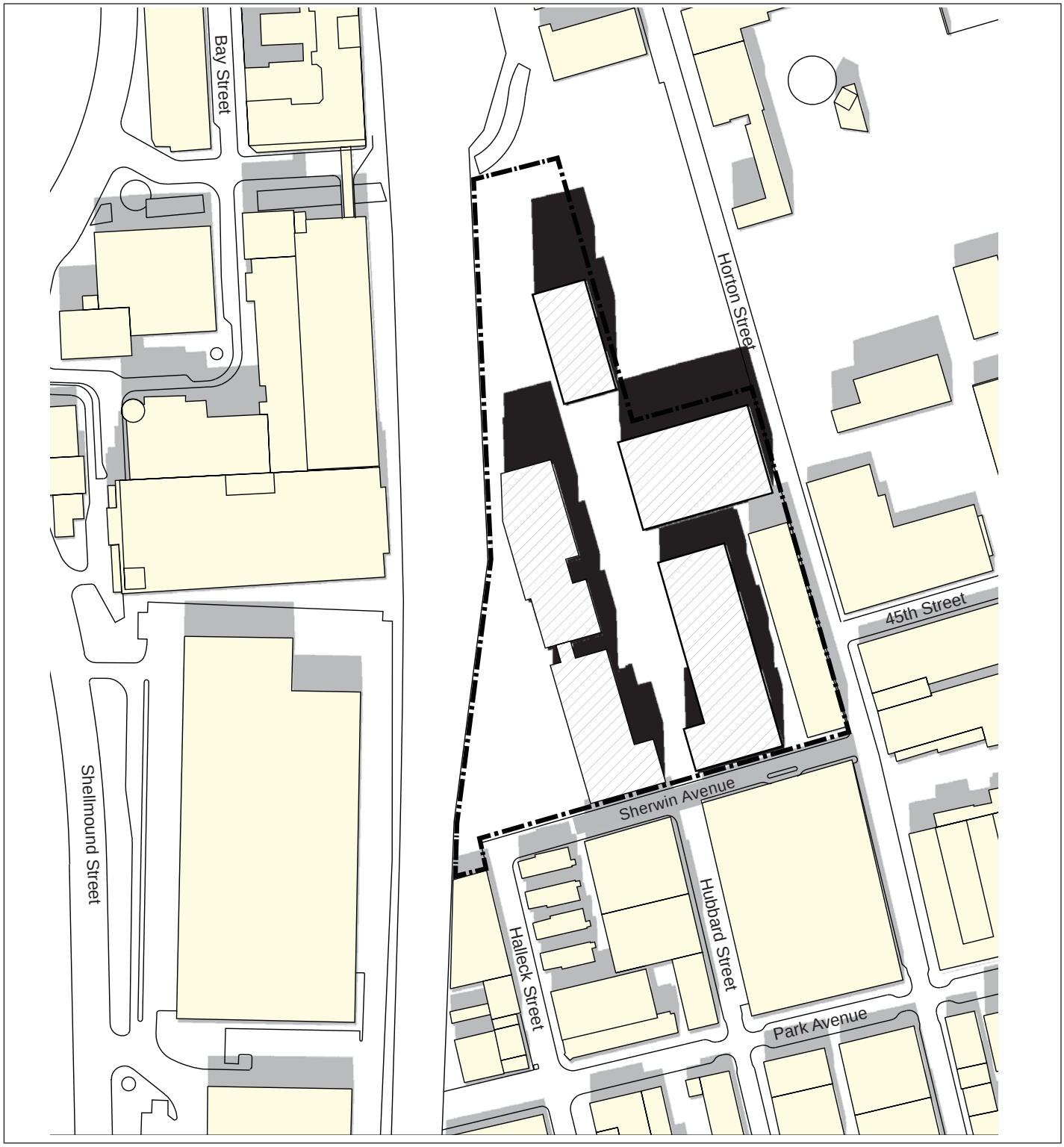
Sherwin-Williams Project EIR

Project Shadow Patterns - Option B

December 21, 9:00 a.m. PDT

SOURCE: ENVIRONMENTAL VISION, APRIL 20, 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVM25.ai (4/29/15)



LSA

FIGURE IV.M-26

Project Buildings | Project Boundary | Existing Shadow | Net New Project Shadow

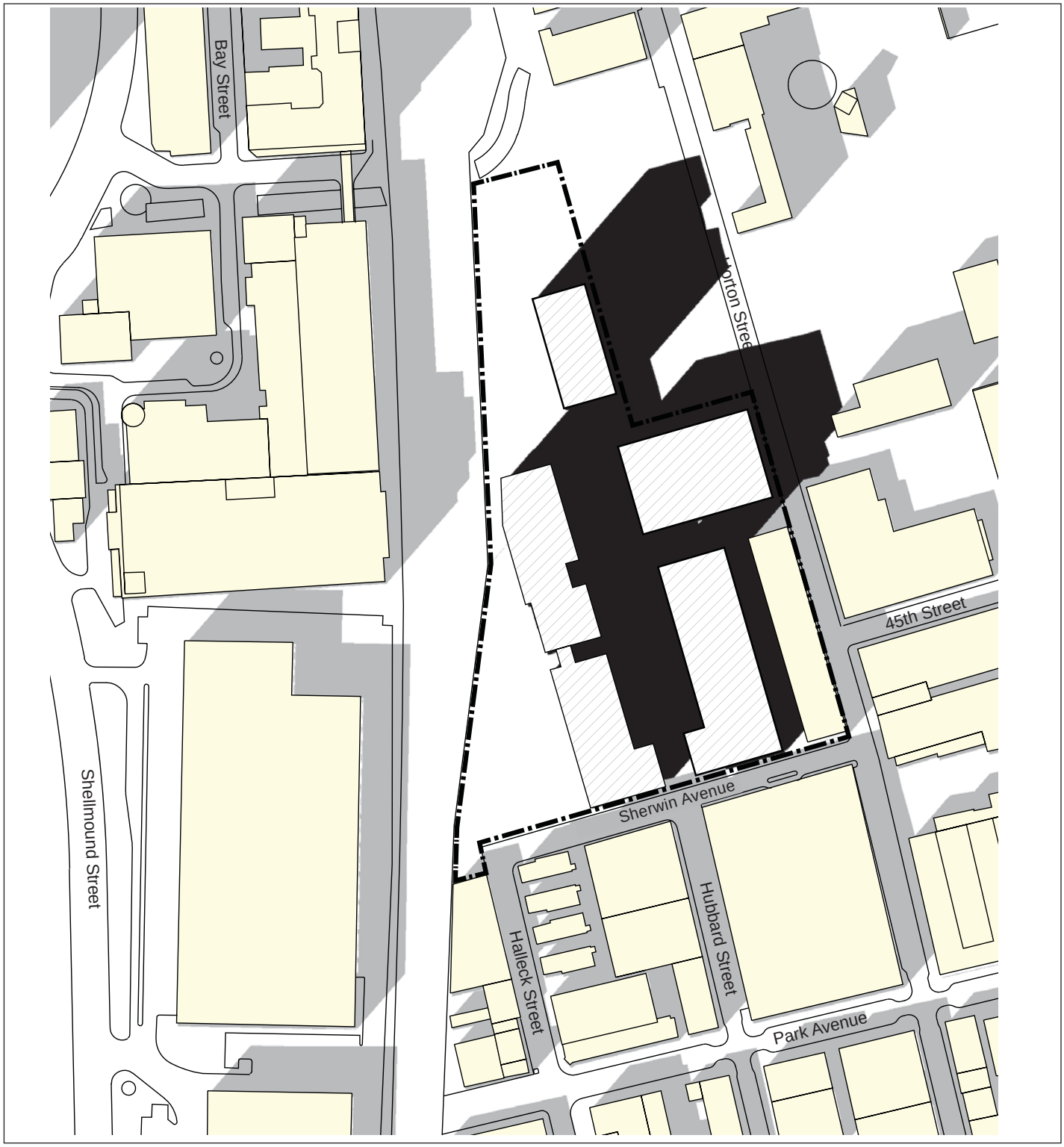
0 100 200
FEET

Sherwin-Williams Project EIR

Project Shadow Patterns - Option B
December 21, 12:00 noon PDT

SOURCE: ENVIRONMENTAL VISION, APRIL 20, 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVM26.ai (5/13/15)



LSA

FIGURE IV.M-27

Project Buildings

Project Boundary

Existing Shadow

Net New Project Shadow

N

0 100 200
FEET

Sherwin-Williams Project EIR

Project Shadow Patterns - Option B

December 21, 3:00 p.m. PDT

SOURCE: ENVIRONMENTAL VISION, APRIL 20, 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVM27.ai (5/13/15)

Shadow simulations were prepared for June 21, September 21, and December 21 for 9:00 a.m. (morning), 12:00 p.m. (noon), and 3:00 p.m. (afternoon). A summary of the results of the shadow simulation for each project option is provided below.

