1900 FOURTH STREET PROJECT
DRAFT ENVIRONMENTAL IMPACT REPORT

STATE CLEARINGHOUSE NO. 2016022038

November 2016
NOTICE OF AVAILABILITY OF
DRAFT ENVIRONMENTAL IMPACT REPORT
1900 Fourth Street Project
AND
NOTICE OF PUBLIC HEARINGS
State Clearinghouse #2016022038

Notice is hereby given that the City of Berkeley has completed a Draft Environmental Impact Report (Draft EIR), pursuant to the California Environmental Quality Act (CEQA), for the proposed 1900 Fourth Street Project in West Berkeley.

PUBLIC HEARINGS: The Landmarks Preservation Commission (LPC) is scheduled to receive public comments on the Draft EIR on December 1, 2016 at 7:00 p.m. at the North Berkeley Senior Center, 1901 Hearst Avenue, Berkeley, CA.

The Zoning Adjustments Board (ZAB) is scheduled to receive public comments on the Draft EIR on December 8, 2016 at 7:00 p.m. at the Council Chambers, 2134 Martin Luther King, Jr. Way, 2nd Floor, Berkeley, CA.

PUBLIC REVIEW TIMELINE: The public review and comment period for the Draft EIR begins November 16, 2016 and ends January 5, 2017. The City must receive all written comments regarding the adequacy of the Draft EIR within this time period. Written comments may be submitted in person, by mail or by e-mail. The mailing address is 1947 Center Street, 2nd Floor, Berkeley, CA 94704.

DOCUMENT AVAILABILITY: Copies of the Draft EIR are available for review Monday through Friday, between the hours of 8:30 a.m. and 4:00 p.m. at the City of Berkeley Planning and Development Department, 1947 Center Street, 2nd Floor, Berkeley, California or online at http://www.cityofberkeley.info/Planning_and_Development/Zoning_Adjustment_Board/1900_Fourth.aspx. Copies are also available at the Office of the City Clerk, 2180 Milvia Street and the Berkeley Main Public Library Reference Desk, 2090 Kittredge Street.

PROJECT LOCATION: The approximately 2.21-acre rectangular Project site is located at 1900 Fourth Street in West Berkeley, within the Fourth Street shopping area. The site is bounded by Hearst Avenue to the north, Fourth Street to the east, University Avenue to the south, and the Union Pacific Railroad (UPRR) corridor to the east. The site is adjacent to the Berkeley Amtrak station and approximately two blocks east of Aquatic Park.

EXISTING CONDITIONS: The generally level Project site is currently developed with a 900 square-foot, one-story commercial building and an approximately 350-space surface parking lot that is open to the public for a fee. The existing building is currently vacant. The site is surrounded by chain link and metal fencing and wooden bollards. Approximately 27 trees are located around the site perimeter. The Project site is also part of a group of several properties designated by the City of Berkeley’s Landmarks Preservation Commission as a Landmark site (City Landmark #227, West Berkeley Shellmound).
PROJECT DESCRIPTION: The proposed Project would result in redevelopment of the site with a mix of residential and commercial uses within two separate buildings totaling 191,362 gross square feet, as well as associated parking and circulation, open space, landscaping, and utility improvements. The proposed Project would include development of 155 residential units and 30,000 square feet of retail and restaurant space, as well as 372 parking spaces within a parking garage. Building heights along Fourth Street would be lower and stepback from the street frontage, while the five-story building components would be concentrated at the interior of the site and along the UPRR corridor and University Avenue/Fourth Street frontages. Maximum proposed building heights are 71 feet to the top of the parapet at its greatest extent, which is the measurement required and defined by the Zoning Ordinance (Section 23F.04.010, “Height of Building, Maximum”). Mechanical features, elevator, and stair overruns would extend up to 10 feet above the roof line; the roofline would generally be 60 feet above grade. A total of approximately 13,032 square feet of open space would be provided at the ground level, second-story, and rooftop.

Discretionary actions/approvals by the City that would be necessary for this Project include a Structural Alteration Permit, Demolition Permit, various Use Permits. In addition, the Project applicant is requesting a waiver/modification of the four-story and 50-foot height limit development standards under the State Density Bonus Law (Government Code Section 65915(e)).

ENVIRONMENTAL EFFECTS: The Initial Study (included as Appendix B to the Draft EIR) identified no impacts or less-than-significant impacts to the following environmental issues: Aesthetics; Agricultural and Forestry Resources; Biological Resources; Cultural (Historic) Resources; Geology and Soils; Greenhouse Gas Emissions; Hydrology and Water Quality; Land Use and Planning; Mineral Resources; Population and Housing; Public Services; Recreation; and Utilities and Service Systems.

The Initial Study identified potentially significant impacts to Cultural (Paleontological) Resources and Hazards and Hazardous Materials; however, these were mitigated to a less-than-significant level with mitigation measures recommended in the Initial Study.

The Draft EIR evaluates the following environmental issues in detail:

- Cultural (Archaeological) Resources
- Traffic and Circulation
- Air Quality
- Noise and Vibration

Impacts to Cultural (Archaeological) Resources, Air Quality, and Noise and Vibration would be mitigated to a less-than-significant level. Impacts to Traffic and Circulation under near-term conditions would be less-than significant; impacts to Traffic and Circulation under cumulative (year 2040) conditions would be significant and unavoidable.

ALTERNATIVES: The CEQA Guidelines require analysis of a reasonable range of alternatives to the Project, or to the location of the Project, which would feasibly attain most of the Project’s basic objectives and avoid, or substantially lessen, any of the significant effects of the Project. The range of alternatives required in an EIR is governed by a “rule of reason” that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The Draft EIR analyzes the following three alternatives: 1) No Project alternative; 2) Reduced Commercial Use alternative; and 3) Reduced Building alternative. The Reduced Building alternative is identified as the environmentally superior alternative.

QUESTIONS: If you have any questions about this Project, contact Shannon Allen, AICP at ShAllen@cityofberkeley.info or (510) 981-7430.
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I. INTRODUCTION

A. PURPOSE OF THIS EIR

In compliance with the California Environmental Quality Act (CEQA), this Environmental Impact Report (EIR) describes the potential environmental consequences of the proposed 1900 Fourth Street Project (Project) located in West Berkeley, Alameda County. The City of Berkeley (City) is the lead agency for review of this Project.

This EIR is designed to inform City decision-makers, responsible agencies, and the general public of the proposed Project and the potential physical consequences of Project approval. This EIR also examines alternatives to the proposed Project and recommends mitigation measures to reduce or avoid potentially significant physical impacts, where appropriate. The EIR will be used by the City, responsible agencies, and the public in their review of the proposed Project and associated approvals described below and in more detail in Chapter III, Project Description.

B. PROPOSED PROJECT

The approximately 2.21-acre Project site occupies the block surrounded by Hearst Avenue to the north, Fourth Street to the east, University Avenue to the south, and the Union Pacific Railroad (UPRR) tracks to the west. The Project site is located within the Fourth Street shopping area in West Berkeley. The site is also part of a group of several properties designated by the City of Berkeley’s Landmarks Preservation Commission as a Landmark site due to its association with the West Berkeley Shellmound.

The proposed Project would result in the demolition of the existing 900 square-foot, one-story structure and approximately 350-space surface parking lot on the Project site and redevelopment of the site with a mix of residential and commercial uses within two separate buildings totaling 191,362 gross square feet, as well as associated parking and circulation, open space, landscaping, and utility improvements. The proposed Project would include development of 155 residential units and 30,000 square feet of retail and restaurant space, as well as 372 parking spaces within a parking garage.1 Building heights along Fourth Street would be lower and stepback from the street frontage, while the five-story building components would be concentrated at the interior of the site and along the UPRR corridor and University Avenue/Fourth Street frontages. Maximum proposed building heights would be 71 feet to the top of the parapet at its greatest extent, which is the measurement required and

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1 The parking garage is designed as a single helix with a sloped floor that provides two-way vehicular circulation. The garage would provide six levels of parking, and would be the same height as the five-story mixed-use buildings because approximately two levels (floors) of parking are accommodated behind the high ceiling ground floor commercial space.
defined by the Zoning Ordinance (Section 23F.04.010, “Height of Building, Maximum”). The roofline would generally be 60 feet above grade. Mechanical features, elevator, and stair overruns would extend up to 10 feet above the roof line. Individual Project components are described in more detail in Chapter III, Project Description.

Discretionary actions/approvals by the City that would be necessary for this Project include a Structural Alteration Permit, Demolition Permit, various Use Permits, and a waiver/modification under the State Density Bonus Law. Refer to Chapter III, Project Description, for a more detailed description of the proposed Project and associated discretionary actions.

C. EIR SCOPE
The City circulated a Notice of Preparation (NOP) notifying responsible agencies and interested parties that an EIR would be prepared for the Project and indicated the environmental topics anticipated to be addressed in the EIR. The NOP was published on February 10, 2016, and was submitted to the State Clearinghouse, mailed to relevant public agencies, mailed to owners and residents of properties within 300 feet, emailed to interested parties, and provided to members of the Zoning Adjustments Board (ZAB), Landmark Preservation Commission (LPC) and Design Review Committee (DRC). Two public scoping sessions were held for the Draft EIR. The Landmarks Preservation Commission scoping session was held on March 3, 2016 and the Zoning Adjustments Board scoping session was held on March 10, 2016.

Comments on the NOP were received by the City and considered during preparation of the Draft EIR. Seventeen comment letters regarding the NOP were received, in addition to the verbal comments provided at the public scoping sessions. Copies of the NOP and the comment letters, along with a summary of the verbal comments received at the LPC Scoping Meeting and the captioner’s record from the ZAB Scoping Meeting are included in Appendix A.

Based on the preliminary analysis provided in the Initial Study (included as Appendix B), consultation with City staff, and review of the comments received during the scoping process, the following environmental topics are addressed as separate sections of this Draft EIR:

A. Cultural Resources
B. Traffic and Circulation
C. Air Quality
D. Noise and Vibration

It has been determined that the following potential effects of the proposed Project would be less than significant or have no impact, and therefore these topics are not studied in detail in the Draft EIR: aesthetics; agricultural and forestry resources; biological resources; cultural (historic and paleontological) resources; geology and soils; greenhouse gas emissions; hazards and hazardous materials; hydrology and water quality; land use and planning; mineral resources; population and housing; public services; recreation; and utilities and service systems. Each of these topics is addressed in the Initial Study provided in Appendix B and summarized in Chapter V, CEQA-Required Assessment Conclusions (subsection C).
D. REPORT ORGANIZATION

This EIR is organized into the following chapters:

- **Chapter I – Introduction:** Discusses the overall EIR purpose, provides a summary of the proposed Project, describes the EIR scope, and summarizes the organization of the EIR.

- **Chapter II – Summary:** Provides a summary of the proposed Project and the impacts that might result from implementation of the proposed Project, and describes mitigation measures recommended to reduce or avoid significant impacts. Potential areas of controversy and alternatives to the proposed Project are also summarized.

- **Chapter III – Project Description:** Provides a description of the Project site, the Project objectives, the proposed Project, and uses of this EIR.

- **Chapter IV – Setting, Impacts and Mitigation Measures:** Describes the following for each environmental technical topic: existing conditions (setting), potential environmental impacts and their level of significance, and mitigation measures recommended to mitigate identified impacts. Cumulative impacts are also discussed in each topical section. Potential adverse impacts are identified by levels of significance, as follows: less-than-significant impact (LTS), significant impact (S), and significant and unavoidable impact (SU). The significance of each impact is categorized before and after implementation of any recommended mitigation measures(s).

- **Chapter V – CEQA-Required Assessment Conclusions:** Provides additional specifically-required analyses of the proposed Project’s growth-inducing effects, significant irreversible changes, and effects found not to be significant, including a summary of the Initial Study findings.

- **Chapter VI – Alternatives:** Provides an evaluation of two alternatives to the proposed Project in addition to the CEQA-required No Project alternative.

- **Chapter VII – Report Preparation:** Identifies preparers of the EIR, references used, and the persons and organizations contacted.

- **Appendices:** The appendices contain the NOP and associated comments (Appendix A); the Initial Study (Appendix B); AB 52 Documentation (Appendix C); Transportation Impact Analysis (Appendix D); Air Quality Data (Appendix E); and Noise Data (Appendix F). EIR appendices C through F and Initial Study appendices A and B are included on a compact disc on the inside back cover of the EIR.
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II. SUMMARY

This chapter provides an overview of the proposed Project and the findings outlined in this EIR, including a discussion of alternatives and cumulative Project impacts.

A. PROJECT UNDER REVIEW

This EIR has been prepared to evaluate the environmental consequences of approval and implementation of the 1900 Fourth Street Project (Project). The approximately 2.21-acre Project site occupies the block surrounded by Hearst Avenue to the north, Fourth Street to the east, University Avenue to the south, and the Union Pacific Railroad (UPRR) corridor to the west. The Project site is located within the Fourth Street shopping area in West Berkeley. The site is also part of a group of several properties designated by the City of Berkeley’s Landmarks Preservation Commission as a Landmark site due to its association with the West Berkeley Shellmound.

The proposed Project would result in demolition of the existing 900 square-foot, one-story structure and approximately 350-space surface parking lot on the Project site and redevelopment of the site with a mix of residential and commercial uses within two separate buildings totaling 191,362 gross square feet, as well as associated parking and circulation, open space, landscaping, and utility improvements. The proposed Project would include development of 155 residential units and 30,000 square feet of retail and restaurant space as well as 372 parking spaces within a parking garage. Building heights along Fourth Street would be lower and stepback from the street frontage, while the five-story building components would be concentrated at the interior of the site and along the UPRR corridor and University Avenue/Fourth Street frontages. Maximum proposed building heights would be 71 feet to the top of the parapet at its greatest extent, which is the measurement required and defined by the Zoning Ordinance (Section 23F.04.010, “Height of Building, Maximum”). The roofline would generally be 60 feet above grade. A total of approximately 13,032 square feet of open space would be provided at the ground level, second-story, and rooftop.

The proposed Project would be built on a deep foundation secured by pre-cast, pre-stressed concrete piles or drilled displacement piles in order to reach the stiffer clay soils that are present below the weaker shallow soils that underlie the site. Alternatively, shallow-footing foundation elements supported on underlying geopiers or drilled concrete displacement columns may be used. No pile driving would occur. Foundation depths are anticipated to range between 4 and 12 feet. Piles may extend up to a maximum of 50 feet below grade. Individual Project components are described in more detail in Chapter III, Project Description.

Discretionary actions/approvals by the City that would be necessary for this Project include the following:
Structural Alteration Permit (SAP), per Berkeley Municipal Code (BMC) Section 3.24.260 to allow construction activities with the potential to affect a designated City of Berkeley Landmark site. The Project site is part of a group of several properties designated for their location within the potential boundaries of the West Berkeley Shellmound. As per BMC Section 23E.12.020, the LPC has the responsibility for design review of projects which involve landmarks.

Demolition Permit, per BMC Section 22.12.060 to allow demolition of the existing commercial building.

Use Permit, per BMC Section 23E.64.030.A to allow new retail sales uses greater than 7,500 square feet.

Use Permit, per BMC Section 23E.64.030.A to allow a quick or full service restaurant use.

Use Permit, per BMC Section 23E.64.030.A to allow a mixed-use development over 20,000 square feet.

Use Permit, per BMC Section 23E.64.050.B.1 to allow creation of floor area greater than 5,000 square feet.

Use Permit, per BMC Section 23E.64.060.A to allow restaurant operation from 7 a.m. to 1 a.m. on Fridays and Saturdays.

Administrative Use Permit, per BMC Section 23E.64.030.A to allow alcoholic beverage service of beer and wine incidental to food service.

In addition, the Project applicant is requesting a waiver/modification of the four-story and 50-foot height limit development standards under the State Density Bonus Law (Government Code Section 65915(e)), which the City will process in conjunction with the permits described above.

B. POTENTIAL AREAS OF CONTROVERSY

Sixteen comment letters were received in response to the Notice of Preparation (NOP), in addition to the verbal comments provided at the public scoping sessions held on March 3 and March 10, 2016. The NOP, comment letters received and meeting summaries and transcripts from the scoping sessions are included in Appendix A. Comments in response to the NOP generally identified the following potential areas of concern:

- Impacts to archaeological resources and the West Berkeley Shellmound
- Impacts to nearby historic structures
- Traffic, circulation, parking, and transit operations
- Proximity of at-grade rail crossings and pedestrian safety
- Air quality impacts due to locating residential uses near the freeway
- Noise impacts due to locating residential uses near noise-generating uses
- Effects of global climate change and sea level rise
II. SUMMARY

- Impacts to hydrology and water quality, including flooding
- Impacts related to land use compatibility and character of the surrounding area
- Conflicts with land use planning policies
- Provision of public services and utilities
- Impacts specific to Project construction activities

The City considered the comments received on the NOP and at the public scoping sessions during preparation of the Initial Study and EIR.

C. SUMMARY OF IMPACTS AND MITIGATION MEASURES

This summary provides an overview of the analysis contained in the Initial Study (included in Appendix B) and Chapter IV, Setting, Impacts and Mitigation Measures of this EIR. The level of significance\(^1\) for each environmental issue topic discussed in the Initial Study and EIR is identified, including those impacts determined to be cumulatively considerable and significant and unavoidable. Project alternatives are also described.

1. Findings of the Initial Study

The Initial Study for the proposed Project is included as Appendix B to this EIR. The Project evaluated in the Initial Study consisted of the proposed Project with the discretionary actions outlined in Chapter III, Project Description of the EIR. The Initial Study identified no impacts or less-than significant impacts related to the following environmental issues:

- Aesthetics
- Agricultural and Forestry Resources
- Biological Resources
- Cultural (Historic) Resources
- Geology and Soils
- Greenhouse Gas Emissions
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Population and Housing
- Public Services

\(^1\) Under CEQA, a significant impact on the environment is defined as “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the Project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance.”
• Recreation
• Utilities and Service Systems

The Initial Study identified potentially significant impacts to the following environmental issues:
• Cultural (Paleontological) Resources
• Hazards and Hazardous Materials

However, the mitigation measures recommended in the Initial Study would mitigate these impacts to a less-than-significant level. Table II-1, Summary of Impacts and Mitigation Measures from the Initial Study (located at the end of this Chapter), shows recommended mitigation measures as they relate to each environmental topic identified in the Initial Study.

The Initial Study identified potential impacts requiring more detailed evaluation related to the following environmental issues, which are further evaluated in this EIR:
• Cultural (Archaeological) Resources
• Traffic and Circulation
• Air Quality
• Noise

For a complete description of potential impacts and recommended mitigation measures identified in the Initial Study, please refer to the specific discussion in the Initial Study, included as Appendix B to this EIR. Chapter V, CEQA-Required Assessment Conclusions, also summarizes the findings for each topic not discussed in the EIR.

2. Findings of the Environmental Impact Report

The EIR Traffic and Circulation analysis concluded that implementation of the proposed Project would result in a less than significant impact under Near-Term Conditions.

The EIR identified potentially significant impacts to the following environmental issues:
• Cultural (Archaeological) Resources
• Air Quality
• Noise

However, the mitigation measures recommended in the EIR would mitigate these impacts to a less-than-significant level. Table II-2, Summary of Impacts and Mitigation Measures from the EIR (located at the end of this Chapter), shows recommended mitigation measures as they relate to each environmental topic identified in the EIR.

The EIR identified significant unavoidable impacts for the following environmental issue:
• Traffic and Circulation - Cumulative, Year 2040
Mitigation measures were recommended to reduce these impacts to a less-than-significant level; however, these measures may not feasibly be implemented, and therefore, these impacts are considered to be significant and unavoidable.

3. Significant Impacts

As summarized above, development of the proposed Project has the potential to result in adverse environmental impacts in several environmental areas. The following impacts identified in both the Initial Study and EIR would be significant without the implementation of mitigation measures, but would be reduced to a less-than-significant level if the mitigation measures recommended in this EIR are implemented:

- Adverse effects of construction activities on previously unidentified paleontological resources;
- Hazards to the public or environment through the reasonably foreseeable upset or accident conditions associated with the release of hazardous materials;
- Adverse changes in the significance of a historical resource, the West Berkeley Shellmound (City Landmark #227) during ground disturbing activities;
- Short-term degradation of air quality due to the release of particulate matter emissions generated by excavation, hauling, and other activities;
- Location of residential land uses in an area that is generally considered an unacceptable noise environment for these uses; and
- Temporary or periodic increases in ambient noise levels due to construction activities.

Tables II-1 and II-2, Summary of Impacts and Mitigation Measures in the Initial Study and EIR, respectively (located at the end of this Chapter), summarizes the impacts and mitigation measures discussed in the Initial Study and Chapter IV of the EIR.

4. Significant and Unavoidable Impacts

No project-level significant and unavoidable impacts were identified in the Initial Study or the EIR. However, significant unavoidable Traffic and Circulation-related impacts were identified in the EIR under cumulative conditions (see below for further discussed of the cumulative analysis). Even with implementation of the mitigation measures recommended in this EIR, the proposed Project would result in significant unavoidable traffic congestion impacts at the following study intersections during Cumulative Plus Project Conditions:

- Fourth Street/Hearst Avenue
- Sixth Street/Hearst Avenue
- Sixth Street/University Avenue
- San Pablo Avenue/University Avenue
5. **Cumulative Impacts**

CEQA defines cumulative impacts as “two or more individual effects which, when considered together, are considerable, or which can compound or increase other environmental impacts.” Section 15130 of the CEQA Guidelines requires that an EIR evaluate potential environmental impacts that are individually limited, but cumulatively significant. These impacts can result from the proposed Project when combined with other past, present, or reasonably foreseeable future projects. The cumulative impacts analysis in this Draft EIR is based on information provided by the City on currently planned, approved, or proposed projects primarily located within West Berkeley or at least within ¼-mile of the Project site, unless otherwise noted in cumulative discussion for each of the topical sections.

As discussed in Section IV.B, Traffic and Circulation of this EIR and summarized above, cumulative traffic congestion impacts would occur under Cumulative Plus Project Conditions at four of the study intersections and these impacts would be significant and unavoidable.

6. **Alternatives to the Proposed Project**

In accordance with CEQA and the CEQA Guidelines (Section 15126.6), an EIR must describe a reasonable range of alternatives to the project, or to the location of the project, that could attain most of the project’s basic objectives, while avoiding or substantially lessening any of the significantly adverse environmental effects of the project. The range of alternatives required in an EIR is governed by a “rule of reason” that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. CEQA states that an EIR should not consider alternatives “whose effect cannot be ascertained and whose implementation is remote and speculative.”

Three alternatives to the proposed Project are analyzed in Chapter VI of this EIR as summarized below:

- **No Project Alternative.** Under the No Project alternative, the existing Project site would remain in its current condition and use as a parking lot.

- **Reduced Commercial Use Alternative.** Under the Reduced Commercial Use alternative the existing building and surface parking lot on the site would be demolished and the site would be redeveloped with two five-story mixed-use buildings that would include 155 residential units and 22,500 square feet of commercial retail/restaurant space and associated improvements.

- **Reduced Building Alternative.** Under the Reduced Building alternative, the existing building and surface parking lot on the site would be demolished and the site would be redeveloped with a single two-story mixed-use building that includes 50 residential units and 7,500 square feet of commercial retail/restaurant space and associated improvements.

Each alternative is compared to the proposed Project, and discussed in terms of its various mitigating or adverse effects on the environment. Analysis of the alternatives focuses on those topics for which significant adverse impacts would result from the proposed Project. The Reduced Building alternative is considered to be the environmentally superior alternative.
D. SUMMARY TABLES

Information in Table II-1 summarizes the recommended mitigation measures as they relate to each environmental topic in the Initial Study. Information in Table II-2 summarizes the impacts and mitigation measures discussed in Chapter IV of the EIR. Tables II-1 and II-2 are arranged in four columns: 1) impacts; 2) level of significance without mitigation; 3) mitigation measures; and 4) level of significance after mitigation. Levels of significance are categorized as follows:

- LTS  Less Than Significant
- S    Significant
- SU   Significant and Unavoidable

For a complete description of potential impacts and recommended mitigation measures, please refer to the specific topical discussions in the Initial Study and Chapter IV.
## Table II-1: Summary of Impacts and Mitigation Measures from the Initial Study

<table>
<thead>
<tr>
<th>Environmental Impacts</th>
<th>Level of Significance Without Mitigation</th>
<th>Mitigation Measures</th>
<th>Level of Significance With Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. AESTHETICS</strong></td>
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<tr>
<td>There are no significant impacts to aesthetics.</td>
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<tr>
<td><strong>II. AGRICULTURAL RESOURCES</strong></td>
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<tr>
<td>There are no significant impacts to agricultural resources.</td>
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<tr>
<td><strong>III. AIR QUALITY</strong></td>
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<tr>
<td>There are no significant impacts to air quality.</td>
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<tr>
<td><strong>IV. BIOLOGICAL RESOURCES</strong></td>
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<tr>
<td>There are no significant impacts to biological resources.</td>
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<tr>
<td><strong>V. CULTURAL RESOURCES</strong></td>
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<tr>
<td>The proposed Project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature</td>
<td>S</td>
<td><strong>CUL-1</strong>: Should any apparent fossil be encountered during Project subsurface construction, all ground-disturbing activities within 50 feet shall be halted, and a qualified paleontologist contacted to assess the situation, consult with agencies as appropriate, and make recommendations for the treatment of the fossil. If the fossil is found to be significant, and Project activities cannot avoid the fossils, adverse impacts to the fossil shall be mitigated. Mitigation may include, but shall not be limited to, monitoring, recording the fossil locality, data recovery and analysis, a final report, and submitting 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 of Berkeley Planning and Development Department for review and, if significant paleontological materials are recovered, a paleontological repository, such as the University of California Museum of Paleontology.</td>
<td>LTS</td>
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<td></td>
<td><strong>Prior to any groundbreaking activities, the Project applicant shall inform the construction contractor(s) of the sensitivity of the Project site for fossils and include the following directive in the appropriate contract documents.</strong></td>
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<td>The sub-surface of the construction site may be sensitive for paleontological resources (fossils). If fossils are encountered during Project sub-surface construction and a paleontologist is not on site, all ground-disturbing activities within 25 feet shall be halted and a qualified paleontologist shall be contacted to assess the situation, consult with agencies as appropriate, and make recommendations for the treatment of the fossil. Project personnel shall not collect or move any fossil.</td>
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</table>
Table II-1: Summary of Impacts and Mitigation Measures from the Initial Study

<table>
<thead>
<tr>
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<th>Level of Significance With Mitigation</th>
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<tbody>
<tr>
<td>CUL-1 Continued</td>
<td></td>
<td>Paleontological resources include fossil plants and animals, and such trace fossil evidence of past life as tracks. Ancient marine sediments may contain invertebrate fossils such as snails, clam and oyster shells, sponges, and protozoa; and vertebrate fossils such as fish, whale, and sea lion bones. Vertebrate land mammals may include bones of mammoth, camel, saber tooth cat, horse, and bison. Paleontological resources also include plant imprints, petrified wood, and animal tracks.</td>
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</tr>
</tbody>
</table>

VI. GEOLOGY AND SOILS
There are no significant impacts to geology and soils.

VII. HAZARDS AND HAZARDOUS MATERIALS
The proposed Project could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

S  HAZ-1a: Phase II ESA sampling of soil, groundwater, and soil gas shall be performed at the Project site by a qualified environmental professional to evaluate potential impacts from hazardous materials in soil, groundwater, and soil gas, and potential elevated methane levels in soil gas. A work plan for the proposed sampling activities shall be prepared by the qualified environmental professional and submitted to the TMD for review and approval. The work plan shall outline the proposed sampling locations (which shall include locations where petroleum contamination, staining, odors, slag, ash, refuse and demolition debris were observed in archaeological studies), and the proposed sample collection procedures and laboratory analytical methods. At a minimum, laboratory analysis of soil and groundwater samples shall include Title 22 metals, petroleum hydrocarbons (gasoline, diesel, and motor oil), VOCs, and PAHs. Soil samples shall additionally be analyzed for asbestos, and soil gas samples shall be analyzed for VOCs and methane. Soil and groundwater sampling and analysis shall be performed in accordance with the United States Environmental Protection Agency’s SW-846 guidelines. Sampling of soil gas shall be performed in accordance with DTSC’s Active Soil Gas Investigations Advisory and analysis of methane in soil gas shall be performed in accordance with DTSC’s Guidance for Evaluation of Biogenic Methane. LTS
Table II-1: Summary of Impacts and Mitigation Measures from the Initial Study

<table>
<thead>
<tr>
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<th>Level of Significance With Mitigation</th>
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<tr>
<td>HAZ-1 Continued</td>
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<td>The Phase II ESA report documenting the results of the sampling and analysis activities shall be prepared by the qualified environmental professional and submitted to the Berkeley TMD for review and approval. The report shall document the sampling activities performed and subsurface characteristics observed, and shall evaluate sample results based on applicable regulatory agency screening levels and guidance documents (e.g., the San Francisco Bay Regional Water Quality Control Board’s [Regional Water Board] Environmental Screening Levels for soil, groundwater, and soil gas, and the DTSC’s methane guidance.) The report shall include recommendations for the following: further investigation if warranted; soil handling, disposal, and potential re-use options; groundwater handling and discharge/disposal options; health and safety procedures and worker training requirements; and recommendations for addressing the possible presence of methane (e.g., removal of the methane source or installation of soil gas mitigation systems), if methane in soil gas could pose a potential explosion hazard for the proposed Project.</td>
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<tr>
<td>HAZ-1b</td>
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<td>If soil, groundwater, or soil gas sample analytical results exceed ESLs for unrestricted land use and naturally-occurring background concentrations for metals in soil, and/or if elevated methane is detected in soil gas, the applicant shall present the Phase II ESA report to the appropriate regulatory agency(ies) (e.g., Alameda County Department of Environmental Health [ACDEH], Regional Water Board, or DTSC) and enter into an oversight agreement with the regulatory agency(ies). The regulatory agency(ies) shall determine whether additional actions (e.g., further investigation, preparation of a health risk assessment, remediation, and/or installation of a soil gas mitigation system) are required for the proposed Project, and shall oversee the development of plans for additional action and implementation of additional actions (if required) to ensure that the proposed Project would not pose a threat to human health or the environment.</td>
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<tr>
<td>Environmental Impacts</td>
<td>Level of Significance Without Mitigation</td>
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<td>HAZ-1 Continued</td>
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<td><strong>HAZ-1c</strong>: A Risk Management Plan (RMP) shall be prepared for the proposed Project by a qualified environmental professional, and shall include protocols for the characterization and handling of soil and groundwater including the following:</td>
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<td>• <strong>Observation during site demolition and soil disturbing activities.</strong> A qualified environmental consultant shall observe demolition activities, including removal of asphalt pavement, subsurface utilities, or any other subsurface feature; and soil disturbing activities, including grading/scraping, excavation/trenching, and drilling, to evaluate whether previously unidentified areas of impacts from hazardous materials are present at the Project site. The qualified environmental consultant shall identify signs of potential impacts from hazardous materials in soil and/or groundwater, such as staining/discoloration, odors, and presence of rubble/debris. The qualified environmental consultant shall also use a photoionization detector (PID) meter to screen soil for organic vapors to evaluate potential impacts. The qualified environmental consultant shall have the authority to stop work in an area where previously unidentified potential impacts from hazardous materials in soil or groundwater are identified until the nature and extent of the potential impacts are further evaluated.</td>
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<td>• <strong>Appropriate sample collection procedures.</strong> If previously unidentified impacted soil or groundwater is encountered at the Project site, sampling of the potentially impacted soil or groundwater shall be performed to evaluate the nature and extent of the potential impacts and determine whether notification of appropriate regulatory agencies and remediation may be necessary. The appropriate sample containers, sampling techniques, sample preservation, and laboratory analysis to be performed shall be specified.</td>
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<td>• <strong>Protocols for confirmation sampling.</strong> If previously unidentified impacted soil is encountered and removed, or if a spill occurs and impacted soil is removed, confirmation sampling shall be performed to evaluate whether the extent of impacted soil removal was sufficient and whether the remaining soil is of acceptable quality (e.g., the soil meets appropriate regulatory agency guidelines for residential land use) to remain on-site.</td>
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Table II-1: Summary of Impacts and Mitigation Measures from the Initial Study

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<td>HAZ-1 Continued</td>
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<td>• Segregation of impacted soil from non-impacted soil. If impacted soil is excavated, it shall be placed in a segregated stockpile or directly into trucks or roll off bins for off-site disposal to ensure that it is not mixed with potentially clean soil.</td>
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<td>• <strong>Appropriate stockpile best management practices.</strong> Stockpile management methods shall be specified to ensure that stockpiles are constructed in a manner that would prevent potential contamination of underlying soil, spilling of soil from stockpile areas, infiltration of rainwater into stockpiles, and dust, vapor, or odor emissions from stockpiles.</td>
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<td>• <strong>Dust control/air monitoring procedures.</strong> Dust control procedures shall include limiting vehicle and equipment speeds; regular application of water on routes of vehicle/equipment travel; sweeping of pavement surfaces if soil is tracked onto pavement surfaces by vehicles/equipment; and application of water to active soil disturbing activities such as excavation, grading, stockpiling, and truck loading, to ensure that potential emissions of fugitive dust are minimized to the maximum extent practicable. The application of water shall be controlled to ensure that water does not run off and cause ponding or enter storm drains. Air monitoring shall include visual monitoring for dust. If visual dust is observed to be generated at the Project site, additional dust control measures shall be implemented. If visual dust is observed to cross the site boundary, work shall be suspended until the dust emissions can be controlled. If impacted soil or groundwater is encountered at the Project site that could pose a health risk for construction workers or the surrounding public due to exposure to dust or vapors from impacted soil or vapors from the impacted groundwater, appropriate air monitoring procedures shall be developed and implemented to ensure that emissions of dust and/or vapors are adequately controlled to prevent exposure of construction workers and the surrounding public to potential health risks.</td>
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<tr>
<td>HAZ-1 Continued</td>
<td></td>
<td><strong>Protocols for off-site waste disposal and on-site soil re-use.</strong> Excess soil or impacted soil to be removed from the Project site shall be sampled and characterized to ensure that it is disposed of at an appropriate off-site location. Soil impacted with hazardous materials shall be disposed of at an appropriately permitted landfill and not be re-used as fill material on-site or at an off-site location. Soil that is sampled due to suspected contamination shall only be re-used on-site if sampling results indicate that the soil meets the appropriate regulatory agency guidelines for residential land use. If soil that was suspected of contamination is proposed for on-site re-use based on waste characterization sampling results, additional sampling of the soil may need to be performed to demonstrate that the soil is suitable for re-use as a higher frequency of sampling shall be specified for re-use of soil than for waste disposal characterization. The appropriate sample containers, sampling techniques, sample preservation, and laboratory analysis shall be specified for evaluation of soil proposed for off-site disposal or on-site re-use.</td>
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<td><strong>Construction dewatering and treatment/management procedures, if necessary.</strong> If groundwater is encountered and dewatering is required, sampling and characterization of the groundwater shall be performed to evaluate groundwater disposal options. If groundwater is impacted with hazardous materials, it may require treatment prior to discharging to the sanitary sewer in accordance with East Bay Municipal Utility District (EBMUD) permit requirements.</td>
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<td><strong>Guidelines for import of fill material.</strong> Fill material would be imported to the site for construction activities. The source of the fill material shall be evaluated and the fill material shall be sampled and characterized prior to importing to ensure that it is not impacted with hazardous materials. The guidelines of DTSC’s Information Advisory for Clean Imported Fill Material shall be followed for evaluation and sampling of imported fill material.</td>
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Table II-1: Summary of Impacts and Mitigation Measures from the Initial Study

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<td>HAZ-1 <em>Continued</em></td>
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<td>• <strong>Notifications and response procedures.</strong> Procedures for notification of construction workers, construction management personnel, and the appropriate regulatory agencies shall be specified for situations where previously unidentified impacted soil or groundwater is encountered, or other features of environmental concern are discovered such as underground storage tanks, buried drums or other hazardous materials containers, pipelines containing hazardous materials, or buried asbestos containing materials such as asbestos-cement pipelines or pipelines wrapped in asbestos insulation. Response procedures for such situations shall include emergency response and evacuation procedures, further assessment/evaluation of the potentially hazardous conditions by appropriately trained personnel through use of field equipment and sampling, and retaining appropriately trained personnel to abate the hazards.</td>
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<td>• <strong>Contingency plan.</strong> A contingency plan shall be prepared and shall describe how construction activities would be modified (e.g., temporary stopping of work, focusing on construction activities in a different area of the site, or designing and implementing engineering controls) if features of potential environmental concern or previously unidentified impacted soil and/or groundwater are identified that would require further evaluation and possibly remediation, and therefore cause significant impacts to proposed construction activities and the Project schedule.</td>
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<td>• <strong>Health and Safety Plan.</strong> A Health and Safety Plan (HSP) shall be prepared and shall describe potential site hazards, training requirements, personal protective equipment, and safe work practices for site personnel. All contractors working at the Project site shall either adopt and abide by this HSP or develop their own safety plans which, at a minimum, meet the requirements of this HSP.</td>
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</table>

The RMP shall be submitted to the appropriate regulatory oversight agencies for review and approval. If regulatory agency involvement is not required based on the findings of the Phase II ESA, the RMP shall be submitted to TMD for review and approval.
Table II-1: Summary of Impacts and Mitigation Measures from the Initial Study

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<tr>
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<tr>
<td>HAZ-1 Continued</td>
<td></td>
<td>HAZ-1d: Prior to issuance of any demolition, grading, or building permit, the applicant shall submit for review and approval by the City, written verification that the appropriate regulatory oversight agencies (e.g., Regional Water Board, ACDEH, and/or DTSC), have granted all required clearances and confirmed that all of the applicable standards, regulations, and conditions for the proposed use of the Project site have been met, as outlined in Mitigation Measures HAZ-1a, HAZ-1b, and HAZ-1c.</td>
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</table>

VIII. HYDROLOGY AND WATER QUALITY
There are no significant impacts to hydrology and water quality.

X. MINERAL RESOURCES
There are no significant impacts to mineral resources.

XI. NOISE
There are no significant impacts to noise.

XII. POPULATION AND HOUSING
There are no significant impacts to population and housing.

XIII. PUBLIC SERVICES
There are no significant impacts to public services.

XIV. RECREATION
There are no significant impacts to recreation.

XV. TRANSPORTATION/TRAFFIC
There are no significant impacts to transportation/traffic.

XVI. UTILITIES AND SERVICE SYSTEMS
There are no significant impacts to utilities and service systems.

Table II-2: Summary of Impacts and Mitigation Measures from the EIR

<table>
<thead>
<tr>
<th>Environmental Impacts</th>
<th>Level of Significance Without Mitigation</th>
<th>Mitigation Measures and Recommended Measures</th>
<th>Level of Significance With Mitigation</th>
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<tbody>
<tr>
<td><strong>A. CULTURAL RESOURCES</strong></td>
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<tr>
<td>CUL-2: Ground-disturbing activities associated with Project construction could result in a substantial adverse change in the significance of a historical resource, the West Berkeley Shellmound (City Landmark #227).</td>
<td>S</td>
<td><strong>CUL-2a:</strong> Before construction-related ground-disturbing activities commence, including ground clearance, the Project site shall be surveyed by a qualified archaeologist using ground-penetrating radar (GPR). The GPR survey is intended to identify those areas where it is most likely that any Shellmound material that may exist is concentrated or dispersed to focus archaeological and tribal monitoring efforts at those locations, as further described in Mitigation Measure CUL-2d.</td>
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<td><strong>CUL-2b:</strong> Prior to Project ground disturbance, all construction contractor(s) responsible for overseeing and operating ground-disturbing mechanical equipment (e.g., on-site construction managers and backhoe operators) shall be required to participate in cultural awareness and sensitivity training. The purpose of this training is to (1) educate construction personnel regarding the types of archaeological deposits that may be encountered during construction; (2) inform construction personnel of the appropriate procedures that must be used if archaeological deposits or human remains are encountered, including work stoppage, agency notification, and archaeological exposure and removal of significant deposits; and (3) provide cultural sensitivity training to construction personnel to ensure respectful and appropriate behaviors in the vicinity of archaeological deposits and human remains, consistent with the direction of the on-site Ohlone tribal group.</td>
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<td>A qualified archaeologist that meets or exceeds the Secretary of the Interior's Professional Qualifications Standards in archeology and an Ohlone tribal representative eligible to consult with the City, pursuant to AB 52, shall conduct the training. The City shall ensure that this training occurs prior to Project ground disturbance and shall maintain a record of all construction personnel that have received this training.</td>
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### Table II-2: Summary of Impacts and Mitigation Measures from the EIR

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<th>Mitigation Measures and Recommended Measures</th>
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<td><strong>CULT-2c</strong>: The Project applicant shall provide a utility plan for the Project to a qualified archaeologist for review prior to issuance of any demolition or grading permits. The archaeologist shall review these plans to assess whether trenching for utility connections adjacent to the Project site have the potential to impact intact deposits associated with the West Berkeley Shellmound. The archaeologist shall prepare a report documenting appropriate measures for mitigating potential impacts to intact archaeological deposits and associated human remains that may occur from utility excavations. Appropriate mitigation measures documented in the report may include, but would not necessarily be limited to: (1) a GPR survey to determine the possible presence and locations of subsurface archaeological features; (2) archaeological excavation at proposed utility excavation locations to identify and recover archaeological deposits or human remains; (3) documentation and scientific study of recovered artifacts and human remains, and preparation of a report of findings; and (4) public outreach, including presentations, articles, and literature describing findings. The mitigation measures provided in the report shall clearly indicate whether the measures would be implemented prior to Project ground disturbance, during Project construction, or after Project ground disturbance has been completed. <strong>CULT-2d</strong>: All Project ground-disturbing activities shall be monitored by an archaeologist and a representative of an Ohlone tribe. The archaeological monitoring shall be overseen by an archaeologist that meets or exceeds the Secretary of the Interior’s Professional Qualifications Standards in archaeology. The Ohlone tribal monitor shall be an individual identified by the Native American Heritage Commission as eligible to consult with the City under AB 52.</td>
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|                        |                                        | Level of Significance With Mitigation |
## Table II-2: Summary of Impacts and Mitigation Measures from the EIR

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</table>
| CUL-2 Continued       |                                        | Should an archaeological deposit be encountered during project subsurface construction, all ground-disturbing activities within 25 feet shall be redirected and the on-site archaeologist and Ohlone monitor shall assess the deposit, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. The City shall be notified by the applicant team within 24 hours of the encounter. If found to be significant by the on-site archaeologist (i.e., eligible for listing in the California Register of Historical Resources), the applicant shall be responsible for funding and implementing appropriate mitigation measures. Mitigation measures may include, but would not be limited to, recording the archaeological deposit, data recovery and analysis, and public outreach. Upon completion of the selected mitigations, a report documenting methods, findings, and recommendations shall be prepared and submitted to the City for review. Significant archaeological materials shall be submitted to an appropriate curation facility and used for public interpretive displays, as appropriate and in coordination with an Ohlone tribe representative. The applicant shall inform its contractor(s) of the sensitivity of the Project site for archaeological deposits, and include the following directive in the appropriate contract documents:

“The subsurface of the construction site is sensitive for archaeological deposits. If archaeological deposits are encountered during project subsurface construction, all ground-disturbing activities within 25 feet shall be redirected and a qualified archaeologist shall 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 archaeological materials. Archaeological deposits can include, but are not limited to, shellfish remains; bones, including human remains; flakes of, and tools made from, obsidian, chert, and basalt; and mortars and pestles.”

The City shall verify that the language has been included in the grading plans prior to issuance of a grading permit or other permitted project action that includes ground-disturbing activities on the Project site. |
### Table II-2: Summary of Impacts and Mitigation Measures from the EIR

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<th>Level of Significance With Mitigation</th>
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<tr>
<td><strong>AB 52 Measures</strong></td>
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<td>AB 52 Measure CUL-1: The applicant will make a donation to the Ohlone Indian Tribe, Inc., a 501(c)(3) organization, in the amount of $75,000 for the sole purpose of maintaining, with appropriate dignity, the Ohlone Indian Cemetery at 1401 Washington Boulevard in the Mission San Jose District of the City of Fremont, Alameda County. Potential improvements include revegetation with native landscaping; repair and replacement of the existing site fencing; repairs to the entry archway, signage, and grave markers; and other improvements necessary to maintain and enhance the dignity of the cemetery. The Ohlone Indian Tribe will be responsible for documenting the uses of these funds and providing confirmation to the City that this work has been completed within one year of the date that the funds are granted to the Tribe.</td>
<td>N/A</td>
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<td>AB 52 Measure CUL-2: The applicant will fund creation and implementation of a GIS layer for City staff use that indicates areas of archaeological sensitivity within the City. This map will be for internal, project-planning use and will not be available to the public as it would contain sensitive information. The City would routinely update the information contained in the GIS database as new information is revealed through records searches conducted at the Northwest Information Center by qualified archaeologists as part of individual development project review.</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Recommended Measures</strong></td>
<td></td>
<td>Recommended Measure CUL-1: The Project applicant will fund and maintain a publicly accessible, permanent display within the City Landmark boundary of the West Berkeley Shellmound that describes the archaeological and cultural significance of the site. The content of the display will be developed in consultation with a qualified archaeologist and Ohlone representative to ensure that tribal and archaeological perspectives are equally presented.</td>
<td>N/A</td>
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### Table II-2: Summary of Impacts and Mitigation Measures from the EIR

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<tr>
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<tr>
<td><strong>B. TRAFFIC AND CIRCULATION</strong></td>
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<tr>
<td>TRA-1: Under Cumulative Plus Project Conditions, the proposed Project would increase vehicle trips and intersection level of delay at the intersection of Fourth Street/Hearst Avenue (Intersection #2).</td>
<td>S</td>
<td>TRA-1: The City of Berkeley shall install a traffic signal at the intersection of Fourth Street/Hearst Avenue. The Project shall contribute a fair share to the design and implementation of the traffic signal. Implementation of this mitigation measure would reduce this impact to a less-than-significant level. However, there are currently no plans to signalize this intersection and the Berkeley City Council recently rejected adoption of a West Berkeley Transportation Services Fee, which would have instituted a mechanism for new developments to contribute a fair-share investment to fund capital improvements. Therefore, the City has no program to fund and install a traffic signal and this impact would remain significant and unavoidable.</td>
<td>SU</td>
</tr>
<tr>
<td>TRA-2: Under Cumulative Plus Project Conditions, the proposed Project would increase vehicle trips and intersection level of delay at the intersection of Sixth Street/Hearst Avenue (Intersection #3).</td>
<td>S</td>
<td>TRA-2: The City of Berkeley shall implement signal timing and striping changes at the intersection of Sixth Street/Hearst Avenue. Specific geometric modifications include restriping the southbound approach from a left and through/right turn lane to a through/left and through/right turn lane; and, restriping the eastbound approach from one all-movement lane to a through/left turn lane and right-turn pocket. The Project shall contribute a fair share to the design and implementation of the intersection modifications. With implementation of signal timing and striping changes at the intersection of Sixth Street/Hearst Avenue (Intersection #3), the impact on auto delay would be reduced to less than significant levels. However, this treatment would have the potential to result in left-turning vehicles blocking through traffic and could increase safety conflicts for all modes. Due to these potential secondary impacts, this mitigation is considered undesirable and infeasible. For these reasons, this impact would remain significant and unavoidable.</td>
<td>SU</td>
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<tr>
<td><strong>TRA-3</strong>: Under Cumulative Plus Project Conditions, the proposed Project would increase vehicle trips and intersection level of delay at the intersection of Sixth Street/University Avenue (Intersection #6).</td>
<td>S</td>
<td><strong>TRA-3</strong>: The City of Berkeley shall implement signal timing changes (e.g., splits, phasing, and cycle length) at the intersection of Sixth Street/University Avenue. The Project shall contribute a fair share to the design and implementation of the intersection modifications. With implementation of signal timing changes (e.g., splits, phasing, cycle length) at the intersection of Sixth Street/University Avenue (Intersection #6), the degree of the impact on auto delay could be reduced to a less-than-significant level. However, signal timing changes, such as, increasing the cycle length, would adversely affect other signals along the coordinated corridor. Due to these potential secondary impacts, this mitigation is considered undesirable and the impact is considered significant and unavoidable.</td>
<td>SU</td>
</tr>
<tr>
<td><strong>TRA-4</strong>: Under Cumulative Plus Project Conditions, the proposed Project would increase vehicle trips and intersection level of delay at the intersection of San Pablo Avenue/University Avenue (Intersection #7).</td>
<td>S</td>
<td><strong>TRA-4</strong>: Caltrans shall coordinate with the City of Berkeley to implement signal timing changes (e.g., splits, phasing, and cycle length) at the intersection of San Pablo Avenue/University Avenue. The Project shall contribute a fair share to the design and implementation of the intersection modifications. With implementation of signal timing changes (e.g., splits, phasing, cycle length) at the intersection of San Pablo Avenue/University Avenue (Intersection #7), the degree of the impact on auto delay could be reduced to a less-than-significant level. However, signal timing changes, such as, increasing the cycle length, would adversely affect other signals along the coordinated corridor. Additionally, the mitigation is outside the jurisdiction of the City of Berkeley and could only be implemented in coordination with and at the discretion of Caltrans. Accordingly, this impact is considered significant and unavoidable.</td>
<td>SU</td>
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<tr>
<td><strong>Recommended Measures</strong></td>
<td></td>
<td>Recommended Measure TRA-1: To further reduce railroad-related hazards within the vicinity of the site, the following measures are recommended to be implemented: [\begin{itemize} \item Upgrade the crossing to ADA standard with connecting sidewalks, ADA detectable warning devices (e.g., tactile strips), refresh pavement markings; \item Construct vandal-resistant fencing or other appropriate barriers to limit access to railroad right-of-way; and \item Plan for grade separations for major thoroughfares. \end{itemize}]</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>C. AIR QUALITY</strong></td>
<td></td>
<td>AIR-1: Construction of the proposed Project would generate air pollutant emissions that could violate air quality standards.</td>
<td>LTS</td>
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<td>AIR-1</td>
<td>S</td>
<td>AIR-1: Consistent with guidance from the BAAQMD, the Project applicant shall ensure the following Basic Construction Mitigation Measures and Additional Measures are implemented through all construction contracts and specifications for the Project: [\begin{itemize} \item All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. \item All haul trucks transporting soil, sand, or other loose material off-site shall be covered. \item All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. \item All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph). \item 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. \item Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage on this measure shall be provided for construction workers at all access points. \item All construction equipment shall be maintained and properly tuned in accordance with manufacturer’s specifications. All equipment shall be checked by a certified visible emissions evaluator. \end{itemize}]</td>
<td>LTS</td>
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<td>AIR-1 Continued</td>
<td></td>
<td>A publicly visible sign with the telephone number and person to contact at the City of Berkeley regarding dust complaints shall be posted. This person shall respond and take corrective action within 48 hours. The BAAQMD’s phone number shall also be visible to ensure compliance with applicable regulations.</td>
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D. NOISE AND VIBRATION

NOI-1: The proposed Project would locate residential land uses in an area that, based on the City’s Noise and Land Use Compatibility Guidelines, is generally considered an unacceptable noise environment for residential land uses.

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<tr>
<td>NOI-1: The Project applicant shall implement the following measures, or similar combination of measures, which demonstrate that interior noise levels would be reduced to an acceptable level of 45 dBA Ldn or lower:</td>
<td>S</td>
<td>• In order for windows and doors to remain closed, mechanical ventilation such as air conditioning shall be provided for all units. • All exterior walls shall be constructed with a minimum STC rating of 50, consisting of construction of 2 inch by 4 inch wood studs with one layer of 5/8 inch Type “X” gypsum board on each side of resilient channels on 24 inch centers and 3 ½ inch fiberglass insulation. • All windows and glass doors shall be rated STC 39 or higher such that the noise reduction provided will satisfy the interior noise standard of 45 dBA Ldn. • An acoustical test report of all the sound-rated windows and doors shall be provided to the City for review by a qualified acoustical consultant to ensure that the selected windows and doors in combination with wall assemblies would reduce interior noise levels sufficiently to meet the City’s interior noise standard for residential uses. • All vent ducts connecting interior spaces to the exterior (i.e., bathroom exhaust, etc.) shall have at least two 90 degree turns in the duct. • All windows and doors shall be installed in an acoustically-effective manner. Sliding-window panels shall form an air-tight seal when in the closed position and the window frames shall be caulked to the wall opening around the perimeter with a non-hardening caulking compound to prevent sound infiltration. Exterior doors shall seal air-tight around the full perimeter when in the closed position.</td>
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<tr>
<td>NOI-1 <em>Continued</em></td>
<td></td>
<td>• Prior to issuance of a building permit, the applicant shall submit a report to the Building and Safety Division and the Zoning Officer by a qualified acoustic engineer certifying that the interior residential portions of the Project will achieve interior noise levels of no more than 45 Ldn. Should the City determine that the proposed building specifications outlined in this mitigation measure do not provide sufficient noise reduction, further details to achieve the noise standard shall be required. If the adopted Building Code imposes a more restrictive standard for interior noise levels, the report shall certify compliance with this standard.</td>
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<tr>
<td>NOI-2: Noise from construction activities would result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project.</td>
<td>S</td>
<td>NOI-2a: At least two weeks prior to initiating any construction activities at the Project site, the applicant shall provide notice to businesses and residents within 500 feet of the Project site, including: 1) a description of the Project; 2) description of construction activities; 3) daily construction schedule (i.e., time of day) and expected duration (number of weeks of months); 4) the name and phone number of the “Noise Management Individual” for the Project; 5) commitment to notify neighbors at least four days in advance of any authorized extended work hours and the reason for extended hours; 6) that construction work is about to commence; and 7) designate a “Noise Management Individual” who would be responsible for responding to any local complaints about construction noise. The noise manager would determine the cause of the noise complaints (e.g., starting too early, bad muffler, etc.) and institute reasonable measures to correct the problem. A copy of such notice and methodology for distributing the notice shall be provided in advance to the City for review and approval.</td>
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<td>NOI-2b: The Project applicant shall develop a site specific noise reduction program prepared by a qualified acoustical consultant to reduce construction noise impacts to the maximum extent feasible, subject to review and approval of the Zoning Officer. The noise reduction program shall include time limits for construction and all technically and economically feasible measures to ensure that construction complies with BMC Section 13.40.070. The noise reduction program should include, but shall not be limited to, the following available controls to reduce construction noise levels as low as practical:</td>
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| NOI-2 Continued       |                                        | • Construction activities (including the loading and unloading of materials and truck movements) shall be limited to the hours of 7:00 a.m. and 7:00 p.m. on weekdays and between the hours of 9:00 a.m. and 8:00 p.m. on weekends or holidays.  
• Construction equipment should be well maintained and used judiciously to be as quiet as practical.  
• All internal combustion engine-driven equipment shall be equipped with mufflers, which are in good condition and appropriate for the equipment.  
• Utilize “quiet” models of air compressors and other stationary noise sources where technology exists. Select hydraulically or electrically powered equipment and avoid pneumatically powered equipment where feasible.  
• Locate stationary noise-generating equipment as far as possible from sensitive receptors when adjoining construction sites. Construct temporary noise barriers or partial enclosures to acoustically shield such equipment where feasible.  
• Prohibit unnecessary idling of internal combustion engines. Construction equipment that would not be used for more than 5 minutes should be turned off completely.  
• Construct solid plywood fences around construction sites adjacent to operational business, residences or other noise-sensitive land uses where the noise control plan analysis determines that a barrier would be effective at reducing noise.  
• Erect temporary noise control blanket barriers, if necessary, along building facades facing construction sites. This mitigation would only be necessary if conflicts occurred which were irresolvable by proper scheduling. Noise control blanket barriers can be rented and quickly erected.  
• Route construction related traffic along major roadways and away from sensitive receptors where feasible. |                                        |                                      |
### Table II-2: Summary of Impacts and Mitigation Measures from the EIR

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</table>
| **Recommended Measures** |                                         | Recommended Measure NOI-1: As a condition of approval of the proposed Project, it is recommended that the Project applicant:  
• Provide a disclosure to future Project residents that the property is adjacent to an active rail corridor which generates train noise and vibration and  
• Ensures that the property manager provides public education materials on rail safety to all future residents of the Project site. |                                         | N/A |
| **Recommended Measures** |                                         | Recommended Measure NOI-2: To reduce long-term exposure of sensitive receptors to groundborne vibration the Project applicant should ensure that the proposed residential structure incorporates vibration reduction design measures as necessary to reduce vibration levels to less than 72 VdB. Methods may include, but are not limited to, the use of elastomer pads to support the building foundation, deeper joists, shorter floor spans, and/or lally columns. Proposed building structures should be designed to minimize vibration amplification at the upper floors. These measures should be incorporated into the Project design as a condition of approval and to the satisfaction of the City Engineer prior to the issuance of a building permit. If it is determined that these methods would not reduce vibration impacts to the less than 72 VdB, other design features should be considered and incorporated into final design plans. |                                         | N/A |

III. PROJECT DESCRIPTION

This chapter describes the 1900 Fourth Street Project (Project) that is proposed by West Berkeley Investors, LLC (Project applicant) and evaluated in this Environmental Impact Report (EIR). A description of the Project's location, context and objectives is followed by details of the Project itself and a summary of required approvals and entitlements.

A. PROJECT SITE

The following discussion describes the geographic context of the Project site and provides a brief overview of existing land uses within and in the vicinity of the site.

1. Location

The approximately 2.21-acre Project site is located in the City of Berkeley in Alameda County. The site occupies the block surrounded by Hearst Avenue to the north, Fourth Street to the east, University Avenue to the south, and the Union Pacific Railroad (UPRR) corridor to the west. The Project site is located within the Fourth Street shopping area in West Berkeley.

Regional vehicular access to the Project site is provided by Interstate 80 (I-80) and I-580, access to which is provided approximately two blocks west of the site via the University Avenue overpass. University Avenue provides direct local access immediately south of the site and is a major arterial roadway that provides east-west access through the City. Fourth Street, a north-south collector street with two travel lanes, borders the site to the east. Transit in the Project vicinity includes the Berkeley Amtrak Station, located immediately south of the Project site. In addition, there is extensive bus transit service provided by Alameda-Contra Costa County Transit (AC Transit) in the vicinity; the closest bus stops border the Project site to the south on University Avenue and service the Amtrak Station.

Figure III-1 depicts the site’s regional and local context.

2. Site Characteristics and Current Site Conditions

The rectangular Project site is generally level and is comprised of two contiguous parcels of land (Assessor’s Parcel Numbers [APNs] 057-2101-001 and 057-2101-005). As shown in the aerial view of the site depicted in Figure III-2, the site is currently developed with a surface parking lot (1900 Fourth Street) and a commercial structure (701 University Avenue). Figures III-3a and III-3b include photos of the existing site; viewpoint locations are depicted in Figure III-2.

---

1 The street grid in the immediate vicinity of the Project site generally extends northwest-southeast and northeast-southwest. To simplify the directional descriptions used in this document, roadways immediately surrounding the Project site are identified as north-south or east-west roadways. North arrows on all figures note this terminology be referring to “true north” and “Project north.” In this document, Project north is the convention used when describing the proposed Project in relation to its surroundings.
FIGURE III-1

Project Location and Regional Vicinity Map

I:\CBE1504 1900 Fourth Street\Figures\EIR\Fig_III1.ai (8/11/16)
FIGURE III-2

Aerial Photograph of the Project Site and Photo Locations

Photo 1: Existing surface parking lot, as seen from Hearst Avenue/UPRR tracks

Photo 2: Existing surface parking lot, as seen from Fourth Street

FIGURE III-3a

Photos of Existing Site and Surrounding Land Uses
Photo 3: Existing surface parking lot, as seen from University Avenue

Photo 4: Existing commercial structure on the project site (701 University Avenue)
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The surface parking lot provides designated parking for about 350 vehicles and is open to the public for a fee. Ingress and egress to the parking lot is provided by two separate one-way driveways located on Fourth Street. The entrance driveway is controlled by a gate where parking slips are issued via machine and the exit driveway is controlled by a gate and kiosk staffed by an attendant from 10:00 a.m. to midnight. Photos 1 through 3 in Figures III-3a and III-3b depict the surface parking lot as seen from surrounding roadways.

An approximately 900 square foot one-story commercial structure is located at the southwest corner of the Project site, as shown in Photo 4 in Figure III-3b. The building was constructed in 1955 and was most recently occupied by a fitness facility. The building is currently vacant.

The site is surrounded by chain link and metal fencing and wooden bollards. Vegetation on the site is limited to scattered grasses and shrubs around the site perimeter and near the commercial building. Approximately 27 trees are located around the site perimeter.

An abandoned underground portion of a former Strawberry Creek culvert bisects the site and follows an east-west alignment just north of the existing commercial structure. The culvert was abandoned when the existing culvert that runs beneath the southern lanes of the University Avenue overpass was completed.

The Project site is also part of a group of several properties designated by the City of Berkeley's Landmarks Preservation Commission as a Landmark site. The landmark status was conferred in an effort to preserve the area as an important Ohlone living and burial site, defined primarily by what prior research and investigations estimated as the location and potential dimensions of the West Berkeley Shellmound, one of the oldest surviving remnants of native settlements in the Bay Area.

3. Planning Designations and Zoning
The site is designated Avenue Commercial with a Development Node overlay in the Berkeley General Plan and is within the West Berkeley Commercial (C-W) zoning district. The site is also designated General Commercial within the West Berkeley Plan and is located within the Fourth Street Regional Serving Node/Sub-Area 1 of the University Avenue Strategic Plan. The Association of Bay Area Governments also identifies the Project site as a Priority Development Area.\(^2\) Refer to Section X, Land Use and Planning in the Initial Study (Appendix B) for additional information regarding applicable planning regulations.

4. Surrounding Land Uses
As previously described, the Project site is located within the Fourth Street shopping area of West Berkeley, which is characterized by high levels of pedestrian traffic and a mix of low- and mid-rise structures. The site is generally surrounded by a mix of retail, restaurant, office, high-density residential, manufacturing, and light industrial uses, as depicted in Figure III-2 and further described below. Figures III-3c and III-3d include photos of some of the land uses that surround the site. Figure III-2 shows the viewpoint locations for each of these photos.

a. **North of the Project Site.** The Project site is bordered immediately to the north by Hearst Avenue, a two-lane roadway that runs east-west through the City. An at-grade railroad crossing bisects Hearst Avenue, immediately northwest of the Project site. The crossing includes warning gates, lights, and signage to alert motorists, bicyclists, and pedestrians to the arrival of trains and to prevent intersection crossings as trains pass through. In addition, trains are required by federal law to sound their whistles when approaching and passing through the crossing. Across Hearst Avenue, land uses include one- to three-story commercial buildings that primarily consist of ground-floor retail space and restaurants within the Fourth Street shopping area with office space on the upper floors (see Photo 5 in Figure III-3c).

b. **East of the Project Site.** The Project site is bordered immediately to the east by Fourth Street, a two-lane collector street that runs north-south generally between the City limits to the north and Dwight Way to the south. Immediately east of Fourth Street, land uses consist of retail and restaurant uses within the Fourth Street shopping area (Photo 6 in Figure III-3c). The block across Fourth Street (1919 Fourth Street) is currently undergoing redevelopment and will include a new two-story building with ground floor retail space and office uses on the second level, as well as the remodeled (2002) Spenger’s Restaurant (a Berkeley Landmark building) and a privately-owned public pathway between Fourth and Fifth Streets. A building permit was issued for this project and construction began in early 2016; archaeological resources have been encountered during construction of this project (refer to Section IV.A, Cultural Resources of this EIR for additional information). Two blocks east of the site, across Sixth Street, land uses transition to low- and medium-density residential uses. San Pablo Avenue, a major transportation and commercial corridor, is located approximately 0.4 miles further east.

c. **South of the Project Site.** The Project site is bordered immediately to the south by University Avenue, which in this location includes both a ground level segment and an overpass. The ground level segment of University Avenue provides access to and terminates at the Berkeley Amtrak Station and runs approximately two blocks east of the site where it meets the main University Avenue roadway, which provides direct local east-west access through the City. The elevated University Avenue overpass provides access to the I-80 and I-580 freeways and meets the main roadway just before Sixth Street to the east of the site. Across University Avenue and south of the site, land uses consist of a mix of low- to mid-rise structures ranging in age from the early 20th century to newer construction. Immediately across University Avenue is the recently constructed five-story Fourth and U residential apartment building that includes ground-level retail uses (Photo 7 in Figure III-3d) and the nearby five-story Avalon residential building. Also across University Avenue at the southeast intersection with Fourth Street, is a retail grocery store that is planned to be redeveloped as a five-story residential building with ground floor retail uses. A building permit was submitted for this project in late 2015. Further south, land uses consist of a mix of light industrial, manufacturing, office uses, and low-density residential uses. Aquatic Park, which provides public pathways and picnic and boating areas, is located approximately two blocks south of the site.
Photo 5: Fourth Street shopping area, north of the project site

Photo 6: Commercial uses, including Spenger's Restaurant, east of the project site
**Photo 7:** Mixed-use residential uses (Fourth and U Apartments), south of the project site

**Photo 8:** Berkeley Amtrak Station platform and light industrial uses, west of the project site
d. **West of the Project Site.** The Project site is bordered immediately to the west by the UPRR corridor, which includes two sets of rail tracks, and the Berkeley Amtrak Station platform (Photo 8 in Figure III-3d). The Berkeley Amtrak Station services the Capitol Corridor passenger route with access between Auburn and San Jose. Other long haul and intra-state passenger routes pass through but do not stop at this station. In addition, the rail corridor serves as the main local and regional line for freight activity. Across the rail corridor, land uses consist of light industrial and manufacturing uses, including a lumber yard immediately west of the rail corridor. The McLaughlin Eastshore State Park, San Francisco Bay Trail (Bay Trail), and San Francisco Bay are located approximately 0.5 miles to the west. The Berkeley Marina is located approximately 1 mile further west.

B. **PROJECT OBJECTIVES**

The applicant’s Project objectives are as follows:

1. Enhance and extend the Fourth Street retail environment.
   a. Replace an auto-oriented surface parking lot with walkable, well-articulated retail opportunities and amenities, including open-air paseos and quality landscaping and pedestrian features that complement the Fourth Street shopping area.
   b. Complement the pedestrian-oriented retail character of the Fourth Street shopping area while bridging the character of the shopping area to the north and the higher density residential developments to the south.
   c. Create a careful balance of retail and residential floor areas that will generate the revenue needed to allow for generous street fronting and ground level articulation, including the substantial paseos.
   d. Provide the potential for additional parking to support nearby retail uses that serve both neighborhood uses and the greater Fourth Street area’s regional retail draw.

2. Contribute to solving the housing shortage in Berkeley with the provision of transit-proximate residential units, including units affordable to families at 50 percent AMI.
   a. Create needed market rate and below market rate housing units in an economically feasible manner in a location proximate to transit options and neighborhood amenities and attractions.
   b. Provide a variety of housing options by offering a mix of unit types, including smaller units at lower price points up to larger two bedroom units suitable for small families.
   c. Enhance and further activate the Fourth Street shopping area with new residents.

3. Promote best practices in green construction through:
   a. Encouraging and providing access to alternative modes of transportation for residents, employees, and retail customers of the Project
b. Committing to Build It Green certification, and including numerous additional sustainability features that are a part of the project’s careful balance of economic feasibility and community benefit that are not requirements of the development project. These features include but are not limited to the following:

i) AC Transit passes for residents

ii) Secure bicycle storage and amenities for residents and for businesses, as well as for the general public that will exceed Zoning Ordinance requirements.

4. Provide residential and retail development consistent with multiple local and regional land use policies.

a. Fulfill policies of the General Plan that encourage sustainable infill development that is compatible with neighboring land uses, design, and scale, as well as policies that support improving Avenue Commercial areas as pedestrian-friendly areas that serve both neighborhood needs and the needs of Fourth Street’s broader regional retail draw.

b. Fulfill policies of the West Berkeley Plan, including: supporting commercial districts that foster the continued vitality of West Berkeley’s neighborhood and regional serving retail trade in a pedestrian-friendly manner; assuring that new development is of a scale and design that is appropriate to its surroundings while respecting the genuine economic and physical needs of the development; supporting the clustering of retail uses to strengthen existing walkable retail areas; encouraging infill buildings on vacant and low intensity use sites along corridors with retail as the ground level use in nodes and residential or office uses above the ground floor; and encouraging appropriately scaled and located housing development.

c. Fulfill the design guidelines of the University Avenue Strategic Plan, which identifies Avenue nodes such as the Project site as target areas for higher-intensity mixed-use buildings, and which encourages higher-intensity buildings to create a more urban environment and provide as many residential units as possible within proximity to University Avenue and transit, while also conforming to guidelines encouraging high levels of articulation, detailing, and variations to create an interesting and active public realm.

5. Generate significant new revenue for the City of Berkeley by constructing an economically feasible development project that will result in increased property taxes, retail revenue, affordable housing mitigation and other impact fees, public art, creation of jobs, and a new residential population that supports West Berkeley businesses.
C. PROPOSED PROJECT

This section provides a description of the proposed Project as identified in the Project applicant’s Zoning Project Re-Submittal package submitted to the City of Berkeley in May 19, 2015 (including supplemental information provided June 10, 2015 and July 22, 2016).3,4 The proposed Project would involve demolition of the existing structure and all existing pavement and redevelopment of the site with a mix of residential and commercial uses totaling 191,362 gross square feet (155 residential units and 30,000 square feet of retail and restaurant space), as well as associated parking and circulation, open space, landscaping, and utility improvements. The proposed Project components are described in detail below.

Figures III-4 through III-8 depict the conceptual site plans for the first through fifth floor levels, respectively. Figures III-9a and III-9b depict conceptual building elevations as seen from surrounding roadways. Conceptual building cross sections are depicted in Figures III-10a and III-10b.

1. Building Program

The proposed Project would result in redevelopment of the site with two separate buildings: a three-story building at the corner of Fourth Street and Hearst Avenue (referred to as the corner building), and a one- to five-story building on the balance of the site. Building heights along Fourth Street would be primarily one- to three stories with breaks between buildings for the paseo and garage entrance, while the five-story building components would be concentrated at the interior of the site and along the UPRR corridor and University Avenue/Fourth Street frontages. Maximum proposed building heights would be 71 feet to the top of the parapet at its greatest extent, which is the measurement required and defined by the Zoning Ordinance (Section 23F.04.010, “Height of Building, Maximum”). The parapet would vary in height around the perimeter of the building from 4 feet, 6 inches to 9 feet, 6 inches. The roofline would generally be 60 feet above grade. Mechanical features, elevator, and stair overruns would extend up to 10 feet above the roof line.

The three-story corner building would be up to 41 feet to the top of the parapet. This building would include ground floor commercial uses with two floors of residential uses above. The ground floor level would be set back approximately 2 feet from the property line to the proposed pilaster (rectangular column) on both Hearst Avenue and Fourth Street. The Project would also include sidewalk widening from 8 feet to approximately 13 feet, 6 inches from the curb to the proposed pilaster on both Hearst Avenue and Fourth Street.

The larger one- to five-story building that would occupy the remainder of the Project site would range in height, but five-story elements would be up to 60 feet at the roofline above grade and 71 feet the top of the tallest parapet. This building would include primarily ground floor retail uses and four floors of residential uses along Fourth Street, Hearst Avenue, and University Avenue; it would also include a six-level parking garage in the vicinity of the

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UPRR corridor. The ground floor would be set back 2 feet to 4 feet, 6 inches from the property line on Hearst Avenue, between 3 feet and 3 feet, 6 inches from the property line on Fourth Street, and 3 feet from the property line on University Avenue. The building would be setback approximately 3 feet from the northwestern property line along the border of the UPRR rail corridor and approximately 9 feet, 1 inch along the southwestern border adjacent to the Amtrak Station platform. The second floor would be set back from the property line at the same distance as the ground floor in some instances, with some second- through fifth story elements stepped back up to 43 inches and 6 feet along the paseo (running parallel to Fourth Street), 14 to 24 feet along the northwestern border of the UPPR corridor, and 4 feet and 6 inches to approximately 62 feet on the Fourth Street frontage.

A total of approximately 151,738 square feet of residential uses (155 dwelling units) would be located on the second level and above in both buildings. Units would average 695 square feet in size, with a mix of studio, one- and two-bedroom units. Residential uses would be developed at a density of approximately 70 units per acre. A total of 13 residential units (10 percent) would be affordable to very-low-income (VLI) households. Residential amenity space would be distributed throughout the first and second floors as well as a fifth floor indoor lounge and roof deck and would consist of approximately 6,078 gross square feet including a leasing office, a fitness center, multi-purpose room, a common lounge, and bicycle repair space.

Commercial uses would total approximately 30,000 gross square feet, including approximately 20,500 gross square feet of retail uses and 9,500 gross square feet of restaurant uses. Between 10 and 15 commercial tenants are anticipated to occupy the ground level, with an average floor space of between 1,500 and 3,000 square feet. Outdoor dining space within the site interior (e.g., the proposed paseo) would also be provided to serve restaurant uses.

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5 The parking garage is designed as a single helix with a sloped floor that would provide two-way vehicular circulation. The garage would provide six levels of parking, and would be the same height as the five-story mixed-use buildings because approximately two levels (floors) of parking would be accommodated behind the high ceiling ground floor commercial space.

6 VLI households are those earning 50 percent or less of area median income.

7 The proposed restaurant spaces are comprised of approximately 5,000 square feet of quick service restaurant space and 5,000 square feet of full service, high-quality restaurant space. Refer to Section IV.B, Transportation and Circulation, for additional information.
LEGEND

Residential
Parking / Operations
Circulation
Amenities
Exit Stairs & Elevators

FIGURE III-5

1900 Fourth Street Project EIR
Conceptual Second-Floor (Podium Level) Site Plan
*See sheet A-4.0 for more detailed typical unit plans.*

**LEGEND**
- Residential
- Parking / Operations
- Circulation
- Exit Stairs & Elevators

**SOURCES:** TCA ARCHITECTS; WEST BERKELEY INVESTORS, LLC, JULY 2016.

1900 Fourth Street Project EIR
Conceptual Fourth-Floor Site Plan
**South Elevation - University Avenue**

**West Elevation - Union Pacific Railroad**

**FIGURE III-9b**

1900 Fourth Street Project EIR
Conceptual Building Elevations

SOURCES: TCA ARCHITECTS; WEST BERKELEY INVESTORS, LLC, JULY 2016.

I:\CBE1504 1900 Fourth Street\Figures\EIR\Fig_III9b.ai (8/4/16)
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2. **Access, Circulation and Parking**

Pedestrian access to both buildings would be provided via Hearst Avenue, Fourth Street, University Avenue, and the site interior; no pedestrian access would be provided on the western boundary of the site. A paseo would wrap around the three-story corner building, providing access between Hearst Avenue and Fourth Street through the interior of the site (see Figure III-4). Two residential lobbies would be provided on University Avenue, and the residential units would be accessed via stairwells located at six entryways, including from Hearst Avenue, University Avenue, the site interior, and from within the parking garage. Two elevators would provide access to all levels.

An at-grade, six-level, approximately 156,752-gross-square-foot, 372-space parking garage would be located within the larger building at the southwest corner of the site, adjacent to the University Avenue overpass and UPRR corridor. The lower three levels of the parking garage would consist of a commercial parking garage, with 214 public parking spaces. The upper three levels would provide 158 parking spaces for project residents. Of the 372 parking stalls, 17 would be ADA-compliant spaces; 2 to 3 would be provided on each floor. Two loading spaces would be provided near the north entrance of the garage.

Access to the parking garage would be via two entry points: 1) a two-way entry/exit driveway located on Hearst Avenue dedicated to resident and service access only, and 2) a two-way entry/exit driveway located on Fourth Street dedicated to retail and guest access.

A total of 345 bicycle parking spaces would be provided throughout the ground level of the Project site, including 3 cargo bicycle spaces, 26 public bicycle spaces located at the ground level near the commercial uses, 60 spaces within a designated bike storage room within the first floor of the garage for the commercial tenants, and 256 spaces for residents located within a designated bike storage room within the first floor of the garage and separate bike repair and storage room adjacent to University Avenue.

3. **Open Space and Landscaping**

A total of approximately 13,032 square feet of open space would be provided at the ground level, second story, and rooftop. Private residential open space would consist of common courtyards and roof deck areas, totaling approximately 6,450 square feet. Common outdoor courtyards for residents would be located at the second-story of the larger building and would consist of an approximately 2,967-square-foot outdoor fitness courtyard facing Fourth Street adjacent to the indoor residential fitness center and multi-purpose room and an approximately 2,733-square-foot passive courtyard within the interior of the site adjacent to the pedestrian paseo. These spaces would include seating areas, a barbeque area, and other similar amenities. Private balcony space would total approximately 2,611 square feet and would be provided with some residential units, facing either surrounding street frontages or the interior of the site. Publicly-accessible open space on the Project site would consist of the approximately 6,852-square-foot paseo that would provide access to the site interior and also provide space for outdoor dining.

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8 An emergency exit doorway would be located on the southeast border of the building adjacent to the UPRR corridor but would not be a designated or signed entry point.
The 27 existing street trees located around the perimeter of the site would be removed to facilitate Project construction. Approximately 40 new trees would be planted on the site, including along the Fourth Street and University Avenue frontages, within the site interior at the ground level and second-story podium level courtyards, and within the west side landscaped deck area (see below). New trees would be a minimum of 24-inch box size.

Figure III-11 provides an overview of the proposed open space and landscaping plan for the Project site.

4. Green Building Features

The proposed Project would be designed to GreenPoint Rated standards or equivalent. Currently, the Project is anticipated to have a GreenPoint rating of 71. Project elements that contribute to this rating include, but are not limited to:

Construction Site
- Diversion of up to 65 percent of construction waste;
- Use of recycled base materials; and
- Implementation of prescriptive stormwater controls, including use of non-leaching roof materials and Smart Stormwater street design.

Landscaping
- Grouping of plants by water needs (hydrozoning);
- Use of up to 3 inches of mulch in planting beds;
- Installation of resource-efficient landscaping, including no planting of invasive species, use of plants chosen and located to grow to natural size, and use of drought-tolerant and other Bay-friendly species;
- Use of minimal landscape turf;
- Utilization of recycled wastewater for irrigation;
- Use of a dedicated water meter for landscaping; and
- Use of environmentally-preferable materials for hardscaped surfaces.

Structural Frame and Building Envelope
- Installation of elements utilizing engineered lumber,
- Use of energy heels on roof trusses, and
- Use of moisture-resistant materials in wet areas.

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All landscaping, except where noted, will be planted and irrigated compliant with Bay-Friendly Landscaping Requirements and as described in the Irrigation Design Intent statement. This landscape plan is compliant with Alameda County C-3 requirements. Please see C-3 checklist attached to project application.
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Exterior

- Installation of durable and fire resistant roof materials.

Insulation

- Installation of insulation that does not include fire retardants.

Plumbing

- Installation of insulated hot water pipes and water-efficient fixtures.

Heating, Ventilation and Air Conditioning (also see description below)

- Installation of sealed-combustion water heaters;
- Installation of effective duct work at joints and seams;
- Installation of ENERGY STAR bathroom fans;
- Implementation of “whole-house” mechanical ventilation practices; and
- Implementation of effective range hood ducting and design.

Appliances and Lighting

- Installation of ENERGY STAR appliances and efficient lighting systems.

In addition, the Project is anticipated to exceed Title 24 requirements by 10 percent. Indoor air quality would be enhanced with the use of mechanical fresh air systems that would continuously circulate fresh air through the residential units. Fans would automatically turn on if moisture is detected. Heating and cooling duct work would be sealed with a 6 percent or less leakage rate. High efficiency windows would minimize heat gain and help keep conditioned air from leaking.

Other sustainability factors would include the Project site’s proximity to transit and goods and services.

5. Utilities and Infrastructure

The Project site is located in an urban area with existing utilities and infrastructure. The proposed Project would be required to install the following utility connections to the satisfaction of the applicable utility providers: water; wastewater; stormwater drainage; power; and telecommunications services. Connections to existing infrastructure would occur within the adjacent public rights-of-way.

The proposed Project would include the following elements which would reduce the demand for utilities and infrastructure: a landscaped roof providing stormwater treatment would be located on the second-story podium level of the larger building bordering the western edge of the site; drought-tolerant landscaping; flow-through planters; stormwater treatment planters at the ground and podium levels; high-efficiency irrigation systems; and water-efficient fixtures in kitchens and bathrooms.
In addition, the applicant would underground utility poles that border the site on University Avenue and the UPRR corridor.

The Project site currently drains to two separate watersheds: Strawberry Creek and Schoolhouse Creek. The proposed Project would generally maintain pre-project conditions by directing ground runoff and roof plumbing towards the corresponding public drainage facilities.

6. Demolition, Grading and Construction

The proposed Project would include demolition of the existing building and surface parking lot on the site. Construction debris, such as old foundations, pavements, and structures, would be collected and hauled off site for disposal. Approximately 2,300 tons of demolition waste would be generated by the Project. Up to 8 feet of site soils would be excavated across the entire site to remove materials that may not be suitable for Project development. Up to 17,000 cubic yards of cut would be excavated from the site for excavation, utility trenching, and foundations, all of which would be off-hauled as part of site grading and excavation. Approximately 17,000 cubic yards of fill would be brought in to balance the site after excavation.