Option A

- **June 21 (Figures IV.M-10- IV.M-12).** On June 21, shadows cast by proposed buildings are the most limited, since the sun is at its highest location in the sky. Shadows in the morning extend onto the UPRR tracks immediately west of the project site. At noon and in the afternoon shadows are limited in length and fall within the project site.
- **September 21/March 21 (Figures IV.M-13- IV.M-15).** In the mornings of September 21 and March 21, shadows from proposed buildings extend onto the UPRR tracks and cover the majority of the project site. Shadows at noon are concentrated within the project site. Afternoon shadows are concentrated on the site however; the northeastern buildings cast shadows onto the neighboring Novartis parking lot as well as Horton Street.
- **December 21 (Figures IV.M-16- IV.M-18).** On December 21, shadows cast by proposed buildings cover a large portion of the area in the morning and afternoon. In the morning, shadows extend across the UPRR tracks and onto a small portion of the Bay Street parking garage. At noon shadows are concentrated on the site and only slightly extend onto the Novartis parking lot in the north. Afternoon shadows cover Horton Street and the Novartis parking lot and reach a small portion of a Novartis campus building across Horton Street. Existing shadows from Sherwin-Williams Building 31-1 fall on the Artist Co-op building during the afternoon.

Option B

- **June 21 (Figures IV.M-19- IV.M-21).** On June 21, shadows cast by proposed buildings are the most limited, since the sun is at its highest location in the sky. Shadows in the morning minimally extend onto the UPRR tracks. At noon and in the afternoon shadows are limited in length and fall within the project site.
- **September 21/March 21 (Figures IV.M-22- IV.M-24).** In the mornings of September 21 and March 21, shadows from proposed buildings extend onto the UPRR tracks and cover the majority of the project site. Shadows at noon are average in size and concentrated within the project site. Afternoon shadows are concentrated on the site however; the northeastern buildings cast shadows onto the neighboring Novartis parking lot as well as Horton Street.
- **December 21 (Figures IV.M-25- IV.M-27).** On December 21, shadows cast by proposed buildings cover a large portion of the area in the morning and afternoon. In the morning, shadows extend across the UPRR tracks and reach the vehicular access driveway behind the Bay Street parking garage. At noon shadows are concentrated on the site but slightly extend onto the Novartis parking lot in the north. Afternoon shadows cover Horton Street and the Novartis parking lot and reach a small portion of a Novartis campus building across Horton Street. Existing shadows from Sherwin-Williams Building 31-1 fall on the Artist Co-op building during the afternoon.

The shadow analysis was used to determine shade and shadow impacts on parks and solar collectors. Aerial photography and City maps were used to locate public parks, lawns, gardens, or open space.

Public Open Space. There are no existing public parks, lawns, gardens, or open space within the vicinity of the project site that would be affected by shadows resulting from development of the proposed project. The proposed project does include a dedicated City Park, dog park, bike and pedestrian trail, children's playground, adult fitness, and sports courts. Conceptual Site Plans for each option (Shown in Figures III-6 and III-7) shows the proposed location of each open space amenity. A City Park (Horton Landing Park) is also planned on the property north of the project site and would not be affected by shadows resulting from the development of the proposed project.

Option A. Implementation of the proposed project would result in shade and shadows cast on the proposed public open space within the development. In particular, the proposed buildings would cast shadows on the proposed bike and pedestrian trail, dog park, children's playground, adult fitness area, and sports courts. On June 21, the proposed City Park would experience limited shading during the morning and afternoon; however, there would be no shadows cast on the park at noon. On September 21/March 21, the proposed City Park would experience partial shading in the morning and afternoon; and there would be no shadows cast on the park at noon. The proposed City Park is located in an area that currently has partial shade coverage from existing development on Sherwin Avenue on the morning of December 21 and would experience limited additional shading from the proposed project on that morning. On December 21, the City Park would experience limited shading at noon and would be almost completely covered in shadows during the afternoon.

No existing parks are located within the vicinity of the project site and as a result Option A would have no impact on existing parks and open space. However, the development of Option A would result in shade and shadows being cast on proposed open space amenities within the project site. The shading of these public areas would vary throughout the year and anticipated shadows would not substantially affect the use of these spaces. Furthermore, the amenities are associated with the proposed project and would be affected by shadows caused by the project. Because the proposed project Option A would not result in a significant shadow impact which would substantially affect an existing or the future public outdoor recreation facility or other public areas, shadow impacts associated with the project are considered to be less than significant.

Option B. Implementation of the proposed project Option B would result in shade and shadows cast onto the proposed public open space within the development. In particular, the proposed buildings would cast shadows on the bike and pedestrian trail, City Park, dog park, children's playground, adult fitness area, and sports courts. On June 21, the proposed City Park would experience partial shading during the morning; there would be no shadows cast on the park at noon and in the afternoon. On September 21/March 21, extensive shadows would almost completely cover the City Park in the morning; the park would not experience shading at noon and during the afternoon. The proposed City Park is located in an area that currently has partial shade coverage from existing development on Sherwin Avenue on the morning of December 21 and would experience limited additional shading from the proposed project on that morning. On December 21, the City Park would not be subject to shading at noon and during the afternoon.

No existing parks are located within the vicinity of the project site and as a result Option B would have no impact on existing parks and open space. However, the development of Option B would

result in shade and shadows being cast on proposed open space amenities within the project site. The shading of these public areas would vary throughout the year and anticipated shadows would not substantially affect the use of these spaces. Furthermore, the amenities are associated with the proposed project and would be affected by shadows caused by the project. Because the proposed project Option B would not result in a significant shadow impact which would substantially affect an existing or the future public outdoor recreation facility or other public areas, shadow impacts associated with the project are considered to be less than significant.

Solar Collectors. Within the vicinity of the project site, Ikea is the only existing solar collector. The 45th Street Artist Co-Op has also been identified as a potential future location for solar collection based on comments received during the NOP scooping period.

Option A. Development of the proposed project Option A would not impact existing or potential solar collection sites. The shadow diagrams indicate that at no time in the year would the proposed project's shadows fall on any portion of the Ikea building. Additionally, the shadow diagram indicates that the 45th Street Artist Co-Op building is partially covered by existing shadows from the Sherwin-Williams Building 1-31 in the afternoon of December 21. As this is an existing shadow and would not result from development of the project, Option A would have no shadow impacts on existing or identified potential solar collectors.

Option B. Development of the proposed project Option B would not impact existing or potential solar collection sites. The shadow diagrams indicate that at no time in the year would the proposed project's shadows fall on any portion of the Ikea building. Additionally, the shadow diagram indicates that the 45th Street Artist Co-Op building is partially covered by existing shadows from the Sherwin-Williams Building 1-31 in the afternoon of December 21. As this is an existing shadow and would not result for development of the project, Option B would have no shadow impact on existing or identified potential solar collectors.

c. Cumulative Impacts. A cumulative analysis of visual and shadow impacts associated with development of both Option A and Option B of the project in addition to construction of the two towers associated with completion of the entitled Novartis development on the site adjacent to the project has been prepared.[2] As of December 2015, it is uncertain when the Novartis development would be constructed, and this analysis does not constitute an evaluation of the potential impacts associated with development of the Novartis project, as it is considered to be a separate project under CEQA. There are no other entitled large-scale projects in the immediate vicinity of the proposed project that would need to be included in this analysis of cumulative visual resources impacts.

(1) Visual Resources. Visual simulations were prepared to show the potential cumulative impacts to visual resources of the proposed project in combination with the buildout of the Novartis towers, similar to the cumulative analysis contained in Section IV.C, Transportation and Circulation. Figures IV.M-28 through IV.M-31 show simulations of Option A development and buildout of the Novartis site and Figures IV.M-32 through IV.M-35 show Option B development with buildout of the

[2] Resolution 15-129. 2015. Resolution of the City Council of the City of Emeryville Amending the General Plan to Reduce the Base Levels for Floor Area Ratio, Building Height, and Residential Density. Exhibit B. October 20.