The proposed Project would be built on a deep foundation secured by piles in order to reach the stiffer clay soils that are present below the weaker shallow soils that underlie the site. Foundation supports may consist of pre-cast, pre-stressed reinforced concrete piles, or other options such as drilled displacement piles. Alternatively, shallow-footing foundation elements supported on underlying geopiers or drilled concrete displacement columns that would transfer the building loads to deeper soils may also be feasible. No impact pile driving would occur as part of the proposed Project. Foundation depths are anticipated to range from 4 to 12 feet. Piles may extend up to a maximum of 50 feet.

If approved, construction for the Project is anticipated to begin in early 2018 and would occur over an 18 to 24 month period. Demolition activities are anticipated to occur over an approximately 10 day period and grading would occur over a 45 day period. Exterior work such as foundation installation, building construction, and installation of pavements is expected to occur over a 4 to 5 month period.

D. Uses of This EIR

It is anticipated that this EIR will provide environmental review for all discretionary approvals necessary for the proposed Project as described within this chapter. A list of the required permits and approvals that may be required by the City and other agencies is provided in Table III-1.

The proposed Project is subject to approvals by the City of Berkeley’s Zoning Adjustments Board (ZAB) and the Landmarks Preservation Commission (LPC). The Project would require the following discretionary entitlements from the City of Berkeley, per the City of Berkeley Municipal Code (BMC):
- Structural Alteration Permit (SAP), per BMC Section 3.24.260 to allow construction activities with the potential to affect a designated City of Berkeley Landmark site that is part of a group of several properties designated for their location within the potential boundaries of the West Berkeley Shellmound. As per BMC Section 23E.12.020, the LPC has the responsibility for design review of projects which involve landmarks.

- Demolition Permit, per BMC Section 22.12.060 to allow demolition of the existing commercial building.

- Use Permit, per BMC Section 23E.64.030.A to allow new retail sales uses greater than 7,500 square feet.

- Use Permit, per BMC Section 23E.64.030.A to allow a quick or full service restaurant use.

- Use Permit, per BMC Section 23E.64.030.A to allow a mixed-use development over 20,000 square feet.

- Use Permit, per BMC Section 23E.64.050.B.1 to allow creation of floor area greater than 5,000 square feet.

- Use Permit, per BMC Section 23E.64.060.A to allow restaurant operation from 7 a.m. to 1 a.m. on Fridays and Saturdays.

- Administrative Use Permit, per BMC Section 23E.64.030.A to allow alcoholic beverage service of beer and wine incidental to food service.

In addition, the Project applicant is requesting a waiver/modification of the four-story and 50-foot height limit development standards under the State Density Bonus Law (Government Code Section 65915(e)) and this will be processed by the City in conjunction with the permits described above.

### Table III-1: Required Permits and Approvals

<table>
<thead>
<tr>
<th>Lead Agency</th>
<th>Permit/Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Berkeley</td>
<td>• Certification of EIR</td>
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<tr>
<td></td>
<td>• Structural Alteration Permit</td>
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<tr>
<td></td>
<td>• Demolition/Construction Permits</td>
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<td></td>
<td>• Encroachment Permit</td>
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<td></td>
<td>• Use Permits</td>
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<tr>
<td>Responsible Agencies</td>
<td></td>
</tr>
<tr>
<td>East Bay Municipal Utility District</td>
<td>• Approval of water line, water hookups and review of water needs.</td>
</tr>
<tr>
<td></td>
<td>• Approval of wastewater hookups</td>
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<tr>
<td>California Regional Water Quality</td>
<td>• National Pollutant Discharge Elimination System</td>
</tr>
<tr>
<td>Control Board (RWQCB)</td>
<td>(NPDES) “C.3” permit for stormwater discharge</td>
</tr>
<tr>
<td>Other Agencies and Service Providers</td>
<td></td>
</tr>
<tr>
<td>AT&amp;T</td>
<td>• Approval of communication line improvements and connection permits</td>
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<tr>
<td>Pacific Gas &amp; Electric (PG&amp;E)</td>
<td>• Undergrounding of electrical infrastructure</td>
</tr>
<tr>
<td></td>
<td>• Approval of electric/natural gas improvements and connection permits</td>
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IV. SETTING, IMPACTS AND MITIGATION MEASURES

This chapter contains an analysis of each potentially significant environmental issue that has been identified for the 1900 Fourth Street Project (Project). The following: 1) identifies how a determination of significance is made; 2) identifies the environmental issues addressed in the subsections of this chapter; 3) describes the context for the evaluation of cumulative effects; 4) lists the format of each topical issue section; and 5) provides an evaluation of each potentially significant issue in subsections A through D.

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 topical section of this chapter includes criteria of significance, which are the thresholds for determining whether an impact is significant. These criteria of significance have been developed in a cooperative process with the City and LSA staff using the CEQA Guidelines and applicable City policies and guidelines or the standards of other regulatory agencies.

ISSUES ADDRESSED IN THE DRAFT EIR

The following environmental issues are addressed in this chapter:

A. Cultural Resources
B. Traffic and Circulation
C. Air Quality
D. Noise and Vibration

Based on analysis contained in the Initial Study (Appendix B) the City has determined that the proposed Project would not result in significant impacts to the following environmental topics: aesthetics; agricultural and forestry resources; biological resources; cultural (historic and paleontological) resources; geology and soils; greenhouse gas emissions; hazards and hazardous materials; hydrology and water quality; land use and planning; mineral resources; parks and recreation; population and housing; public services; and utilities and service systems. Consequently, these issues are not examined in this chapter of the EIR but are briefly summarized in Chapter V, CEQA-Required Assessment Conclusions.

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\(^1\) Public Resources Code 21068.
Consistency with the City’s land use and planning policies, including the Zoning Ordinance, are discussed in the Land Use and Planning section of the Initial Study. It should be noted that, according to CEQA, policy conflicts do not, in and of themselves, constitute a significant environmental impact. Policy conflicts are considered to be environmental impacts only when they would result in direct physical impacts or where those conflicts relate to avoiding or mitigating environmental impacts. Any such associated physical environmental impacts are discussed in the Initial Study or appropriate sections of this Draft EIR. Zoning compliance and other policy considerations will be further evaluated by the Zoning Adjustments Board when it considers approval of the proposed Project.

In some cases the Initial Study identified potentially significant impacts that could be mitigated to a less-than-significant level with implementation of recommended mitigation measures. These impacts and mitigation measures are not addressed in the Draft EIR, but are identified in Chapter II, Summary of the Draft EIR and in the Initial Study (Appendix B) and will also be included in the Mitigation Monitoring and Reporting Program that will be adopted by the City.

**CUMULATIVE ANALYSIS CONTEXT**

CEQA defines cumulative impacts as “two or more individual effects which, when considered together, are considerable, or which can compound to increase other environmental impacts.” Section 15130 of the CEQA Guidelines requires that an EIR evaluate potential environmental impacts when the project’s incremental effect is cumulatively considerable. “Cumulatively considerable” means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of “reasonably foreseeable probable future” projects, per CEQA Section 15355. Cumulative impacts can result from a combination of the proposed Project together with other closely related projects that cause an adverse change in the environment. Cumulative impacts can result from individually minor but collectively significant projects taking place over time.

The methodology used for assessing cumulative impacts typically varies depending on the specific topic being analyzed. CEQA requires that cumulative impacts be discussed using either a list of past, present, and probable future projects producing related or cumulative impacts, or a summary of projections contained in an adopted local, regional, or Statewide plan, or related planning document, that describes or evaluates conditions contributing to the cumulative effect. This EIR uses both approaches to evaluate cumulative impacts, and the particular approach used depends on the topical area under consideration. The general approach to analysis of cumulative impacts in this Draft EIR is summarized below; refer to the cumulative discussion in each individual topic section (Sections IV.A through IV.D) for further discussion.

The list-based approach is used for the Near-Term conditions analysis (which captures development assumed to occur within approximately 5 years and which may be under construction at the same time as the proposed Project) and is based, in part, on information provided by the City of Berkeley on currently planned, approved, or proposed projects primarily located within the West Berkeley area, or at least within ¼ mile of the Project site.
In addition, for some topics, the EIR uses the summary of projections in a plan approach to evaluate cumulative impacts. For example, the transportation analysis (and transportation-related noise and air quality emissions) uses the Alameda County Transportation Commission (ACTC) travel demand model forecasts. Refer to the cumulative impact discussion in Section IV.B, Transportation and Circulation for additional information.

CEQA also specifies that lead agencies should define the geographic scope of the area associated with the cumulative effect and provide a reasonable explanation for the geographic limitation used. The cumulative geographic context for most project impacts generally extends for a ¼ mile radius around the Project site. However, the geographic scope for each topical area may be different depending upon the nature of the environmental impact being evaluated. For example, the geographic and temporal (time-related) parameters affecting the cumulative analysis of air quality impacts are not necessarily the same as those for a cumulative analysis of noise impacts because the geographic area that relates to air quality is much larger and regional in character than the geographic area that could be affected by potential noise impacts from a proposed project and other cumulative projects/growth. The cumulative noise impacts are more localized than air quality and transportation impacts, which are more regional in nature. Accordingly, the parameters of the respective cumulative analyses in this document are determined by the degree to which impacts from this project are likely to occur in combination with other development projects and the location of those projects.

FORMAT OF ISSUE SECTIONS

Each environmental topical section in Chapter IV 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 site and its surroundings in West Berkeley. 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. The impacts of the proposed Project are organized into separate categories based on their significance according to the criteria listed in each topical section: less-than-significant impacts (which do not require mitigation measures) and significant impacts (which do require mitigation measures). Cumulative impacts are also addressed.

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., CUL). The following symbols are used for individual topics:

- CUL: Cultural Resources
- TRA: Transportation and Circulation
- AIR: Air Quality
- NOI: Noise

Impacts are also categorized by type of impact, as follows: Less-Than-Significant (LTS), Significant (S), and Significant and Unavoidable (SU).

ENVIRONMENTAL ISSUES

Sections A through D of this chapter describe the environmental setting of the Project as it relates to each specific environmental topic evaluated in the EIR and the impacts that are expected to result from implementation of the proposed Project. Mitigation measures are proposed to reduce potential impacts, where appropriate.
A. CULTURAL RESOURCES

This section describes the baseline conditions for archaeological cultural resources in the Project site and vicinity, identifies potentially significant impacts to such resources that may result from project implementation, and identifies mitigation measures to reduce the severity of significant impacts, as necessary.¹

Cultural resources are sites, buildings, structures, objects, and districts that may have cultural value for their historical significance. For a cultural resource to be considered a “historical resource” for purposes of CEQA, it generally must be 50 years or older (California Code of Regulations (CCR) section 4852(d)(2)) and: 1) be listed in, or determined eligible for listing in, the California Register of Historical Resources; 2) be included in a local historical register of historical resources, as defined in Public Resources Code (PRC) section 5020.1(k) or identified as part of a survey meeting the requirements of PRC section 5024.1(g); or 3) be determined by the lead agency as historically significant.

Please see the Initial Study (Appendix B) for an analysis of potential impacts to historical architectural resources and paleontological resources. As described in the Initial Study, with implementation of Mitigation Measure CUL-1, the proposed Project would not result in significant impacts to paleontological or historical architectural resources; as such, these resource types are not further addressed in this EIR.

In addition to the references cited in this section, a 2014 Archaeological Testing Report was prepared for the proposed Project and is one of the primary sources of technical information used in identification of the baseline conditions for cultural resources in the Project site.²

1. Setting

This section describes the methods used to establish the baseline conditions for archaeological cultural resources in and around the Project site; provides a brief historical overview of the Project site and surrounding area; describes the archaeological 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 and Results. To establish the baseline conditions for archaeological cultural resources in the Project site and vicinity, the following tasks were completed: 1) background research, consisting of records searches at local repositories and a literature review; 2) consultation with local Native American individuals and groups; and 3) an archaeological excavation at

¹ Note that Appendix G of the CEQA Guidelines (Environmental Checklist Form) was recently updated to include “Tribal Cultural Resources,” as a new resource category established by California Assembly Bill 52 (AB 52). Consultation with the Ohlone Indian Tribe, conducted pursuant to AB 52, was completed for the Project and mitigation measures are recommended, as appropriate. For purposes of this analysis, archaeological cultural resources are inclusive of Tribal Cultural Resources.

the Project site to determine the presence/absence of archaeological deposits and, if present, the significance and depositional integrity of such deposits. Each task is described below.

(1) Records Searches. Records searches were conducted to identify cultural resources within and adjacent to the Project site. These searches were conducted at the Northwest Information Center (NWIC) of the California Historical Resources Information System, Sonoma State University, Rohnert Park; and at the Berkeley Architectural Heritage Association (BAHA). 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 BAHA archives contain information on City Landmarks, which were reviewed for historical information and documentation for the West Berkeley Shellmound.

As part of the records search, the following State and local inventories for cultural resources in and adjacent to the Project site were also reviewed:

- California Inventory of Historic Resources;
- California Historical Landmarks;
- California Points of Historical Interest;
- Five Views: An Ethnic Historic Site Survey for California;
- Directory of Properties in the Historic Property Data File. 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;
- City of Berkeley Landmarks List;
- City of Berkeley West Berkeley Project;
- City of Berkeley The West Berkeley Plan; and
- Berkeley Landmarks.

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9 Berkeley, City of, 2010. West Berkeley Project, Figure 4-1. Website: www.ci.berkeley.ca.us/WBP_Archive.aspx (accessed January 27, 2016).


The records searches and literature review identified one recorded cultural resource in the Project site: the West Berkeley Shellmound (#P-01-000084/CA-ALA-307; Berkeley City Landmark #227).

In its original condition, the West Berkeley Shellmound (hereafter referred to as the Shellmound) was a large, ovate mound structure, located only a short distance from the north bank of Strawberry Creek, in proximity to the stream’s entrance to San Francisco Bay (Bay). In 1949, archaeologist Arnold Pilling prepared an Archaeological Site Survey Record\textsuperscript{12} for the Shellmound – based on Nels Nelson’s survey information compiled in the first decade of the 20th century\textsuperscript{13} – and stated that the site was “between Hearst and University streets and between 2nd and 4th streets.”

Intensive investigation of the Shellmound took place in the mid-20th century. By this time, however, most of the Shellmound had been systematically demolished by development and related ground disturbance. Shellmound materials were scattered throughout the surrounding area as agricultural fertilizer and for road-building and paving. As a result, the original conditions of the Shellmound’s exact boundaries were never properly defined. Based on Wallace and Lathrap’s estimates, the original mound dimensions were 350 by 600 feet, with its long axis paralleling Strawberry Creek; however, when investigated by U.C. Berkeley in 1950, only a 45 by 100 foot portion of the site remained.\textsuperscript{14}

\textsuperscript{12} Pilling, Arnold, 1949. Archaeological Site Survey Record for CA-ALA-307, on file at the Northwest Information Center, Sonoma State University, Rohnert Park, California.


The Shellmound has received State and City confirmation of its significance. The West Berkeley Shellmound was assigned a historical resource status code of “2S2” by the California Office of Historic Preservation, indicating that it is individually eligible for listing in the National Register of Historic Places by virtue of a consensus determination made during Section 106 review; by this mechanism it is also listed in the California Register of Historical Resources. On February 7, 2000, the Berkeley Landmarks Preservation Commission voted to designate the West Berkeley Shellmound as Berkeley City Landmark #227. The mapped City Landmark location of the Shellmound, as depicted on a recently published map, is shown on Figure IV.A-1.

Due to its listing in the California Register of Historical Resources and status as a City Landmark, the Shellmound is a “historical resource” as defined in the CEQA Guidelines (Section 15064.5(a)).

(2) Literature and Map Review. Archaeological reports, including the 2014 Archaeological Testing Report prepared for the Project, historical U.S. Geological Survey maps, Sanborn Fire Insurance Company maps, and historical newspaper articles on file at the NWIC were reviewed for the Project site and vicinity. The review was done to obtain information on the distribution of the Shellmound and to assess the potential for the Project site to contain remnants of the Shellmound and/or historic-period artifacts.

Previous Studies within the Project Site. Three previous archaeological investigations have been conducted within the Project site in 1999, 2000, and 2014. All three investigations were completed by Archeo-Tec and were done under the supervision of an archaeologist that meets the Secretary of the Interior’s Professional Qualifications Standards for Archaeology. The investigations are described below, and the locations of archaeological testing at the Project site are depicted on Figure IV.A-2.

1999 Archaeological Investigation. In 1999, archaeological testing was conducted within the northeastern portion of the current Project site for the proposed Spenger’s Plaza Development Project. The testing consisted of 14 mechanical exploratory borings using a 24-inch auger mounted on a diesel-powered drill rig. Excavation of each test boring was carried out in arbitrary 2-foot levels. At the completion of each 2-foot level, the auger was removed from the boring, and then excavated soils were sifted through 1/8-inch mesh screens to capture archaeological materials.

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FIGURE IV.A-1

1900 Fourth Street Project EIR
Aerial Photograph of the Project Site and City Landmark Boundary of the West Berkeley Shellmound

Project Site
Designated Shellmound Location
(California Register of Historical Resources #P-01-000084/CA-ALA-307; Berkeley City Landmark #227)

I:\CBE1504 1900 Fourth Street\Figures\EIR\Fig_IVA1.ai (8/11/16)
Figure IV.A-2

Archaeological Excavation Locations

1900 Fourth Street Project EIR

Points 1-14  Boring Locations in 1999
              Positive Locations Identified in Red

Trench Locations in 2014

Project Site

Based on the excavation results, it was concluded that “the pre-construction testing procedures uncovered no evidence to suggest that subsurface cultural resources from the Prehistoric/Protohistoric Period (ca. 4000 BCE - CE 1775) exist anywhere within the confines of the approximately 18,000-square-foot subject property. No artifacts of prehistoric age or characteristics (e.g., specimens of chipped stone or ground/polished stone, or objects of modified bone or shell) were encountered in any of the 14 mechanical exploratory borings placed within the project area during the course of the archaeological testing program.”

Although the 1999 investigation noted that “a number of diffuse lenses of highly fragmented, unmodified shell were observed in six of the exploratory borings,” it was concluded that these are of natural, rather than of cultural, origin.

**2000 Archaeological Investigation.** In 2000, additional archaeological testing was conducted for the proposed Spenger’s Plaza Development Project in the northwestern, southwestern, and southeastern quadrants of the Project site. A total of 29 mechanical exploratory borings were excavated. The methods of the 2000 investigation were identical to those of the 1999 excavation, with the exception that samples of soil were collected and screened through 1/16-inch mesh screens.

The excavation identified two discrete areas of prehistoric deposits within the northwestern quadrant and the east-central portion of the Project site at a depth of approximately 5 to 9 feet below the surface (see Figure IV.A-2 for locations of borings where materials were identified). The archaeological deposits identified consisted “of a gray/black silty-clay mixed with an abundance of mussel and clam shell fragments, some oyster shell, a small quantity of mammal bones and several other possible cultural items.” Although the archaeological materials are remnants of the Shellmound, it was concluded that the testing was insufficient to determine if the prehistoric deposits were of primary or secondary deposition.

**2014 Archaeological Investigation.** The 2014 archaeological investigation was conducted for the current Project by the Project applicant’s consultant, Archeo-Tec. Andrew Galvan of the Ohlone Indian Tribe worked with Archeo-Tec to provide tribal monitoring services for the investigation. The investigation included excavation of 20 trenches—each measuring 5 feet wide and 15 feet long—in the central portion of the Project site, and two large excavations—each measuring 10 feet by 20 feet square—in the northwest portion of the Project site. Trenches were mechanically excavated using a backhoe, and all excavations were strategically placed to extensively sample the areas identified during the 2000 excavation as potentially containing Shellmound material. Ground-penetrating radar (GPR)
was used to pinpoint the most likely areas of potentially intact midden and avoiding debris encountered during the 1999 and 2000 exploratory borings. When Shellmound material (e.g., midden) was identified, this was screened, and archaeological materials were collected, washed, and cataloged in Archeo-Tec’s laboratory.

LSA cultural resources staff, under contract to the City of Berkeley, have reviewed the 2014 archaeological testing report completed for the Project site. The methods used for that study included a pre-excavation geophysical survey (ground-penetrating radar) to identify possible locations of intact archaeological features; standard controls to record the geospatial locations of excavation units and artifacts using a Trimble M3 Total Station; examination of continuous soil profiles in excavation trenches to assess the potential for intact archaeological deposits; screening of matrix to identify archaeological materials; and professional oversight by an archaeologist that meets the Secretary of the Interior’s Professional Qualifications Standards for Archeology. These methods are consistent with standard archaeological practice, and the study represents a reasonable and good faith effort to identify archaeological deposits in the Project site.

The archaeological testing program determined that Shellmound materials identified within the parking lot in 2000 are in secondary deposition (Figure IV.A-2). That is, while these materials possibly originated from CA-ALA-307, they were likely relocated due to natural creek deposition or during one of many episodes of site disturbance and grading activities that occurred in the vicinity in the late-19th or early-20th century. No evidence was found of intact primary Shellmound deposits anywhere within the Project site.

The 2014 study concluded that Shellmound material found within the Project site does not appear to be intact based on: 1) lenticular pockets of midden – as opposed to intact, continuous stratigraphic layers of cultural material – indicating redeposited material; 2) midden deposits mixed with sand and gravel, suggesting cultural deposits were eroded from off-site, entrained in the flow of Strawberry Creek, and redeposited on the project site; 3) the presence of extremely fragmentary shell, suggesting transport from elsewhere; and 4) the presence of historic-period (post-1900) butchered bone (i.e., bone butchered with metal implements) intermingled with midden deposit. Archaeological deposits that are not intact, as is the case with the Shellmound deposits identified at the Project site, do not qualify for listing in either the National Register or California Register due to a lack of integrity.

The 2014 excavation also uncovered whole and fragmentary artifacts that represent “historic period (post-1900) food debris and dining related material goods” represented by glass bottles, ceramic cups, plates, and bowls. Brick, assorted demolition debris, and various metallic waste were also identified. These materials do not qualify for listing in either the National Register or California Register as these cannot be associated with a person, household, event, nor do these materials possess information important in history. Such collections of historic-period material are commonly encountered at many archaeological sites throughout the Bay region, and additional study of the Project site for important historic-period associations does not appear warranted.

**Previous Archaeological Excavations Adjacent to the Project Site.** The NWIC has a record of archaeological excavations and archaeological monitoring reports that have been conducted adjacent to the Project site. A summary of these efforts is presented below.

*Basin Research Associates (1978).* In 1978, Basin Research Associates completed a cultural resources assessment for City of Berkley Redevelopment Commission properties just northwest of and adjacent to the current Project site. This assessment consisted of archival research, pedestrian survey, and auger coring. Auger cores yielded shell flakes and fragments; however, the archaeologist attributed this to the filling and leveling activities that occurred on the property in the 1920s. Based on the proximity of the area to CA-ALA-307, Basin Research Associates recommended archaeological monitoring of subsurface ground disturbance.

*David Chavez & Associates (1989).* In 1989, David Chavez & Associates conducted archaeological monitoring and screening of Shellmound material for a sanitary sewer rehabilitation project for the City. During the archaeological monitoring, disturbed prehistoric midden deposits were encountered beneath Fourth Street east of, and adjacent to, the current Project site (outside of the City-designated Shellmound Landmark site boundaries). Deposits were also encountered west of the Project site underneath Second Street. The midden was screened through 1/8-inch and 1/4-inch wire mesh to recover artifacts and human bones. Several artifacts were recovered, including mortar and pestle fragments, stone net sinkers, abalone pendants and olive shell beads, bone awls, a bone flaking implement, and a bird bone whistle. Human bones were also recovered and were reburied at the Ohlone Cemetery in Fremont.

It was concluded that the midden deposits were disturbed subsurface remnants of the Shellmound and that remnants of the site are still present within the vicinity of Hearst Avenue and Second Street, west of the current Project site.

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26 Galvan, Andrew, 2016. President, Board of Directors, The Ohlone Indian Tribe, Inc. Personal communication with Shannon Allen, Principal Planner, City of Berkeley. September 6.
**Basin Research Associates (2000).** In 2000, Basin Research Associates conducted archaeological monitoring at 1842-1860 Fourth Street, the corner of Hearst Avenue and Fourth Street adjacent to the current Project site. No prehistoric or significant historic-period cultural materials were noted as a result of this monitoring.

**Garcia and Associates (2002a, 2002b).** In 2002, Garcia and Associates (GANDA) completed an archaeological survey and cultural resources inventory of 17 linear blocks in West Berkeley for a proposed streetscape, parking, and rail stop improvement project. GANDA’s study included soil core excavations along Hearst Avenue, University Avenue, and Fourth Street, which lie to the north, south, and east of the current Project site. GANDA identified intact (primary deposition) and disturbed (secondary deposition) cultural sediments in 33 of the 124 cores. These cultural deposits are adjacent to, and outside of, the Project site and the City Landmark boundary for the Shellmound.

GANDA’s study also evaluated the Shellmound for its eligibility for listing in the National Register of Historic Places, based on cultural deposits identified outside of the current Project site. The National Register evaluation completed as part of that study is cited below under the four criteria for listing.

**Criterion A (California Register Criterion 1).** The Shellmound is eligible for listing under Criterion A/1 within the context of settlement of the San Francisco Bay (3000-1000 BCE). Although recent study of human remains identified during construction of the Transbay Terminal Project in San Francisco indicate ancestral Ohlone settlement in the Bay Area dating from at least 7,500 years before present, the Shellmound is the earliest known settlement site along the edge of the Bay, a significant contribution to the broad patterns of history. Increases in sea level during the late Pleistocene and early Holocene led to the formation and stabilization of the Bay approximately 6,000 years ago. This stabilization of sea level caused the formation of estuaries along the Bay’s edge, and this resource-rich environmental niche provided suitable habitat for human settlement. The site retains integrity of location and materials, sufficient to uphold eligibility under this criterion.

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30 The eligibility criteria for the National Register of Historic Places and the California Register of Historical Resources are similar as are the integrity requirements necessary for eligibility to either register. A property that is listed in, or is eligible for listing in, the National Register is also eligible for the California Register.

31 Dore, Christopher D., Stephen Bryne, and James Jenks, 2002a, *Cultural Resources Inventory*, op. cit.

32 Ibid.

Criterion B (California Register Criterion 2). The Shellmound is eligible for listing under Criterion B/2 due to its association with archaeologist Nels Nelson. The introduction and development of the stratigraphic method in American archaeology, a major methodological advance in the discipline, is credited to Nels Nelson. Nelson was associated with U.C. Berkeley from 1903 to 1912, during which time he conducted work at numerous Bay Area sites, including the Shellmound. Consultation conducted between the City and the Ohlone Indian Tribe for the Project also indicates eligibility under Criterion B/2 due to its association with the Ohlone as the first inhabitants of the East Bay. The site retains integrity of location and setting but lacks integrity of feeling and association. Location and setting are sufficient to uphold eligibility under this criterion.

Criterion C (California Register Criterion 3). The Shellmound is eligible for listing under Criterion C/3 as the “type site” for the Berkeley facies of the Early Horizon (3030-800 BCE). Type sites are those where the first, or most representative, example of something is found or defined. The Early Horizon of central California dates to approximately 5500-2000 BCE, and is characterized by an extensive list of archaeological traits. A facies is a group of closely related archaeological traits that characterize a variation within the horizon. The Berkeley Facies represents the archaeological manifestation of the initial San Francisco Bay region estuary adaption. In addition to its important association at the type site for the Berkeley Facies, the Shellmound is eligible under Criterion C/3 as the first (oldest) example of mound building in the Bay region. The site retains integrity of location, materials, and design, which are sufficient to uphold eligibility under this criterion.

Criterion D (California Register Criterion 4). The Shellmound is eligible for listing under Criterion D/4 as it has yielded, and may continue to yield, information important in precontact history (i.e., the period of time before Euro-American settlement and occupation), including information on subsistence, settlement, adaptation, and paleoenvironment (3030 BCE-CE 780). As noted by Wallace and Lathrap:

“…it can be said that the West Berkeley [S]hellmound proved to be of unusual significance to the understanding of San Francisco Bay’s prehistoric past. Not only has the midden’s excavation enriched the archaeological record with a considerable body of substantive data, but, more importantly, it extends knowledge of man’s presence in the bay region farther back in time by providing the first clear-cut evidences of Early Horizon occupation, hitherto recognized only at inland localities.”

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36 The West Berkeley Shellmound represents the oldest example of mound building in the Bay Area. Recent archaeological evidence associated with a human burial discovered in San Francisco in 2014, however, suggests Native American occupation of the bayshore from at least 7,500 years ago.

Portions of the Shellmound retain integrity of location and materials, and these are sufficient to uphold eligibility under this criterion.

**Garcia and Associates (2003).** In 2003, GANDA conducted cultural resources monitoring of utility excavation at the Berkeley Amtrak rail station. The monitored area included the easternmost portion of the Union Pacific Railroad (UPRR) right-of-way between Addison Street on the south and Hearst Avenue on the north and a portion of University Avenue underlying the University Avenue bridge between the railroad right-of-way on the west and Fourth and Fifth streets on the east. The area lies adjacent to, and south and west of, the current Project site. The archaeological monitoring resulted in the identification of historic-period and prehistoric artifacts and ecofacts, consisting of charcoal flecking and small pieces of shell that are likely associated with the Shellmound.

**Basin Research Associates (2005).** In 2004 and 2005, Basin Research Associates conducted soil core excavations at an area south of the current Project site and bounded by University Avenue on the north, Addison Street on the south, Third Street on the west, and Fourth Street on the east. A total of 41 soil cores were excavated, none of which contained evidence of an intact deposit associated with the Shellmound.

**Pacific Legacy, Inc. (2005).** In 2005, Pacific Legacy and Ohlone monitor Irene Zwerlein identified a fragment of human tibia during archaeological monitoring of trench excavation for the Berkeley Transit Center, outside the project site at a location south of the building at 701 University Avenue. The bone was identified in a previously excavated utility trench and was not found in primary deposition. The final disposition of the remains is not indicated in the report.

**Garcia and Associates (2016).** The East Bay Municipal Utility District (EBMUD) conducted trenching and associated re-paving to replace existing infrastructure, from February 10, 2016, through May 12, 2016, on Fifth Street between Virginia Street and University Avenue, and on Hearst Avenue between Fourth and Fifth Streets. EBMUD received notification on April 25, 2016, regarding the culturally sensitive area on the southern end of the site. Once notified, EBMUD brought on GANDA to conduct archaeological monitoring of the work through completion.

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39 An ecofact is organic material found at an archaeological site that has not been technologically altered but has archaeological significance. Ecofacts can include subsistence-related remains, such as shell and bone, or seeds and charcoal associated with a cooking hearth.


GANDA archaeologists monitored nine EBMUD excavation locations. One excavation location, approximately one-block east of the current Project site, contained a shell midden layer in the west sidewall of the excavation, at a depth of 28 to 30 inches below surface, extending horizontally for seven feet at which point it was truncated by an existing utility trench. No artifacts were observed in the shell midden layer. Road base and mixed fill soils truncated the deposit, which indicates that the midden had been previously impacted as a result of grading and cutting during historic development. GANDA concluded that the midden deposit may either be a portion of the Shellmound, in its original depositional context, but heavily truncated, or redeposited midden from associated site deposits located immediately to the west.

Pacific Legacy, Inc. (Ongoing). In March and April 2016, Ohlone remains were identified during trenching activity for the 1919 Fourth Street Project along Fourth Street, outside of and adjacent to the 1900 Fourth Street Project site. The NAHC identified the Ohlone Indian Tribe, with Andrew Galvan representing the tribe, as the Most Likely Descendent (MLD) for the human remains. A local archaeological consultant, Pacific Legacy, Inc., was retained to assess and treat impacts to the human remains and associated archaeological finds.

To date, four burial locations and assorted unprovenienced human bones (from a minimum of five individuals) have been identified during the tribal monitoring and archaeological recovery completed for the 1919 Fourth Street Project. The human remains were removed for additional study and will be returned to the Ohlone Indian Tribe for reburial. A report of archaeological findings for the 1919 Fourth Street Project is not yet available.

Map Review Results. An 1856 U.S. Coast Survey Map depicts two mounds, one to the west and one to the east of the Project site on the north bank of Strawberry Creek. This same map depicts the southern two-thirds of the Project site as occupied by a willow grove marshland, representing the creek channel and flood plain of Strawberry Creek during the same time period. The Strawberry Creek mouth emptied into a small tidal inlet of the Bay at the southwest corner of the Project site, and the northernmost portion of the site was part of the land mass outside the marsh area, on the northeast shore of the tidal inlet. A 1957 U.S. Geological Survey map also indicates the locations of the two mounds as well as the deposition of artificial fill on the Project site where Strawberry Creek joined the former tidal inlet. While areas along Strawberry Creek, particularly near its terminus with the Bay, attracted pre-contact groups and settlement, areas that were formerly tidal marshland would not have been conducive for habitation.

The 1911 Sanborn Fire Insurance (Sanborn) map of the Project site depicts Strawberry Creek crossing the southern third of the Project site. Built-environment development is depicted clustered at the southeast corner of the Project site fronting the northwest corner of the Fourth Street and University Avenue intersection, and is comprised of two residential buildings fronting Fourth Street and two residential buildings fronting University Avenue. Two minor outbuildings are also depicted on this Sanborn map in the southeast portion of the Project site. The rest of the parcel is vacant.

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43 Galvan, Andrew, 2016, op. cit.
Historical Accounts. Local historian Richard Schwartz provided several historical newspaper articles to the NWIC that document archaeological finds and collections recovered in the vicinity of the Shellmound. These articles include references to human remains identified at University Avenue and Third Street behind the Franklin House and on former El Dorado Oil Co. property, west of the railroad and the current Project site. None of the historical newspaper articles on file at the NWIC document archaeological finds or human remains within the Project site. Collectively, however, these articles reaffirm the sensitivity of the Project site and vicinity for Native American deposits and remains.

The 1929 Sanborn map depicts a single-story grocery store with an attached single-story residential building at the northwestern corner of the Fourth Street and University Avenue intersection. One residential property depicted in 1911 fronting Fourth Street remains. Strawberry Creek has been culverted beneath the Project site by this time. No other buildings, structures, or objects are depicted in the Project site.

The 1950 Sanborn map depicts no buildings or structures in the Project site. Records indicate that the building at 701 University Avenue was constructed circa 1955. A review of historical aerial photographs indicates the asphalt parking lot that covers the Project site was constructed sometime between 1946 and 1958. No other development on the Project site occurred between 1958 and the modern Sanborn map published in 1981.

(3) Native American Consultation. On January 21, 2016, a request form describing the Project and map depicting the Project site was sent to the Native American Heritage Commission (NAHC) in West Sacramento requesting a review of their Sacred Lands File (SLF) and a list of tribes eligible to consult with the City, pursuant to AB 52. On February 4, 2016, NAHC Staff Services Analyst, Sharaya Souza, responded in a letter that “A search of the SLF was completed for the USGS quadrangle information provided with negative results.” Included with the SLF results was a list of five individuals eligible to consult under AB 52. The City sent letters to these individuals on March 21, 2016, notifying them of their opportunity to consult for this Project.

To date, the City has been contacted by one individual, Andrew Galvan, President, Board of Directors, the Ohlone Indian Tribe, Inc., who requested in a letter dated March 3, 2016, “tribal consultation under the provisions of the California Environmental Quality Act ... for the mitigation of potential project impacts to tribal cultural resources” for the Project. The City contacted Andrew Galvan on April 5, 2016, to initiate consultation as requested.

On May 31, 2016, City of Berkeley Principal Planner Shannon Allen met with Mr. Galvan to discuss the Ohlone Indian Tribe’s input on the cultural resources analysis for this EIR. Ms. Allen and Mr. Galvan discussed the environmental review and consultation process. On August 3, 2016, Ms. Allen met again with Mr. Galvan. During that meeting, Mr. Galvan reviewed the Administrative Draft EIR and several recommendations and options that could be incorporated into the Project to benefit the Ohlone community were discussed.

44 Richard Schwartz collection, on file at the Northwest Information Center, Sonoma State University.
On September 6, 2016, Ms. Allen met for a third time with Mr. Galvan to discuss the Ohlone Indian Tribe’s review, and comments on, the second Administrative Draft of the EIR. Mr. Galvan provided several suggested edits and revisions to the EIR. In addition, Mr. Galvan provided additional recommendations that could be incorporated into the Project as mitigation measures. These measures are included as AB 52 Measures CUL-1 and CUL-2 in this EIR. Potential impacts to tribal resources are evaluated in this EIR and these impacts are mitigated to a less-than-significant level, in consultation with the Ohlone Indian Tribe. Therefore, the City and the Ohlone Indian Tribe consider the consultation process to be complete for this Project. Please refer to Appendix C of this EIR for documentation of the AB 52 consultation process.

b. Cultural Resources Overview. This section briefly describes the historical and cultural setting of the Project site vicinity, including a history of investigations at the Shellmound. Sections of this overview are adapted from the 2014 Archaeological Testing Report prepared for the Project.

(1) Pre-Contact History. Archaeological sites in the vicinity of the Project site consist mainly of pre-contact shellmound deposits. Until recently, the Bay Area’s landscape was marked by numerous large and small mounds of earth and shell containing a variety of Native American cultural materials and features. When U.C. Berkeley archaeologist Nels Nelson conducted the first intensive archaeological survey of the Bay Area between 1907 and 1908, he recorded no fewer than 425 shellmounds on or near the shoreline of the Bay. Nelson found that, at the time of his survey, most of these shellmounds lie within 50 feet of the Bay and very often near a freshwater source, such as Strawberry Creek.

The alignment of known sites, along freshwater sources near the confluence areas with tidal marshes, suggests the Project site was within an ecotone conducive to Native American habitation. Along the western shores of Alameda and Contra Costa counties, dozens of large and small pre-contact sites have been recorded within similar landscapes. The Emeryville Shellmound, for example, was situated along Temescal Creek where it empties into the Bay, and the Stege Mounds in Richmond are on an old Bay shoreline at the terminus of several small creeks. When Nelson first saw these sites during the 1907 and 1908 survey, they were all visible above the surface of the ground, and most extended more than 1 foot below the ground surface or deeper.

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48 Galvan, Andrew, 2016. President, Board of Directors, The Ohlone Indian Tribe, Inc. Written communication with Shannon Allen, City of Berkeley, Principal Planner. RE: Request for Funding to Conduct Improvements at the Ohlone Indian Cemetery in the Mission San Jose District in the City of Fremont, California. September 7.
49 Berkeley, City of, 2016. Written communication to Andrew Galvan, President, Board of Directors, The Ohlone Indian Tribe, Inc. Subject: Conclusion of Assembly Bill 52 Consultation for the 1900 Fourth Street Project, Berkeley, Alameda County. October 6.
50 Archeo-Tec, 2014, op. cit.
51 Nelson, 1909, op. cit.
The West Berkeley Shellmound. The first documented archaeological study of the Shellmound was conducted in 1902 by E.L. Furlong. Though this excavation was of limited extent, it resulted in the collection of a Native American cultural assemblage consisting of 265 artifacts. The recovered artifacts were added to the collections at the Phoebe Hearst Museum of Anthropology. Furlong’s notes did not accompany the artifacts and artifact catalog and, as a consequence, there are substantial gaps in the existing state of knowledge about this initial phase of archaeological study of the Shellmound.

Two years later, in 1904, Joseph Peterson continued the archaeological study of the Shellmound. His excavations were confined to the northeastern corner of the Shellmound, but uncovered significant stone and bone artifacts and nine human remains. When his field research and analysis were finished, Peterson prepared a written report of his findings and placed the document in the archives of the Lowie Museum of Anthropology at the University of California, Berkeley.

Near the end of the first decade of the 20th century, Nels Nelson completed his mapping of the Native American shellmounds of the Bay region. The Shellmound was one of the sites recorded by Nelson, but unfortunately, by that time “not a single mound of any size [was] left in its absolutely pristine condition.” Following the publication of Nelson’s work, other representatives of the University of California continued to investigate the steadily diminishing remnant of the Shellmound throughout the first half of the 20th century. Unfortunately, a variety of amateur collectors also took artifacts from the Shellmound. On occasion, local collectors and construction workers would donate artifacts they had collected from the Shellmound and other sites, but their finds were usually de-contextualized to such a degree that provenience information often did not accompany the artifacts.

The Shellmound was not officially recorded with the State until 1949 when archaeologist Arnold Pilling, using data from Nelson’s earlier survey, compiled the formal site documents. In the site record forms, Pilling estimated that the Shellmound measured approximately 900 feet (north-south) by roughly 300 feet (east-west) and was on the north bank of Strawberry Creek between Hearst and University streets and between Second and Fourth Streets.

As described in the following section, the most extensive, systematic excavations at the Shellmound were conducted in the early 1950s by archaeologists with U.C. Berkeley. These excavations were conducted on the last visible remnant of the Shellmound that was “wedged tightly between two old factory buildings” on the Truitt and White Company property west of the Project site between Second and Third Streets. These excavations are summarized in Wallace and Lathrap’s 1975 monograph of the Shellmound, which remains the most exhaustive study of the Shellmound published to date. By 1954, the entire Shellmound was cut to ground level.

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52 Archeo-Tec, 2014, op. cit.
53 Nelson 1909, op. cit.
54 Wallace, William J., and Donald W. Lathrap, 1975, op. cit.
Archaeological Findings from the West Berkeley Shellmound. The various archaeological investigations carried out at the Shellmound between 1902 and the mid-1950s resulted in the recovery of 3,412 Native American artifacts. Given the relatively extensive volume of soil excavated, the recovered cultural sample is rather small; nevertheless, such a limited quantity of artifacts is typical of the diminutive artifact yields that characterized San Francisco Bay Area shellmounds.  

The recovered artifacts can be characterized as a limited, but diverse, assemblage of flaked stone tools, items of ground or polished stone, as well as a variety of modified objects fashioned from shell, bone, and antler. The chipped-stone assemblage included a variety of projectile points, knife blades, flake and core scrapers and choppers. Recovered objects of ground or polished stone include mortars, pestles, many net sinkers, “charmstones,” and pendants. Objects of modified bone included awls, flakers, pins, beads, and a single fishhook. The most ubiquitous items of modified shell consisted of Olivella shell beads as well as a variety of abalone beads and pendants. Finally, the Shellmound contained large numbers of subsistence debris, including mammal, bird, fish bones, and shellfish.

In addition to the recovered Shellmound assemblage, “95 more or less complete skeletons and a number of disassociated human bones were exhumed.” Most of the burials encountered at the Shellmound were found in a loosely flexed position, a common practice in pre-contact California. Also of note are examples of deliberately buried mammals and birds encountered during U.C. Berkeley’s excavation of the Shellmound, including a coyote and a California condor.

In comparison to the Emeryville and Ellis Landing shellmounds, Wallace and Lathrap note:

“West Berkeley appears to have been the first of these three localities to have seen human occupation with Ellis Landing inhabited next and Emeryville last. There may have been a brief period when all three were inhabited simultaneously. West Berkeley became deserted first while people continued to live at both Emeryville and Ellis Landing for a lengthy span of time.”  

Radiocarbon dates from the Shellmound suggest that occupation of the site began prior to 2000 BCE, and it was occupied for an estimated span of 1,300 to 1,500 years.

(2) Ethnography. By the time Spanish colonists arrived in northern California, the Bay region supported a robust Native American population. Population estimates that, at a minimum, 50,000 people lived between Monterey County’s Point Sur and the Bay. The present Project site is situated within the territory of the Ohlone Chochenyo-speaking people. In 1770, the Ohlone numbered at most around 10,000 individuals in what today are

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55 Ibid.
56 Ibid.
57 Ibid.
58 Ibid.
59 Andrew Galvan of the Ohlone Indian Tribe contributed content to the discussion in this section.
Alameda and Contra Costa counties; by 1810, much of the Ohlone population and their traditional culture had been impacted due to European encroachment and its devastating impacts from diseases, warfare, and displacement and, above all, the operation of the Franciscan missions.

The term Ohlone implies a linguistic affiliation encompassing eight distinct language branches that derive from the Penutian stock. It is generally regarded that these languages evolved, split, recombined, borrowed, paraphrased and invented over millennia until the eight distinctive Ohlone languages observed in the ethnographic present were formed, each mutually unintelligible but derived from a common ancestor.

The Ohlone people were primarily harvesters and hunters of fish and game. Of significant importance to their diet were clams, ocean and bay mussels, and oysters. Many other food sources, including varieties of gastropods and crustaceans, contributed protein. Other sources of meat included land and waterfowl, as well as terrestrial and marine mammals. Fish contributed a large measure of protein to the diet, and were taken by net, trap, hook, spear, and poison. Ocean and estuarine environments yielded a wide variety of fish such as steelhead, sturgeon, salmon, ray, lamprey, perch, smelts, and varieties of small sharks. The main source of calories came from plant foods. A staple food was the acorn, pounded by stone mortar and pestle to make flour for soup. Buckeye yielded edible nuts; and berries were harvested for flavoring acorn starch and for brewing cider. Roots, shoots, and seeds were savored, and derived from wild onion, cattail, wild carrot, dock, tarweed, chia, and other species. Plant communities remained vigorous through managed burning of land.

In addition to providing primary subsistence, the flora and fauna provided the diet variety for the Ohlone people and their neighbors. Tule reeds provided the materials for building shelter and balsa canoes for fishing and for hunting waterfowl and possibly sea mammals. Plant resources also provided material for making nets, cords, and baskets. Baskets were a multi-purpose tool used as cooking containers and utensils, storage containers, seed beaters, water jugs, cradles, fish traps, trays for leaching and drying acorn meal, and for portage, among other uses. Faunal remains such as bone, tooth, beak and claw, were modified into awls, pins, daggers, scraping and cutting knives, and other tools. Pelts and feathers provided clothing and bedding. Feather, bone, and especially shell were used for items of ornamentation, such as beads, pendants, hair bangles, septum inserts, earrings, and other jewelry. Local rock and mineral sources provided materials to manufacture tools. Local sandstone, highly indurated, provided suitable material as grinding and pounding tools. Exotic materials, such as steatite and particularly obsidian, were obtained in trade and bartered for other commodities such as cinnabar and hematite. Other resources used in trade with inland peoples included salt, shellfish meat, and shell.

The family household of 15 individuals formed the basic social unit and was recognized along patrilineal lines. The next larger social unit was the clan. The largest Ohlone social unit was the tribal community. A tribal community, consisting of a group of interrelated villages, consisted of around 200 to 400 people under the leadership of a single headman. Each tribal community was autonomous politically and socially, presumably for enforcing equal access to resources and for protection.
Religion and ceremony played important roles in life and death. Ohlones observed rituals at important life events, such as birth, puberty and death. Ohlones danced for many reasons, all having to do with something of importance in their lives: birth of a child, reaching puberty, thanksgiving, war, a deceased, plentiful harvest of fish or acorns, capturing a black bear, or for a woman being consecrated into the priesthood, etc.

There were separate degrees of medical knowledge, practice and roles available to individuals. In general, many illnesses were believed to be caused by conscious intervention of other beings. Illness might be caused by a human enemy using supernatural power or by the spirit of some object or place which had been offended. This type of illness called for a specialized form of doctoring only available from a shaman.

Ohlone shamans were able to diagnose and cure disease. The shaman's power came to him from a guardian spirit that appeared to him during a trance or vision. His knowledge of medicine was learned over many centuries through experimentation and observation.

Curing ceremonies used a combination of physical, psychosomatic, spiritual aids, singing, herbal medicine, and massage. Medicine tubes were used to suck out the foreign object thought to be causing the sickness. Many plants could be used to treat different illnesses. Common yarrow, California hedge nettle and California rose were used for treating colds and fevers. California poppy, California bay laurel and willow were used to cure headaches. The major ingredient found in willow, salicylic acid, is today's aspirin. California bay laurel, Douglas fir and soap plants could be used to treat people suffering from rheumatism and arthritis. A liquid made from the bark of either madrone or roasted soap plant bulbs was used to relieve itching and reduce the swelling caused by poison oak. The soap plant was also a source for soap and shampoo as well as being a food resource.

Acorns were also used as medicine. In some areas of California acorn meal was tightly covered so that a mold could form into an early form of penicillin. When the layer of mold was strong enough to be pulled it was rolled into sheets that were then stored for later use in treating sores, boils and inflammations.

The Ohlone people practiced both cremation and burial. Most deceased individuals were cremated, and their possessions broken or disfigured and thrown into the funeral pyre along with the body. The ashes were then buried. Those who died without enough friends or relatives to gather wood for the pyre were buried, frequently with their possessions. Bodies to be interred were wrapped in tule mats or animal skins and placed in shallow graves along with their personal effects, while the cremated bodies were put into baskets that were then interred.

(3) Berkeley History. The Project site is located in the former Rancho San Antonio, a 44,800-acre rancho granted in 1820 by Spanish Governor Pablo Vicente de Solá to Luis María Peralta for his 40 years of service to the Spanish government. Rancho San Antonio includes the cities of Alameda, Berkeley, Emeryville, Oakland, and Piedmont, as well as part of San Leandro. Peralta’s land grant was confirmed after Mexico’s independence from Spain in 1822, and his title was honored when California entered the Union by treaty in 1848. In 1842, Peralta’s son, José Domingo, received the northern portion of the rancho lands, which includes the modern communities of Albany and Berkeley. Like many similar ranchers, José
and his brothers raised cattle and participated in the hide and tallow trade from the 1820s to the 1840s.

The history of West Berkeley begins when two retired sea captains, James H. Jacobs and William J. Bowen, settled in the area. In 1853, Jacobs built a wharf at the foot of Delaware Street; a year later, Bowen built a roadhouse and stage stop along the Contra Costa Road (modern San Pablo Avenue) and named it Ocean View. The area’s ties to industry began early with the establishment of the Pioneer Starch and Grist Mill in 1855 and a lumberyard in 1856. By 1860 Ocean View was home to 60 residents, whose children attended Ocean View School at San Pablo Avenue and Virginia Street. The Berkeley Land and Town Improvement Association (BLTIA) was formed in 1874 to promote development by capitalizing on the relocation of the University of California to Berkeley and the completion of the transcontinental railroad through the area. The BLTIA surveyed lands west of San Pablo Avenue between Bancroft Way and Codornices Creek, laid out streets, numbered blocks and lots, and arranged land sales. By 1878 the population grew approximately tenfold, and in that same year, Ocean View and Berkeley incorporated to avoid annexation by Oakland. Renamed West Berkeley, the area became a major industrial and manufacturing area, hosting companies in the 1870s such as Standard Soap, California Watch, Wentworth Boot and Shoe, California Ink, Griffin Glove and Tannery, and the Hoffburg Brewery. The area also contained smaller businesses such as grocers, blacksmiths, and hardware stores, as well as churches, a post office, a school, and a telephone exchange. Civic improvements marked West Berkeley’s growth, as gas streetlights were installed in 1879, a town hall was constructed in the 1880s, and electricity arrived in the 1890s.

The late-19th century development of West Berkeley was influenced by the Central Pacific Railroad and later the Southern Pacific Railroad (SPRR). The railroads connected Bay Area manufacturers and Central Valley farms and ranches with markets in the interior and overseas via port facilities in San Francisco. By 1900, the population rose to approximately 1,500. During the early-20th century, land uses in the western subdivisions located along the SPRR main line began to change in density, driven principally by the relocation of people and businesses following the San Francisco Earthquake and Fire of 1906. This change did not happen in a uniform manner; however, by the 1920s a lack of land zoning created a mixed area of commercial and industrial land uses interspersed with pockets of persistent single- and multi-family residential areas.

Interest in the shellmounds that dotted the landscape was rife in the years following the establishment of Ocean View. The Shellmound was situated on property controlled by the Pioneer Starch and Grist Mill. The Shellmound became a source for material that was used extensively for road building because it became nearly impenetrable after soaking. Horse teams were routinely used to take away large portions of the Shellmound, which were laid down along the major streets in West Berkeley, including San Pablo and University Avenues. The Emeryville Shellmound to the south saw a similar pattern of wholesale destruction.

c. **Regulatory Context.** The following describes CEQA and City of Berkeley regulatory and policy requirements for cultural resources.
(1) **CEQA Requirements.** CEQA defines a “historical resource” as a resource that is: 1) listed in, or determined eligible for listing, in the California Register of Historical Resources (California Register); 2) listed in a local register of historical resources as defined in PRC Section 5020.1(k); 3) identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); or 4) determined to be a historical resource by a project’s lead agency (PRC Section 21084.1 and CEQA Guidelines 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. Significant impacts under CEQA require that specific, feasible mitigation measures be developed to reduce adverse environmental conditions.

(2) **Public Resources Code 5024.1: California Register of Historical Resources.** The California Register is established at PRC Section 5024.1. The California Register is a guide to cultural resources that must be considered when a government agency undertakes a discretionary action subject to CEQA. The California Register helps government agencies identify and evaluate California’s historical resources and indicates which properties are to be protected, to the extent prudent and feasible, from a substantial adverse change (PRC Section 5024.1(a)). Any resource listed in, or eligible for listing in, the California Register must be considered during the CEQA process.60

A cultural resource is evaluated under four California Register criteria to determine its historical significance (CEQA Guidelines Section 15064.5(a)(3); PRC 5024.1(c)). To be eligible for listing on the California Register, a resource must be significant at the local, State, or national level in accordance with one or more of the following criteria:

- Is associated with events that have made a significant contribution to the broad pattern of California’s history and cultural heritage;
- Is associated with the lives of persons important in our past;
- 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
- Has yielded, or may be likely to yield, information important in pre-contact history or history.

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In addition, California Register eligibility is based on other considerations, including its integrity, which is “the authenticity of a historical resource’s physical identity evidenced by the survival of characteristics that existed during the resource’s period of significance.” Integrity is evaluated with regard to the retention of seven elements:

- **Location**: the place where the resource was constructed;
- **Design**: the combination of elements that create the form, plans, space, structure, and style of the resource;
- **Setting**: the physical environment of the resource, including the landscape and spatial relationship of the buildings;
- **Materials**: the physical elements that were combined or deposited during a particular period of time and in a particular pattern of configuration to form the resource;
- **Workmanship**: the physical evidence of the crafts of a particular culture or people during any given period of history;
- **Feeling**: the resource’s expression of the aesthetic or historic sense of a particular period of time; and
- **Association**: the direct link between an important historic event or person and a resource.

Resources that are significant and possess integrity will generally be considered eligible for listing in the California Register.

(3) **California Assembly Bill 52 - Tribal Cultural Resources and Consultation.** Assembly Bill 52 (AB 52), which became law on January 1, 2015, provides for consultation with California Native American tribes during the CEQA process, and equates significant impacts to “tribal cultural resources” with significant environmental impacts. Public Resources Code (PRC) Section 21074 states that “tribal cultural resources” are:

1. Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe and are one of the following:
   - (A) Included or determined to be eligible for inclusion in the California Register of Historical Resources.
   - (B) Included in a local register of historical resources as defined in subdivision (k) of PRC Section 5020.1.
   - (C) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.
A “historical resource” (PRC Section 21084.1), a “unique archaeological resource” (PRC Section 21083.2(g)), or a “nonunique archaeological resource” (PRC Section 21083.2 (h)) may also be a tribal cultural resource if it is included or determined to be eligible for inclusion in the California Register.

The consultation provisions of the law require that within 14 days of determining that a project application is complete, or a decision by a public agency to undertake a project, the lead agency must notify tribes of the opportunity to consult on the project. California Native American tribes must be recognized by the Native American Heritage Commission as traditionally and culturally affiliated with the project site, and must have previously requested that the lead agency notify them of projects. Tribes have 30 days following notification of a project to request consultation with the lead agency.

The purpose of consultation is to inform the lead agency in its identification and determination of the significance of tribal cultural resources. Consultation may also include a discussion of project alternatives, significant effects, and mitigation measures, and should be undertaken in good faith by both the tribe and lead agency. If a project is determined to result in a significant impact to an identified tribal cultural resource, the consultation process must occur and conclude prior to adoption of a Negative Declaration, Mitigated Negative Declaration, or certification of an Environmental Impact Report (PRC Sections 21080.3.1, 21080.3.2, 21082.3).

(4) City of Berkeley Landmarks Preservation Ordinance. Chapter 3.24 of the Berkeley Municipal Code contains the Landmarks Preservation Ordinance (LPO). Enacted by the Berkeley City Council in 1974, the LPO was drafted by BAHA as an attempt to prevent or delay the demolition of historically significant architecture while alternatives to the demolition are sought. The LPO authorized the creation of a Landmarks Preservation Commission (LPC) to implement the ordinance; the LPO was tasked with protecting those sites, structures, or areas that are: 1) reminders of past eras, events, and persons important to local, state, or national history; 2) significant examples of architectural styles of the past; or 3) landmarks in the history of architecture, or unique or irreplaceable assets to the City and its neighborhoods. In addition, the LPO seeks to: 1) develop and maintain appropriate architectural settings for identified resources; 2) enhance property values, stabilize neighborhoods, and increase economic benefits to the City; 3) preserve the City’s various architectural styles; and 4) encourage an understanding of the living heritage of the City’s past, as expressed by its historically significant built environment features.

The LPC is authorized to designate Landmarks, Structures of Merit, and Historic Districts. In addition to its designation duties, the LPC reviews applications for the alteration or demolition of Landmarks and Structures of Merit, as well as new construction in Historic Districts. Designation proposals may originate from private individuals, the LPC, the Planning Commission, the Civic Arts Commission, or the City Council.

In considering designation applications for Landmarks and Historic Districts, the LPC uses the following criteria established by the LPO Section 3.24.110:
Architectural Merit:
- A property is the first, last, only, or most significant architectural property of its type in the region;
- A property is the prototype of, or outstanding example of, a period, style, architectural movement, or construction, or is an example of the more notable works of the best surviving work in a region of an architect, designer, or master builder; or
- A property is an architectural example worth preserving for the exceptional values it adds as part of the neighborhood fabric.

Cultural Value: A structure, site, or area associated with the movement or evolution of religious, cultural, governmental, social, and economic development of the City.

Educational Value: A structure worth preserving for its usefulness as an educational force.

Historic Value: A structure that represents the preservation and enhancement of structures, sites, and areas that embody and express the history of Berkeley/Alameda County/California/United States. History may be social, cultural, economic, political, religious, or military.

Historic Property: Any property listed in the National Register of Historic Places.

In considering applications for Structure of Merit designation, the LPC uses the following criteria:

General Criteria: A structure shall be judged on its architectural merit and/or cultural, educational, or historic interest or value. If a structure does not meet Landmark criteria, it may be designated a Structure of Merit if it is worthy of preservation as part of a neighborhood, a block or street frontage, or as part of a group of buildings that includes Landmarks.

Specific Criteria:
- The age of the structure is contemporary with: (1) a Landmark within its neighborhood, block, street frontage, or group of buildings; or (2) a historic period or event of significance to Berkeley, or to the structure’s neighborhood, block, street frontage, or group of buildings;
- The structure is comparable in size, scale, style, materials, or design with a Landmark structure within its neighborhood, block, street frontage, or group of buildings;
- The structure is a good architectural design example; and
- The structure has historical significance to Berkeley and/or to the structure’s neighborhood, block, street frontage, or group of buildings.
(5) **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.

(6) **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.

(7) **Berkeley General Plan.** The General Plan treats the preservation of historical resources as an important part of the City’s development planning. The General Plan includes policies in the Urban Design and Preservation Element to provide for the protection of culturally or historically important resources. The Element contains 39 policies and accompanying actions to achieve its four objectives. To summarize, the Element’s objectives and attendant policies are:

- **Protection of Existing Resources.** This goal is to preserve historically or culturally important structures, sites, and areas, and protect the character of Berkeley’s neighborhoods and districts. The Element contains 11 general policies to achieve this objective. These policies include (by Element reference number): (UD-1) employing a wide array of regulatory, incentive, and outreach techniques; (UD-2) regulating the use of significant properties; (UD-3) regulating the character of neighborhoods; (UD-4) maintaining and expanding an inventory of cultural resources; (UD-5) retaining significant architectural features during building rehabilitation; (UD-6) encouraging adaptive reuse; (UD-7) implementing disaster preparedness; (UD-8) selecting public works projects sympathetic to historical street features; (UD-9) maintaining historic trees and plantings; (UD-10) encouraging the University of California to retain historically significant campus buildings; and (UD-11) urging the Berkeley public school system to maintain and improve its historic buildings.

- **Preservation Incentives.** This goal is to provide incentives for the preservation of historic and cultural resources. The Element contains four general policies to achieve this objective. These policies include: (UD-12) expanding the incentives available for the preservation of historic and cultural resources; (UD-13) revising regulations to provide new incentives and remove disincentives for preservation; (UD-14) providing new funding, tax reduction, and technical assistance incentives to facilitate preservation; (UD-15) establish and improve preservation partnerships with public agencies, nonprofit organizations, and the private sector.
• **New Construction and Alterations.** This goal is to ensure that new construction and alterations are well designed and respect and enhance the existing environment. The Element contains 20 policies to achieve this objective. These policies include: (UD-16) designing new, or remodeling buildings, to respect their architectural context; (UD-17) designing architectural aspects (e.g., the mass, height, materials, color, or detailing) in relation to the surroundings; (UD-18) encouraging an overall experience with a variety of stimulating contrasts; (UD-19) encouraging consonance of new designs with the best designs of an architecturally diverse area; (UD-20) altering a significant building only in ways compatible with its character; (UD-21) redirecting redevelopment to areas that will not require removing historical buildings; (UD-22) ensuring well-designed new construction that enhances its location; (UD-23) ensuring that design review results in designs compatible with the best elements of an area’s character; (UD-24) regulating new construction to reinforce the design character of its location; (UD-25) encouraging stimulating and inviting facades and exterior building features; (UD-26) incorporating pedestrian-friendly choices in site design; (UD-27) relating building entrances to public sidewalks; (UD-28) limiting appreciable setbacks of commercial structures from public sidewalks; (UD-29) requiring aesthetically pleasing signage compatible with the surroundings; (UD-30) ensuring that new development respects and maintains existing on-site trees; (UD-31) avoiding construction that blocks significant views; (UD-32) requiring new construction that maximizes solar access and minimizes shadows; (UD-33) promoting environmentally-friendly building designs; (UD-34) supporting the presentation of public art; and (UD-35) undertaking public improvement projects that clarify the City’s urban pattern and facilitate a visitor’s ease and comfort therein.

• **Outreach.** This goal is to promote the awareness, understanding, and preservation of significant examples of the City’s built environment cultural heritage. The Element contains four policies to achieve this objective. These policies include: (UD-36) encouraging citizens’ understanding of the City’s cultural heritage and ways to sensitively preserve it; (UD-37) distributing information on the incentives available for preservation; (UD-38) promoting the City’s cultural and architectural heritage as an economic development strategy; and (UD-39) promoting the understanding of what constitutes a good design and how it respects its architectural context.

(8) West Berkeley Plan. The adopted (1993) West Berkeley Plan represents Berkeley’s land area along its western edge. West Berkeley is bordered on the north by the City of Albany, on the west by the San Francisco Bay and the Berkeley marina, on the south by the municipal borders of Emeryville and Oakland, and on the east by San Pablo Avenue. The West Berkeley Plan is intended to guide development and preservation decisions in this area until at least 2005 and includes implementing guidelines, goals, objectives, and policies. The Historic Preservation Goals and Policies for West Berkeley include language relevant to historic architectural resources. Portions of the West Berkeley Plan relevant to the current Project are discussed below.

• **Goal 7:** Preserve West Berkeley’s existing architectural and historic resources in the context of district goals, permitted uses, and other goals of the West Berkeley Plan. Seek to develop the built environment as a whole in a way consistent with this goal. Five policies are associated with this goal.
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IV. SETTING, IMPACTS AND MITIGATION MEASURES  
A. CULTURAL RESOURCES

• Policy 7.1 charges the City with reviewing each of the 112 West Berkeley buildings in the State Historic Resources Inventory and the Landmarks Preservation Commission Priority List for Landmark Designation.

• Policy 7.2 requests that the West Berkeley Historical Survey be completed and designation of additional landmarks be made in accordance with the survey findings.

• Policy 7.3 seeks to preserve and maintain architecturally and historically important buildings, including landmarked and non-landmarked structures whenever feasible. Preservation of historical façades should be explored in the event the building as a while cannot be feasibly preserved.

• Policy 7.4 encourages the infill development that is sensitive to historical or architecturally important resources.

• Policy 7.5 encourages the City to work with the University of California to preserve any buildings the institution currently owns or may acquire in the future.

2. Impacts and Mitigation Measures

The following section describes potentially significant impacts to historical resources, archaeological resources, and human remains that could result from the proposed Project. Mitigation measures are identified to reduce such impacts. As previously noted, potential impacts associated with architectural cultural resources and paleontological resources are evaluated in the Initial Study (Appendix B) and were determined to be less than significant with implementation of Mitigation Measure CUL-1. Therefore, these topics are not further addressed in this EIR section.

a. Criteria of Significance. Implementation of the proposed Project would have a significant impact on historical resources if it would:

• Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5. Specifically, substantial adverse changes include 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;

• Cause a substantial adverse change to the significance of an archaeological resource; or

• Disturb any human remains, including those interred outside of formal cemeteries.

b. Project Impacts. The following describes the Project’s potential impacts to cultural resources. For the project to have “a substantial adverse change” on a historical resource, it would have to demolish, destroy, relocate, or alter the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired (CEQA Guidelines Section 15064.5(b)). Archaeological sites may qualify as historical resources under CEQA (CEQA Guidelines Section 15064.5(c)(1)).

Generally, for purposes of CEQA, 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 convey its historical significance and that justify its inclusion in, or eligibility for inclusion in, the California Register or an officially
recognized local register of historical resources, or its identification in a historical resources survey meeting the requirements of PRC Section 5024.1(g).

(1) Potential Impacts to Historical Resources. The proposed Project would occur within the boundary of City Landmark #227, the West Berkeley Shellmound. As a designated City Landmark, the Shellmound qualifies as a historical resource under CEQA (CEQA Guidelines Section 15064.5(a)(2)).

While National Register or California Register-eligible Shellmound deposits have not been identified within the Project site during previous excavations, the possibility exists that intact Shellmound deposits could be present in areas that have not been previously excavated as well as at locations where above-ground utility connections would be relocated underground for the Project. Project implementation would affect a designated City Landmark, and Project excavation could potentially unearth previously unidentified intact Shellmound deposits that contribute to the resource’s significance under the National Register and California Register. These impacts would have a substantial adverse change on a historical resource due to the destruction of those critical aspects of integrity that qualify it as a City Landmark and for listing in the National Register and California Register.

Impact CUL-2: Ground-disturbing activities associated with Project construction could result in a substantial adverse change in the significance of a historical resource, the West Berkeley Shellmound (City Landmark #227). (S)

Project ground-disturbing activities may encounter precontact archaeological deposits in those portions of the Project site not previously excavated in 1999, 2000, and 2014 (Figure IV.A-2). Destruction of a City Landmark or intact Shellmound deposits – should previously unidentified, intact deposits be found at the Project site – would have a significant impact on a historical resource. Construction of the project would effectively remove a portion of City Landmark #227, a designated area of local cultural importance, and the partial or total destruction of previously unidentified intact archaeological deposits by the Project would impair the ability of such resources to convey important scientific and historical information. Implementation of Mitigation Measures CUL-2a, CUL-2b, CUL-2c, and CUL-2d, below would reduce potential impacts to intact archaeological deposits associated with the West Berkeley Shellmound. Potential impacts would be reduced by requiring training for construction personnel in the appropriate procedures to be enacted if archaeological deposits are encountered. Collection, analysis, and documentation of important information associated with archaeological historical resources by qualified archaeologists and Ohlone tribal monitors would also reduce potential impacts.

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61 Mitigation Measure CUL-1 addresses paleontological resources and is included in the Initial Study (see Appendix B). Also refer to Chapter II, Summary of this EIR.
Mitigation Measure CUL-2a: Before construction-related ground-disturbing activities commence, including ground clearance, the Project site shall be surveyed by a qualified archaeologist using ground-penetrating radar (GPR). The GPR survey is intended to identify those areas where it is most likely that any Shellmound material that may exist is concentrated or dispersed to focus archaeological and tribal monitoring efforts at those locations, as further described in Mitigation Measure CUL-2d.

Mitigation Measure CUL-2b: Prior to Project ground disturbance, all construction contractor(s) responsible for overseeing and operating ground-disturbing mechanical equipment (e.g., on-site construction managers and backhoe operators) shall be required to participate in cultural awareness and sensitivity training. The purpose of this training is to (1) educate construction personnel regarding the types of archaeological deposits that may be encountered during construction; (2) inform construction personnel of the appropriate procedures that must be used if archaeological deposits or human remains are encountered, including work stoppage, agency notification, and archaeological exposure and removal of significant deposits; and (3) provide cultural sensitivity training to construction personnel to ensure respectful and appropriate behaviors in the vicinity of archaeological deposits and human remains, consistent with the direction of the on-site Ohlone tribal group.

A qualified archaeologist that meets or exceeds the Secretary of the Interior’s Professional Qualifications Standards in archeology and an Ohlone tribal representative eligible to consult with the City, pursuant to AB 52, shall conduct the training. The City shall ensure that this training occurs prior to Project ground disturbance and shall maintain a record of all construction personnel that have received this training.

Mitigation Measure CULT-2c: The Project applicant shall provide a utility plan for the Project to a qualified archaeologist for review prior to issuance of any demolition or grading permits. The archaeologist shall review these plans to assess whether trenching for utility connections adjacent to the Project site have the potential to impact intact deposits associated with the West Berkeley Shellmound. The archaeologist shall prepare a report documenting appropriate measures for mitigating potential impacts to intact archaeological deposits and associated human remains that may occur from utility excavations. Appropriate mitigation measures documented in the report may include, but would not necessarily be limited to: (1) a GPR survey to determine the possible presence and locations of subsurface archaeological features; (2) archaeological excavation at proposed utility excavation locations to identify and recover archaeological deposits or human remains; (3) documentation and scientific study of recovered artifacts and human remains, and preparation of a report of findings; and (4) public outreach, including presentations, articles, and literature describing findings. The mitigation measures provided in the report shall clearly indicate whether the measures would be implemented prior to Project ground disturbance, during Project construction, or after Project ground disturbance has been completed.
Mitigation Measure CUL-2d: All Project ground-disturbing activities shall be monitored by an archaeologist and a representative of an Ohlone tribe. The archaeological monitoring shall be overseen by an archaeologist that meets or exceeds the Secretary of the Interior’s Professional Qualifications Standards in archaeology. The Ohlone tribal monitor shall be an individual identified by the Native American Heritage Commission as eligible to consult with the City under AB 52.

Should an archaeological deposit be encountered during project subsurface construction, all ground-disturbing activities within 25 feet shall be redirected and the on-site archaeologist and Ohlone monitor shall assess the deposit, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. The City shall be notified by the applicant team within 24 hours of the encounter. If found to be significant by the on-site archaeologist (i.e., eligible for listing in the California Register of Historical Resources), the applicant shall be responsible for funding and implementing appropriate mitigation measures. Mitigation measures may include, but would not be limited to, recording the archaeological deposit, data recovery and analysis, and public outreach. Upon completion of the selected mitigations, a report documenting methods, findings, and recommendations shall be prepared and submitted to the City for review. Significant archaeological materials shall be submitted to an appropriate curation facility and used for public interpretive displays, as appropriate and in coordination with an Ohlone tribe representative.

The applicant shall inform its contractor(s) of the sensitivity of the Project site for archaeological deposits, and include the following directive in the appropriate contract documents:

“The subsurface of the construction site is sensitive for archaeological deposits. If archaeological deposits are encountered during project subsurface construction, all ground-disturbing activities within 25 feet shall be redirected and a qualified archaeologist shall 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 archaeological materials. Archaeological deposits can include, but are not limited to, shellfish remains; bones, including human remains; flakes of, and tools made from, obsidian, chert, and basalt; and mortars and pestles.”

The City shall verify that the language has been included in the grading plans prior to issuance of a grading permit or other permitted project action that includes ground-disturbing activities on the Project site.

Collectively, implementation of the above mitigation measures would reduce potential impacts from the Project to the City Landmark and intact archaeological deposits to a less-than-significant level. On-site monitoring of ground disturbance by an archaeologist and Ohlone representative would ensure that: 1) if archaeological deposits are identified during excavation, these would be evaluated, documented, and studied in accordance with standard archaeological practice, and 2) archaeological deposits and human remains would be treated in accordance with appropriate State codes and regulations and according to culturally appropriate norms acceptable to the Ohlone Most Likely Descendant.
In addition to the mitigation measures described above, two measures resulting from AB 52 consultation and one recommended measure are identified below that would further lessen impacts to historic resources through compensation, avoidance, and public outreach. These measures are not required to reduce these impacts to a less-than-significant level, but are recommended to be incorporated into the conditions of approval for the Project.

The Project applicant is proposing to fund the following improvements and program as part of the proposed Project. These additional measures would (1) donate money to the Ohlone Indian Tribe for improvements and maintenance of the Ohlone Cemetery in Fremont; and (2) create a GIS database designating areas of archaeological sensitivity, to be used for future project planning purposes within the City of Berkeley.

**AB 52 Measure CUL-1:** The applicant will make a donation to the Ohlone Indian Tribe, Inc., a 501(c)(3) organization, in the amount of $75,000 for the sole purpose of maintaining, with appropriate dignity, the Ohlone Indian Cemetery at 1401 Washington Boulevard in the Mission San Jose District of the City of Fremont, Alameda County. Potential improvements include revegetation with native landscaping; repair and replacement of the existing site fencing; repairs to the entry archway, signage, and grave markers; and other improvements necessary to maintain and enhance the dignity of the cemetery. The Ohlone Indian Tribe will be responsible for documenting the uses of these funds and providing confirmation to the City that this work has been completed within one year of the date that the funds are granted to the Tribe.

**AB 52 Measure CUL-2:** The applicant will fund creation and implementation of a GIS layer for City staff use that indicates areas of archaeological sensitivity within the City. This map will be for internal, project-planning use and will not be available to the public as it would contain sensitive information. The City would routinely update the information contained in the GIS database as new information is revealed through records searches conducted at the Northwest Information Center by qualified archaeologists as part of individual development project review.

In addition, archaeological monitoring and treatment of archaeological deposits in accordance with standard archaeological practice could provide important information regarding the ancestral Ohlone in a manner that incorporates data generated by scientific analysis to complement traditional tribal perspectives. In turn, the City could utilize this information in interpretive material for public education, as provided for in the following recommended measure.

**Recommended Measure CUL-1:** The Project applicant will fund and maintain a publicly accessible, permanent display within the City Landmark boundary of the West Berkeley Shellmound that describes the archaeological and cultural significance of the site. The content of the display will be developed in consultation with a qualified archaeologist and Ohlone representative to ensure that tribal and archaeological perspectives are equally presented.
(2) Potential Impacts to Archaeological Resources. According to the CEQA Guidelines, “When a project will impact an archaeological site, a lead agency shall first determine whether the site is an historical resource” (CEQA Guidelines Section 15064.5 (c)(1)). Pursuant to this guidance, this analysis has concluded that the Shellmound is a “historical resource” under CEQA, as described in subsection 1.a.(1) of this section and in CEQA Guidelines Section 15064.5(a). Therefore, no additional discussion of potential impacts to a unique archaeological resource (California PRC Section 21083.2) need be included in this analysis. Additionally, see Section V, Cultural Resources, of the Initial Study Checklist included as Appendix B.

(3) Potential Impacts to Human Remains. Although no such remains were encountered at the Project site during archaeological testing conducted in 1999, 2000, and 2014, over 95 human burials have been reported in earlier excavations and grading of the Shellmound, west of the UPRR corridor and the Project site. Disarticulated human bone has also been identified during archaeological monitoring adjacent to the Project site along University Avenue.62 Although previous archaeological testing of the Project site does not indicate the presence of undisturbed deposits associated with the Shellmound, secondarily deposited Shellmound material could contain human bone. While the scientific value of such remains would be highly compromised due to a loss of critical provenience information, the presence of such remains would undoubtedly have profound importance to the local Ohlone community. Therefore, the potential to encounter such remains cannot be discounted. However, any human remains encountered during Project-related ground-disturbing activities would be treated in accordance with California Health and Safety Code Section 7050.5 and Public Resources Code 5097.98, as described above and as included in the City’s standard conditions of approval. All work within 25 feet of the discovery would be required to halt and the Project contractor would be required to immediately notify the Alameda County Coroner and the NAHC for further evaluation and treatment, if appropriate. Therefore, this impact would be less than significant.

c. Cumulative Impacts. The disturbance of archaeological deposits that may underlie the Project site, and potential disturbance of human remains, could have a cumulatively significant impact when considered with other past, present, or reasonably foreseeable projects in Berkeley and the San Francisco Bay Area.

Implementation of the Project, in conjunction with other developments within the City, has the potential to cumulatively impact archaeological cultural resources, including the Shellmound. Adjacent to the current Project site, archaeological deposits and human remains have recently been identified during construction of the 1919 Fourth Street Project, and the proposed 600 Addison Street Project would require environmental review under CEQA due to that Project’s proximity to the Shellmound. Current development at 1919 Fourth Street has, and future nearby development could, adversely affect historical resources, archaeological resources, and human remains through their destruction or disturbance. Before mitigation, therefore, developments within the City’s jurisdiction, as well

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as other local recent and current developments, have the potential to cause adverse cumulative impacts to cultural resources due to their destruction or loss of historical integrity.

However, it should be noted that each development that the City oversees would undergo environmental review, consistent with CEQA and the City's current procedures, and would be subject to similar mitigation measures as those recommended above. Neither the proposed Project nor other development projects are expected to cumulatively result in significant impacts to cultural resources, provided that appropriate predevelopment environmental review occurs and appropriate mitigation measures, including but not limited to preservation in place, capping, and data recovery, are implemented as a condition of development. Therefore, implementation of Project-specific mitigation measures described herein and appropriate City measures and conditions would reduce any potential cumulative impacts related to cultural resources to a less-than-significant level. Accordingly, the proposed Project would not result in a cumulatively considerable contribution to a significant impact to cultural resources.
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B. TRAFFIC AND CIRCULATION

This section describes the existing traffic and circulation conditions on the Project site and its vicinity and analyzes the Project's potential transportation-related impacts. Figure IV.B-1 shows the location of the proposed Project and adjacent street system, as well as the intersections studied in this analysis.

This analysis evaluates the traffic, transit, pedestrian, bicycle, loading, emergency vehicle access and construction-related impacts of the proposed Project. Intersection Level of Service (LOS) is evaluated for study intersections for the weekday AM and PM peak hours and the weekend (Saturday) peak hour. An assessment of the effects of the proposed Project on parking and vehicle miles traveled (VMT) is included for informational purposes.

The analysis evaluates conditions under the following scenarios and identifies the transportation-related impacts of the proposed Project:

- Existing (Year 2016) Conditions
- Near-Term Conditions
- Near-Term Plus Project Conditions
- Cumulative (Year 2040) Conditions
- Cumulative Plus Project Conditions
- Construction Conditions

This section is based on the Transportation Impact Analysis prepared for the proposed Project. This report is provided in Appendix C.

1. Setting

The transportation-related context in which the proposed Project would be constructed and operated is described below, beginning with a description of the proposed Project's study area and the approach and methodology used in this analysis. Next, the existing street network that serves the Project area and transit service in the vicinity of the Project site is described.

a. Study Area Intersections. Figure IV.B-1 presents the proposed Project's location and study intersections. Based on discussions with City staff, seven intersections were evaluated during the weekday AM and PM peak hours and weekend (Saturday) peak hour for this analysis. The study intersection locations and traffic control devices are described below.

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1 Near-Term Conditions reflect conditions with buildout of all approved and under construction projects. This is assumed to occur within five years.

1. Second Street/Hearst Avenue (All-Way Stop Control)
2. Fourth Street/Hearst Avenue (All-Way Stop Control)
3. Sixth Street/Hearst Avenue (Signal)
4. Fourth Street/University Avenue North Frontage Road (All-Way Stop Control)
5. Fourth Street/University Avenue South Frontage Road (All-Way Stop Control)
6. Sixth Street/University Avenue (Signal)
7. San Pablo Avenue/University Avenue (Signal)

Each of these intersections is described in more detail below.

(1) **Second Street/Hearst Avenue.** This intersection is an all-way stop controlled intersection with four approaches. The approaches are striped with one all-movement lane and crosswalks are marked on the south and west legs of the intersection.

(2) **Fourth Street/Hearst Avenue.** This intersection is an all-way stop controlled intersection with four approaches. There are marked crosswalks and upgraded curb ramps on all approaches. Each approach is striped with one all-movement lane.

(3) **Sixth Street/Hearst Avenue.** This intersection is a signalized intersection with four approaches. The Hearst Avenue, eastbound and westbound approaches are striped with one all-movement lane. The Sixth Street, northbound and southbound approaches are striped with one left-turn pocket and one shared through/right-turn lane.