Novartis site. All figures show both before and after views of the massing of the proposed project and the Novartis towers from the previously identified viewpoints.

Option A. As shown in most of the visual simulations, development of the site under Option A and construction of the Novartis towers would be visible from various vantage points within the vicinity of the project site. When comparing the proposed project's impacts to existing conditions shown in Viewpoint 1 (Figure IV.M-2) and cumulative development impacts shown in Figure IV.M-28, no additional portions of the East Bay Hills would be obstructed by development associated with the Novartis project. Therefore, cumulative impacts from this viewpoint are considered to be less than significant. Development of the Novartis towers also would be visible from Viewpoint 2, as shown in Figure IV.M-29. However, no scenic vistas or viewsheds can be seen from this viewpoint with development of the proposed project under Option A, and therefore cumulative impacts would be less than significant. The Novartis towers cannot be seen in Viewpoint 3 (Figure IV.M-3) and therefore, no cumulative impacts would occur associated with this viewpoint and construction of the Novartis towers. When comparing the proposed project's impacts to existing conditions in Viewpoint 4 (Figure IV.M-5) and including the Novartis towers (Figure IV.M-31), it can be seen that no additional portions of the East Bay Hills would be obscured by the project and development of the towers and therefore cumulative impacts from this viewpoint are considered to be less than significant.

Option B. As shown in most of the visual simulations, development of the site under Option B and construction of the Novartis towers would be visible from various vantage points within the vicinity of the project site. When comparing the proposed project's impacts (under Option B) to existing conditions shown in Viewpoint 1 (Figure IV.M-6) and cumulative development impacts shown in Figure IV.M-32, no additional portions of the East Bay Hills would be obstructed by development associated with the Novartis project. Therefore, cumulative impacts from this viewpoint are considered to be less than significant. Development of the Novartis towers also would be visible from Viewpoint 2, as shown in Figure IV.M-33. However, no scenic vistas or viewsheds can be seen from this viewpoint with development of the proposed project under Option B, and therefore cumulative impacts would be less than significant. The Novartis towers cannot be seen in Viewpoint 3 (Figure IV.M-8) and therefore, no cumulative impacts would occur associated with this viewpoint and construction of the Novartis towers. When comparing the proposed project's impacts to existing conditions in Viewpoint 4 (Figure IV.M-9) and including the Novartis towers (Figure IV.M-35), it can be seen that no additional portions of the East Bay Hills would be obscured by the project and development of the towers, and therefore cumulative impacts from this viewpoint are considered to be less than significant.

As analyzed throughout this section, the proposed project under both Option A and Option B along with the development of the Novartis towers would not result in a cumulatively significant impact to visual resources by creating a substantial adverse effect on a scenic vista; substantially damaging scenic resources; substantially degrading the existing visual character or quality of the site; or creating a new source of light or glare. Cumulative development, including the entitled Novartis project, in combination with the proposed project, would continue to result in new buildings of varying size and scale being developed on infill or vacant sites within the area.

Based on the analysis provided above, the proposed project would not contribute to significant adverse cumulative impacts to visual resources when considered together with past, present, and reasonably foreseeable future development.

Existing view from 40th Street Bridge looking north (VP 1)

Visual simulation of Proposed Project - Option A
(Novartis approved development shown in grey)

LSA

FIGURE IV.M-28

Sherwin-Williams Project EIR
Cumulative Visual Simulations - Option A:
40th Street Bridge, Looking North

SOURCE: ENVIRONMENTAL VISION, DECEMBER 8, 2015.

I:\CEM1404 sherwin-williams\figures\Figures_IVM28-IVM31-Option A.indd (12/17/15)

Existing view from Hubbard Street near Sherwin Street looking northwest (VP 2)

Visual simulation of Proposed Project - Option A
(Novartis approved development shown in grey)

LSA

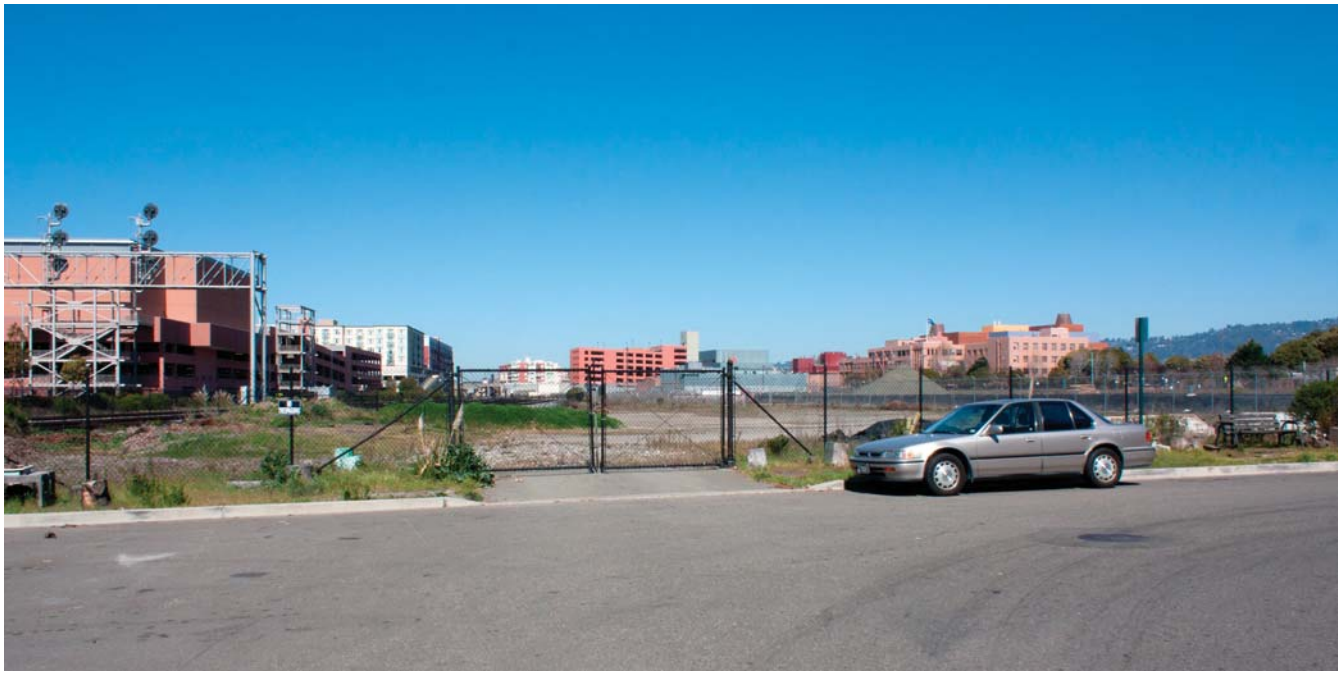
FIGURE IV.M-29

Sherwin-Williams Project EIR

Cumulative Visual Simulations - Option A:
Hubbard Street Near Sherwin Avenue, Looking Northwest

SOURCE: ENVIRONMENTAL VISION, DECEMBER 8, 2015.

I:\CEM1404 sherwin-williams\figures\Figures_IVM28-IVM31-Option A.indd (12/17/15)



Existing view from Halleck Street at Sherwin Street looking north (wide angle VP 3)

Visual simulation of Proposed Project - Option A
(Novartis approved development is not visible)

LSA

FIGURE IV.M-30

Sherwin-Williams Project EIR

Cumulative Visual Simulations - Option A:
Halleck Street at Sherwin Avenue, Looking North

SOURCE: ENVIRONMENTAL VISION, DECEMBER 8, 2015.

I:\CEM1404 sherwin-williams\figures\Figures_IVM28-IVM31-Option A.indd (12/17/15)

Existing view from Bay Street Mall parking garage looking northeast (wide angle VP 4)

Visual simulation of Proposed Project - Option A
(Novartis approved development shown in grey)

LSA

FIGURE IV.M-31

Sherwin-Williams Project EIR

Cumulative Visual Simulations - Option A:
Bay Street Mall Parking Garage, Looking Southeast

SOURCE: ENVIRONMENTAL VISION, DECEMBER 8, 2015.