(4) **Fourth Street/University Avenue North Frontage Road.** This intersection is an all-way stop controlled intersection with three approaches. The University Avenue North Frontage Road is a one-way westbound road. The northbound approach along Fourth Street has one shared left-turn/through lane. The southbound approach along Fourth Street has one shared through/right-turn lane. The westbound approach along the University Avenue North Frontage Road has one all-movement lane. High visibility marked crosswalks and upgraded curb ramps are provided on the north, east, and west legs of the intersection.

(5) **Fourth Street/University Avenue South Frontage Road.** This intersection is an all-way stop controlled intersection with three approaches. The University Avenue South Frontage Road is a one-way road traveling eastbound. The northbound approach along Fourth Street has one shared through/right-turn lane. The southbound approach along Fourth Street has one shared left-turn/through lane. The eastbound approach along the University Avenue South Frontage Road has one shared all-movement lane. High visibility marked crosswalks and upgraded curb ramps are provided on the south, east, and west legs of the intersection.
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(6) **Sixth Street/University Avenue.** This intersection is a signalized intersection with four approaches. The northbound and southbound approaches along Sixth Street each have one dedicated left-turn lane, one through lane, and one dedicated right-turn lane. The eastbound approach along University Avenue has one dedicated left-turn lane, one through lane, and one shared through/right-turn lane. The westbound approach along University Avenue has one dedicated left-turn lane, two through lanes, and one dedicated right-turn lane. High visibility marked crosswalks and upgraded curb ramps are provided on the south, east, and west legs of the intersection. Pedestrian countdown signals are provided and there is a narrow median island on the six-lane University Avenue crossing.

(7) **San Pablo Avenue/University Avenue.** This intersection is a signalized intersection with four approaches. The northbound and southbound approaches along San Pablo Avenue each have one dedicated left-turn lane, one through lane, and one shared through/right-turn lane. The eastbound and westbound approaches along University Avenue each have one dedicated left-turn lane, one through lane, and one shared through/right-turn lane. High visibility marked crosswalks and upgraded curb ramps are provided on the south, east, and west legs of the intersection. Pedestrian countdown signals are provided and there is a narrow median island on the five-lane San Pablo Avenue crossing.

b. **Analysis Approach and Methodology.** The following sections describe the approach and methodology used to analyze potential traffic and circulation-related impacts to the study area that could result from implementation of the proposed Project.

(1) **Overview.** This analysis evaluates the traffic and circulation-related impacts of the proposed Project during the weekday morning and evening peak hours (between 7:00 a.m. and 9:00 a.m. and 4:00 p.m. and 6:00 p.m., respectively) and during the weekend (Saturday) period between 1:00 p.m. and 3:00 p.m. Traffic and circulation impacts were assessed for the following scenarios:

- **Near-Term Plus Project Conditions.** This scenario evaluates traffic and circulation-related impacts that would occur if the proposed Project plus other approved developments located in the vicinity of the proposed Project were implemented. Traffic volumes for the study intersections were developed by adding traffic generated by the proposed Project to the Near-Term Conditions.

- **Cumulative Plus Project Conditions.** This scenario evaluates traffic and circulation-related impacts in the year 2040 with implementation of the proposed Project. Traffic volumes for this condition are based on growth rates derived from the Alameda CTC travel demand model traffic forecasts for future year 2040 with the addition of traffic generated by the proposed Project.

(2) **Traffic Analysis Methodology.** The following describes the methodology used for analysis of transportation-related impacts.

**Intersection Level of Service.** Traffic conditions in the study area are assessed through the evaluation of intersection level of service (LOS). Intersections were analyzed using Synchro 8 Software and according to the Highway Capacity Manual (2000 HCM) methodology, which uses quantitative measures of traffic conditions (turning movement volumes, signal timing information, roadway geometric configurations) to determine
 capacity, average delay, and other operational performance measures at an intersection, of which the most widely used is the level of service. Level of service provides a qualitative description of the performance of an intersection based on average delay per vehicle. Intersection LOS ranges from LOS A, which indicates free flow or excellent conditions with short delays, to LOS F, which indicates congested or overloaded conditions with extremely long delays. Intersection LOS criteria are summarized in Table IV.B-1.

For signalized and all way stop control intersections, LOS and delay are reported as an average across all movements and approaches. For one-way and two-way stop controlled intersections, LOS and delay are reported for the worst stop-controlled approach (or yield movement).

**Table IV.B-1: Intersection Level of Service Criteria**

<table>
<thead>
<tr>
<th>Level of Service</th>
<th>Description</th>
<th>Signalized Intersections</th>
<th>Unsignalized Intersections</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Little or no delay</td>
<td>&lt; 10.0</td>
<td>&lt; 10.0</td>
</tr>
<tr>
<td>B</td>
<td>Short traffic delay</td>
<td>&gt; 10.0 and &lt; 20.0</td>
<td>&gt; 10.0 and &lt; 15.0</td>
</tr>
<tr>
<td>C</td>
<td>Average traffic delay</td>
<td>&gt; 20.0 and &lt; 35.0</td>
<td>&gt; 15.0 and &lt; 25.0</td>
</tr>
<tr>
<td>D</td>
<td>Long traffic delay</td>
<td>&gt; 35.0 and &lt; 55.0</td>
<td>&gt; 25.0 and &lt; 35.0</td>
</tr>
<tr>
<td>E</td>
<td>Very long traffic delay</td>
<td>&gt; 55.0 and &lt; 80.0</td>
<td>&gt; 35.0 and &lt; 50.0</td>
</tr>
<tr>
<td>F</td>
<td>Extreme traffic delay</td>
<td>&gt; 80.0</td>
<td>&gt; 50.0</td>
</tr>
</tbody>
</table>


**Roadway Segment Level of Service.** Roadway segments on the Metropolitan Transportation System (MTS) network was performed based on the service volume tables from the Highway Capacity Manual, as shown in Table IV.B-2. A volume to capacity ratio was calculated using the volumes from the Alameda CTC model and the LOS F service volume threshold as the estimate for roadway capacity. On CMP and MTS designated roadway segments that are projected to exceed the CMP standard in the future (Year 2040) without the Project, the impact is significant if the Project adds at least five percent to the future peak hour traffic volume.

c. **Street Network.** The proposed Project is located within West Berkeley. The study area includes several key regional and local roadways that connect the Project site with Interstate 80/Interstate 580 (I-80/I-580), cities situated along the parallel San Pablo Avenue (State Route 123), and to surrounding areas. The following summarizes the main facilities in the study area, including roadway classifications, travel lanes, and other traffic flow characteristics.
Table IV.B-2: Roadway Segment Level of Service Criteria

<table>
<thead>
<tr>
<th>Level of Service</th>
<th>Description</th>
<th>Volume-to-Capacity Ratio (V/C Ratio)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Vehicles travel at free-flow speeds and can maneuver almost freely within the traffic stream.</td>
<td>≤ 0.30</td>
</tr>
<tr>
<td>B</td>
<td>Vehicles travel at free-flow speeds and movement within the traffic stream is only slightly restricted.</td>
<td>&gt; 0.30 and ≤ 0.50</td>
</tr>
<tr>
<td>C</td>
<td>Vehicles travel at or near free-flow speed and movement is somewhat restricted. Incidents can cause local queuing.</td>
<td>&gt; 0.50 and ≤ 0.71</td>
</tr>
<tr>
<td>D</td>
<td>Vehicle speed declines as density increases, and maneuverability within the traffic stream is noticeably limited.</td>
<td>&gt; 0.71 and ≤ 0.89</td>
</tr>
<tr>
<td>E</td>
<td>Roadway is operating at or near capacity, with vehicles closely spaced. Any incident can cause backups that propagate upstream.</td>
<td>&gt; 0.89 and ≤ 1.00</td>
</tr>
<tr>
<td>F</td>
<td>Roadway operates beyond capacity, with significant queuing at bottlenecks such as key intersections or lane drops. Vehicles are closely spaced and maneuverability is extremely restricted.</td>
<td>&gt; 1.00</td>
</tr>
</tbody>
</table>


1) Interstate 80/Interstate 580. I-80/I-580 is a ten-lane, north-south freeway facility with a High Occupancy Vehicle (HOV) lane in each direction. I-80/I-580 is located on the western edge of Berkeley. The freeway has a dual designation (I-80 and I-580) through Berkeley and splits just to the north and south of Berkeley city limits. The freeway connects Berkeley to southern Alameda County to the south, San Francisco and the Peninsula to the west, the Sacramento region to the east, and Marin County to the north. The Eastshore Freeway (a collector road) and two interchanges (Gilman Street and University Avenue) provide access to the freeway near the Project site.

2) Eastshore Freeway. Eastshore Freeway is a two-lane, two-way, north-south collector road that runs parallel to I-80/I-580. This roadway serves as an access road to several residential and collector streets. Direct access to Eastshore Freeway is provided at the intersection with Hearst Avenue, two blocks west of the proposed Project site.

3) San Pablo Avenue. San Pablo Avenue (State Route 123) is a north-south divided arterial with two lanes in each direction and dedicated turn lanes at major intersections. San Pablo Avenue is a Caltrans’ State Route and the only north-south designated truck route (serving seven-ton trucks) in the study area. San Pablo Avenue is sometimes used as an alternate route to the Eastshore Freeway when that freeway becomes congested. On-street parking is provided on both sides of San Pablo Avenue. The posted speed limit is 30 miles per hour.

4) University Avenue. University Avenue is an east-west divided arterial with two lanes in each direction and dedicated turn lanes at major intersections that connect downtown Berkeley with I-80/I-580 and the Berkeley Marina. South of the proposed Project, west of Sixth Street, University Avenue is an elevated structure over the I-80/I-580 freeway.
and Union Pacific Railroad (UPRR) corridor. Two one-way frontage roads, one on each side of the overpass, extend to a turnaround east of the UPRR corridor at Third Street. Metered parking is provided on both sides of University Avenue near the Project site. The posted speed limit is 25 miles per hour.

(5) **Sixth Street.** Sixth Street is a north-south roadway with two lanes in each direction in the vicinity of the Project site. Farther from the site, Sixth Street generally has one lane in each direction with dedicated left turn lanes at major intersections. On-street parking is provided on both sides of Sixth Street near the Project site. The posted speed limit is 25 miles per hour.

(6) **Fourth Street.** Fourth Street is a north-south roadway with one lane in each direction in the vicinity of the Project site. Fourth Street runs from Gilman Street to the north to Dwight Way to the south and serves the Fourth Street commercial corridor between Virginia Street and Hearst Avenue. On-street parking is provided on both sides of Sixth Street near the Project site. The posted speed limit is 25 miles per hour.

(7) **Hearst Avenue.** Hearst Avenue is an east-west roadway with one lane in each direction in the vicinity of the Project site. Hearst Avenue runs from Eastshore Highway to the east and along the north side of UC Berkeley campus to the west. On-street parking is provided on both sides of Hearst Avenue near the Project site. The posted speed limit is 25 miles per hour.

(8) **Addison Street.** Addison Street is an east-west roadway with one lane in each direction in the vicinity of the Project site. Addison Street runs from Second Street to the west, crosses the UPRR corridor, and continues across San Pablo Avenue to dead end at Curtis Street. On-street parking is provided on both sides of Addison Street near the Project site. The posted speed limit is 25 miles per hour.

d. **Existing Transit Network.** Existing transit service near the Project site includes Local, Rapid, and Transbay fixed-route bus and shuttle service provided by Alameda-Contra Costa County Transit (AC Transit). In addition, regional commuter rail service is provided by Bay Area Rapid Transit (BART), and passenger rail service along the UPRR corridor is provided by Amtrak. Other regional transit service is accessible by transferring to and from AC Transit. Each of these services is described below and shown in Figure IV.B-2.

(1) **AC Transit.** A number of AC Transit routes operate in the vicinity of the proposed Project site. The nearest AC Transit bus stops are located at the University Avenue turnaround near the Amtrak Station. Other nearby stops are located along University Avenue at Fourth Street and Sixth Street. Existing transit routes in the study area are described below.

- **Route 51B:** A north-south Local route, that provides access between Berkeley Amtrak (and Berkeley Marina) and Rockridge BART. The stop nearest to the Project site is located on University Avenue at the turnaround near the Amtrak Station.
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- **Route 52**: A north-south Local route that provides access between UC Village and UC Berkeley. The stop nearest to the Project site is located on Cedar Street at Sixth Street.

- **Route 72/72M**: A north-south Local route that provides access between Contra Costa (and Hilltop Mall) and Jack London Square Amtrak. The stop nearest to the Project site is located on San Pablo Avenue at University Avenue.

- **Route 72R**: A north-south Local route that provides Rapid bus service between Contra Costa College and Downtown Oakland (Jack London Square) Amtrak. The stop nearest to the Project site is located on San Pablo Avenue at University Avenue.

- **Route 800**: An east-west overnight (owl) route that provides access between Richmond BART and San Francisco (Van Ness Muni Metro). The stop nearest to the Project site is located on University Avenue at San Pablo Avenue.

- **Route 802**: A north-south overnight (owl) route that provides access between Oakland (14th Street/Broadway) and Berkeley Amtrak. The stop nearest to the Project site is located on University Avenue at San Pablo Avenue.

- **Route FS**: An east-west Transbay route that provides access between Berkeley (Solano Avenue/Colusa Avenue) and the Temporary Transbay Terminal. The stop nearest to the Project site is located on University Avenue at San Pablo Avenue.

- **Route G**: An east-west Transbay route that provides access between El Cerrito and the Temporary Transbay Terminal. The stop nearest to the Project site is located on San Pablo Avenue at University Avenue.

- **Route J**: An east-west Transbay route that provides access between Sacramento Street and University Avenue and the Temporary Transbay Terminal. The stop nearest to the Project site is located on Sacramento Street at University Avenue.

- **Route Z**: An east-west Transbay route that provides access between Albany (in the morning at Buchanan Street and Pierce Street, in the afternoon at San Pablo Avenue and Marin Avenue) and the Temporary Transbay Terminal. The stop nearest to the Project site is located on Sixth Street at Cedar Street.

(2) **Bay Area Rapid Transit.** BART is the regional rapid transit provider and connects Berkeley to other parts of Alameda County, Contra Costa County, San Francisco, and northern San Mateo County. The BART system operates trains along five routes: 1) Richmond-Fremont; 2) Richmond-Daly City/SFO/Millbrae; 3) San Francisco Airport (SFO)/Millbrae-Dublin/Pleasanton; 4) SFO/Millbrae-Pittsburg/Bay Point; and 5) Fremont-Daly City. The BART lines that serve the North Berkeley and Downtown Berkeley BART Stations, nearest the Project site, include the Richmond-Fremont, and Richmond-Daly City/SFO/Millbrae lines.

The BART station nearest to the Project site is the North Berkeley BART Station at Virginia Street/Sacramento Street, located approximately 1.2 miles (about a 20 minute walk) from the Project site. AC Transit Local Line 51B provides weekday daily and weekend service along University Avenue to serve this station. The stop nearest to the Project site is located at the Amtrak Station on University Avenue turnaround. The stop nearest to the North
Berkeley BART Station is located about a 13 minute bus ride away at University Avenue and Acton Street, about 0.4 miles (or about a 7 minute walk) south of the station. The Downtown Berkeley BART Station is located about 1.9 miles east of the Project site at Shattuck Avenue/Center Street. AC Transit Local Line 51B provides direct weekday daily and weekend service to this station with average travel times of less than 20 minutes.

(3) Amtrak Capitol Corridor and Union Pacific Railroad. Amtrak’s Capitol Corridor and San Joaquin services provides intercity rail service to the Berkeley Amtrak station located at University Avenue and Third Street, below the University Avenue overpass, adjacent to the Project site. Capitol Corridor service connects Berkeley to San Jose, Oakland, Davis, and Sacramento, and smaller communities along the route. In total, passenger operations contribute to 44 daily trains running through the station, with four to five trains per hour in both the weekday AM and PM peak hours.

The UPRR mainline tracks through West Berkeley provide a key link for freight and passenger activity in the Bay Area. Opportunities to increase operations along this corridor could result in an increase in the number and length of trains per day through West Berkeley. This increase in rail activity could result in increase in delay to local circulation, and increased exposure for vehicles, transit, pedestrians and bicycles, where at-grade crossings exist (at Hearst Avenue and Addison Street and Third Street, near the proposed Project site).

The California Public Utilities Commission (CPUC) has identified the Hearst Street railroad crossing (DOT #751179D), located on the northwest corner of the Project site, as a crossing of concern. The Hearst Street railroad crossing is currently equipped with Flashing Lights and Gates Assembly (Commission Standard No 9s) and does not currently meet Americans with Disabilities Act (ADA) standards.

e. Bicycle and Pedestrian Facilities. Existing bicycle facilities and pedestrian facilities in the study area are described in this section.

(1) Bicycle Facilities. City of Berkeley bicycle facilities are classified with the following designations:

- **Class 1 Multi-Use Path** (paved and unpaved) – Also known as a bicycle path, this is a dedicated path for bicyclists and pedestrians that does not permit motorized travel. Bicycle paths create a relaxed environment for non-motorized travel and reduce the risk of potential conflict between vehicles and bicyclists. These facilities are typically located in parks or greenway areas, areas connecting dead-end streets, or atop railroad right-of-way that is no longer in use.

- **Class 2 Bicycle Lane** – Also known as a bicycle lane, this is a portion of the roadway network that has been striped and signed for bicycle use. Bicycle lanes are typically used along collector or major streets with medium to high traffic volumes, providing additional travel space for bicyclists along busy roadway segments.
• **Class 3 Bicycle Route** – This is a bikeway that primarily serves to connect other facilities and destinations in the bikeway network but provides a lower level of service than Class 1 or Class 2 bikeway facilities. These routes include signage, but do not have roadway markings or striping to indicate reserved space for the bicyclist.

• **Class 3A Bicycle Route** – These facilities are found along some arterial streets where bicycle lanes are not feasible and parallel streets do not provide adequate connectivity. Speed limits as low as 25 mph, shared lane bicycle stencils, wide curb lanes, and signage are used to encourage shared use.

• **Class 3B Bicycle Boulevard** – These facilities are found along residential streets with low traffic volumes. In addition to signage, traffic calming measures and bicycle traffic signal actuation are used to prioritize through-trips for bicycles.

Existing bicycle facilities in the study area are shown in Figure IV.B-3 and include:

• **Ohlone Greenway** is a Class 1 pedestrian and bicycle path that begins at the east end of Ohlone Park at Martin Luther King Jr. Way/Hearst Avenue and runs west to Sacramento Street and Delaware Street. In the segment around the North Berkeley BART Station (one block west on Delaware Street to Acton Street, then one block north on Acton Street to Virginia Street), the bike path becomes a Class 2 on-street bike lane. At Virginia Street, the path resumes its own dedicated course northwest of the North Berkeley BART station and runs through the cities of Albany and El Cerrito, terminating at San Pablo Avenue at Baxter Creek Gateway Park in Richmond. For most of its length, the Ohlone Greenway runs along what was formerly a railroad right-of-way, and alongside the elevated tracks of the BART Richmond line. For the majority of this segment, the Ohlone Greenway is divided into two paths, one for bicyclists and one for pedestrians.

• **West Street Pathway** is a Class 1 pedestrian and bicycle path that follows a route along the former Southern Pacific Railway right-of-way between Cedar Rose Park and Strawberry Canyon Park. The trail intersects with the Ohlone Greenway south of Cedar Street, continues south across University Avenue at a signalized trail intersection and then continues as an on-street bike path and sidewalk along Addison Street. From the Ohlone Greenway to University Avenue, the West Street Pathway is 14 feet wide with striping to separate pedestrians and bicyclists. The section between University Avenue and Addison Street runs along a 10-foot wide easement and does not have striping to separate pedestrians and bicyclists.

• **Fourth Street/Fifth Street** is a north-south Class 3A facility that extends along Fifth Street from Gilman Street to Hearst Avenue, continues east-west along Hearst Avenue to Fourth Street and continues south to Channing Way. Hearst Avenue is an east-west Class 3A facility for one block that connects the north-south Fourth Street/Fifth Street route. Fourth Street is identified as an “unclassified” route from Virginia Street to Channing Way in the Alameda Countywide Bicycle Plan.³

### Setting, Impacts and Mitigation Measures

#### B. Traffic and Circulation

- **Channing Way** is an east-west Class 3B facility between Fourth Street and Martin Luther King Jr. Way and a Class 2 facility to Piedmont Avenue in the east. This traffic-calmed bicycle boulevard provides a major east-west connection between Aquatic Park, downtown Berkeley and UC Berkeley.

- **Virginia Street** is an east-west Class 3B facility that begins at Euclid Street in the east, three blocks north of the entrance to UC Berkeley, and continues to Fifth Street in the west. This boulevard provides a connection to the University Avenue Pedestrian Bridge and the Berkeley Marina Overpass via Fifth Street, Hearst Avenue, Fourth Street, Addison Street, and Aquatic Park.

- **Delaware Street** is an east-west Class 2 bicycle facility that runs from Sacramento Street/Ohlone Greenway in the east to Ninth Street in the west and connects the Ninth Street bicycle boulevard with the Ohlone Greenway Class 1 bicycle and pedestrian path.

- **Ninth Street** is a north-south Class 3B facility that runs from Albany to Emeryville through West Berkeley. At the north end it begins on Eighth Street at the entrance to UC Village, runs three blocks on Eighth Street to the Camelia Street Connector, and continues on Ninth Street. The bicycle boulevard continues on Ninth Street to Heinz Avenue, near the southern city limit. A bike path connection is planned to connect the Ninth Street Bicycle Boulevard with bicycle facilities in Emeryville.

#### (2) Pedestrian Facilities.

The Project site fronts Fourth Street, a Major Commercial District that extends between Cedar Street and University Avenue and is identified as a Pedestrian Plan Area of Countywide Significance in the Alameda Countywide Pedestrian Plan. Sidewalks ranging from 5 to 8 feet in width are provided on both sides of all streets adjacent to the Project site. Sidewalks are not provided on either side of Second Street between Addison Street and Hearst Avenue. The presence of parking meters, trash bins and other obstructions reduce the effective sidewalk width to less than 3 feet at some locations. Sidewalks on the south side of Hearst Avenue between Second Street and Fourth Street are particularly constrained. Additionally, large curb radii and the absence of curb ramps at some locations (e.g., Second Street/Hearst Avenue) limit accessibility, result in long pedestrian crossing distances, and generally reduce the quality of the pedestrian environment.

Marked crosswalks and other pedestrian infrastructure (curb ramps, pedestrian push buttons and countdown signals), are provided at all signalized study intersections. A high-visibility mid-block crossing with advance yield markings is located on Fourth Street between University Avenue and Hearst Avenue. Marked crosswalks are provided at all legs of unsignalized intersections with the exception of the south and east legs of the Second Street/Hearst Avenue intersection. Potential for vehicular-pedestrian conflicts was observed at unsignalized intersections where drivers were observed not to yield to pedestrians waiting to cross. The railroad at-grade crossing at Hearst Avenue also presents a safety concern because the crossing does not meet ADA standards.

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FIGURE IV.B-3

Existing Bikeway Network and Traffic Calming Features


I:\CBE1504 1900 Fourth Street\Figures\EIR\Fig_IVB3.ai (8/12/16)
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f. Parking Conditions. The parking conditions near the Project site include on-street parking and several private parking facilities (surface parking lots). There are no City-owned or public off-street parking facilities within the parking study area (the two-block area bounded by Virginia Street to the north, Allston Way to the south, Second Street to the west, and Sixth Street to the east).

(1) On-Street Parking. On-street parking consists of about 200 metered spaces located primarily along streets with commercial frontages (e.g., Hearst Avenue and Fourth Street) and about 250 unmetered parking spaces without time restrictions along other streets.

(2) Off-Street Parking, Private Parking Areas. There are about 900 parking spaces in surface lots throughout the study area, which increases to about 1,180 spaces during evenings and weekends, when private employee lots become available for public use. These surface parking lots provide a combination of unrestricted or reserved parking and are generally free, with the exception of the 350-space surface parking lot on the proposed Project site. The 1900 Fourth Street Parking Lot is the only paid lot in the study area with publicly available parking. This lot typically has lower occupancies than on-street parking and other free lots in the vicinity.

g. Intersection Operations Analysis. Existing, Near-Term, and Cumulative intersection operations without the proposed Project are described below.

(1) Existing Conditions. Existing intersection operating conditions were evaluated for the weekday AM, weekday PM, and the weekend (Saturday) midday peak periods (7:00 a.m. to 9:00 a.m., 4:00 p.m. to 6:00 p.m., and 1:00 p.m. to 3:00 p.m., respectively) at the seven existing study intersections. Existing traffic counts were collected during the morning and evening peak periods on Tuesday, February 2, 2016 and during the weekend midday peak period on Saturday, February 6, 2016. Existing lane configurations and weekday AM and PM peak hour volumes are shown in Figure IV.B-4. Existing lane configurations and weekend (Saturday) midday peak hour volumes are shown in Figure IV.B-5. The Existing Conditions level of service analysis results for the weekday AM, weekday PM, and the weekend (Saturday) midday peak hours are shown in Table IV.B-3.

<table>
<thead>
<tr>
<th>#</th>
<th>Intersection</th>
<th>Traffic Control</th>
<th>Weekday AM</th>
<th>Weekday PM</th>
<th>Weekday</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Second Street and Hearst Avenue</td>
<td>All-Way Stop Control</td>
<td>10.8 B</td>
<td>8.1 A</td>
<td>9.5 A</td>
</tr>
<tr>
<td>2</td>
<td>Fourth Street and Hearst Avenue</td>
<td>All-Way Stop Control</td>
<td>11.5 B</td>
<td>11.5 B</td>
<td>13.1 B</td>
</tr>
<tr>
<td>3</td>
<td>Sixth Street and Hearst Avenue</td>
<td>Signal</td>
<td>18.9 B</td>
<td>19.4 B</td>
<td>16.6 B</td>
</tr>
<tr>
<td>4</td>
<td>Fourth Street and University Avenue North</td>
<td>All-Way Stop Control</td>
<td>8.2 A</td>
<td>9.2 A</td>
<td>8.3 A</td>
</tr>
<tr>
<td>5</td>
<td>Fourth Street and University Avenue South</td>
<td>All-Way Stop Control</td>
<td>8.2 A</td>
<td>9.0 A</td>
<td>8.3 A</td>
</tr>
<tr>
<td>6</td>
<td>Sixth Street and University Avenue</td>
<td>Signal</td>
<td>39.8 D</td>
<td>36.3 D</td>
<td>39.0 D</td>
</tr>
<tr>
<td>7</td>
<td>San Pablo Avenue and University Avenue</td>
<td>Signal</td>
<td>37.0 D</td>
<td>43.6 D</td>
<td>49.5 D</td>
</tr>
</tbody>
</table>

a LOS: Level-of-Service
FIGURE IV.B-4

Existing Conditions - Weekday AM and PM Peak Hours

FIGURE IV.B-5

1900 Fourth Street Project EIR
Existing Conditions - Saturday Midday Peak Hour

I:\CBE1504 1900 Fourth Street\Figures\EIR\Fig_IVB5.ai (4/11/16)
(2) **Near-Term Conditions.** Near-Term Conditions reflect Existing Conditions plus approved projects and is anticipated to occur within five years. Approved projects include developments that are either under construction, built but not fully occupied, or not built but have final development approval from the City. Based on a review of City planning records, five approved developments in the vicinity of the proposed Project were included in the analysis. Estimated traffic from the developments listed below was added to the existing intersection traffic volumes.

- 800 University Avenue (58 residential units: 4 studios, 46 one-bedroom, 8 two-bedroom; 1,175 square feet of retail);
- 824 University Avenue (48 residential units: 36 one-bedroom, 12 two-bedroom; 2,749 square feet of retail);
- 2013 Second Street (19 live/work units, 26,500 square feet of live/work commercial);
- 2001 Fourth Street (152 residential units: 8 studios, 70 one-Bedroom, 48 two-bedroom, 26 loft; 8,450 square feet of retail/restaurant); and
- 1500 San Pablo Avenue (170 residential units: 48 studios, 41 one-Bedroom, 64 two-bedroom, 11 town houses; 10,900 square feet of retail/restaurant).

The majority of the approved development is occurring to the south of the proposed Project, with the exception of the 1500 San Pablo Avenue site, located to the northeast. Trip generation and trip assignment assumptions for the above projects were based on the traffic study reports prepared for each project, where available.

An intersection operations analysis was conducted to evaluate the study intersections under Near-Term Conditions. Near-Term Conditions weekday AM and PM peak hour volumes are shown in Figure IV.B-6. Near-Term Conditions weekend (Saturday) midday peak hour volumes are shown in Figure IV.B-7. The Near-Term Conditions level of service analysis results for the weekday AM, weekday PM, and the weekend (Saturday) midday peak hours are shown in Table IV.B-4. With the addition of traffic generated by the approved developments, study intersections would continue to operate at LOS D or better for all analysis time periods.

**Table IV.B-4: Intersection Operations – Near-Term Conditions**

<table>
<thead>
<tr>
<th>#</th>
<th>Intersection</th>
<th>Traffic Control</th>
<th>Weekday AM</th>
<th>Weekday PM</th>
<th>Weekend</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Delay (sec)</td>
<td>LOS&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Delay (sec)</td>
<td>LOS&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>1</td>
<td>Second Street and Hearst Avenue</td>
<td>All-Way Stop Control</td>
<td>10.9</td>
<td>B</td>
<td>8.2</td>
</tr>
<tr>
<td>2</td>
<td>Fourth Street and Hearst Avenue</td>
<td>All-Way Stop Control</td>
<td>11.5</td>
<td>B</td>
<td>11.5</td>
</tr>
<tr>
<td>3</td>
<td>Sixth Street and Hearst Avenue</td>
<td>Signal</td>
<td>19.0</td>
<td>B</td>
<td>19.4</td>
</tr>
<tr>
<td>4</td>
<td>Fourth Street and University Avenue North</td>
<td>All-Way Stop Control</td>
<td>8.2</td>
<td>A</td>
<td>9.2</td>
</tr>
<tr>
<td>5</td>
<td>Fourth Street and University Avenue South</td>
<td>All-Way Stop Control</td>
<td>8.2</td>
<td>A</td>
<td>9.0</td>
</tr>
<tr>
<td>6</td>
<td>Sixth Street and University Avenue</td>
<td>Signal</td>
<td>39.9</td>
<td>D</td>
<td>37.4</td>
</tr>
<tr>
<td>7</td>
<td>San Pablo Avenue and University Avenue</td>
<td>Signal</td>
<td>38.3</td>
<td>D</td>
<td>44.4</td>
</tr>
</tbody>
</table>

<sup>a</sup> LOS: Level-of-Service

FIGURE IV.B-7

1900 Fourth Street Project EIR
Near-Term Conditions -
Saturday Midday Peak Hour


I:\CBE1504 1900 Fourth Street\Figures\EIR\Fig_IVB7.ai (4/11/16)
(3) **Cumulative (Year 2040) Conditions.** The Cumulative (Year 2040) traffic analysis takes into consideration projected land use development and planned, funded, and approved changes to the transportation (roadway, transit, pedestrian, and bicycle) network and infrastructure near the proposed Project site. Traffic forecasts were developed using directional link-based growth rates for the weekday AM and PM peak hours derived from the Alameda County Transportation Commission (ACTC) travel demand model. Weekday AM and PM growth rates were averaged to estimate Saturday midday peak hour growth rates. The ACTC travel demand model roadway network is based on the constrained Project list included in the Regional Transportation Plan, Plan Bay Area.\(^5\)

An intersection operations analysis was conducted to evaluate the study intersections under Cumulative Conditions. Cumulative Conditions weekday AM and PM peak hour volumes are shown in Figure IV.B-8. Cumulative Conditions weekend (Saturday) midday peak hour volumes are shown in Figure IV.B-9. The Cumulative Conditions level of service analysis results for the weekday AM, weekday PM, and the weekend (Saturday) midday peak hours are shown in Table IV.B-5. Under this scenario, five of the seven study intersections would deteriorate to LOS E or LOS F during at least one peak hour under Cumulative Conditions.

<table>
<thead>
<tr>
<th>#</th>
<th>Intersection</th>
<th>Traffic Control</th>
<th>Weekday AM</th>
<th>Weekday PM</th>
<th>Weekend</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Delay (sec)</td>
<td>V/C Ratio</td>
<td>LOS</td>
</tr>
<tr>
<td>1</td>
<td>Second Street and Hearst Avenue</td>
<td>All-Way Stop</td>
<td>53.6</td>
<td>N/A</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Fourth Street and Hearst Avenue</td>
<td>All-Way Stop</td>
<td>68.0</td>
<td>N/A</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Control</td>
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<td></td>
<td></td>
</tr>
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<td>3</td>
<td>Sixth Street and Hearst Avenue</td>
<td>Signal</td>
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<td>1.33</td>
<td>F</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Fourth Street and University</td>
<td>All-Way Stop</td>
<td>9.2</td>
<td>N/A</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>Avenue North</td>
<td>Control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Fourth Street and University</td>
<td>All-Way Stop</td>
<td>9.2</td>
<td>N/A</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>Avenue South</td>
<td>Control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Sixth Street and University</td>
<td>Signal</td>
<td>&gt;80.0</td>
<td>1.22</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td>Avenue</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>San Pablo Avenue and University</td>
<td>Signal</td>
<td>&gt;80.0</td>
<td>1.04</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td>Avenue</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Shading indicates intersection operates at LOS E or LOS F. N/A indicates not applicable.  
\(^a\) Delay presented in seconds per vehicle. Delays greater than 50 seconds at an unsignalized intersection are reported as "50.0." Delays greater than 80 seconds at a signalized intersection are reported as ">80.0."  
\(^b\) V/C Ratio: Volume-to-Capacity Ratio presented for signalized intersection operating at LOS F.  
\(^c\) LOS: Level-of-Service


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FIGURE IV.B-8

1900 Fourth Street Project EIR
Cumulative Conditions - Weekday Am and PM Peak Hours

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1900 Fourth Street Project EIR
Cumulative Conditions -
Saturday Midday Peak Hour

XX - SATURDAY PEAK HOUR
- STOP SIGN
- TRAFFIC SIGNAL
- ALL-WAY STOP CONTROL

I:\CBE1504 1900 Fourth Street\Figures\EIR\Fig_IVB9.ai (4/11/16)
2. Impacts and Mitigation Measures

This section presents the significance criteria used to determine whether the effects of the proposed Project would be considered significant, includes an impact discussion for Near-Term Plus Project and Cumulative Plus Project conditions, and also evaluates parking and construction conditions.

a. Criteria of Significance. Per the CEQA Guidelines (Appendix G Checklist), the proposed Project would have a significant impact on the study area’s transportation network and traffic if it 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 could be identified:
  
  If at a local signalized or all-way stop-controlled intersection, the addition of Project traffic causes:
  
  o intersection operations to degrade from LOS D to LOS E or worse with more than a 2-second increase in delay; or
  o an increase of 3 or more seconds of delay at an intersection operating at LOS E;
  o intersection operations to degrade from LOS E to LOS F with more than a 3-second increase in delay; or
  o an increase in v/c ratio of 0.01 or more at intersections operating at LOS F without the project.

  If at a local one-way or two-way stop-controlled intersection, the intersection meets peak hour signal warrants and the addition of project traffic causes the critical approach to operate at LOS F.

  If on a Caltrans facility with the addition of project traffic the facility fails to maintain target LOS at the transition of LOS C and LOS D. Where an existing facility is operating at less than the LOS C/D threshold, the existing measure of effectiveness should be maintained.

- 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 (ACTC) for designated roads and highways.6

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6 The ACTC requires the assessment of development-driven impacts to regional roadways of projects that generate more than 100 “net new” PM peak-hour trips for which an EIR is being prepared. Impact thresholds are established by local agencies.
For a roadway segment of the ACTC Congestion Management Program (CMP) Network:

(a) On CMP designated roadway segments that are projected to meet the CMP standard in the future (Year 2040) without the Project, the impact is significant if the Project causes the segment to exceed the standard and adds at least five (5) percent to the future peak hour traffic volume; or

(b) On CMP designated roadway segments that are projected to exceed the CMP standard in the future (Year 2040) without the Project, the impact is significant if the Project adds at least five (5) percent to the future peak hour traffic volume.

- Substantially increases traffic hazards due to a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses;
- Result in inadequate emergency access;
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities;

In addition, the transportation-related issues of parking and construction-period impacts, which are not specifically considered as impacts under CEQA and the City’s transportation-related significance thresholds, are also assessed and discussion of these topics is provided for informational purposes.

(1) Project Trip Generation. The proposed mixed-use residential and commercial (retail and restaurant) development would consist of 155 apartment units, and 30,000 square feet of commercial space, which is currently anticipated to include 25,000 square feet of retail space, including 5,000 square feet of quick-service restaurant space and 5,000 square feet of full-service, high-quality restaurant space.7

Trip generation estimates were developed for the proposed Project based on the trip rates provided in the current Institute of Transportation Engineer’s (ITE) Trip Generation Manual (Ninth Edition, 2012)8 with adjustments using methods consistent with the City’s Guidelines.9 The Guidelines identify potential trip generation adjustment factors to apply to the ITE trip generation to calculate the number of trips generated by the proposed Project for each mode.

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7 The proposed retail space would include a mix of commercial retail including 5,000 square feet of quick serve restaurant space.
Given the proximity of the Project site to transit and bicycle options, a modal split adjustment was applied to ITE trip generation estimates to account for carpool, transit, walk, bike, and “other” non-auto trips. Mode share and average vehicle occupancy (AVO) data were estimated based on available data from the United States Census for the Project’s census tract (Census Tract 4220) and Metropolitan Transportation Commission’s 2000 Bay Area Travel Survey.\(^{10}\) The total estimated Project vehicle-trips reflects adjustments to ITE estimates of 35 percent for the weekday AM and PM peak hours and 17 percent for the weekend midday peak hour based on this data.

As shown in Table IV.B-6 the proposed Project is expected to generate approximately 166 vehicle trips (83 inbound, 83 outbound) during the weekday AM peak hour, 130 vehicle trips (75 inbound, 55 outbound) during the weekday PM peak hour, and 187 vehicle trips (96 inbound, 91 outbound) during the Saturday midday peak hour.

### Table IV.B-6: Project Vehicle-Trip Generation Estimates

<table>
<thead>
<tr>
<th>Land Use/ITE Code(^a)</th>
<th>Units</th>
<th>AM Peak Hour</th>
<th>PM Peak Hour</th>
<th>Weekend Peak Hour</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>In</td>
<td>Out</td>
<td>Total</td>
</tr>
<tr>
<td>ITE Vehicle-Trip Estimates</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential – Apartment</td>
<td>220</td>
<td>15</td>
<td>64</td>
<td>79</td>
</tr>
<tr>
<td>Commercial – Retail</td>
<td>826</td>
<td>106</td>
<td>65</td>
<td>171</td>
</tr>
<tr>
<td>Commercial – Restaurant</td>
<td>931</td>
<td>3</td>
<td>124</td>
<td>124</td>
</tr>
<tr>
<td></td>
<td></td>
<td>35%</td>
<td>35%</td>
<td>17%</td>
</tr>
<tr>
<td>Project Vehicle-Trips</td>
<td>83</td>
<td>83</td>
<td>166</td>
<td>75</td>
</tr>
</tbody>
</table>

Notes: DU = dwelling unit. SF = square feet.

**ITE Land Use 220: Apartment**
- Weekday AM Peak Hour Trip Rate: 0.51 trips/DU (20% in, 80% out)
- Weekday PM Peak Hour Trip Rate: 0.62 trips/DU (65% in, 35% out)
- Saturday Midday Peak Hour Trip Rate: 0.52 trips/DU (50% in, 50% out)

**ITE Land Use 826: Specialty Retail Center**
- Weekday AM Peak Hour Trip Rate: 6.84 trips/KSF (62% in, 38% out)
- Weekday PM Peak Hour Trip Rate: 2.71 trips/KSF (48% in, 52% out)
- Saturday Midday Peak Hour Trip Rate: 3.59 trips/KSF (52% in, 48% out)

**ITE Land Use 931: Quality Restaurant**
- Weekday AM Peak Hour Trip Rate: 0.81 trips/KSF (55% in, 45% out)
- Weekday PM Peak Hour Trip Rate: 7.49 trips/KSF (67% in, 33% out)
- Saturday Midday Peak Hour Trip Rate: 10.82 trips/KSF (53% in, 47% out)

\(^b\) Vehicle-trip reduction reflects adjustments to ITE estimates based on U.S. Census American Community Survey and Bay Area Travel Survey data to reflect local mode choice and travel behavior.