I:\CEM1404 sherwin-williams\figures\Figures_IVM28-IVM31-Option A.indd (12/17/15)

Existing view from 40th Street Bridge looking north (VP 1)

Visual simulation of Proposed Project - Option B
(Novartis approved development shown in grey)

LSA

FIGURE IV.M-32

Sherwin-Williams Project EIR

Cumulative Visual Simulations - Option B:
40th Street Bridge, Looking North

SOURCE: ENVIRONMENTAL VISION, DECEMBER 8, 2015.

I:\CEM1404 sherwin-williams\figures\Figures_IVM32-IVM35-Option B.indd (12/10/15)

Existing view from Hubbard Street near Sherwin Street looking northwest (VP 2)

Visual simulation of Proposed Project - Option B
(Novartis approved development shown in grey)

LSA

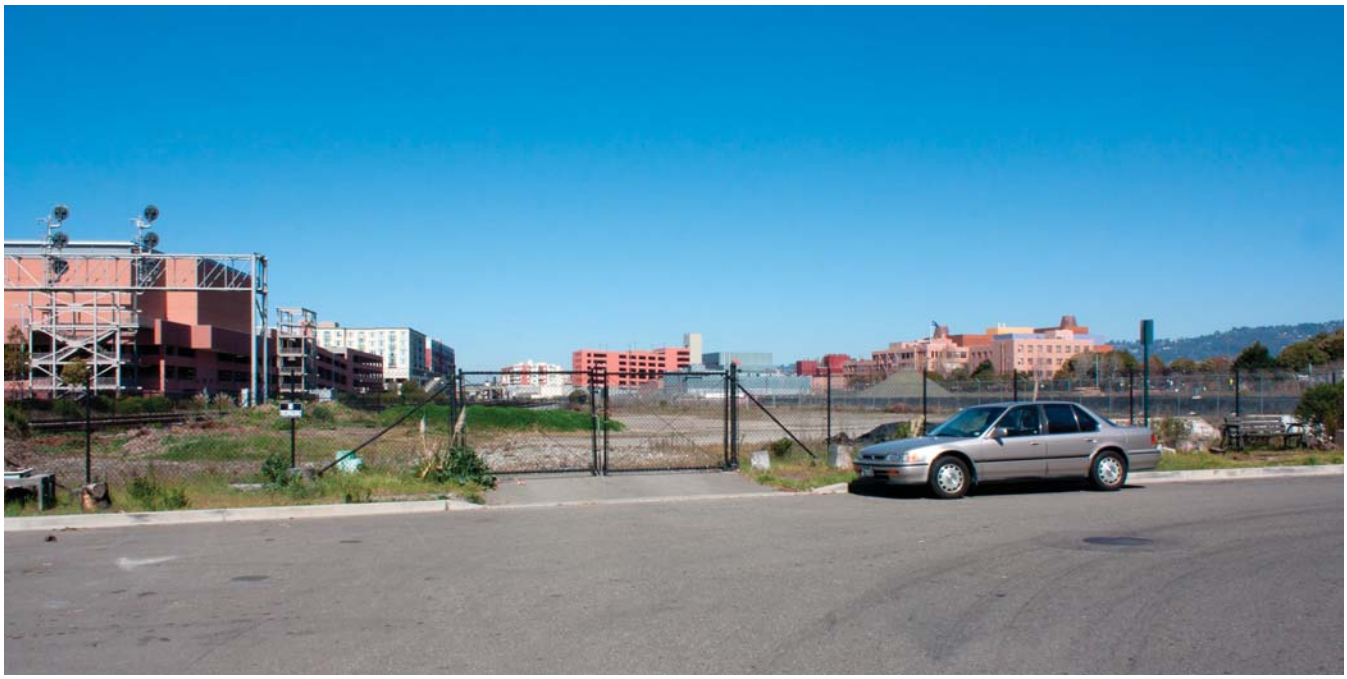
FIGURE IV.M-33

Sherwin-Williams Project EIR

Cumulative Visual Simulations - Option B:
Hubbard Street Near Sherwin Avenue, Looking Northwest

SOURCE: ENVIRONMENTAL VISION, DECEMBER 8, 2015.

I:\CEM1404 sherwin-williams\figures\Figures_IVM32-IVM35-Option B.indd (12/10/15)



Existing view from Halleck Street at Sherwin Street looking north (wide angle VP 3)

Visual simulation of Proposed Project - Option B
(Novartis approved development is not visible)

LSA

FIGURE IV.M-34

Sherwin-Williams Project EIR

Cumulative Visual Simulations - Option B:
Halleck Street at Sherwin Avenue, Looking North

SOURCE: ENVIRONMENTAL VISION, DECEMBER 8, 2015.

I:\CEM1404 sherwin-williams\figures\Figures_IVM32-IVM35-Option B.indd (12/10/15)

Existing view from Bay Street Mall parking garage looking northeast (wide angle VP 4)

Visual simulation of Proposed Project - Option B
(Novartis approved development shown in grey)

LSA

FIGURE IV.M-35

Sherwin-Williams Project EIR

Cumulative Visual Simulations - Option B:
Bay Street Mall Parking Garage, Looking Southeast

SOURCE: ENVIRONMENTAL VISION, DECEMBER 8, 2015.

I:\CEM1404 sherwin-williams\figures\Figures_IVM32-IVM35-Option B.indd (12/10/15)

(2) Shade and Shadow. As previously described, the proposed project would not create a new shadow that substantially affects an existing outdoor recreation facility or other public areas or existing solar collectors. To determine if there would be a cumulative shade and shadow impact on parks and solar collectors with buildout of the Novartis project, cumulative shadow patterns were developed to show the potential shadows associated with the proposed project, as well as future development with construction of the Novartis towers. Shadow simulations showing shadows for the project and the Novartis towers were prepared for June 21, September 21, December 21, and March 21, for 9:00 a.m. (morning), 12:00 p.m. (noon), and 3:00 p.m. (afternoon), and are shown in Figure IV.M-36 through IV.M-43.

Cumulative shadow patterns were only prepared for Option A because, as shown in Figures III-6 and III-7, Option A and Option B have the same development proposed for the northern portion of the site adjacent to the Novartis development. In addition, the cumulative shadows from the Novartis development project would be the same for both Option A and Option B. For the purpose of the analysis, it is assumed that the Sherwin-Williams development project would be constructed before the Novartis development project.

Public Open Space. There are no existing public parks, lawns, gardens, or open space within the vicinity of the project site that would be affected by shadows resulting from development of the project and the Novartis towers. The proposed project does include a dedicated City Park, dog park, bike and pedestrian trail, children's playground, adult fitness, and sports courts. Conceptual Site Plans for each option (Shown in Figures III-6 and III-7) shows the proposed location of each open space amenity. A City Park (Horton Landing Park) is planned on the property north of the project site.

As shown in Figures IV.M-36, IV.M-39, and IV.M-42, the Novartis development project could cast shadows on the sports courts proposed as part of the project and the City-planned Horton Landing Park on the mornings of June 21, September 21, and December 21. However, these parks do not currently exist and should they be developed before the Novartis development project, shadow impacts associated with the Novartis development project would be assessed at that time.

Solar Collectors. As previously mentioned in this section, Ikea is the only existing solar collector within the vicinity of the project site. The 45th Street Artist Co-Op has also been identified as a potential future location for solar collection based on comments received during the NOP scoping period. Development of the proposed project along with development of the Novartis towers would not impact these existing or potential future locations for solar collections.

As analyzed throughout this section, the proposed project's contribution to shade and shadow impacts on public open space and existing and potential future solar collection sites is not cumulatively considerable and therefore, would not result in a cumulative impact.