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\(^{10}\) Metropolitan Transportation Commission, 2000. Bay Area Travel Survey.
The following transportation demand management (TDM) strategies would be implemented as part of the proposed Project and would be anticipated to discourage driving and reduce parking demand:

- Residential parking unbundled from residential units (consistent with City Condition of Approval – Parking to be Leased or Sold Separately);
- One AC Transit Pass (or equivalent) provided per dwelling unit (consistent with City Condition of Approval – Transit Subsidy Condition);
- Extensive and secure on-site and sidewalk bicycle parking (256 secure residential spaces, 60 secure commercial spaces, and 29 public spaces, including 3 spaces for cargo bicycles) (consistent with Condition of Approval – Bike Parking);
- A bicycle repair room for residents; and
- Commitment that residents would not be eligible for on-street Residential Permit Parking.

In addition, participation in the Berkeley Gateway Transportation Management Association or other private non-profit agency responsible for administering a West Berkeley Shuttle to the North Berkeley and Ashby BART Stations may be considered by the Project applicant.

No trip reduction credits were taken for implementation of these measures, to provide for a conservative analysis.

(2) Project Trip Distribution and Assignment. Trip distribution assumptions for the proposed Project were developed based on existing travel patterns, knowledge of the study area, and trip distribution patterns used for recently approved development Projects in the area, as shown in Figure IV.B-10. The net new vehicle trips generated by the proposed Project are shown in Figure IV.B-11 for the weekday AM and PM peak hours and Figure IV.B-12 for the Saturday Midday peak hour.

b. Project Impacts. This section describes potential impacts from increased vehicle trips associated with the proposed Project. It also describes potential impacts associated with site access, hazards, consistency with plans and policies, and parking.

(1) Intersection Operations Analysis. Intersection operations for Near-Term Plus Project and Cumulative Plus Project Conditions are described below.

Near-Term Plus Project Conditions. An intersection operations analysis was conducted to evaluate the study intersections under Near-Term Plus Project Conditions. Near-Term Plus Project Conditions weekday AM and PM peak hour volumes are shown in Figure IV.B-13. Near-Term Plus Project Conditions weekend (Saturday) midday peak hour volumes are shown in Figure IV.B-14. The Near-Term Plus Project Conditions level of service analysis results for the weekday AM, weekday PM, and the weekend (Saturday) midday peak hours are shown in Table IV.B-7.
### Table IV.B-7: Intersection Operations – Near-Term Plus Project Conditions

<table>
<thead>
<tr>
<th>#</th>
<th>Intersection</th>
<th>Traffic Control</th>
<th>Weekday AM</th>
<th>Weekday PM</th>
<th>Weekend</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Delay (sec)</td>
<td>Delay (sec)</td>
<td>Delay (sec)</td>
</tr>
<tr>
<td>1</td>
<td>Second Street and Hearst Avenue</td>
<td>All-Way Stop Control</td>
<td>10.9</td>
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<td>10.6</td>
</tr>
<tr>
<td>2</td>
<td>Fourth Street and Hearst Avenue</td>
<td>All-Way Stop Control</td>
<td>13.9</td>
<td>13.2</td>
<td>25.2</td>
</tr>
<tr>
<td>3</td>
<td>Sixth Street and Hearst Avenue</td>
<td>Signal</td>
<td>21.2</td>
<td>19.6</td>
<td>20.6</td>
</tr>
<tr>
<td>4</td>
<td>Fourth Street and University Avenue North</td>
<td>All-Way Stop Control</td>
<td>8.5</td>
<td>9.4</td>
<td>8.7</td>
</tr>
<tr>
<td>5</td>
<td>Fourth Street and University Avenue South</td>
<td>All-Way Stop Control</td>
<td>8.4</td>
<td>9.1</td>
<td>8.5</td>
</tr>
<tr>
<td>6</td>
<td>Sixth Street and University Avenue</td>
<td>Signal</td>
<td>41.0</td>
<td>38.1</td>
<td>42.2</td>
</tr>
<tr>
<td>7</td>
<td>San Pablo Avenue and University Avenue</td>
<td>Signal</td>
<td>38.8</td>
<td>44.7</td>
<td>52.5</td>
</tr>
</tbody>
</table>

<sup>a</sup> LOS: Level-of-Service


As shown in Table IV.B-7, with the addition of traffic generated by the proposed Project, all study intersections would continue to operate at acceptable LOS D or better for all analysis time periods and the proposed Project would result in a less than significant impact under Near-Term Plus Project Conditions.

**Cumulative Plus Project Conditions.** An intersection operations analysis was conducted to evaluate the study intersections under Cumulative Plus Project Conditions. Cumulative Plus Project Conditions weekday AM and PM peak hour volumes are shown in Figure IV.B-15. Cumulative Plus Project Conditions weekend (Saturday) midday peak hour volumes are shown in Figure IV.B-16. The Cumulative Plus Project Conditions level of service analysis results for the weekday AM, weekday PM, and the weekend (Saturday) midday peak hours are shown in Table IV.B-8. The Project contribution to Cumulative Plus Project Conditions are shown in Table IV.B-9.
**Legend:**
- XX - AM PEAK HOUR
- (XX) - PM PEAK HOUR
- STOP SIGN
- TRAFFIC SIGNAL
- ALL-WAY STOP CONTROL

**Figure IV.B-11**

**1. 2ND Street/Hearst Avenue**

<table>
<thead>
<tr>
<th>Direction</th>
<th>AM Peak Hour</th>
<th>PM Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0(0)</td>
<td>9(6)</td>
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<tr>
<td></td>
<td>0(0)</td>
<td>6(6)</td>
</tr>
<tr>
<td></td>
<td>24(19)</td>
<td>0(0)</td>
</tr>
</tbody>
</table>

**2. 4TH Street/Hearst Avenue**

<table>
<thead>
<tr>
<th>Direction</th>
<th>AM Peak Hour</th>
<th>PM Peak Hour</th>
</tr>
</thead>
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<tr>
<td></td>
<td>1(3)</td>
<td>2/2</td>
</tr>
<tr>
<td></td>
<td>2(2)</td>
<td>20(12)</td>
</tr>
<tr>
<td></td>
<td>7(18)</td>
<td>27(21)</td>
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</table>

**3. 6TH Street/Hearst Avenue**

<table>
<thead>
<tr>
<th>Direction</th>
<th>AM Peak Hour</th>
<th>PM Peak Hour</th>
</tr>
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<tbody>
<tr>
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**4. 4TH Street/University Avenue Frontage (N)**

<table>
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<th>PM Peak Hour</th>
</tr>
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<td>0(0)</td>
<td>6(5)</td>
</tr>
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<td></td>
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**5. 4TH Street/University Avenue Frontage (S)**

<table>
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<td>9(6)</td>
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**6. 6TH Street/University Avenue**

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<th>Direction</th>
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<th>PM Peak Hour</th>
</tr>
</thead>
<tbody>
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<td>17(16)</td>
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<td>0(0)</td>
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<tr>
<td></td>
<td>9(7)</td>
<td>15(6)</td>
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</table>

**7. San Pablo Avenue/University Avenue**

<table>
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<th>Direction</th>
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<th>PM Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0(0)</td>
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<td>4(2)</td>
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<td>7(2)</td>
</tr>
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<td></td>
<td>8(4)</td>
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</tr>
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**A. 4TH Street/Retail Driveway**

<table>
<thead>
<tr>
<th>Direction</th>
<th>AM Peak Hour</th>
<th>PM Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6(3)</td>
<td>5(4)</td>
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<td>6(24)</td>
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<td>12(8)</td>
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<td>18(9)</td>
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</table>

**B. Hearst Avenue/Residential Driveway**

<table>
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<th>Direction</th>
<th>AM Peak Hour</th>
<th>PM Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>28(15)</td>
<td>4(2)</td>
</tr>
<tr>
<td></td>
<td>3(13)</td>
<td>34(18)</td>
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</table>
Figure IV.B-12

1900 Fourth Street Project EIR
Net New Project Trips -
Saturday Midday Peak Hour

I:\CBE1504 1900 Fourth Street\Figures\EIR\Fig_IVB12.ai (8/12/18)
1900 Fourth Street Project EIR
Near-Term Plus Project Conditions - Saturday Midday Peak Hour

FIGURE IV.B-14

I:\CBE1504 1900 Fourth Street\Figures\EIR\Fig_IVB14.ai (8/12/16)
FIGURE IV.B-15

1900 Fourth Street Project EIR
Cumulative Plus Project Conditions -
Weekday AM and PM Peak Hours

I:\CBE1504 1900 Fourth Street\Figures\EIR\Fig_IVB15.ai (8/12/16)
FIGURE IV.B-16

1900 Fourth Street Project EIR
Cumulative Plus Project Conditions - Saturday Midday Peak Hour
As shown in Table IV.B-8, five of the seven study intersections that would operate at unacceptable conditions under Cumulative Conditions without the Project would continue to operate at unacceptable conditions with the addition of traffic generated by the proposed
Project in Cumulative Plus Project Conditions. A review of the proposed Project’s contribution to increases in average intersection delay and v/c ratio was conducted for all signalized study intersections and signal warrant analyses were conducted at all poorly performing unsignalized study intersections based on the significance thresholds, as described below.

The Second Street/Hearst Avenue all-way stop controlled intersection is projected to operate at LOS F during the weekday AM, weekday PM and Saturday midday peak hours but would not meet California Manual on Uniform Traffic Control Devices (CA-MUTCD) Peak Hour Vehicular Delay and Volume Warrant criteria for minor street (Second Street) volume under Cumulative or Cumulative Plus Project Conditions during any peak hour.

As such, based on City of Berkeley criteria, which state that an impact would occur only if the intersection meets peak hour signal warrants, operates at LOS F, and adds more than 10 vehicles to the critical approach/movement, the proposed Project would not result in a significant impact at this location.

The proposed Project would result in potentially significant impacts to intersection level of service at one unsignalized and three signalized study locations under Cumulative Conditions.

- Fourth Street/Hearst Avenue
- Sixth Street/Hearst Avenue
- Sixth Street/University Avenue
- San Pablo Avenue/University Avenue

These impact findings are consistent with other studies in the area, including the West Berkeley Project Environmental Impact Report.\(^{11}\) Several mitigation measures were considered and found to be infeasible for reasons primarily related to funding and multi-modal tradeoffs. Impact findings and conclusions are summarized below.

**Impact TRA-1:** Under Cumulative Plus Project Conditions, the proposed Project would increase vehicle trips and intersection level of delay at the intersection of Fourth Street/Hearst Avenue (Intersection #2). (S)

This all-way stop controlled intersection is projected to operate at LOS F during the weekday AM, weekday PM and Saturday midday peak hours and would meet peak hour signal warrants under Cumulative and Cumulative Plus Project Conditions. The proposed Project would add more than 10 vehicle trips to the critical eastbound approach and would contribute to a significant impact at this location for each peak hour under Cumulative Plus Project Conditions.

Mitigation Measure TRA-1: The City of Berkeley shall install a traffic signal at the intersection of Fourth Street/Hearst Avenue. The Project shall contribute a fair share to the design and implementation of the traffic signal.

Implementation of this mitigation measure would reduce this impact to a less-than-significant level. However, there are currently no plans to signalize this intersection and the Berkeley City Council recently rejected adoption of a West Berkeley Transportation Services Fee, which would have instituted a mechanism for new developments to contribute a fair-share investment to fund capital improvements. Therefore, the City has no program to fund and install a traffic signal and this impact would remain significant and unavoidable. (SU)

Impact TRA-2: Under Cumulative Plus Project Conditions, the proposed Project would increase vehicle trips and intersection level of delay at the intersection of Sixth Street/Hearst Avenue (Intersection #3). (S)

This signalized intersection is projected to operate at LOS F during the weekday AM and Saturday midday peak hours. The addition of traffic generated by the proposed Project would increase the v/c ratio by more than 0.01 and would increase delay by more than 3 seconds at the deficient intersection during each peak hour under Cumulative Plus Project Conditions.

Mitigation Measure TRA-2: The City of Berkeley shall implement signal timing and striping changes at the intersection of Sixth Street/Hearst Avenue. Specific geometric modifications include restripling the southbound approach from a left and through/right turn lane to a through/left turn and through/right turn lane; and, restripling the eastbound approach from one all-movement lane to a through/left turn lane and right-turn pocket. The Project shall contribute a fair share to the design and implementation of the intersection modifications.

With implementation of signal timing and striping changes at the intersection of Sixth Street/Hearst Avenue (Intersection #3), the impact on auto delay would be reduced to less than significant levels. However, this treatment would have the potential to result in left-turning vehicles blocking through traffic and could increase safety conflicts for all modes. Due to these potential secondary impacts, this mitigation is considered undesirable and infeasible. For these reasons, this impact would remain significant and unavoidable. (SU)

Impact TRA-3: Under Cumulative Plus Project Conditions, the proposed Project would increase vehicle trips and intersection level of delay at the intersection of Sixth Street/University Avenue (Intersection #6). (S)

This signalized intersection is projected to operate at LOS F during the weekday AM and Saturday midday peak hours. The addition of traffic generated by the proposed Project would increase the v/c ratio by more than 0.01 and would increase delay by more than 3
Mitigation Measure TRA-3: The City of Berkeley shall implement signal timing changes (e.g., splits, phasing, and cycle length) at the intersection of Sixth Street/University Avenue. The Project shall contribute a fair share to the design and implementation of the intersection modifications.

With implementation of signal timing changes (e.g., splits, phasing, cycle length) at the intersection of Sixth Street/University Avenue (Intersection #6), the degree of the impact on auto delay could be reduced to a less-than-significant level. However, signal timing changes, such as, increasing the cycle length, would adversely affect other signals along the coordinated corridor. Due to these potential secondary impacts, this mitigation is considered undesirable and the impact is considered significant and unavoidable. (SU)

Impact TRA-4: Under Cumulative Plus Project Conditions, the proposed Project would increase vehicle trips and intersection level of delay at the intersection of San Pablo Avenue/University Avenue (Intersection #7). (S)

This signalized intersection is projected to operate at LOS F during the weekday AM, weekday PM and Saturday midday peak hours. The addition of traffic generated by the proposed Project would increase the v/c ratio by more than 0.01 and would increase delay by more than 3 seconds at the deficient intersection during the weekday AM and Saturday midday peak hours under Cumulative Plus Project Conditions. 13

Mitigation Measure TRA-4: Caltrans shall coordinate with the City of Berkeley to implement signal timing changes (e.g., splits, phasing, and cycle length) at the intersection of San Pablo Avenue/University Avenue. The Project shall contribute a fair share to the design and implementation of the intersection modifications.

With implementation of signal timing changes (e.g., splits, phasing, cycle length) at the intersection of San Pablo Avenue/University Avenue (Intersection #7), the degree of the impact on auto delay could be reduced to a less-than-significant level. However, signal timing changes, such as, increasing the cycle length, would adversely affect other signals along the coordinated corridor. Additionally, the mitigation is outside the jurisdiction of the City of Berkeley and could only be implemented in coordination with and at the discretion of Caltrans. Accordingly, this impact is considered significant and unavoidable. (SU)

---

12 This impact is consistent with West Berkeley Project EIR Impact TRANS-5: Unacceptable Delay at University Avenue and Sixth Street.

13 This impact and finding is consistent with West Berkeley Project EIR Impact TRANS-7 and Impact TRANS-26, Unacceptable Delay at University Avenue and San Pablo Avenue.
(2) Congestion Management Program (CMP) Analysis. Impacts associated with Congestion Management Program operations are discussed below. Vehicle impacts were assessed at selected roadway locations, including segments of I-80/I-580, San Pablo Avenue, Sixth Street, and University Avenue.

Traffic forecasts for Year 2040 Conditions were extracted from the current version of the Countywide Model (dated December 2015) at the selected roadway segments. The Cumulative (Year 2040) traffic analysis takes into consideration forecasted land use development and planned, funded, and approved changes to the transportation (roadway, transit, pedestrian, and bicycle) network and infrastructure near the proposed Project site. The ACTC travel demand model roadway network is based on the constrained Project list included in the Regional Transportation Plan, Plan Bay Area. The Cumulative Plus Project forecasts were derived by manually adding the Project generated traffic to the Cumulative no Project forecasts. The Cumulative Conditions level of service analysis results and Project contribution for the weekday AM and weekday PM peak hours are shown in Table IV.B-10 and Table IV.B-11, respectively.

**Table IV.B-10: Roadway Segment Analysis – Cumulative Plus Project Conditions, Weekday AM Peak Hour**

<table>
<thead>
<tr>
<th>#</th>
<th>Segment</th>
<th>Capacity</th>
<th>Volume</th>
<th>v/c Ratio&lt;sup&gt;a&lt;/sup&gt;</th>
<th>LOS&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Trips</th>
<th>v/c Ratio&lt;sup&gt;c&lt;/sup&gt;</th>
<th>Percent&lt;sup&gt;d&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>I-80/I-580, south of University Avenue</td>
<td>10,360</td>
<td>7,515</td>
<td>0.73</td>
<td>C</td>
<td>12</td>
<td>-</td>
<td>0.2%</td>
</tr>
<tr>
<td>2</td>
<td>I-80/I-580, north of University Avenue</td>
<td>10,360</td>
<td>7,322</td>
<td>0.71</td>
<td>C</td>
<td>9</td>
<td>-</td>
<td>0.1%</td>
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<tr>
<td>3</td>
<td>San Pablo Ave, south of University Ave</td>
<td>1,690</td>
<td>1,034</td>
<td>0.61</td>
<td>D</td>
<td>12</td>
<td>0.01</td>
<td>1.1%</td>
</tr>
<tr>
<td>4</td>
<td>San Pablo Ave, north of University Ave</td>
<td>1,690</td>
<td>930</td>
<td>0.55</td>
<td>C</td>
<td>10</td>
<td>0.01</td>
<td>1.1%</td>
</tr>
<tr>
<td>5</td>
<td>Sixth Street, south of University Avenue</td>
<td>850</td>
<td>487</td>
<td>0.57</td>
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<td>5</td>
<td>0.01</td>
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<tr>
<td>6</td>
<td>Sixth Street, north of University Avenue</td>
<td>850</td>
<td>302</td>
<td>0.36</td>
<td>C</td>
<td>17</td>
<td>0.02</td>
<td>5.3%</td>
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<tr>
<td>7</td>
<td>University Avenue, west of Sixth Street</td>
<td>1,690</td>
<td>1,292</td>
<td>0.76</td>
<td>D</td>
<td>24</td>
<td>0.02</td>
<td>1.8%</td>
</tr>
<tr>
<td>8</td>
<td>University Avenue, east of Sixth Street</td>
<td>1,690</td>
<td>1,239</td>
<td>0.73</td>
<td>D</td>
<td>15</td>
<td>0.01</td>
<td>1.2%</td>
</tr>
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<tr>
<td>9</td>
<td>I-80/I-580, south of University Avenue</td>
<td>10,360</td>
<td>8,785</td>
<td>0.85</td>
<td>D</td>
<td>29</td>
<td>-</td>
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<td>I-80/I-580, north of University Avenue</td>
<td>10,360</td>
<td>9,412</td>
<td>0.91</td>
<td>E</td>
<td>12</td>
<td>-</td>
<td>0.1%</td>
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<tr>
<td>11</td>
<td>San Pablo Ave, south of University Ave</td>
<td>1,690</td>
<td>1,108</td>
<td>0.66</td>
<td>D</td>
<td>13</td>
<td>-</td>
<td>1.2%</td>
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<tr>
<td>12</td>
<td>San Pablo Ave, north of University Ave</td>
<td>1,690</td>
<td>1,084</td>
<td>0.64</td>
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<td>9</td>
<td>0.01</td>
<td>0.8%</td>
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<td>Sixth Street, south of University Avenue</td>
<td>850</td>
<td>1,055</td>
<td>1.24</td>
<td>F</td>
<td>5</td>
<td>0.01</td>
<td>0.5%</td>
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<td>14</td>
<td>Sixth Street, north of University Avenue</td>
<td>850</td>
<td>1,612</td>
<td>1.90</td>
<td>F</td>
<td>34</td>
<td>0.04</td>
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<td>15</td>
<td>University Avenue, west of Sixth Street</td>
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<td>1,937</td>
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<td>39</td>
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<td>16</td>
<td>University Avenue, east of Sixth Street</td>
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<td>1,142</td>
<td>0.68</td>
<td>D</td>
<td>14</td>
<td>-</td>
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</tbody>
</table>

<sup>a</sup> v/c Ratio: Volume-to-Capacity Ratio

<sup>b</sup> LOS: Level-of-Service

<sup>c</sup> Project-related increase to v/c Ratio

<sup>d</sup> Project contribution to Cumulative Plus Project volume

Shaded cells indicate roadway segments that would operate at LOS E or LOS F. “-“ indicates no increase in v/c Ratio relative to Cumulative Conditions.

Table IV.B-11: Roadway Segment Analysis – Cumulative Plus Project Conditions, Weekday PM Peak Hour

<table>
<thead>
<tr>
<th>#</th>
<th>Segment</th>
<th>Capacity</th>
<th>Volume</th>
<th>v/c Ratio&lt;sup&gt;a&lt;/sup&gt;</th>
<th>LOS&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Trips</th>
<th>v/c Ratio&lt;sup&gt;c&lt;/sup&gt;</th>
<th>Percent&lt;sup&gt;d&lt;/sup&gt;</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Northbound/Eastbound</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>I-80/I-580, south of University Avenue</td>
<td>10,360</td>
<td>9,352</td>
<td>0.90</td>
<td>E</td>
<td>10</td>
<td>-</td>
<td>0.1%</td>
</tr>
<tr>
<td>2</td>
<td>I-80/I-580, north of University Avenue</td>
<td>10,360</td>
<td>9,830</td>
<td>0.95</td>
<td>E</td>
<td>6</td>
<td>-</td>
<td>0.1%</td>
</tr>
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<td>San Pablo Ave, south of University Ave</td>
<td>1,690</td>
<td>1,498</td>
<td>0.89</td>
<td>D</td>
<td>7</td>
<td>-</td>
<td>0.5%</td>
</tr>
<tr>
<td>4</td>
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<td>1,690</td>
<td>1,472</td>
<td>0.87</td>
<td>D</td>
<td>6</td>
<td>-</td>
<td>0.4%</td>
</tr>
<tr>
<td>5</td>
<td>Sixth Street, south of University Avenue</td>
<td>850</td>
<td>991</td>
<td>1.17</td>
<td>F</td>
<td>6</td>
<td>-</td>
<td>0.6%</td>
</tr>
<tr>
<td>6</td>
<td>Sixth Street, north of University Avenue</td>
<td>850</td>
<td>711</td>
<td>0.84</td>
<td>D</td>
<td>16</td>
<td>0.02</td>
<td>2.2%</td>
</tr>
<tr>
<td>7</td>
<td>University Avenue, west of Sixth Street</td>
<td>1,690</td>
<td>1,107</td>
<td>0.66</td>
<td>D</td>
<td>13</td>
<td>-</td>
<td>1.2%</td>
</tr>
<tr>
<td>8</td>
<td>University Avenue, east of Sixth Street</td>
<td>1,690</td>
<td>1,014</td>
<td>0.60</td>
<td>C</td>
<td>6</td>
<td>-</td>
<td>0.5%</td>
</tr>
<tr>
<td></td>
<td>Southbound/Westbound</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>I-80/I-580, south of University Avenue</td>
<td>10,360</td>
<td>7,742</td>
<td>0.75</td>
<td>D</td>
<td>22</td>
<td>-</td>
<td>0.3%</td>
</tr>
<tr>
<td>10</td>
<td>I-80/I-580, north of University Avenue</td>
<td>10,360</td>
<td>7,898</td>
<td>0.76</td>
<td>D</td>
<td>9</td>
<td>-</td>
<td>0.1%</td>
</tr>
<tr>
<td>11</td>
<td>San Pablo Ave, south of University Ave</td>
<td>1,690</td>
<td>1,489</td>
<td>0.88</td>
<td>D</td>
<td>6</td>
<td>-</td>
<td>0.4%</td>
</tr>
<tr>
<td>12</td>
<td>San Pablo Ave, north of University Ave</td>
<td>1,690</td>
<td>1,779</td>
<td>1.05</td>
<td>F</td>
<td>4</td>
<td>0.01</td>
<td>0.2%</td>
</tr>
<tr>
<td>13</td>
<td>Sixth Street, south of University Avenue</td>
<td>850</td>
<td>608</td>
<td>0.72</td>
<td>D</td>
<td>3</td>
<td>-</td>
<td>0.5%</td>
</tr>
<tr>
<td>14</td>
<td>Sixth Street, north of University Avenue</td>
<td>850</td>
<td>1,310</td>
<td>1.54</td>
<td>F</td>
<td>25</td>
<td>0.03</td>
<td>1.9%</td>
</tr>
<tr>
<td>15</td>
<td>University Avenue, west of Sixth Street</td>
<td>1,690</td>
<td>2,943</td>
<td>1.74</td>
<td>F</td>
<td>27</td>
<td>0.02</td>
<td>0.9%</td>
</tr>
<tr>
<td>16</td>
<td>University Avenue, east of Sixth Street</td>
<td>1,690</td>
<td>1,861</td>
<td>1.10</td>
<td>F</td>
<td>8</td>
<td>0.01</td>
<td>0.4%</td>
</tr>
</tbody>
</table>

<sup>a</sup> v/c Ratio: Volume-to-Capacity Ratio  
<sup>b</sup> LOS: Level-of-Service  
<sup>c</sup> Project-related increase to v/c Ratio  
<sup>d</sup> Project contribution to Cumulative Plus Project volume  

Shaded cells indicate roadway segments that would operate at LOS E or LOS F. "-" indicates no increase in v/c Ratio relative to Cumulative Conditions.


The following study roadway segments would operate at LOS E or LOS F for all analysis time periods under Cumulative Conditions and would continue to operate at LOS E or LOS F under Cumulative Plus Project Conditions with the addition of traffic generated by the proposed Project.

- **Segment 1** (northbound I-80/I-580 south of University Avenue) during the PM peak hour (LOS E)
- **Segment 2** (northbound I-80/I-580 north of University Avenue) during the PM peak hour (LOS E)
- **Segment 5** (northbound Sixth Street south of University Avenue) during the PM peak hour (LOS F)
- **Segment 10** (southbound I-80/I-580 north of University Avenue) during the AM peak hour (LOS E)
- **Segment 12** (southbound San Pablo Avenue north of University Avenue) during the PM peak hour (LOS F)
- **Segment 13** (southbound Sixth Street south of University Avenue) during the AM peak hour (LOS F)
- **Segment 14** (southbound Sixth Street north of University Avenue) during the AM and PM peak hours (LOS F)
- **Segment 15** (westbound University Avenue, west of Sixth Street) during the AM and PM peak hour (LOS F)
- **Segment 16** (westbound University Avenue, east of Sixth Street) during the PM peak hour (LOS F)

With the addition of traffic generated by the proposed Project, study CMP and MTS roadway segments that are operating at LOS F without the Project would continue to operate at LOS F with the Project. However, as shown in Table IV.B-10 and Table IV.B-11, the Project would add less than 5 percent to the future peak hour traffic volume at these locations. Therefore, according to the significance criteria described in Section 2a, this impact is less than significant.14

(3) **Increase Hazards Due to a Design Feature or Incompatible Uses.** The proposed Project is not expected to cause queues that would extend across the at-grade railroad crossing, or introduce other hazards, and would not result in significant impacts related to pedestrians or queueing.

Because the Project site is adjacent to an at-grade rail crossing and within the proximity of active railroad tracks, the California Public Utilities Commission (CPUC) has recommended the proposed Project be planned with the safety of the rail corridor in mind and recommended the following improvements be considered:15

**Recommended Measure TRA-1:** To further reduce railroad-related hazards within the vicinity of the site, the following measures are recommended to be implemented:
- Upgrade the crossing to ADA standard with connecting sidewalks, ADA detectable warning devices (e.g., tactile strips), refresh pavement markings;
- Construct vandal-resistant fencing or other appropriate barriers to limit access to railroad right-of-way; and
- Plan for grade separations for major thoroughfares.

The improvements to the at-grade railroad crossing would minimize potential adverse effects related to queueing and would improve conditions for pedestrians. However, these recommendations are not required to reduce a significant impact of the proposed Project and are

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14 The criteria of significance are consistent with criteria used in the 2020 Long Range Development Plan EIR. Online: http://realestate.berkeley.edu/sites/default/files/4.12_transportation.pdf . Accessed August 11, 2016. The significance criteria states that on CMP and MTS designated roadway segments that are projected to exceed the CMP standard in the future (Year 2040) without the Project, the impact is significant if the Project adds at least 5 percent to the future peak hour traffic volume.

therefore recommendations to be considered by the City and the Project applicant as part of the Conditions of Approval for the proposed Project.

(4) **Results In Inadequate Emergency Access.** Emergency vehicle access to the proposed Project would be provided from Hearst Avenue, Fourth Street, and University Avenue North Frontage. The Project does not propose any major modifications to the roadway network, circulation patterns or design features that would alter emergency vehicle access. The design is required to comply with all City and access standards as well as requirements in the California Fire Code and California Vehicle Code. The proposed Project would have a less-than-significant impact on emergency access and response times.

(5) **Conflict with Adopted Policies, Plans, or Programs Regarding Public Transit, Bicycle or Pedestrian Facilities, or Otherwise Decrease the Performance or Safety of Such Facilities.** Potential impacts to local and regional transit operations, pedestrian access, and bicycle access would be less than significant, as discussed in more detail below.

**Local Transit Operations.** Project-generated transit riders would result in increased usage of the existing nearby AC Transit bus stops. The Project would generate approximately 25 total transit trips during the weekday AM peak hour, 24 transit trips during the weekday PM peak hour and 17 transit trips during the Saturday midday peak hour. Transit trips to and from the proposed Project would likely use nearby AC Transit bus lines, including Line 51B, Line 52 and Line 72/72M/72R for local trips. Regional service such as BART or Capitol Corridor (potentially with transfers to/from AC Transit) would be used for trips outside of Berkeley. The incremental increase in ridership on lines serving the Project site could be accommodated with existing service and the proposed Project would not be expected to result in overcrowding at transit stops serving the Project. The addition of vehicle traffic generated by the proposed Project would not result in substantial increases in travel times along AC Transit routes, though the increase in traffic along Sixth Street may increase delays to Line 52 near the University Avenue intersection. Impacts to local transit operations would therefore be less than significant.

**Regional Transit Operations.** The Project is located about 1.2 miles southwest of the North Berkeley BART Station and is adjacent to the Berkeley Amtrak station. Potential impacts to regional transit operations are discussed below.

**Bay Area Rapid Transit.** BART is currently operating over capacity with peak hour ridership of about 28,000 through the Transbay Tube. The addition of Project-generated transit riders would contribute to the over-capacity conditions on transbay lines. However, the transbay transit trips generated by the Project would represent an incremental increase in overall ridership on these lines. Assuming 100 percent of Project-related transit trips would have a destination in San Francisco and utilize the Transbay Tube, the Project would generate a maximum of 25 people traveling in the Transbay Tube in the peak westbound direction during the weekday AM peak hour. Based on the current peak commute schedule, with one train departing the Downtown Berkeley BART station every seven to eight minutes, or seven to eight San Francisco-bound trains serving the station during the peak hour, this condition would equate to about three people per train. Given that each train typically consists of between eight and ten cars, this level of ridership would amount to an increase of
fewer than one person per car and would not result in substantial delays to existing riders. Therefore, impacts to BART operations associated with the Project would be less than significant.

Furthermore, BART is currently making major investments in new infrastructure to accommodate growth and improve and increase service. New train cars with higher capacity and three door boarding are currently being tested and are expected to be in commercial service on the transbay lines in Fall 2017. Additionally, an improved train control system, which will allow for shorter headways, is another interrelated capital investment initiative that will increase capacity along the BART line.

**Capitol Corridor.** The Berkeley Amtrak station is an unstaffed station located under the University Avenue overpass west of Fourth Street. The platform has two tracks and serves Amtrak’s Capitol Corridor inter-city/commuter rail line with connecting service on AC Transit lines 51B and 802. The Capitol Corridor has 15 weekday trains in each direction and 11 weekend trains in each direction.

According to the Capitol Corridor Joint Powers Authority monthly performance report, the Berkeley station serves about 6,700 monthly riders with about 420 passengers during the weekday.\(^{16}\) Transit trips generated by the Project would represent an incremental increase in overall ridership on the Capitol Corridor. Assuming a maximum adverse effect analysis whereby 100 percent of Project-related transit trips have a destination along the Capitol Corridor line, the Project would generate a maximum of 25 people traveling in the peak eastbound direction, toward Sacramento, during the weekday AM peak hour. Based on the current operating schedule, with one train departing the station every hour, this would equate to a maximum of 25 additional riders. Given that each train typically consists of between five and six cars, this level of ridership would amount to an increase of about five people per car.

Fewer than 20 people (including about five people with bicycles) were observed to board the eastbound Capitol Corridor train during the weekday AM peak hour during observations conducted in February 2016. There was ample room on the platform to accommodate people waiting for the train arrival and no conflicts were observed between people boarding or alighting. There is sufficient capacity available to accommodate increases in ridership associated with the Project with existing service without causing overcrowding at the station or substantial delays on the Capitol Corridor line. Therefore, impacts to Capitol Corridor transit operations associated with the Project would be less than significant.

**Pedestrian Impacts.** Pedestrian trips generated by the Project would include walk trips to and from the Project site and walk trips to and from parked vehicles and transit lines. The proposed Project would add approximately 53 pedestrian trips (25 walk trips, 28 transit trips) during the weekday AM peak hour, and 47 pedestrian trips (24 walk trips, 23 transit trips) during the weekday PM peak hour.

The sidewalk and frontage improvements proposed as part of the Project would enhance the pedestrian conditions along Hearst Avenue and Fourth Street and the proposed Project would generally have a beneficial effect on the pedestrian environment immediately adjacent to the Project site. The Fourth Street sidewalk would be widened to 15 feet and parallel parking would be provided, acting as a buffer between pedestrians and moving vehicles. Bulb-outs (or curb extensions) would be constructed to enhance the existing mid-block crossing and bulb-outs and directional curb ramps would be provided at the southwest and southeast corner of the Fourth Street/Hearst Avenue intersection. Curb extensions enhance pedestrian safety by increasing pedestrian visibility and waiting space, shortening crossing distances, slowing turning vehicles, and visually narrowing the roadway to encourage slower speeds. A pedestrian paseo would be constructed and landscaping and other amenities would be provided.

The proposed Project would not increase hazards to pedestrians due to design features or incompatible uses. Overall, the proposed Project would have a less-than-significant impact with respect to pedestrian circulation.

**Bicycle Impacts.** The study area for the proposed Project includes several bicycle boulevards and the Project site is within convenient biking distance of many locations. The proposed Project would generate 19 bicycle trips during the weekday AM peak hour and 17 bicycle trips during the weekday PM peak hour. Project-related bicycle trips include trips destined for the Project site as well as those departing the Project site destined for various locations. As such, these trips would be spread over multiple routes, including Fourth Street, Sixth Street, and Ninth Street in the north-south direction and Virginia Street, Delaware Street, and Allston Way in the east-west direction. Observations conducted in February 2016 show bicycle facilities in the vicinity of the project to operate at free-flow speeds of between 10 and 15 miles per hour with room to pass slower bicyclists. Based on these observations, there is sufficient capacity available on these facilities to accommodate bicycle trips generated by the Project and Project-generated bicycle trips would not adversely affect overall bicycle circulation in the area or the operations of adjacent bicycle facilities or study intersections. Bicycle travel would continue to occur without major impedances or safety problems with the projected bicycle and vehicular traffic volumes on nearby streets. Further, the Project proposes to provide a total of 239 bicycle parking spaces including 210 long-term, secure parking spaces (150 for residential use and 60 for commercial tenants and visitors) located in two storage facilities on-site and 29 short-term bicycle parking spaces in racks located throughout the site. Proposed on-site bicycle parking would exceed code requirements for bicycle parking for both residential and commercial uses.

The proposed Project would not increase hazards to bicyclists due to design features or incompatible uses. Overall, the proposed Project would have a less than significant impact with respect to bicycle operations and facilities.

**(6) Other Transportation-Related Considerations.** This section describes transportation-related issues that are not specifically considered as impacts under CEQA, nevertheless, a discussion of parking and construction impacts is provided for informational purposes.
Parking Analysis. An Appeals Court ruling in 2002 held that parking is not part of the permanent physical environment, that parking conditions change over time as people change their travel patterns, and that unmet parking demand created by a project need not be considered a significant environmental impact under CEQA unless it would cause significant secondary effects. Similarly, the December 2009 amendments to the State CEQA Guidelines (which became effective March 18, 2010) removed parking from the State’s Environmental Checklist (Appendix G of the State CEQA Guidelines) as an environmental factor to be considered under CEQA.

Even though it was adopted prior to the Court’s ruling or the revision to Appendix G of the CEQA Guidelines, this concept was anticipated in the City of Berkeley General Plan Policy T-40 Parking Impacts (adopted December 18, 2001):

- **Policy T-40: Parking Impacts.** When considering parking impacts under the California Environmental Quality Act for residential projects with more than two units located in the Avenue Commercial, Downtown, or High Density Residential land use classifications, any significant parking impacts identified that result from the project should be mitigated by improving alternatives to automobile travel and thereby reducing the need for parking. Examples include improvements to public transportation, pedestrian access, car sharing programs, and bicycle facility improvements. Parking impacts for these projects should not be mitigated through the provision of additional parking on the site. The City finds that:

  1. Parking supply and demand may easily be adjusted by changing local pricing policies and by changing how the supply is managed.
  2. As the parking supply increases or parking costs decrease, automobile use becomes a more attractive transportation alternative and demand for parking increases. As parking supply decreases and its price increases, demand decreases.
  3. Increasing the parking supply increases automobile use, which causes a measurably negative impact on the environment.

Given the above, parking deficits are considered to be social effects, rather than impacts on the physical environment as defined by CEQA, and as such, displaced parked vehicles as a result of the build-out of the proposed Project do not constitute a potentially significant impact. The parking supply and occupancy assessment summarized in this study is provided for information purposes.

The Project would utilize one of the two existing curb cuts on Hearst Avenue and Fourth Street to provide access to the proposed residential and commercial garages, respectively. The proposed Project would convert the remaining curb cuts on each street to on-street parking or loading. Overall, the proposed Project would add a total of ten on-street parking spaces along the Fourth Street frontage and eliminate one on-street parking space along

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17 San Franciscans Upholding the Downtown Plan v. the City and County of San Francisco (2002) 102 Cal. App. 4th 656.
the Hearst Avenue frontage. With these curb cut changes, the proposed Project would result in a net increase of nine on-street parking spaces.

Based on the Berkeley Municipal Code requirements, the proposed Project would be required to provide 155 residential parking spaces. For commercial uses the Project would be required to provide a minimum of 77 parking spaces (60 for retail and 17 for restaurant) with a maximum of 145 parking spaces (120 for retail and 25 for restaurant). For a parking supply of this size, the proposed Project would be required to provide four ADA stalls designated for residential use and nine ADA stalls for commercial retail/restaurant use.

The Project includes a six-level parking garage, with a total of 372 parking spaces, on the southwest corner of the site with a residential driveway on Hearst Avenue and a commercial driveway on Fourth Street. The top levels of the parking garage would include 158 residential parking spaces and 214 publicly accessible spaces would be provided on the lower levels. For a parking supply of this size, the proposed Project would be required to provide 3 ADA stalls designated for residential use and 11 ADA stalls for commercial retail/restaurant use. The Project includes 6 independently accessible stalls in the residential garage and 11 ADA-accessible parking stalls in the commercial garage. This supply would exceed the requirements for ADA-accessible parking stalls for residential use by two spaces and would meet code requirements for ADA-accessible parking stalls for commercial retail/restaurant use.

Overall, the proposed parking supply would meet the requirements for residential units and exceed the parking maximums established for commercial uses. In addition, the following transportation demand management strategies would be implemented as part of the proposed Project and would be anticipated to discourage driving and reduce parking demand:

- Residential parking unbundled from residential units (consistent with City Condition of Approval – Parking to be Leased or Sold Separately);
- One AC Transit Pass (or equivalent) provided per dwelling unit (consistent with City Condition of Approval – Transit Subsidy Condition);
- Extensive and secure on-site and sidewalk bicycle parking (256 secure residential spaces, 60 secure commercial spaces, and 29 public spaces including 3 spaces for cargo bikes) (consistent with Condition of Approval – Bike Parking);
- A bicycle repair room for residents; and
- Commitment that residents would not be eligible for on-street Residential Permit Parking.

Although the proposed Project is replacing a surface parking lot, the provision of parking spaces beyond that required and allowed by the code may be counterproductive to the transportation demand management strategy for the proposed Project and environmental goals of the City. Additionally, the absence of a ready supply of parking spaces, combined with available alternatives to vehicle travel, such as riding transit, biking, and walking, may induce people to shift travel modes. These mode shifts should be encouraged through managed parking and other transportation demand strategies, and would be in keeping with the City’s Transit First policy.
Loading Space Analysis. The Project includes two off-street loading spaces (12 feet wide and 25 feet long) in the residential garage to accommodate delivery service and residential move-in and move-out activities.

The Project site is a designated node and as such, is subject to the requirements laid out in BMC Section 23E.64.040. For commercial and retail uses within the C-W zoning district, designated node, the Code states that any construction which results in the creation of 10,000 square feet of new or additional commercial gross floor space, shall provide off-street loading spaces at a ratio of one space for the first 10,000 square feet and one space for each additional 40,000 square feet of gross floor area of commercial space.

Based on the Berkeley Municipal Code requirements outlined above, the proposed Project would be required to provide one off-street loading space for the commercial restaurant and retail use. The proposed two off-street loading spaces, one for residential use, would exceed requirements.

It is also anticipated that some daily deliveries (e.g., Federal Express, United States Postal Service) would utilize existing available on-street parking spaces and the existing loading (white curb) zone located east of the residential driveway on Hearst Avenue. To gain use of this curb space to serve the building, the applicant or site manager would be required to submit a request for loading/curb side parking to Transportation Services Division after occupancy of the site.

Loading activities that occur during the day may cause a temporary reduction in capacity on streets adjacent to the proposed Project. However, loading activities typically occur during off-peak hours such as in the early morning and as such, substantial conflicts on streets adjacent to the Project are not anticipated. Furthermore, other vehicles parked on the street should not present an obstacle to service/loading vehicles, although conflicts could occur when vehicles enter or exit the loading space, similar to other parked vehicles on the street.

Construction Conditions Analysis. This assessment identifies the potential temporary traffic impacts associated with construction-related activities, employees, and equipment, and recommends strategies to avoid or reduce potential impacts, if needed. The following key assumptions were made relevant to the construction conditions traffic operations analysis:

- The day that would yield the highest number of daily construction trips (measured in passenger car equivalents\(^{18}\)) is chosen as the representative day for analysis
- Each construction worker/employee generates two trips per day (one inbound, arriving to the construction site; one outbound, departing the construction site)
- Construction truck and employee trips are assigned to the roadway network as follows: 100 percent inbound during the weekday AM peak hour, 100 percent outbound during the weekday PM peak hour

\(^{18}\) One construction truck trip is equivalent to two passenger vehicles trips and has a passenger car equivalent (PCE) of two.
• Construction truck trips are assigned to designated haul routes (routes that provide the most direct access to the surrounding major regional highways, such as I-80/I-580

• Construction traffic is temporary and would cease at the end of construction

This analysis uses the proposed construction schedule and construction trip estimates (employee, vendor and truck or “haul” trips) to determine the amount of construction traffic generated by the Project. For a conservative “worst-case scenario” analysis, the construction day during the phase that would yield the most daily construction trips was chosen as a representative day for the traffic impact analysis.

Based on the anticipated construction activities during the construction phase that would yield the most construction trips (i.e., building construction), the maximum number of haul trips attributable to equipment, material delivery and disposal that would be required on a single day would be 44 trips (22 inbound during the AM peak hour and 22 outbound during the PM peak hour) and the maximum number of construction worker vehicle trips during this phase would be 170 trips (85 inbound during the AM peak hour and 85 outbound during the PM peak hour). Therefore, cumulatively, on the most congested construction day (i.e., most construction days would experience fewer added vehicles), all construction-related traffic would add approximately 214 total daily passenger car equivalents to area roadways (107 inbound during the AM peak hour and 107 outbound during the PM peak hour).

The construction workers that drive to the site would cause a temporary increase in parking demand of 85 spaces during the building construction phase. A parking study conducted in September 2015 showed parking was generally available south of the Project site in a combination of metered and unrestricted spaces and off-street lots, with at least 85 on-street parking spaces available during the period between 6:00 a.m. and 9:00 a.m. when majority of construction workers would be expected to arrive. Based on this analysis, the parking demand generated by construction workers’ personal vehicles could be accommodated within existing on-street parking spaces, nearby off-street facilities, or on-site (if on-site parking is available).

Assessment of construction-related Project impacts on local and regional roads included review of existing daily traffic volumes and consideration of both the addition of Project-related construction traffic to existing daily traffic levels and the capacity of the roads to handle the additional traffic. Potential temporary construction impacts generated by the Project would include impacts associated with the delivery of construction materials and equipment, removal of construction debris, and parking for construction workers.

Construction-related vehicle trips would increase traffic volume on surrounding streets and contribute to delay at intersections along the route to the Project site. Construction-related traffic generally operates along designated routes and occurs outside of the peak hours for commute travel, and would be temporary in nature, further reducing the impacts of construction activity on transportation facilities.
Approval and permitting of the proposed Project would include implementation of both of the strategies outlined below as part of the Conditions of Approval:

- **Construction Hours.** Construction activities (including the loading and unloading of materials and truck movements) shall be limited to the hours of 7:00 a.m. and 7:00 p.m. on weekdays and between the hours of 9:00 a.m. and 8:00 p.m. on weekends or holidays.

- **Transportation Construction Plan.** A Transportation Construction Plan (TCP) is required for all phases of construction, particularly for the following activities:
  - Alterations, closures, or blockages to sidewalks or pedestrian paths;
  - Alterations, closures, or blockages to vehicle travel lanes (including bicycle lanes);
  - Storage of building materials, dumpsters, debris anywhere in the public right-of-way;
  - Provision of exclusive contractor parking on-street relevant; or
  - Significant truck activity.

Implementation of these strategies would ensure that potential construction-related impacts on traffic circulation, access, and parking would be less than significant during the construction period.
C. 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. In keeping with these guidelines, this section describes existing air quality and the regulatory framework for air quality including the litigation status of the BAAQMD's CEQA Guidelines. The section also 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. Air quality modeling results are included in Appendix E.

1. Setting

This section describes existing air quality conditions in the City of Berkeley, 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 for six criteria air pollutants: carbon monoxide (CO), ozone (O₃), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), 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 when the criteria pollutants exceeding thresholds are those with regional effects, such as ozone precursors like nitrogen oxides (NOₓ) 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

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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.
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.

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

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

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<thead>
<tr>
<th>Pollutants</th>
<th>Sources</th>
<th>Primary Effects</th>
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| 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 (NO₂)      | • Motor vehicle exhaust  
                             | • High temperature stationary combustion  
                             | • Atmospheric reactions                                             | • Aggravation of respiratory illness  
                             |                                                                         | • Reduced visibility  
                             |                                                                         | • Reduced plant growth  
                             |                                                                         | • Formation of acid rain                                                 |
| Ozone (O₃)                  | • 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 (PM₂.₅ and PM₁₀) | • 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 (SO₂)        | • 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 (ARB), 2012.

(1) **Ozone.** Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving ROG and NOₓ. The main sources of ROG and NOₓ, 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 conditions. 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 such 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, and 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.** SO₂ 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. SO₂ 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.\(^4\) SO₂ 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. 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 the industrial facilities in West Berkeley and a soil products facility located approximately 1,200 feet from the project site. 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

\(^4\) Bay Area Air Quality Management District, 2012, op. cit.

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 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 Berkeley 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 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. The 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.

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 Berkeley 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 and the second extends to the northeast, along the west delta region of the Sacramento and San Joaquin Rivers.

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7 Ibid.
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 winds are most common in Berkeley, reflecting the orientation of the Bay and the San Francisco Peninsula. Winds from this direction carry pollutants released by autos and factories from upwind areas of the Bay Area toward Berkeley, 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.

Topography can restrict horizontal dilution and mixing of pollutants by creating a barrier to air movement. The East Bay has significant terrain features that affect air quality. The air draining through the Carquinez Straits toward the Bay and off the elevated terrain east of the Bay Area is relatively unpolluted. Nocturnal air quality is also usually healthful in the Berkeley area even when wind flow is somewhat stagnant. The air pollution 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 Berkeley 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.

The Air Monitoring Program of the BAAQMD operates a 28-station monitoring network which provides the data required to determine whether the Bay Area is in compliance with State and federal air quality standards. Most monitoring stations sample air levels for criteria pollutants, while only some of the monitoring sites include toxics sampling equipment. Sampling for the heavy metals lead, nickel, manganese and total chromium is carried out at five ARB sites, including Fremont, Richmond, Concord, San Francisco and San Jose.

Pollutant monitoring results for the years 2013 to 2015 at the 1100 21st Street (Oakland) ambient air quality monitoring station (the closest monitoring station to the Project site) and where data were not available in Oakland, the San Pablo – Rumrill Boulevard station are shown in Table IV.C-2.

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Table IV.C-2: Ambient Air Quality Monitoring Results

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Standard</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Carbon Monoxide (CO)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 1-hour concentration (ppm)</td>
<td>3.8</td>
<td>3.0</td>
<td>4.7</td>
<td></td>
</tr>
<tr>
<td>Number of days exceeded: State: &gt; 20 ppm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Federal: &gt; 35 ppm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Maximum 8-hour concentration (ppm)</td>
<td>3.2</td>
<td>2.6</td>
<td>2.6</td>
<td></td>
</tr>
<tr>
<td>Number of days exceeded: State: &gt; 9 ppm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Federal: &gt; 9 ppm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Ozone (O3)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 1-hour concentration (ppm)</td>
<td>0.071</td>
<td>0.072</td>
<td>0.091</td>
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<tr>
<td>Number of days exceeded: State: &gt; 0.09 ppm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Maximum 8-hour concentration (ppm)</td>
<td>0.060</td>
<td>0.059</td>
<td>0.065</td>
<td></td>
</tr>
<tr>
<td>Number of days exceeded: State: &gt; 0.07 ppm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Federal: &gt; 0.08 ppm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Coarse Particulates (PM10)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 24-hour concentration (µg/m³)</td>
<td>45.6</td>
<td>44.3</td>
<td>43.0</td>
<td></td>
</tr>
<tr>
<td>Number of days exceeded: State: &gt; 50 µg/m³</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Federal: &gt; 150 µg/m³</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Annual arithmetic average concentration (µg/m³)</td>
<td>17.8</td>
<td>16.0</td>
<td>18.4</td>
<td></td>
</tr>
<tr>
<td>Exceeded for the year: State: &gt; 20 µg/m³</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Federal: &gt; 50 µg/m³</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td><strong>Fine Particulates (PM2.5)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 24-hour concentration (µg/m³)</td>
<td>42.7</td>
<td>38.8</td>
<td>38.7</td>
<td></td>
</tr>
<tr>
<td>Number of days exceeded: Federal: &gt; 35 µg/m³</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Annual arithmetic average concentration (µg/m³)</td>
<td>12.7</td>
<td>9.5</td>
<td>ND</td>
<td></td>
</tr>
<tr>
<td>Exceeded for the year: State: &gt; 12 µg/m³</td>
<td>ND</td>
<td>No</td>
<td>ND</td>
<td></td>
</tr>
<tr>
<td>Federal: &gt; 15 µg/m³</td>
<td>ND</td>
<td>No</td>
<td>ND</td>
<td></td>
</tr>
<tr>
<td><strong>Nitrogen Dioxide (NO2)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 1-hour concentration (ppm)</td>
<td>0.064</td>
<td>0.056</td>
<td>0.057</td>
<td></td>
</tr>
<tr>
<td>Number of days exceeded: State: &gt; 0.250 ppm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Annual arithmetic average concentration (ppm)</td>
<td>0.016</td>
<td>0.016</td>
<td>0.016</td>
<td></td>
</tr>
<tr>
<td>Exceeded for the year: Federal: &gt; 0.053 ppm</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td><strong>Sulfur Dioxide (SO2)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 1-hour concentration (ppm)</td>
<td>0.050</td>
<td>0.017</td>
<td>0.022</td>
<td></td>
</tr>
<tr>
<td>Number of days exceeded: State: &gt; 0.25 ppm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Maximum 3-hour concentration (ppm)</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td></td>
</tr>
<tr>
<td>Number of days exceeded: Federal: &gt; 0.50 ppm</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td></td>
</tr>
<tr>
<td>Maximum 24-hour concentration (ppm)</td>
<td>0.007</td>
<td>0.003</td>
<td>0.004</td>
<td></td>
</tr>
<tr>
<td>Number of days exceeded: State: &gt; 0.04 ppm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Federal: &gt; 0.14 ppm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Annual arithmetic average concentration (ppm)</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td></td>
</tr>
<tr>
<td>Exceeded for the year: Federal: &gt; 0.030 ppm</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td></td>
</tr>
</tbody>
</table>

*Results based on readings at the San Pablo – Rumrill Boulevard monitoring station.

ppm = parts per million
µg/m³ = micrograms per cubic meter
ND = No data. There was insufficient (or no) data to determine the value.

Based on the monitoring data, local air pollutant levels were well below all applicable State and National Ambient Air Quality Standards for gaseous criteria pollutants including ozone, CO, SO₂, and NO₂. In general, levels of criteria pollutants were in the middle of the distribution of Bay Area air monitoring sites. NO₂ and SO₂ levels are similar to levels at other suburban locations within the Bay Area. The same was true for SO₂ emissions, with measurements similar to San Pablo and Livermore. CO measurements in Oakland were among the highest in the Bay Area; however, they are still well below State and federal standards. SO₂ and NO₂ standards were not exceeded in this area during the 3-year period.

Local PM levels were among the middle distribution in the Bay Area, with levels similar to Concord and Livermore. PM₂.₅ levels exceeded the federal 24-hour standards twice in 2013, once in 2014, and three times in 2015. No violations of the State or federal PM₁₀ standard were recorded during the three-year period. The Bay Area is an unclassified area for the federal PM₁₀ standard.

Ozone levels, measured by peak concentrations and the number of days over the State 1-hour standard, 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. Levels of ozone have not exceeded the State’s 1-hour standard; in addition, levels have not exceeded State or federal 8-hour standards. For ozone, levels measured in Oakland were lower than most of the Bay Area.

The BAAQMD also recently documented monitored toxic air contaminants near the Oakland air quality monitoring site. Results indicate that diesel PM concentrations contribute approximately 80 percent of the total cancer risk in west Oakland. Cancer risk in west Oakland from exposure to diesel PM emissions is about 1,200 excess cancer cases in 1 million.9

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.

(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 Federal Clean Air Act Amendments of 1990 (FCAAA) 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\textsuperscript{10} 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.

The State of California’s regulatory efforts for toxic air contaminants are embodied in the Tanner Bill\textsuperscript{11} (effective 1984), which defines a process for the identification and control of toxic air contaminants. The ARB identifies the most important toxic pollutants by considering risk of harm to public health, amount or potential amount of emissions, manner of usage of the substance, its persistence in the atmosphere, and its concentration in outdoor air. The California Office of Environmental Health Hazard Assessment prepares health assessment documents that outline the toxicity of compounds. After a pollutant is listed as a toxic air contaminant, control measures are developed by the ARB and local air districts.

Other relevant legislation is the Air Toxics Hot Spots Information and Assessment Act\textsuperscript{12} (Assembly Bill 2588). This bill was enacted in 1987 with the objective of collecting information concerning industrial emissions of toxic air contaminants and making the information available to the public. The bill established a formal regulatory program for site-specific air toxics emissions inventory and health risk quantification that is managed by California air districts. Under this program, a wide variety of industrial, commercial, and public facilities are required to report the types and quantities of toxic substances their facilities routinely release into the air. The goals of the Air Toxics Hot Spots Program are to collect emissions data, identify facilities with potential for localized health impacts, ascertain health risks, notify nearby residents of risks that are determined to warrant such notification, and reduce significant risks.

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.\textsuperscript{13} 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, O₃, NO₂, SO₂, 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.¹⁴ State and federal standards for the criteria air pollutants are listed in Table IV.C-3.

(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.¹⁵ 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.

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

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging Time</th>
<th>California Standards</th>
<th>Federal Standards</th>
<th>Method</th>
<th>Primary Standards</th>
<th>Secondary Standards</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ozone (O₃)</strong></td>
<td>1-Hour</td>
<td>0.09 ppm (180 μg/m³)</td>
<td>No Federal Standard</td>
<td>Ultraviolet Photometry</td>
<td></td>
<td>0.075 ppm (147 μg/m³)</td>
<td>Inertial Separation and Gravimetric Analysis</td>
</tr>
<tr>
<td></td>
<td>8-Hour</td>
<td>0.07 ppm (137 μg/m³)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Respirable Particulate Matter (PM₁₀)</strong></td>
<td>24-Hour</td>
<td>50 μg/m³</td>
<td>150 μg/m³</td>
<td>Gravimetric or Beta Attenuation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Annual Arithmetic Mean</td>
<td>20 μg/m³</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fine Particulate Matter (PM₂.₅)</strong></td>
<td>24-Hour</td>
<td>No Separate State Standard</td>
<td>35 μg/m³</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Annual Arithmetic Mean</td>
<td>12 μg/m³</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Carbon Monoxide (CO)</strong></td>
<td>8-Hour</td>
<td>9.0 ppm (10 mg/m³)</td>
<td>9 ppm (10 mg/m³)</td>
<td>Non-Dispersive Infrared Photometry (NDIR)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1-Hour</td>
<td>20 ppm (23 mg/m³)</td>
<td>35 ppm (40 mg/m³)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8-Hour (Lake Tahoe)</td>
<td>6 ppm (7 mg/m³)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Nitrogen Dioxide (NO₂)</strong></td>
<td>Annual Arithmetic Mean</td>
<td>0.03 ppm (57 μg/m³)</td>
<td>53 ppb (100 μg/m³)</td>
<td>Gravimetric or Beta Attenuation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1-Hour</td>
<td>0.18 ppm (339 μg/m³)</td>
<td>100 ppb (188 μg/m³)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Lead (Pb)</strong></td>
<td>30-day average</td>
<td>1.5 μg/m³</td>
<td></td>
<td>Atomic Absorption</td>
<td>1.5 μg/m³</td>
<td>Same as Primary Standard</td>
<td>High-Volume Sampler and Atomic Absorption</td>
</tr>
<tr>
<td></td>
<td>Calendar Quarter</td>
<td>–</td>
<td></td>
<td></td>
<td>0.15 μg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rolling 3-month average</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sulfur Dioxide (SO₂)</strong></td>
<td>24-Hour</td>
<td>0.04 ppm (105 μg/m³)</td>
<td></td>
<td>Ultraviolet Fluorescence</td>
<td></td>
<td>0.14 ppm (for certain areas)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3-Hour</td>
<td>–</td>
<td>0.5 ppm (1300 μg/m³)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1-Hour</td>
<td>0.25 ppm (655 μg/m³)</td>
<td>75 ppb (196 μg/m³)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Annual Arithmetic Mean</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td>0.030 ppm (for certain areas)</td>
<td></td>
</tr>
<tr>
<td><strong>Visibility-Reducing Particles</strong></td>
<td>8-Hour</td>
<td>Extinction coefficient of 0.23 per kilometer - visibility of 10 miles or more (0.07–30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.</td>
<td>No Federal Standards</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sulfates</strong></td>
<td>24-Hour</td>
<td>25 μg/m³</td>
<td>Ion Chromatography</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hydrogen Sulfide</strong></td>
<td>1-Hour</td>
<td>0.03 ppm (42 μg/m³)</td>
<td>Ultraviolet Fluorescence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Vinyl Chloride</strong></td>
<td>24-Hour</td>
<td>0.01 ppm (26 μg/m³)</td>
<td>Gas Chromatography</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 (PM10, PM2.5, 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 PM10, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 μg/m³ is equal to or less than one. For PM2.5, 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 SO2 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 SO2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standards, 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 standards 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 μg/m³ 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 standards, the 1978 standards remain in effect until implementation plans to attain or maintain the 2008 standards are approved. The 1978 lead standard (1.5 μg/m³ 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 standards, 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
g/m³ = micrograms per cubic meter
mg/m³ = milligrams per cubic meter
ppm = parts per million
ppb = parts per billion
Source: ARB, 2015.
Clean Air Plan. The BAAQMD’s 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.

The BAAQMD is responsible for developing a Clean Air Plan that guides the region’s air quality planning efforts to attain the California Ambient Air Quality Standards. 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 NOx), particulate matter, and greenhouse gas emissions.

The Bay Area 2010 Clean Air Plan was adopted on September 15, 2010 by the BAAQMD’s Board of Directors. The BAAQMD, in partnership with the Association of Bay Area Governments, the Bay Conservation and Development Commission, and the Metropolitan Transportation Commission, is in the process of producing an updated 2016 Clean Air Plan that will include Regional Climate Protection Strategies. The current Clean Air Plan accomplishes the following:

- Updates the Bay Area 2005 Ozone Strategy in accordance with the requirements of the California Clean Air Act to implement all feasible measures to reduce ozone;
- Provides a control strategy to reduce ozone, PM, air toxics, and greenhouse gases in a single, integrated plan;
- Reviews progress in improving air quality in recent years; and
- Establishes emission control measures, many of which have been adopted and implemented.

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 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 six affected communities. All of western Alameda County, including the Project site, has been included 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 to determine what sources and pollutants to control as well as the degree of control. A health risk assessment 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. 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 were amended to include a risk and hazards threshold for new receptors and modified procedures for assessing impacts related to risk and hazard impacts.

The California Building Industry Association (CBIA) subsequently filed suit against BAAQMD claiming the agency had failed to comply with CEQA when adopting the guidelines. 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 BAAQMD 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 filed a decision on December 17, 2015. The court concluded that CEQA does not require an analysis of how existing environmental conditions will impact a project's future users or residents.

In view of the court’s order, and subsequent decisions, 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. Following the Appellate Court’s order, the BAAQMD released revised CEQA Air Quality

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16 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.

17 Bay Area Air Quality Management District, 2011, op. cit.


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 has not released revised CEQA Air Quality guidelines following the Supreme Court’s ruling in 2015. The BAAQMD recognizes that lead agencies may rely on the previously recommended Thresholds of Significance contained in its CEQA Guidelines adopted in 1999.20 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.21 Accordingly, the City of Berkeley is using the BAAQMD’s 2011 Draft CEQA Guidelines for thresholds and other guidance to evaluate Project impacts in order to protectively evaluate the potential effects of the Project on air quality. The City believes that these protective thresholds and other guidance 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 is required to designate areas of the State as attainment, nonattainment, or unclassified for each State standard. 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 law divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

The U.S. EPA designates areas for ozone, CO, and NO₂ as “does not meet the primary standards,” “cannot be classified,” or “is better than national standards.” For SO₂, areas are designated as “does not meet the primary standards,” “does not meet the secondary standards,” “cannot be classified” or “is better than national standards.” In 1991, new


nonattainment designations were assigned to areas for PM$_{10}$ based on the likelihood that they would violate national PM$_{10}$ standards. All other areas are designated “unclassified.”

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

**Table IV.C-4: Bay Area Attainment Status**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging Time</th>
<th>California Standards</th>
<th>National Standards</th>
<th>Attainment Status</th>
<th>Concentration</th>
<th>Attainment Status</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone (O$_3$)</td>
<td>8-Hour</td>
<td>0.070 ppm (137µg/m$^3$)</td>
<td>Nonattainment $^h$</td>
<td>0.075 ppm</td>
<td>Nonattainment $^d$</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1-Hour</td>
<td>0.09 ppm (180 µg/m$^3$)</td>
<td>Nonattainment</td>
<td>Not Applicable</td>
<td>Not Applicable $^e$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>8-Hour</td>
<td>9.0 ppm (10 mg/m$^3$)</td>
<td>Attainment</td>
<td>9 ppm (10 mg/m$^3$)</td>
<td>Attainment $^f$</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1-Hour</td>
<td>20 ppm (23 mg/m$^3$)</td>
<td>Attainment</td>
<td>35 ppm (40 mg/m$^3$)</td>
<td>Attainment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nitrogen Dioxide (NO$_2$)</td>
<td>1-Hour</td>
<td>0.18 ppm (339 µg/m$^3$)</td>
<td>Attainment</td>
<td>100 ppb</td>
<td>Unclassified</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Annual</td>
<td>0.030 ppm (57 µg/m$^3$)</td>
<td>Not Applicable</td>
<td>53 ppb (100 µg/m$^3$)</td>
<td>Attainment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulfur Dioxide (SO$_2$)</td>
<td>24-Hour</td>
<td>0.04 ppm (105 µg/m$^3$)</td>
<td>Attainment</td>
<td>0.14 ppm (365 µg/m$^3$)</td>
<td>Attainment</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1-Hour</td>
<td>0.25 ppm (655 µg/m$^3$)</td>
<td>Attainment</td>
<td>Not Applicable</td>
<td>Attainment</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Annual</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>0.030 ppm (80 µg/m$^3$)</td>
<td>Attainment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Particulate Matter</td>
<td>Annual</td>
<td>20 µg/m$^3$</td>
<td>Nonattainment $^g$</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coarse (PM$_{10}$)</td>
<td>24-Hour</td>
<td>50 µg/m$^3$</td>
<td>Nonattainment</td>
<td>150 µg/m$^3$</td>
<td>Unclassified</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Particulate Matter</td>
<td>Annual</td>
<td>12 µg/m$^3$</td>
<td>Nonattainment $^g$</td>
<td>12 µg/m$^3$</td>
<td>Attainment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fine (PM$_{2.5}$)</td>
<td>24-Hour</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>35 µg/m$^{31}$</td>
<td>Nonattainment</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$^a$ 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.

*Table notes continued on next page.*
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 of annual averages spatially-averaged across officially-designed clusters of sites falls below the standard.

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.

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.

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

In April 1998, the Bay Area was redesignated to attainment for the national 8-hour carbon monoxide standard.

In June 2002, ARB established new annual standards for PM$_{2.5}$ and PM$_{10}$.

The 8-hour California ozone standard was approved by the ARB on April 28, 2005 and became effective on May 17, 2006.

U.S. EPA lowered the 24-hour PM$_{2.5}$ standard from 65 µg/m$^3$ to 35 µg/m$^3$ in 2006. The U.S. EPA designated the Bay Area as nonattainment for the 35 µg/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.

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
µg/m$^3$ = micrograms per cubic meter

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

City of Berkeley General Plan. The following policies from the Environmental Management Element and Transportation Element of the City of Berkeley General Plan specifically address air quality.22

- **Policy EM-2**: Sustainable Berkeley. Maintain Berkeley’s position as leader in the implementation of sustainable community practices and programs.

- **Policy EM-18**: Regional Air Quality Action. Continue working with the Bay Area Air Quality Management District and other regional agencies to:
  - Improve air quality though pollution prevention methods.
  - Ensure enforcement of air emission standards
  - Reduce local and regional traffic (the single largest source of air pollution in the city) and promote public transit.
  - Promote regional air quality pollution prevention plans for business and industry.

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o Promote strategies to reduce particulate pollution from residential fireplaces and wood-burning stoves.

o Locate parking appropriately and provide adequate signage to reduce unnecessary "circling" and searching for parking.

- **Policy EM-19**: Make efforts to reduce local emissions by 15 percent by the year 2010. Continue to support and implement local emission reduction programs, such as the City of Berkeley Employee Fleet Bicycle Program, the Policy Bicycle Program, and the actions recommended in the City of Berkeley Resource Conservation and Global Warming Abatement Plan.

- **Policy T-10**: Trip Reduction. To reduce automobile traffic and congestion and increase transit use and alternative modes in Berkeley, support, and when appropriate require, programs to encourage Berkeley citizens and commuters to reduce automobile trips.

- **Policy T-19**: Air Quality Impacts. Continue to encourage innovative technologies and programs such as clean-fuel, electric, and low-emission cars that reduce the air quality impacts of the automobile.

(7) **West Berkeley Plan.** The West Berkeley Plan was developed in 1993 to reinforce the dynamic mix of industrial, office, arts and crafts, residential, retail and institutional activities in West Berkeley. The Environmental Quality Element’s goals and policies follow the strategies included in the Land Use and Transportation Elements and address five specific areas of concern. The five areas of concern are: hazardous materials, biohazardous materials, air quality, soils and groundwater, and noise.

The West Berkeley Plan addresses transportation as the foremost source of air quality emissions in the Bay Area. The City’s Trip Reduction Ordinance requires that employers designate a commute coordinator and provide information about alternatives to driving alone to their employees. The following air quality policies are applicable to the proposed Project:

- **Goal 5**: Enhance Air Quality in West Berkeley.

  - **Policy 5.1**: Improve communication and coordinate responsibilities for assistance, enforcement, and complaint response with the BAAQMD.

  - **Policy 5.2**: Reduce existing traffic and adequately mitigate the impact of future traffic.

  - **Policy 5.3**: Regulate the use of ozone depleting compounds.

  - **Policy 5.4**: Promote risk management and communication practices.

  - **Policy 5.5**: Reduce the importing, transportation, use and storage of materials which will become airborne hazardous waste.

  - **Policy 5.6**: Avoid the establishment of new uses which would create immitigable odors in residential districts.

  - **Policy 5.7**: Institute tree planting as an anti-pollution measure.

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24 Ibid.
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 impacts. Where potentially significant impacts are identified, mitigation measures are recommended.

a. Significance Criteria. Consistent with guidance from the BAAQMD, 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 current Air Quality Plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation by:
  - Contributing to CO concentrations exceeding the State ambient air quality standards;
  - Generating construction emissions of ROG, NOx or PM2.5 greater than 54 pounds per day or PM10 exhaust emissions greater than 82 pounds per day; or
  - Generating operation emissions of ROG, NOx or PM2.5 of greater than 10 tons per year or 54 pounds per day, or PM10 emissions greater than 15 tons per year or 82 pounds per day;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations by generating emissions either during construction or operation that would:
  - Individually expose 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;
    - Increase non-cancer risk of greater than 1.0 on the hazard index (chronic or acute);
    - Ambient PM2.5 increase greater than 0.3 µg/m3 annual average; or
  - Cumulatively expose 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 PM2.5 increase greater than 0.8 µg/m3 annual average; or
- Create objectionable odors affecting a substantial number of people.
As discussed previously in CBIA v. BAAQMD, the California Supreme Court\textsuperscript{25} held that CEQA generally does not require analysis or mitigation of the impact of existing environmental conditions on a project, including a project’s future users or residents. However, as with other laws and regulations enforced by other agencies that protect public health and safety, the City as the lead agency has authority other than CEQA to require measures to protect public health and safety. Therefore, this document includes for informational purposes an evaluation of the environment’s impacts on the Project consistent with the current version of the CEQA Checklist provided in Appendix G of the CEQA Guidelines. The evaluation includes an assessment of the Project’s potential to expose future sensitive receptors that would be located on the Project site to substantial pollutant concentrations by individual exposure to the existing sources of toxic air contaminants in the Project vicinity. This analysis of the impacts of the environment on the Project is provided for informational purposes only.

b. Project Impacts. Implementation of the proposed Project could result in air quality impacts, as discussed below. Mitigation measures are recommended, as appropriate.

(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 greenhouse 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 below, with incorporation of BAAQMD construction emission reduction measures required as part of Mitigation Measure AIR-1, the Project would not result in significant construction and operational emission impacts.

As described in Chapter III, Project Description of this EIR, the Project would contain features that would benefit regional air quality and support the goals of the Clean Air Plan, including water-efficient landscaping and outdoor irrigation, installation of ENERGY STAR bathroom fans, and installation of ENERGY STAR appliances and efficient lighting systems.

\textsuperscript{25} California Supreme Court, 2015, op. cit.
These energy efficiency features as well as the Green Building Features outlined in Chapter III, Project Description, of this EIR, are anticipated to result in an approximate 10 percent increase in energy efficiency above Title 24 requirements. Indoor air quality would be enhanced with the use of mechanical fresh air systems that would continuously circulate fresh air though the residential units. Fans would automatically turn on if moisture is detected. Heating and cooling duct work would be sealed with a 6 percent or less leakage rate. High efficiency windows would minimize heat gain and help keep conditioned air from leaking. Other sustainability factors described in Chapter III, Project Description and discussed in Section IV.B, Transportation and Circulation, would include provision of free transit passes for residents, the Project site’s proximity to transit and goods and services; required transportation demand management measures; required bicycle parking; required stormwater management; and required water efficient irrigation systems and fixtures. 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 included controlling 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. The proposed Project would not conflict with the identified transportation and mobile source control measures of the Clean Air Plan. Moreover, the proposed Project is an infill mixed-use Project that would locate residences near employment and public transportation facilities, reducing the demand for travel by single occupancy vehicles.

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 proposed Project would include Transportation Demand Management (TDM) measures that encourage the use of alternate modes of transportation and discourage driving, as described below.

TDM measures could include the following (refer to Section IV.B, Traffic and Circulation, for additional detail):

- Residential parking unbundled from residential units (consistent with City Condition of Approval – Parking to be Leased or Sold Separately);
- One AC Transit Pass (or equivalent) provided per dwelling unit (consistent with City Condition of Approval – Transit Subsidy Condition);
Extensive and secure on-site and sidewalk bicycle parking (256 secure residential spaces, 60 secure commercial spaces, and 29 public spaces, including 3 spaces for cargo bicycles) (consistent with Condition of Approval – Bike Parking);

- A bicycle repair room for residents; and

- Commitment that residents would not be eligible for on-street Residential Permit Parking.

In addition, participation in the Berkeley Gateway Transportation Management Association or other private non-profit agency responsible for administering a West Berkeley Shuttle to North Berkeley and Ashby BART Stations may be considered by the Project applicant.

Future residents and employees of the site would be located adjacent to public transportation options. The Berkeley Amtrak Station is located approximately 200 feet south of the site and the North Berkeley Bay Area Rapid Transit (BART) Station on Sacramento Street is located approximately 1.2 miles east of the Project site. In addition, there are multiple AC Transit bus stops in the vicinity of the proposed Project site with the closest being located at the University Avenue turnaround adjacent to the Amtrak Station (refer to Section IV.B, Traffic and Circulation for further transit information).

These measures and current conditions in the vicinity of the Project site 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 of the Clean Air Plan, is intended to encourage the expansion of 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 include a total of 239 bicycle parking spaces that would be provided throughout the site, including 3 cargo bicycle spaces, 26 public bicycle spaces located at the ground level near the commercial uses, 60 spaces within a designated bike room for the commercial tenants, and 150 spaces within a designated bike room and bike repair area for residents.

*Land Use and Local Impact Measures.* The BAAQMD’s 2010 Clean Air Plan includes Land Use and Local Impact 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 Land Use and Local Impact Measures identified by the BAAQMD are not specifically applicable to the proposed Project as they relate to actions the BAAQMD will take to reduce impacts from goods movement and health risks in affected communities at the plan level. The measures also detail new regulatory actions the BAAQMD will undertake related to land use, including updates to the CEQA Air Quality Guidelines, and indirect source review, which is still under development by the BAAQMD. However, the proposed Project would be a mixed-use and compact development project in support of these measures; therefore, the Project would not conflict with any of the Land Use and Local Impact Measures of the Bay Area 2010 Clean Air Plan.
Energy Measures. The BAAQMD’s 2010 Clean Air Plan also includes Energy and Climate Control Measures, which are designed to reduce ambient concentrations of criteria pollutants and reduce emissions of CO₂. 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. The measures include voluntary approaches to reduce the heat island effect by increasing shading in urban and suburban areas through the planting of trees.

The Project site is currently primarily comprised of a surface parking lot. Implementation of the proposed Project would demolish the existing surface parking lot and redevelop the site with mixed-use buildings, which would reduce the heating effect. In addition, with development of the proposed Project, all of the 20 existing on-site trees would be removed; however, the Project would include the planting of 40 new trees on-site. The Project would also include the energy conservation features as listed above. Therefore, implementation of the proposed Project would not conflict with any of the Energy and Climate Control Measures of the Clean Air Plan.

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, land use and local impact 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:

- Contribute to CO concentrations exceeding the State ambient air quality standards;
- Generate average daily construction emissions of ROG, NOₓ or PM₂.₅ (exhaust) greater than 54 pounds per day or PM₁₀ exhaust emissions greater than 82 pounds per day; or
- Generate average operational emissions of ROG, NOₓ or PM₂.₅ of greater than 10 tons per year or 54 pounds per day or PM₁₀ emissions greater than 15 tons per year or 82 pounds per day.

The following section describes the Project’s CO impacts and construction- and operation-related air quality impacts.

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, 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 (ACTC) for designated roads and highways, a regional transportation plan, or other agency plans. The Project site is not located in an area where vertical or horizontal mixing of air is substantially limited. Some intersections would result in significant and unavoidable level of service impacts during Cumulative Plus Project Conditions due to intersection delay. However, as described in Section IV.B, Transportation and Circulation, the Project would generate 166 AM peak hour trips, 130 PM peak hour trips, and 187 Saturday peak hour trips. The intersection with the highest traffic volume adjacent to the site has peak hour traffic of 3,882 vehicles per hour, therefore total intersection traffic volumes would be well below the screening criteria level of 44,000 vehicles per hour. Therefore, the proposed Project would not result in localized CO concentrations that exceed State or federal standards and this impact 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 these sources and on-site construction equipment would include CO, NOx, ROG, directly-emitted particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>), 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 demolition of the existing building and surface parking lot on the Project site, clearing, cut-and-fill activities, 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 site 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 site.

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. 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.\textsuperscript{26}

Construction is anticipated to begin in early 2018 and is expected to occur over an 18 to 24 month period. Construction emissions were estimated for the Project using California Emissions Estimator Model version 2013.2.2 (CalEEMod). For purposes of this analysis, to be conservative, the construction schedule for all improvements was assumed to be approximately 18 months. Average daily construction-related emissions are presented in Table IV.C-5. Complete CalEEMod output sheets, including daily emissions during each phase of project construction, are included in Appendix E.

<table>
<thead>
<tr>
<th>Project Construction</th>
<th>ROG</th>
<th>NO$_x$</th>
<th>Exhaust PM$_{2.5}$</th>
<th>Fugitive Dust PM$_{2.5}$</th>
<th>Total PM$_{2.5}$</th>
<th>Exhaust PM$_{10}$</th>
<th>Fugitive Dust PM$_{10}$</th>
<th>Total PM$_{10}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Daily Construction Emissions</td>
<td>19.6</td>
<td>25.3</td>
<td>1.0</td>
<td>0.4</td>
<td>1.45</td>
<td>1.1</td>
<td>1.1</td>
<td>2.2</td>
</tr>
<tr>
<td>BAAQMD Thresholds</td>
<td>54.0</td>
<td>54.0</td>
<td>54.0</td>
<td>BMP</td>
<td>NA</td>
<td>82.0</td>
<td>BMP</td>
<td>NA</td>
</tr>
<tr>
<td>Exceed Threshold?</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No*</td>
<td>NA</td>
<td>No</td>
<td>No*</td>
<td>NA</td>
</tr>
</tbody>
</table>

\textsuperscript{*} Would not exceed threshold with implementation of Basic Construction Mitigation Measures (Mitigation Measure AIR-1).

NA = Not Applicable, the BAAQMD does not have threshold

BMP = Best Management Practices


The primary air quality 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

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\textsuperscript{26} Bay Area Air Quality Management District, 2011, op. cit.
shown in Table IV.C-5, construction emissions would not exceed the BAAQMD’s threshold for average daily construction emissions.

The BAAQMD recommends the implementation of Best Management Practices in the form of their suggested Basic Construction Mitigation Measures to reduce construction impacts to a less-than-significant level. To allow the City to enforce and monitor construction activities, mitigation would be required. Implementation of Mitigation Measure AIR-1 would require implementation of the BAAQMD’s Basic Construction Mitigation Measures to reduce diesel PM exhaust emissions and other construction pollutants. Implementation of this mitigation measure would reduce PM emissions to a less-than-significant level. Therefore, impacts associated with the proposed Project’s construction emissions would be less than significant with mitigation.

**Mitigation Measure AIR-1:** Consistent with guidance from the BAAQMD, the Project applicant shall ensure the following Basic Construction Mitigation Measures and Additional Measures are implemented through all 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 track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- 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.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage on this measure shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer’s specifications. All equipment shall be checked by a certified visible emissions evaluator.
- A publicly visible sign with the telephone number and person to contact at the City of Berkeley regarding dust complaints shall be posted. This person shall respond and take corrective action within 48 hours. The BAAQMD’s phone number shall also be visible to ensure compliance with applicable regulations.

Implementation of this mitigation measure would reduce fugitive dust construction period air quality impacts to a less-than-significant level.
Operational Emissions – Regional Emissions Analysis. 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.

According to the Transportation Impact Analysis\textsuperscript{27} prepared for the Project (see Appendix D), the Project is expected to generate approximately 2,050 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 Project operational trip generation, energy and area sources are identified in Table IV.C-6 for ROG, NO\textsubscript{x}, PM\textsubscript{10}, and PM\textsubscript{2.5}. All calculation details are provided in Appendix E. The results indicate the net new Project emissions would not exceed the BAAQMD’s threshold for ROG, NO\textsubscript{x}, PM\textsubscript{2.5} and PM\textsubscript{10}; therefore, the proposed Project would not have a significant effect on regional air quality or result in a violation of air quality standards.