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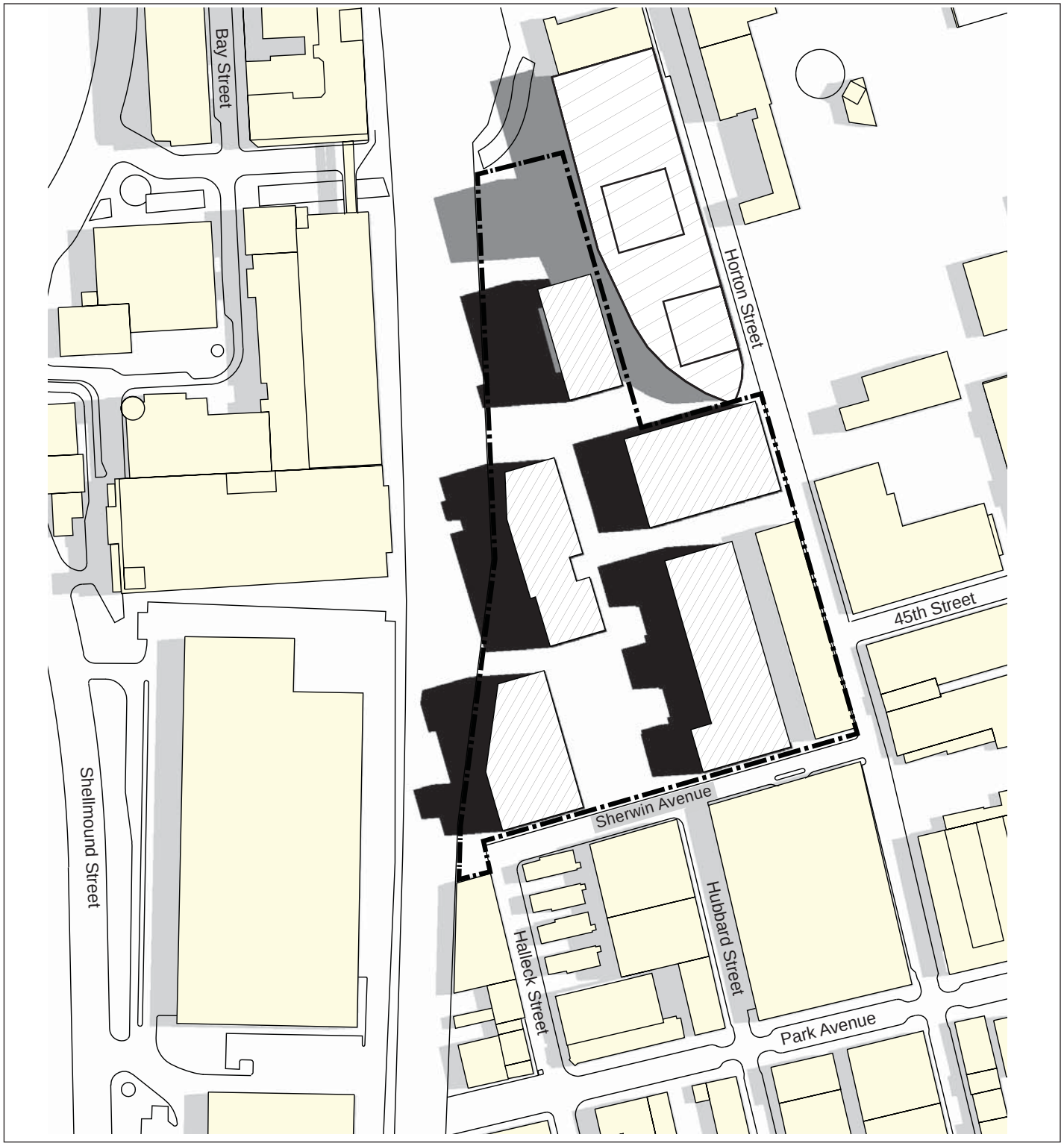


LSA

FIGURE IV.M-36

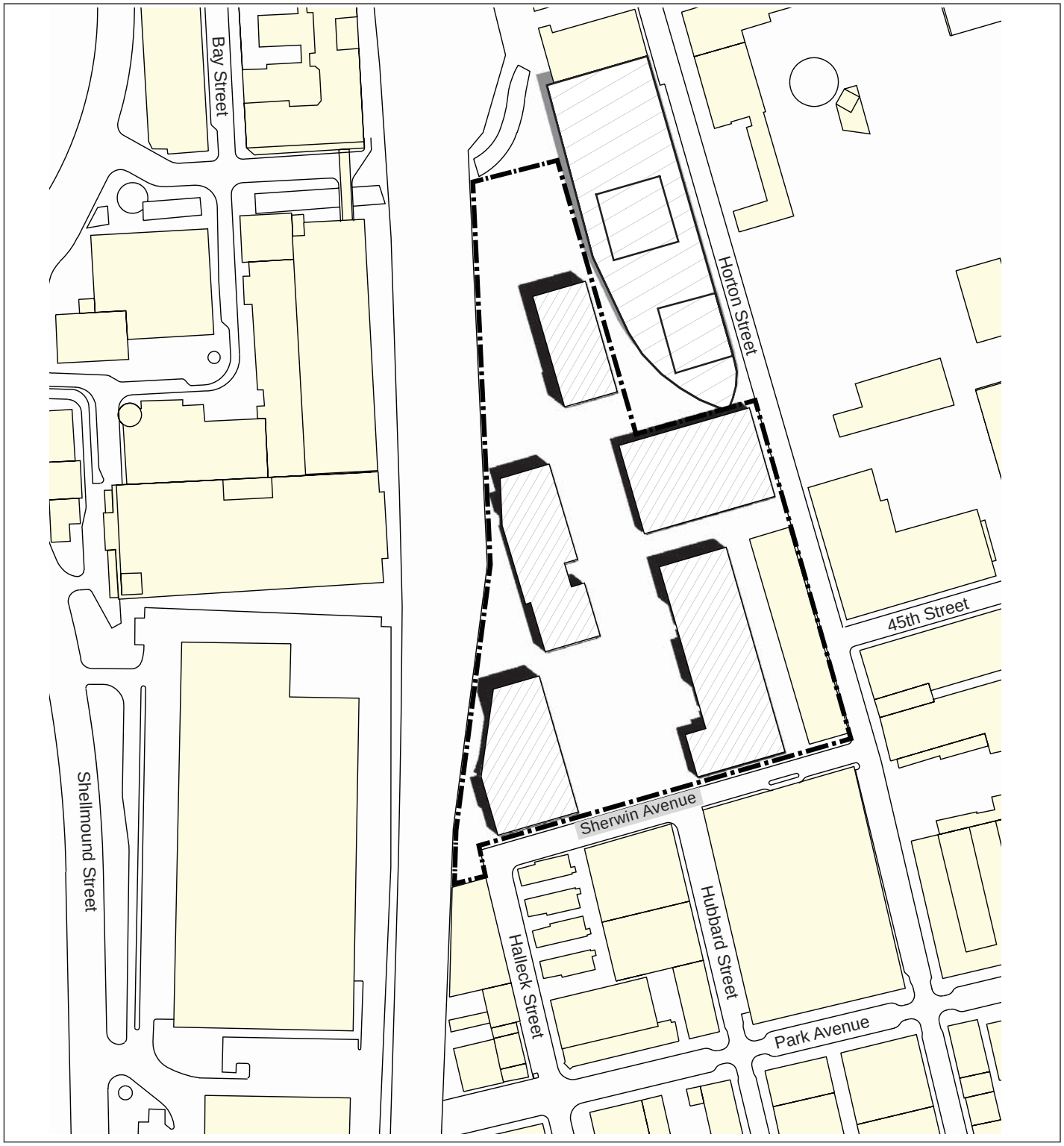
Sherwin-Williams Project EIR

Cumulative Project Shadow Patterns - Option A

June 21, 9:00 a.m. PDT

SOURCE: ENVIRONMENTAL VISION, DECEMBER 8, 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVM36.ai (12/9/15)



LSA

FIGURE IV.M-37

Project Buildings
Project Boundary
New Novartis Building
Existing Shadow
New Novartis Shadow
Net New Project Shadow

0 100 200
FEET

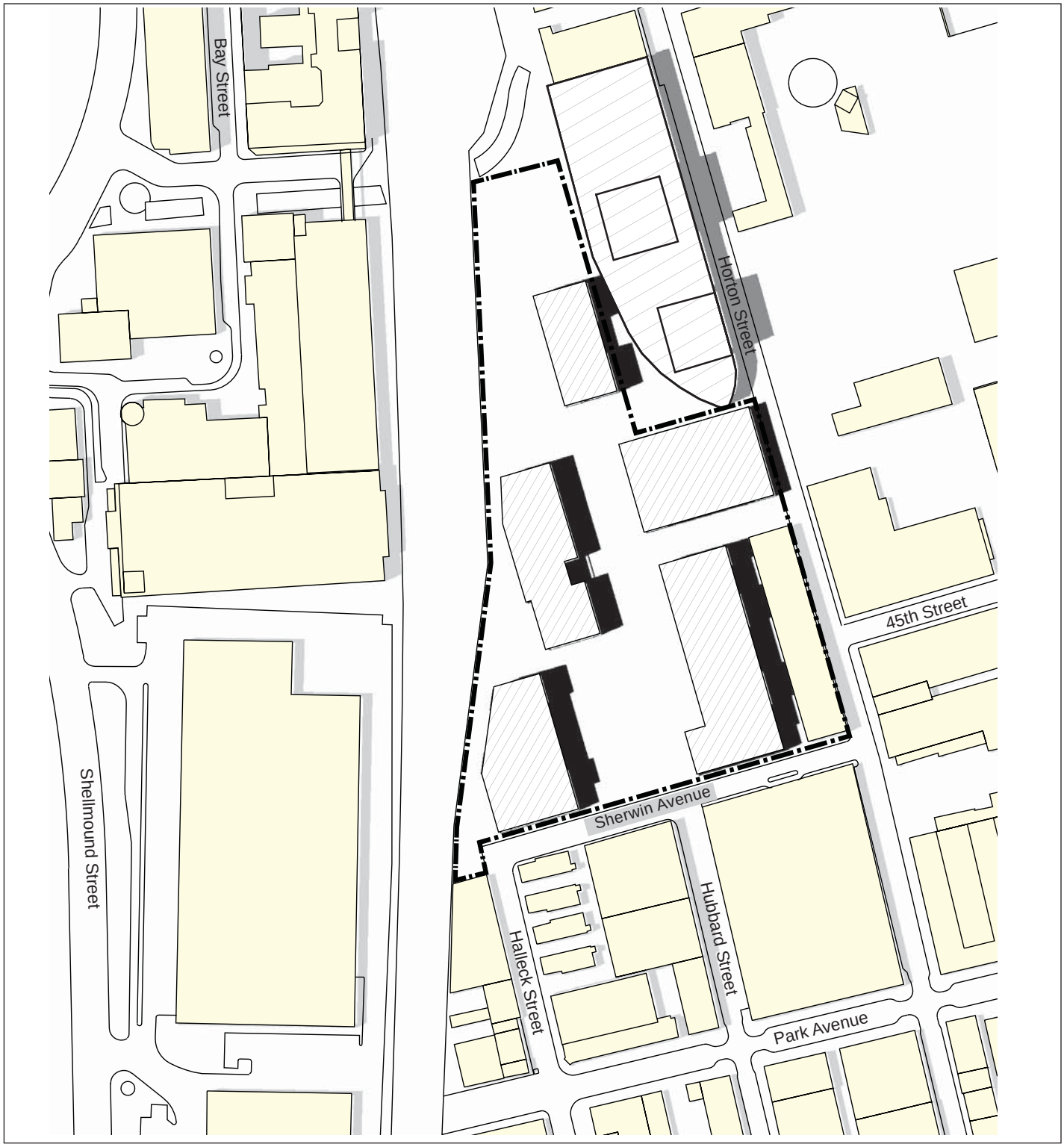
Sherwin-Williams Project EIR

Cumulative Project Shadow Patterns - Option A

June 21, 12:00 noon PDT

SOURCE: ENVIRONMENTAL VISION, DECEMBER 8, 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVM37.ai (12/10/15)



LSA

FIGURE IV.M-38

Project Buildings
Project Boundary
New Novartis Building
Existing Shadow
New Novartis Shadow
Net New Project Shadow

N

0 100 200
FEET

Sherwin-Williams Project EIR

Cumulative Project Shadow Patterns - Option A
June 21, 3:00 p.m. PDT

SOURCE: ENVIRONMENTAL VISION, DECEMBER 8, 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVM38.ai (12/10/15)

LSA

FIGURE IV.M-39

Project Buildings | Project Boundary | New Novartis Building | Existing Shadow | New Novartis Shadow | Net New Project Shadow

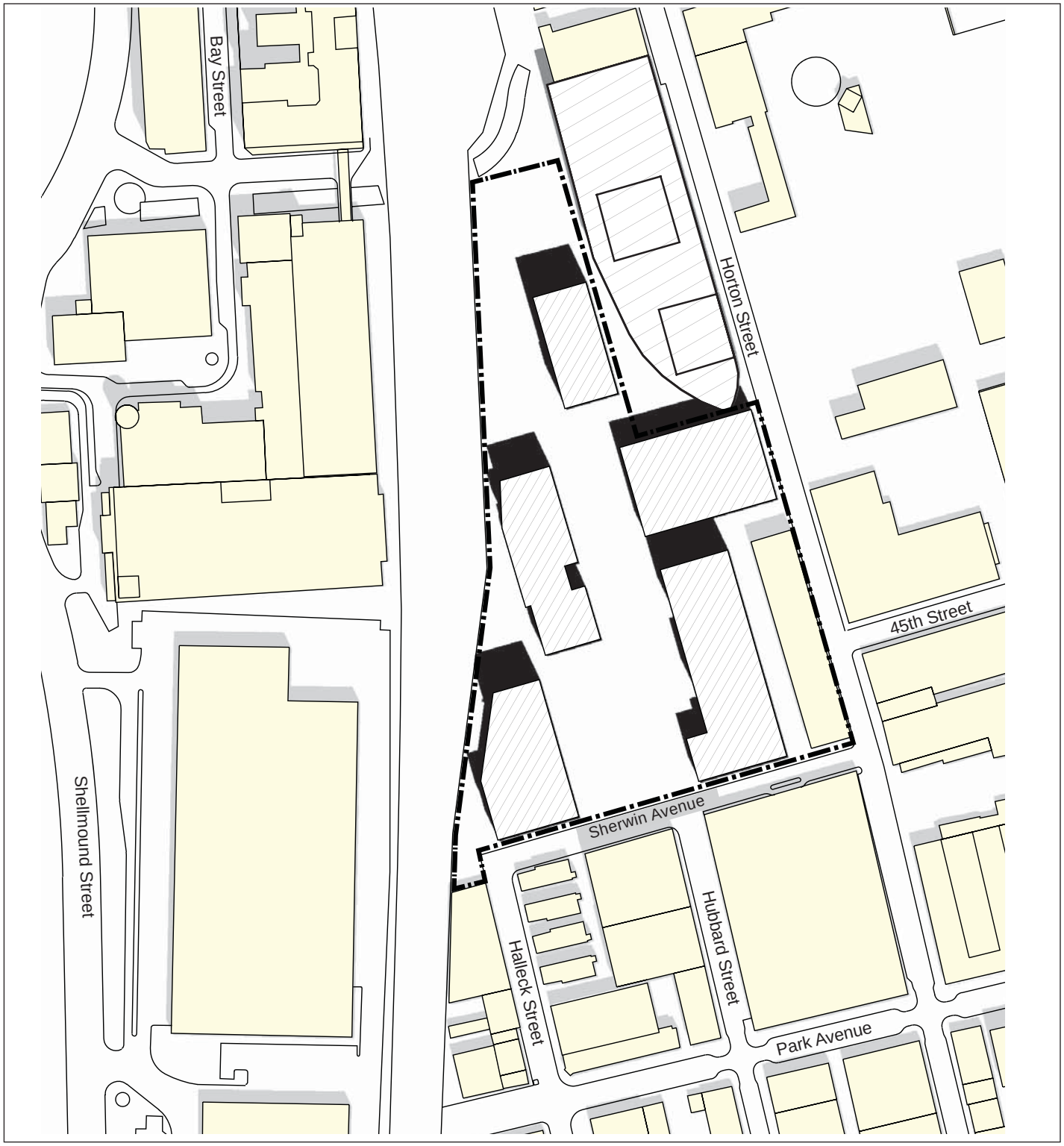
0 100 200
FEET

Sherwin-Williams Project EIR

Cumulative Project Shadow Patterns - Option A
September 21, 9:00 a.m. PDT

SOURCE: ENVIRONMENTAL VISION, DECEMBER 8, 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVM39.ai (12/11/15)



LSA

FIGURE IV.M-40

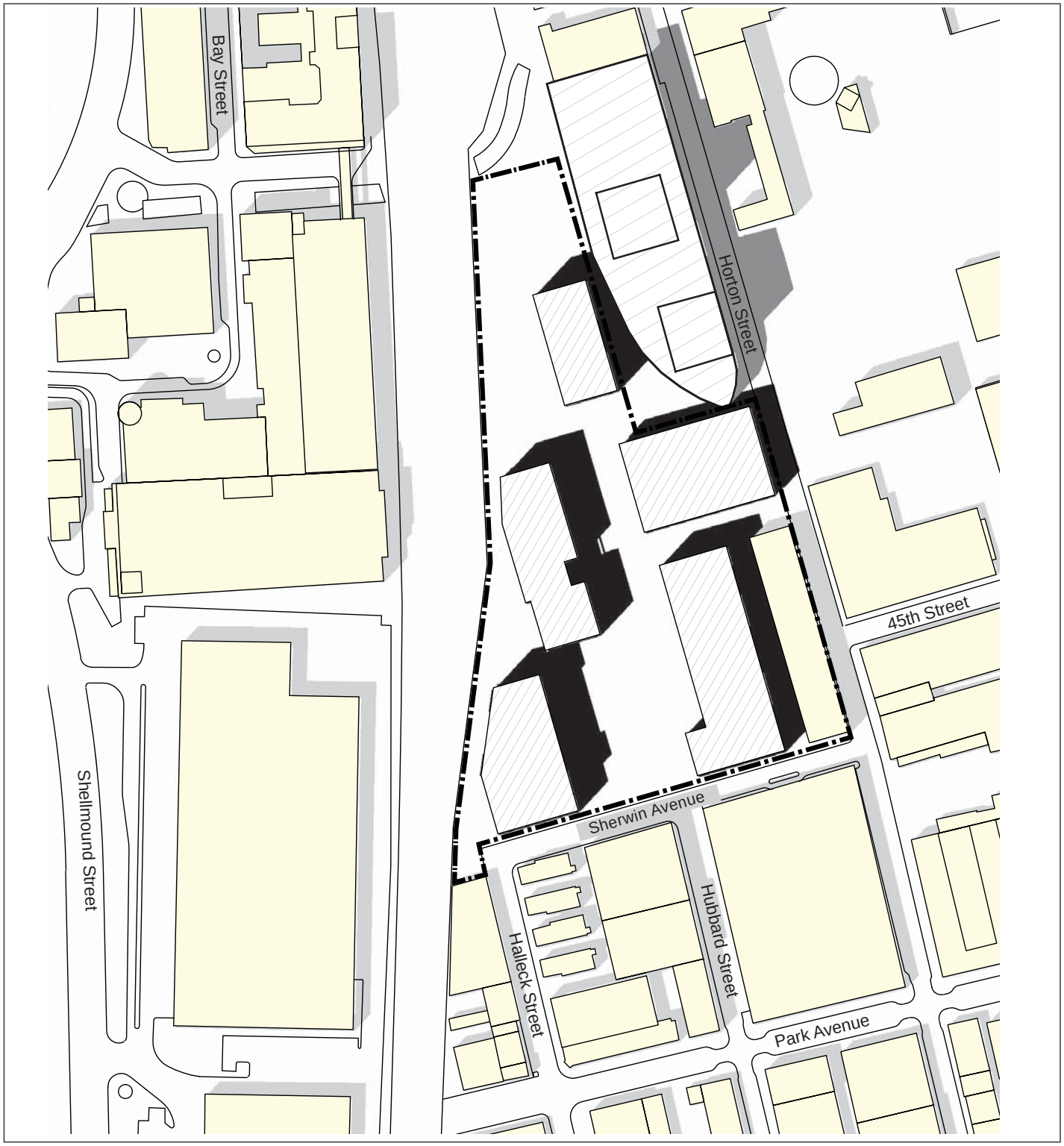
Sherwin-Williams Project EIR

Cumulative Project Shadow Patterns - Option A

September 21, 12:00 noon PDT

SOURCE: ENVIRONMENTAL VISION, DECEMBER 8, 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVM40.ai (12/11/15)



LSA

FIGURE IV.M-41

Project Buildings | Project Boundary | New Novartis Building | Existing Shadow | New Novartis Shadow | Net New Project Shadow

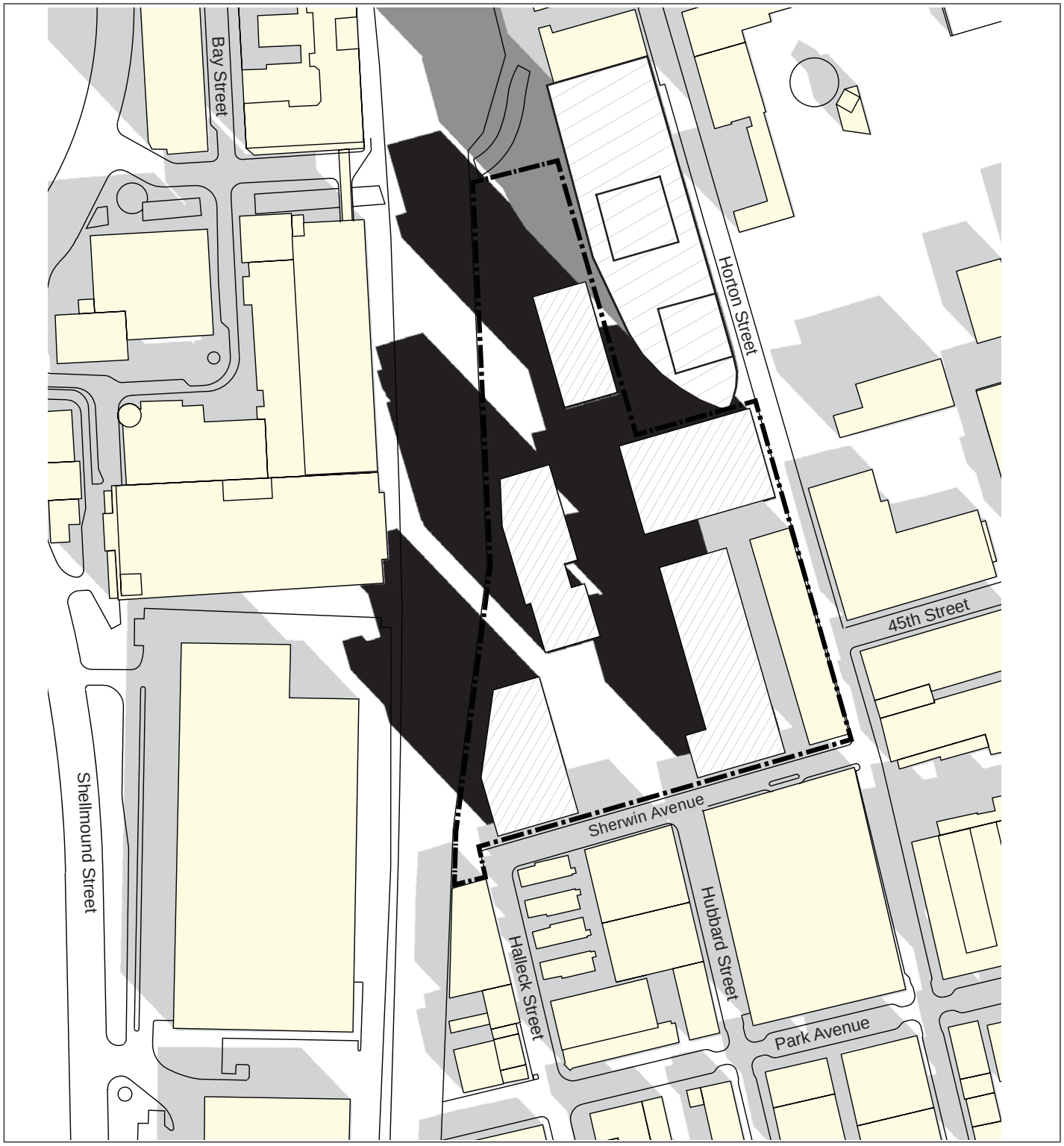
0 100 200
FEET

Sherwin-Williams Project EIR

Cumulative Project Shadow Patterns - Option A
September 21, 3:00 p.m. PDT

SOURCE: ENVIRONMENTAL VISION, DECEMBER 8, 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVM41.ai (12/11/15)



LSA

FIGURE IV.M-42

Project Buildings | Project Boundary | New Novartis Building | Existing Shadow | New Novartis Shadow | Net New Project Shadow

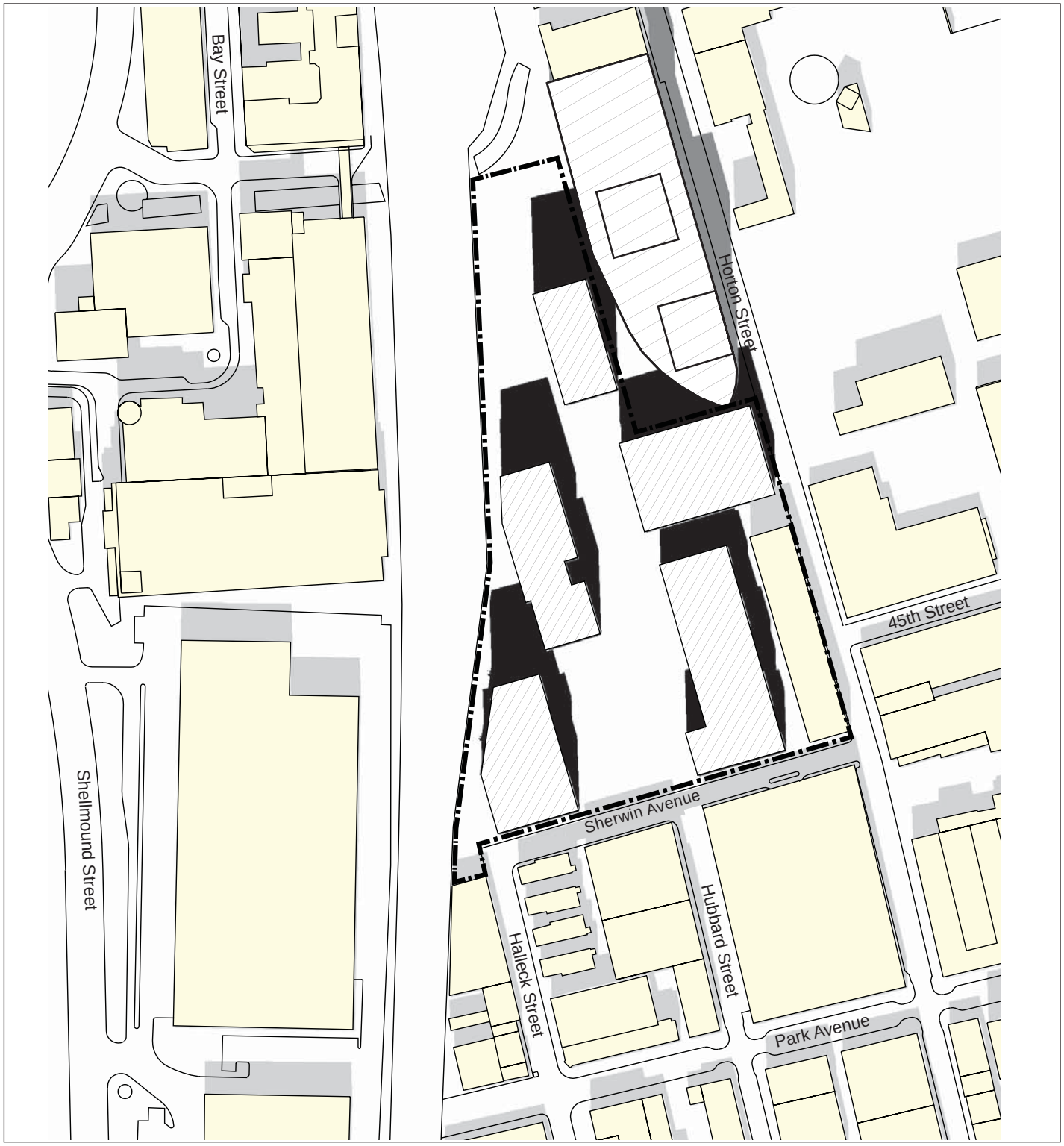
0 100 200
FEET

Sherwin-Williams Project EIR

Cumulative Project Shadow Patterns - Option A
December 21, 9:00 a.m. PDT

SOURCE: ENVIRONMENTAL VISION, DECEMBER 8, 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVM42.ai (12/11/15)



LSA

FIGURE IV.M-43

Project Buildings
Project Boundary
New Novartis Building
Existing Shadow
New Novartis Shadow
Net New Project Shadow

N

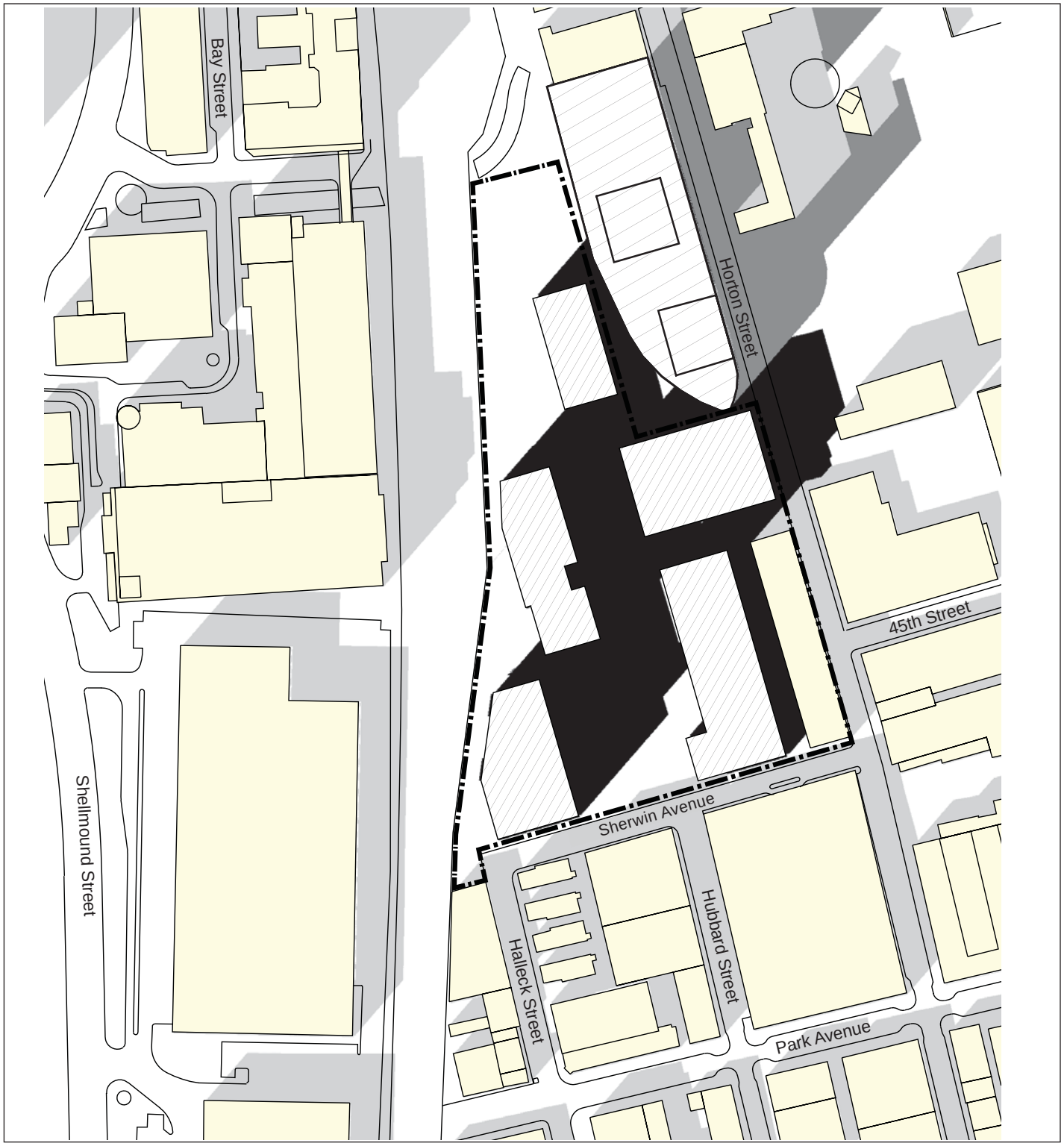
0 100 200
FEET

Sherwin-Williams Project EIR

Cumulative Project Shadow Patterns - Option A
December 21, 12:00 noon PDT

SOURCE: ENVIRONMENTAL VISION, DECEMBER 8, 2015.

I:\CEM1404 sherwin-williams\figures\Fig_IVM43.ai (12/11/15)



LSA

FIGURE IV.M-44

Project Buildings
Project Boundary
New Novartis Building
Existing Shadow
New Novartis Shadow
Net New Project Shadow

N

0 100 200
FEET

Sherwin-Williams Project EIR

Cumulative Project Shadow Patterns - Option A
December 21, 3:00 p.m. PDT

SOURCE: ENVIRONMENTAL VISION, DECEMBER 8, 2015.

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