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|c|}
\hline
Emission Category & Reactive Organic Gases (ROG) & Nitrogen Oxides (NO\textsubscript{x}) & PM\textsubscript{10} & PM\textsubscript{2.5} \\
\hline
Emissions in Pounds Per Day & & & & \\
\hline
Area Source Emissions & 8.8 & 0.1 & 0.1 & 0.1 \\
Energy Source & 0.1 & 0.5 & 0.0 & 0.0 \\
Mobile Source Emissions & 6.0 & 13.7 & 7.9 & 2.2 \\
Total Emissions & 14.9 & 14.4 & 8.0 & 2.3 \\
BAAQMD Significance Threshold & 54.0 & 54.0 & 82.0 & 54.0 \\
Exceed? & No & No & No & No \\
\hline
Emissions in Tons Per Year & & & & \\
\hline
Area Source Emissions & 1.5 & 0.0 & 0.0 & 0.0 \\
Energy Source & 0.0 & 0.1 & 0.0 & 0.0 \\
Mobile Source Emissions & 1.0 & 2.3 & 1.3 & 0.4 \\
Total Emissions & 2.5 & 2.4 & 1.3 & 0.4 \\
BAAQMD Significance Threshold & 10.0 & 10.0 & 15.0 & 10.0 \\
Exceed? & No & No & No & No \\
\hline
\end{tabular}
\caption{Project Regional Emissions}
\end{table}


\textsuperscript{27} Kittelson & Associates, Inc., 2016. 1900 Fourth Street Transportation Impact Analysis. August.
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.C-2.

As shown in Table IV.C-6 the primary source of emissions associated with the Project are mobile source emissions (except for ROG, of 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 Criteria Pollutant. Other land use development projects within the Bay Area and within the City of Berkeley contribute to regional air pollution emissions. 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, the proposed Project would result in a cumulatively significant impact.\(^{28}\)

Development projects occurring within West Berkeley could contribute to a future cumulative air quality impact. These projects are all subject to environmental review and would be required to be consistent with the BAAQMD Clean Air Plan.

As shown in Table IV.C-6, implementation of the Project would not exceed operational thresholds for criteria 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) Odors. During construction, the various diesel powered vehicles and equipment in use on-site would create localized odors. In addition, excavation may unearth rotting vegetation due to the site’s past location within a marshland. 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. In addition, the proposed uses that would be developed within the Project site are not expected to produce any offensive odors that would result in frequent odor complaints. A public records request to the BAAQMD, which included potential complaints from nearby off-site residents, revealed no odor complaints at the existing Project site from 2012 to 2015.

\(^{28}\) Bay Area Air Quality Management District, 2011, op. cit.
However, two industrial facilities, Pacific Steel Casting and American Soil, are located near the Project site. Pacific Steel Casting is located approximately 0.7 mile north of the Project site and American Soil is located approximately 0.5 mile south of the Project site. Odors from these facilities could be detected at the Project site; however, since there are no confirmed odor complaints recorded at the Project site, this impact would be less than significant.

Exposing Sensitive Receptors to Substantial Pollutant Concentrations. 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 µg/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 µg/m$^3$ on an annual average basis.

To determine the health risks associated with the Project to both on and off-site receptors, a health risk assessment (HRA) was conducted for this Project based on three current guidance documents: 1) the California EPA Air Toxics Hot Spots Program Risk Assessment Guidelines, 2) the California Air Pollution Control Officers Association (CAPCOA) Health Risk Assessment for Proposed Land Use Projects, and 3) the BAAQMD Recommended Methods for Screening and Modeling Local Risks and Hazards. 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, and it provides Bay Area-specific guidance on how to screen projects and provides specific inputs for HRA modeling.

This section describes the potential impact on sensitive receptors from construction and operation of the proposed Project.

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 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.

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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 CalEEMod. On-road mobile source emissions were calculated using the ARB’s EMFAC2014 system in conjunction with VMT. Modeled construction equipment emissions are based on the equipment list provided to LSA by the Project applicant that is included in Appendix E. 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 construction assumptions, including hourly and daily equipment usage for each phase of construction, as shown in Appendix E. The total emissions from construction activities were then modeled using conservative construction conditions to determine an average emission concentration. The resulting modeled concentrations represent the maximum emission concentration that would result at off-site receptor locations.

Construction Receptor Grid. A survey of the Project vicinity indicated that the closest sensitive receptors are located approximately 120 feet from the Project site. A construction receptor grid was established as part of the modeling effort to capture locations representing existing off-site resident and worksite 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) when conducting refined modeling. Therefore, in order to conduct a cautious impact analysis that is protective of human health, a reasonable worst-case 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 calculate the probability or risk of cancer associated

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32 Ibid.
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 Assessment (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. For the purposes of HRAs, conservative values are used to determine maximum risk level, which takes into consideration the most sensitive individuals. The RELs also have an uncertainty factor applied to them to ensure that the general population is being protected. The scientific community does not have precise evidence as to what is the exposure level for specific individuals that would result in an adverse effect in response to a given compound.

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. As recommended by OEHHA, the breathing rate 95 percentile for each age in liters per kilogram per day was used. The exposure frequency was assumed to be 350 days per year. To be conservative, the exposure duration for Project construction was assumed to be two 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).

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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 an ASF of 10 for construction projects to account for exposure from the third trimester to age 2. After reaching age 2, the ASF is reduced to 3, until the resident child reaches age 16.

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 using the ARB’s HARP2 program. 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 µg/m³. 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:

\[
\text{Inhalation chronic risk} = \frac{C_{\text{air}}}{\text{Inhalation Chronic REL}}
\]

where:

\[
C_{\text{air}} = \text{annual concentration of DPM}
\]

\[
\text{Inhalation Chronic REL} = 5.0
\]

This calculation was 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. Both acute and chronic inhalation hazard index were estimated using the ARB’s HARP2 program.

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 PM2.5 concentra-
tions are shown in Table IV.C-7. The results for acute and chronic impacts are also shown in Table IV.C-7. AERMOD model inputs and results for all height levels for construction of the Project are included in Appendix E. 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 BAAQMD, and this impact would be less than significant.

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

<table>
<thead>
<tr>
<th>Carcinogenic Inhalation Health Risk in One Million with ASF</th>
<th>Chronic Inhalation Hazard Index</th>
<th>Acute Inhalation Hazard Index</th>
<th>Annual PM$_{2.5}$ Concentration ($\mu g/m^3$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Exposed Individual Location</td>
<td>5.42</td>
<td>0.0077</td>
<td>0.0</td>
</tr>
<tr>
<td>BAAQMD Threshold</td>
<td>&gt;10.0 in one million</td>
<td>&gt;1.0</td>
<td>&gt;1.0</td>
</tr>
<tr>
<td>Exceed?</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

ASF = Age Sensitivity Factors


Results of the analysis indicate that the highest risk during construction would be a risk level of 5.42 in one million for the maximally exposed residents located approximately 120 feet south/southeast of the Project site. This analysis conservatively assumed the resident to be an infant during the construction period and therefore assumed the ASF to be 10 until the resident reached age 2, when the ASF is 3. This risk level is below the threshold of 10 in one million. The Chronic Hazard Index would be 0.0077 which is below the threshold of 1.0.

The acute inhalation Hazard Index threshold for non-carcinogenic TACs is 1.0. As shown in Table IV.C-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 east of the Project site would be 0.068 $\mu g/m^3$, which is also below the BAAQMD’s significance threshold of 0.3 $\mu g/m^3$.

Based on the results of the construction HRA, construction of the proposed Project would not result in the exposure of sensitive receptors in the Project vicinity to substantial pollutant concentrations to a significant degree and this impact would be less than significant.

Project Operation – Toxic Air Contaminants. The project would develop residential and commercial uses that would not result in the generation of toxic air contaminants. Therefore, the project would not expose sensitive receptors to substantial pollutant concentrations.

c. Project Exposure to Existing Air Pollutant Concentrations. 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. Per the previous description of CBIA v. BAAQMD, this section provides for informa-
tional purposes an evaluation of the environment's impacts on the Project including an assessment of the Project's potential to expose future residents of the site to substantial pollutant concentrations by individual exposure to the existing sources of toxic air contaminants in the project vicinity. The potential impacts were evaluated against the suggested BAAQMD thresholds for informational purposes.

**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 and 40 feet north of University Avenue. The site would also be located adjacent to an existing rail line. LSA conducted a health risk assessment for these sources following the dispersion and risk calculation methodology outlined in the construction health risk assessment above, for emissions generated from I-80, University Avenue, and the railroad tracks and determined the contribution of PM$_{2.5}$ concentration on the Project site would be 0.072 µg/m$^3$ which is below the suggested BAAQMD's threshold of 0.30 µg/m$^3$.

**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. The stationary source analysis evaluated the 70-year exposure risk levels from permitted sources in the Project vicinity, using the toxic air contaminant emissions reported to the BAAQMD by the stationary sources identified in the Project vicinity. 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, the BAAQMD identified five sources of emissions that were within 1,000 feet of the Project site, two of which are gas stations and one of which is a generator. The results of the stationary source analysis are presented in Table IV.C-8. Following BAAQMD guidance, the stationary sources were scaled for distance using the BAAQMD’s Gasoline Dispensing Facility (GDF) Distance Multiplier Tool and Diesel Internal Combustion (IC) Engine Distance Multiplier Tool, both of which are shown in Appendix E of this EIR.

**Table IV.C-8: Stationary and Roadway TAC Sources Within 1,000 Feet of the Project Site**

<table>
<thead>
<tr>
<th>Facility ID</th>
<th>Plant ID</th>
<th>Stationary Source (address &amp; name)</th>
<th>Distance (feet)</th>
<th>Adjusted Risk (in one million)</th>
<th>PM$_{2.5}$ Conc. (µg/m$^3$)</th>
<th>Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>588</td>
<td>7616</td>
<td>2070 2nd Street, Berkeley Body Shop</td>
<td>538</td>
<td>0.00</td>
<td>0.005</td>
<td>0.002</td>
</tr>
<tr>
<td>1952</td>
<td>5278</td>
<td>708 Addison Street, Takara Sake USA Inc.</td>
<td>621</td>
<td>0.04</td>
<td>0.119</td>
<td>0.000</td>
</tr>
<tr>
<td>2082</td>
<td>G121</td>
<td>833 University Ave., University Arco (gas station)</td>
<td>752</td>
<td>0.89</td>
<td>n/a</td>
<td>0.001</td>
</tr>
<tr>
<td>2093</td>
<td>G1198 4</td>
<td>849 University Ave., Unocal #3185 (gas station)</td>
<td>907</td>
<td>0.23</td>
<td>n/a</td>
<td>0.000</td>
</tr>
<tr>
<td>433</td>
<td>14067</td>
<td>1725 Eastshore Highway, Kaiser Permanente Berkeley Campus (generator)</td>
<td>967</td>
<td>1.17</td>
<td>0.003</td>
<td>0.014</td>
</tr>
</tbody>
</table>

I-80, University Avenue, and Railroad Tracks: 0.95 0.072 0.002

Total Health Risk: 3.28 0.199 0.019

Suggested BAAQMD Cumulative Threshold: 100 in a million 0.80 10.0

Exceed? (Yes/No): No No No

Results of the stationary source analysis indicate that sources in the Project vicinity would not exceed the suggested stationary source threshold for risk and hazard at the individual or cumulative level. Therefore, future residents of the Project site would not be exposed to a substantial increase in health risk impacts from stationary sources of toxic air contaminants in the project vicinity. As noted above, this analysis is provided for informational purposes; however, it should be noted that additional measures would not be necessary to protect public health from existing environmental conditions.

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.C-8 above. Future residents of the Project site would not be exposed to cumulative TAC emissions from nearby sources in excess of the suggested BAAQMD thresholds. Therefore, future residents of the Project site would not be exposed to substantial cumulative health risk impacts. This impact was considered for informational purposes, however, based on the findings of this analysis it is determined that it would not be necessary for the City to require measures that would reduce the public health risk at this location.

d. 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 Berkeley, the proposed Project would result in a cumulatively significant impact.\(^{35}\)

As shown in Table IV.C-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.C-7, the Project would not exceed the City’s cumulative threshold for cumulative toxic air contaminants during the construction period.

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 such that no single Project is sufficient in size to independently create regional air quality impacts. Therefore, the Project would be considered a less-than-significant cumulative impact.

\(^{35}\) Bay Area Air Quality Management District, 2011, op. cit.
D. NOISE AND VIBRATION

This section describes existing noise and vibration conditions, discusses the characteristics of sound, sets forth criteria for determining the significance of noise and vibration impacts, and estimates the potential noise and vibration impacts of the proposed Project. Mitigation measures are identified, as necessary, to address significant environmental impacts. Noise modeling data is provided in Appendix F.

1. Setting

This noise assessment follows noise-related regulatory framework at the City, State, and federal levels. This section describes the fundamentals of noise, the applicable regulatory framework, and the existing noise and vibration setting within the City of Berkeley.

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 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).

(1) 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

---

\(^1\) 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.
convenient and manageable level. Thus, a 10 dBA (see below for a description of 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 source is physically configured. Noise levels from a single-point source, such as a single piece of construction equipment operating 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.D-1 contains a list of typical acoustical terms and definitions. Table IV.D-2 shows some representative noise sources and their corresponding noise levels in dBA.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decibel, dB</td>
<td>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.</td>
</tr>
<tr>
<td>Frequency, Hz</td>
<td>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).</td>
</tr>
<tr>
<td>A-Weighted Sound Level, dBA</td>
<td>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.</td>
</tr>
<tr>
<td>$L_{01}$, $L_{10}$, $L_{50}$, $L_{90}$</td>
<td>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.</td>
</tr>
<tr>
<td>Equivalent Continuous Noise Level, $L_{eq}$</td>
<td>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.</td>
</tr>
<tr>
<td>Community Noise Equivalent Level, CNEL</td>
<td>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.</td>
</tr>
<tr>
<td>Day/Night Noise Level, $L_{dn}$</td>
<td>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.</td>
</tr>
<tr>
<td>$L_{max}$, $L_{min}$</td>
<td>The maximum and minimum A-weighted sound levels measured on a sound level meter, during a designated time interval, using fast time averaging.</td>
</tr>
<tr>
<td>Ambient Noise Level</td>
<td>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.</td>
</tr>
<tr>
<td>Intrusive</td>
<td>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.</td>
</tr>
</tbody>
</table>

Table IV.D-2: Common Sound Levels and Noise Sources

<table>
<thead>
<tr>
<th>Common Outdoor Sound Levels</th>
<th>Noise Level (dBA)</th>
<th>Common Indoor Sound Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial Jet Flyover at 1000 Feet</td>
<td>110</td>
<td>Rock Band</td>
</tr>
<tr>
<td>Gas Lawn Mower at 3 Feet</td>
<td>100</td>
<td>Inside Subway Train (New York)</td>
</tr>
<tr>
<td>Diesel Truck at 50 Feet</td>
<td>90</td>
<td>Food Blender at 3 Feet</td>
</tr>
<tr>
<td>Concrete Mixer at 50 Feet</td>
<td>80</td>
<td>Garbage Disposal at 3 Feet</td>
</tr>
<tr>
<td>Air Compressor at 50 Feet</td>
<td>70</td>
<td>Shouting at 3 Feet</td>
</tr>
<tr>
<td>Lawn Tiller at 50 Feet</td>
<td>60</td>
<td>Vacuum Cleaner at 10 Feet</td>
</tr>
<tr>
<td>Quiet Urban Daytime</td>
<td>50</td>
<td>Normal Speech at 3 Feet</td>
</tr>
<tr>
<td>Quiet Urban Nighttime</td>
<td>40</td>
<td>Large Business Office</td>
</tr>
<tr>
<td>Quiet Suburban Nighttime</td>
<td>30</td>
<td>Dishwasher Next Room</td>
</tr>
<tr>
<td>Quiet Rural Nighttime</td>
<td>20</td>
<td>Small Theater, Large Conference Room (Background)</td>
</tr>
<tr>
<td>Source: Compiled by LSA Associates, Inc., 2016.</td>
<td></td>
<td>Library</td>
</tr>
</tbody>
</table>

Noise can be quantified based on various time periods and ratings. Ambient noise quantification for humans accounts for the annoying effects of sound in the equivalent continuous sound level (Leq), which is the total sound energy of time varying noise over a sample period. However, the predominant rating scales for communities in the State of California are the Leq, the community noise equivalent level (CNEL), and the day-night average level (Ldn) 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 Leq 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). Ldn is similar to the CNEL scale, but without the adjustment for events occurring during the evening relaxation hours. CNEL and Ldn are within one dBA of each other and are normally exchangeable. The noise adjustments are added to the noise events occurring during the more sensitive hours.

Other noise rating scales when assessing the annoyance factor include the maximum noise level (Lmax), 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 $L_{\text{max}}$ for short-term noise impacts. $L_{\text{max}}$ reflects peak operating conditions, and addresses the annoying aspects of intermittent noise.

Noise impacts can be described in three categories. The first is audible impacts that refer to increases in noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3 dBA or greater, since 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 and 3 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 dBA that are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

(2) Physiological Effects of Noise. According to the U.S. Department of Housing and Urban Development’s 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.

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.

b. 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,

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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 noise levels, the unit is written as “VdB.” Human perception to vibration starts at levels as low as 67 VdB and sometimes lower. Annoyance due to vibration in residential settings starts at approximately 70 VdB. Groundborne vibrations 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. Common sources of groundborne vibration include trains and construction activities such as blasting, pile driving and operating heavy earthmoving equipment. Table IV.D-3 shows the groundborne vibration impact criteria.

Table IV.D-3: Groundborne Vibration Impact Criteria

<table>
<thead>
<tr>
<th>Land Use Category</th>
<th>Groundborne Vibration Levels (VdB re 1 micro-inch/second)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequent Events (^a)</td>
</tr>
<tr>
<td>Category 1: Buildings where vibration would interfere with interior operations.</td>
<td>65 VdB</td>
</tr>
<tr>
<td>Category 2: Residences and buildings where people normally sleep.</td>
<td>72 VdB</td>
</tr>
<tr>
<td>Category 3: Institutional land uses with primarily daytime use.</td>
<td>75 VdB</td>
</tr>
</tbody>
</table>

Notes:
\(^a\) “Frequent Events” is defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category.
\(^b\) “Occasional Events” is defined as between 30 and 70 vibration events of the same source per day. Most commuter rail lines have this many operations.
\(^c\) “Infrequent Events” is defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines.

The Category 1 criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration sensitive manufacturing or research should always require detailed evaluation to define the acceptable vibration levels. Ensuring low vibration levels in a building requires special design of HVAC systems and stiffened floors.


Typical vibration source levels from construction equipment are shown in Table IV.D-4. Although the table gives one level for each piece of equipment, it should be noted that there is a considerable variation in reported ground vibration levels from construction activities. The data provides a reasonable estimate for a wide range of soil conditions. For buildings considered of particular historical significance or that are particularly fragile structures, the damage threshold is approximately 96 VdB; the damage threshold for other structures is 100 VdB.\(^5\) According to the FTA, ground-borne vibration levels exceeding 0.2 inches per second peak particle velocity (PPV) would have the potential to result in superficial or

cosmetic damage to some buildings. A vibration level of 0.12 inches per second is the level at which there is virtually no risk resulting in architectural damage to buildings extremely susceptible to vibration damage.

c. Regulatory Framework. The following section summarizes the regulatory framework related to noise, including federal, State and City of Berkeley plans, policies and standards.

Table IV.D-4: Typical Vibration Source Levels for Construction Equipment

<table>
<thead>
<tr>
<th>Equipment</th>
<th>PPV at 25 feet (in/sec)</th>
<th>Approximate VdB at 25 feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pile Driver (impact)</td>
<td>Upper range</td>
<td>1.518</td>
</tr>
<tr>
<td></td>
<td>Typical</td>
<td>0.644</td>
</tr>
<tr>
<td>Pile Driver (sonic)</td>
<td>Upper range</td>
<td>0.734</td>
</tr>
<tr>
<td></td>
<td>Typical</td>
<td>0.170</td>
</tr>
<tr>
<td>Clam shovel drop (slurry wall)</td>
<td>0.202</td>
<td>94</td>
</tr>
<tr>
<td>Hydromill (slurry wall)</td>
<td>In soil</td>
<td>0.008</td>
</tr>
<tr>
<td></td>
<td>In rock</td>
<td>0.017</td>
</tr>
<tr>
<td>Vibratory roller</td>
<td></td>
<td>0.210</td>
</tr>
<tr>
<td>Hoe ram</td>
<td></td>
<td>0.089</td>
</tr>
<tr>
<td>Large bulldozer</td>
<td></td>
<td>0.089</td>
</tr>
<tr>
<td>Caisson drilling</td>
<td></td>
<td>0.089</td>
</tr>
<tr>
<td>Loaded trucks</td>
<td></td>
<td>0.076</td>
</tr>
<tr>
<td>Jackhammer</td>
<td></td>
<td>0.035</td>
</tr>
<tr>
<td>Small bulldozer</td>
<td></td>
<td>0.003</td>
</tr>
</tbody>
</table>

Notes: PPV= peak particle velocity; in/sec= inches per second


Table IV.D-5: Summary of EPA Noise Levels

<table>
<thead>
<tr>
<th>Effect</th>
<th>Level</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hearing loss</td>
<td>( L_{eq}(24) \leq 70 ) dB</td>
<td>All areas.</td>
</tr>
<tr>
<td>Outdoor activity interference and annoyance</td>
<td>( L_{dn} \leq 55 ) dB</td>
<td>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.</td>
</tr>
<tr>
<td>( L_{eq}(24) \leq 55 ) dB</td>
<td>Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.</td>
<td></td>
</tr>
<tr>
<td>Indoor activity interference and annoyance</td>
<td>( L_{dn} \leq 45 ) dB</td>
<td>Indoor residential areas. Other indoor areas with human activities such as schools, etc.</td>
</tr>
</tbody>
</table>


---

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. Referred to as the State Noise Insulation Standard, it requires buildings to meet performance standards through design and/or building materials that would offset any noise source in the vicinity of the receptor. State regulations include requirements for the construction of new hotels, motels, apartment houses, and dwellings other than detached single-family dwellings that are intended to limit the extent of noise transmitted into habitable spaces. These requirements are found in the California Code of Regulations, Title 24 (known as the Building Standards Administrative Code), Part 2 (known as the California Building Code), Appendix Chapters 12 and 12A. For limiting noise transmitted between adjacent dwelling units, the noise insulation standards specify the extent to which walls, doors, and floor ceiling assemblies must block or absorb sound. For limiting noise from exterior noise sources, the noise insulation standards set an interior standard of 45 dBA CNEL in any habitable room with all doors and windows closed. In addition, the standards require preparation of an acoustical analysis demonstrating the manner in which dwelling units have been designed to meet this interior standard, where such units are proposed in an area with exterior noise levels greater than 60 dBA CNEL.

(3) **City of Berkeley General Plan.** The Environmental Management Element of the City’s General Plan addresses excessive noise. Major noise sources in Berkeley include transportation, industrial plant noise, and activities associated with neighborhoods. The City’s Noise Ordinance sets limits for permissible daytime noise levels, it however does not recognize residents living in non-residential zones, such as West Berkeley. The Environmental Management Element provides policies and actions to protect the community from excessive noise levels. Policies and actions applicable to the proposed Project are as follows:

- **Policy EM-43:** Noise Reduction. Reduce significant noise levels and minimize sources of noise.
- **Policy EM-44:** Noise Prevention and Elimination. Protect public health and welfare by eliminating existing noise problems where feasible and by preventing significant future degradation of the acoustic environment.

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**Table IV.D-6: Summary of Human Effects in Areas Exposed to 55 dBA L_{dn}**

<table>
<thead>
<tr>
<th>Type of Effects</th>
<th>Magnitude of Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech – Indoors</td>
<td>100 percent sentence intelligibility (average) with a 5 dB margin of safety.</td>
</tr>
<tr>
<td>Speech – Outdoors</td>
<td>100 percent sentence intelligibility (average) at 1.4 feet.</td>
</tr>
<tr>
<td></td>
<td>99 percent sentence intelligibility (average) at 3.2 feet.</td>
</tr>
<tr>
<td></td>
<td>95 percent sentence intelligibility (average) at 11.5 feet.</td>
</tr>
<tr>
<td>Average Community Reaction</td>
<td>None evident; 7 dB below level of significant complaints and threats of legal action and at least 16 dB below “vigorous action.”</td>
</tr>
<tr>
<td>Complaints</td>
<td>1 percent dependent on attitude and other non-level related factors.</td>
</tr>
<tr>
<td>Annoyance</td>
<td>17 percent dependent on attitude and other non-level related factors.</td>
</tr>
<tr>
<td>Attitude Towards Area</td>
<td>Noise essentially the least important of various factors.</td>
</tr>
</tbody>
</table>


---

• **Policy EM-45**: Traffic Noise. Work with local and regional agencies to reduce local and regional traffic, which is the single largest source of unacceptable noise in the city.

• **Policy EM-46**: Noise Mitigation. Require operational limitations and all feasible noise buffering for new uses that generate significant noise impacts near residential, institutional, or recreational uses.

• **Policy EM-47**: Land Use Compatibility. Ensure that noise-sensitive uses, including, but not limited, to residences, child-care centers, hospitals, and nursing homes, are protected from detrimental noise levels.

• **Action EM-47-A**: Noise-sensitive development proposals should be reviewed with respect to the Land Use Compatibility Guidelines below.

If the noise level is within the "normally acceptable" level, noise exposure would be acceptable for the intended land use. Development may occur without requiring an evaluation of the noise environment unless the use could generate noise impacts on adjacent uses.

If the noise level is within the "conditionally acceptable" level, noise exposure would be conditionally acceptable; a specified land use may be permitted only after detailed analysis of the noise environment and the Project characteristics to determine whether noise insulation or protection features are required. Such noise insulation features may include measures to protect noise-sensitive outdoor activity areas (e.g., at residences, schools, or parks) or may include building sound insulation treatments such as sound-rated windows to protect interior spaces in sensitive receptors.

If the noise level is within the "unacceptable" level, new construction or development should not be undertaken unless all feasible noise mitigation options have been analyzed and appropriate mitigations incorporated into the Project to reduce exposure of people to unacceptable noise levels.

**Table IV.D-7: Noise and Land Use Compatibility Guidelines**

<table>
<thead>
<tr>
<th>Land Use Category</th>
<th>Exterior Noise Exposure ($L_{dn}$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>55</td>
</tr>
<tr>
<td>Residential, Hotels, and Motels</td>
<td></td>
</tr>
<tr>
<td>Outdoor Sports and Recreation, Neighborhood Parks and Playgrounds</td>
<td></td>
</tr>
<tr>
<td>Schools, Libraries, Museums, Hospitals, Personal Care, Meeting Halls, Churches</td>
<td></td>
</tr>
<tr>
<td>Office Buildings, Business Commercial and Professional</td>
<td></td>
</tr>
<tr>
<td>Auditoriums, Concert Halls, Amphitheaters</td>
<td></td>
</tr>
</tbody>
</table>

**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.

**CONDITIONALLY ACCEPTABLE**: Specific land use may be permitted only after detailed analysis of the noise reduction requirements and needed noise insulation features have been incorporated.

**UNACCEPTABLE**: New construction or development should generally not be undertaken unless all feasible noise mitigation options have been analyzed and appropriate mitigations incorporated into the Project to reduce exposure of people to unacceptable noise levels.


The City’s exterior and interior noise limits are shown in Table IV.D-8. The hourly noise level standards vary based on the receiving land use type and the time period. In order to assess intermittent or maximum noise levels, the time weighted noise level additions presented in Section 13.40.050 and described in further detail below, should be applied.

Table IV.D-8: Exterior and Interior Noise Limits

<table>
<thead>
<tr>
<th>Zoning District</th>
<th>Time Period</th>
<th>Hourly Noise Level (dBA L eq)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exterior Noise Limits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R-1, R-2, R-1A, R-2A, and ESR</td>
<td>7:00 a.m. – 10:00 p.m.</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>10:00 p.m. – 7:00 a.m.</td>
<td>45</td>
</tr>
<tr>
<td>R-3 and above</td>
<td>7:00 a.m. – 10:00 p.m.</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>10:00 p.m. – 7:00 a.m.</td>
<td>55</td>
</tr>
<tr>
<td>Commercial</td>
<td>7:00 a.m. – 10:00 p.m.</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>10:00 p.m. – 7:00 a.m.</td>
<td>60</td>
</tr>
<tr>
<td>Industry</td>
<td></td>
<td>70</td>
</tr>
<tr>
<td>Interior Noise Limits</td>
<td>Anytime</td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>7:00 a.m. – 10:00 p.m.</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>10:00 p.m. – 7:00 a.m.</td>
<td>40</td>
</tr>
</tbody>
</table>

Source: Berkeley, City of, 2014.

The following exterior noise standards are outlined in BMC Section 13.40.050:

A. Maximum permissible sound levels shall be determined by the zoning district of the property subject to the noise, not the property from which the noise originates.

1. The noise standards for the various categories of land use in Table IV.D-8 shall, unless otherwise specifically indicated in other codes, apply to all such property within a designated zone.

2. No person shall operate or cause to be operated any source of sound at any location within the incorporated City or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the sound level when measured on any other property to exceed:

   a. The noise standard for that land use as specified in Table IV.D-8 for a cumulative period of more than 30 minutes in any hour; or

   b. The noise standard for that land use as specified in Table IV.D-8 plus 5 dBA for a cumulative period of more than 15 minutes in any hour; or

   c. The noise standard for that land use as specified in Table IV.D-8 plus 10 dBA for a cumulative period of more than 5 minutes in any hour; or
d. The noise standard for that land use as specified in Table IV.D-8 plus 15 dBA for a cumulative period of more than 1 minute in any hour; or

e. The noise standard for that land use as specified in Table IV.D-8 plus 20 dBA for any period of time.

The following interior noise standards are outlined in BMC Section 13.40.060:

2. No person shall operate or cause to be operated within a multi-family dwelling unit any source of sound or allow the creation of any noise which causes the sound level when measured inside a neighboring dwelling unit to exceed:

a. The noise standard as specified in Table IV.D-8 for a cumulative period of more than 5 minutes in any hour; or

b. The noise standard as specified in Table IV.D-8 plus 5 dBA for a cumulative period of more than one minute in any hour; or

c. The noise standard as specified in Table IV.D-8 plus 10 dBA for any period of time.

BMC Section 13.40.070 restricts construction activities to weekdays between the hours of 7:00 a.m. and 7:00 p.m. and on weekends and holidays, between 9:00 a.m. and 8:00 p.m., except for emergency work. Construction activities are divided into two categories: mobile equipment and stationary equipment. Mobile equipment, as defined by the Section 13.40.070, would be sound levels for nonscheduled, intermittent, short-term operation of less than 10 days of jackhammers, drills, saws, sander grinder, etc. Stationary equipment, according to the Section 13.40.070, would be repetitively scheduled and relatively long term operation for longer than 10 days of stationary equipment. For purposes of the proposed Project’s construction schedule, the construction impacts would be considered stationary equipment such that construction would last longer than 10 days. Where technically and economically feasible, construction activities shall be conducted in such a manner that maximum sound levels at affected properties will not exceed those listed in Table IV.D-9 below.

**Table IV.D-9: Maximum Stationary Equipment Construction Noise Levels (dBA)**

<table>
<thead>
<tr>
<th>Construction Periods</th>
<th>R-1, R-2 Residential</th>
<th>R-3 and above Multi-Family Residential</th>
<th>Commercial/Industrial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekdays 7:00 a.m. to 7:00 p.m.</td>
<td>60</td>
<td>65</td>
<td>70</td>
</tr>
<tr>
<td>Weekends 9:00 a.m. to 8:00 p.m. and legal holidays</td>
<td>50</td>
<td>55</td>
<td>60</td>
</tr>
</tbody>
</table>

Note: Identified maximum noise levels are required where technically and economically feasible.

Source: Berkeley, City of, 2014.
(5) **West Berkeley Plan.** The West Berkeley Plan was developed in 1993 to reinforce the dynamic mix of industrial, office, arts and crafts, residential, retail and institutional activities in West Berkeley. The Environmental Quality Element’s goals and policies follow the strategies included in the Land Use and Transportation Elements and address five specific areas of concern, one of which is noise.

The West Berkeley Plan describes noise pollution as a problem of contamination of the ambient environment. The West Berkeley Plan aspires to reduce irritating noise by mitigating existing noise conflicts and preventing the development of future noise conflicts. The following policies are included to work towards this goal and are applicable to the proposed Project:

- **Policy 6.1:** To the extent feasible, separate noise emitters from sensitive receptors.
- **Policy 6.2:** Develop performance standards for new uses.
- **Policy 6.3:** Investigate problem noise sources and develop appropriate solutions through negotiation or enforcement.
- **Policy 6.5:** Construct sound walls around freeways where feasible.

**d. Existing Noise Environment.** The Project site is bound by Fourth Street to the east, University Avenue to the south, the Union Pacific Railroad (UPRR) tracks to the west, and Hearst Avenue to the north. The site is located two blocks east of the Interstate 80 (I-80) and I-580 entrance and exit ramps. The Berkeley Amtrak station is located just south of the Project site. Beyond these travel corridors are predominantly commercial, manufacturing, and residential uses. Restaurants, retail and office uses within the Fourth Street shopping district are located adjacent to the Project site. The following section describes the existing noise environment and identifies primary noise sources in the vicinity of the Project site.

(1) **Existing Ambient Noise Levels.** The ambient noise environment in the City of Berkeley is impacted by a variety of sources, including stationary sources, traffic, rail, and airport. To assess existing noise levels at the Project site, LSA conducted five short-term (15-minute) noise measurements and one long-term (48-hour) noise measurement on the Project site. Monitoring locations are shown in Figure IV.D-1. On February 5, 2016, the short-term measurements (identified as ST-1 through ST-5) were recorded at different locations on-site between 9:58 a.m. and 11:25 a.m. Noise measurement data collected during short-term monitoring is summarized in Table IV.D-10. The meteorological conditions at the time of noise monitoring are shown in Table IV.D-11. The short-term noise measurements show that ambient noise in the Project site vicinity ranges from approximately 77.5 dBA to 85.0 dBA Leq.

The long-term noise measurement (identified as LT-1) was recorded from March 16, 2016 to March 18, 2016 at a height of approximately 30 feet above ground elevation in order to assess noise levels experienced at height with an unobstructed view of University Avenue.

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9 Ibid.
The results of the long term measurements are shown in Table IV.D-12 and show that daily average noise levels were 83.6 $L_{dn}$ and 82.2 $L_{dn}$, respectively. Traffic on surrounding roadways and trains passing were reported as the primary noise sources at the Project site. Based on a review of the data gathered from the long-term noise measurements, approximately 55 trains passed by each day.

**Table IV.D-10: Short-Term Ambient Noise Monitoring Results, dBA**

<table>
<thead>
<tr>
<th>Location Number</th>
<th>Location Description</th>
<th>Start Time</th>
<th>$L_{eq}$</th>
<th>$L_{max}$</th>
<th>$L_{min}$</th>
<th>Primary Noise Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST-1</td>
<td>Southeast corner of Project site</td>
<td>9:58 a.m.</td>
<td>77.5</td>
<td>87.1</td>
<td>69.7</td>
<td>Traffic on surrounding roadways</td>
</tr>
<tr>
<td>ST-2</td>
<td>Southwest corner of Project site</td>
<td>10:17 a.m.</td>
<td>81.9</td>
<td>101.2</td>
<td>69.7</td>
<td>Traffic on surrounding roadways, trains passing</td>
</tr>
<tr>
<td>ST-3</td>
<td>Northwest corner of Project site</td>
<td>10:35 a.m.</td>
<td>81.1</td>
<td>105.0</td>
<td>63.8</td>
<td>Traffic on surrounding roadways, train passing, industrial noise, parking lot noise</td>
</tr>
<tr>
<td>ST-4</td>
<td>Northeast corner of Project site</td>
<td>10:53 a.m.</td>
<td>78.5</td>
<td>92.7</td>
<td>64.5</td>
<td>Traffic on surrounding roadways, train passing, parking lot noise</td>
</tr>
<tr>
<td>ST-5</td>
<td>Center of Project site</td>
<td>11:10 a.m.</td>
<td>85.0</td>
<td>103.6</td>
<td>69.1</td>
<td>Traffic on surrounding roadways, train passing</td>
</tr>
</tbody>
</table>

$^{a}L_{eq}$ represents the average of the sound energy occurring over the 15-minute time period.

$^{b}L_{max}$ is the highest instantaneous sound level measured during the 15-minute time period.

$^{c}L_{min}$ is the lowest instantaneous sound level measured during the 15-minute time period.


**Table IV.D-11: Meteorological Conditions During Ambient Noise Monitoring**

<table>
<thead>
<tr>
<th>Location Number</th>
<th>Maximum Wind Speed (mph)</th>
<th>Average Wind Speed (mph)</th>
<th>Temperature (ºF)</th>
<th>Relative Humidity (%)</th>
<th>Sky Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST-1</td>
<td>2.5</td>
<td>0.9</td>
<td>61.2</td>
<td>68</td>
<td>Sunny and clear</td>
</tr>
<tr>
<td>ST-2</td>
<td>2.1</td>
<td>0.9</td>
<td>62.8</td>
<td>56</td>
<td>Sunny and clear</td>
</tr>
<tr>
<td>ST-3</td>
<td>4.4</td>
<td>0.9</td>
<td>57.4</td>
<td>48</td>
<td>Sunny and clear</td>
</tr>
<tr>
<td>ST-4</td>
<td>1.8</td>
<td>0.8</td>
<td>68.8</td>
<td>45</td>
<td>Sunny and clear</td>
</tr>
<tr>
<td>ST-5</td>
<td>6.5</td>
<td>2.8</td>
<td>66.0</td>
<td>60</td>
<td>Sunny and clear</td>
</tr>
</tbody>
</table>


**Table IV.D-12: Long-Term Ambient Noise Monitoring Results, dBA**

<table>
<thead>
<tr>
<th>Location Number</th>
<th>Location Description</th>
<th>Day</th>
<th>Daytime Noise Levels (dBA Leq)</th>
<th>Evening Noise Levels (dBA Leq)</th>
<th>Nighttime Noise Levels (dBA Leq)</th>
<th>$L_{dn}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>LT-1 Day 1</td>
<td>Southwest corner of Project site</td>
<td>March 16, 2016</td>
<td>70.1 - 77.5</td>
<td>69.0 – 77.6</td>
<td>66.3 – 80.1</td>
<td>83.6</td>
</tr>
<tr>
<td>LT-1 Day 2</td>
<td>Southwest corner of Project site</td>
<td>March 17, 2016</td>
<td>70.1 - 77.5</td>
<td>72.1 – 79.0</td>
<td>63.5 – 78.0</td>
<td>82.2</td>
</tr>
</tbody>
</table>

This page intentionally left blank.
(2) **Existing Groundborne Vibration Noise Levels.** The proposed Project site has the potential to experience groundborne vibration impacts from the adjacent rail activity located to the west, for which the centerline is approximately 50 feet from the proposed building façade. On March 16, 2016 vibration measurements were gathered at the location of the closest proposed building façade during seven different train passbys. The results of the measurements indicate that vibration levels range from 67.2 to 85.4 VdB depending on the type of train (freight or passenger), speed and length of train, and existing surface. The highest vibration levels were measured during freight train passbys as compared to passenger train passbys as shown in Table IV.D-13. The location of the vibration measurements are shown in Figure IV.D-1.

<table>
<thead>
<tr>
<th>Measurement Number</th>
<th>Train Type</th>
<th>Measurement Location</th>
<th>Vibration Level (VdB)</th>
<th>Vibration Level (in/sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VM-1</td>
<td>Passenger</td>
<td>VL-1</td>
<td>80.6</td>
<td>0.011</td>
</tr>
<tr>
<td>VM-2</td>
<td>Freight</td>
<td>VL-1</td>
<td>85.4</td>
<td>0.019</td>
</tr>
<tr>
<td>VM-3</td>
<td>Freight</td>
<td>VL-2</td>
<td>82.8</td>
<td>0.014</td>
</tr>
<tr>
<td>VM-4</td>
<td>Passenger</td>
<td>VL-2</td>
<td>73.1</td>
<td>0.005</td>
</tr>
<tr>
<td>VM-5</td>
<td>Passenger</td>
<td>VL-3</td>
<td>73.5</td>
<td>0.005</td>
</tr>
<tr>
<td>VM-6</td>
<td>Freight</td>
<td>VL-3</td>
<td>75.9</td>
<td>0.006</td>
</tr>
<tr>
<td>VM-7</td>
<td>Passenger</td>
<td></td>
<td>67.2</td>
<td>0.002</td>
</tr>
</tbody>
</table>


(3) **Existing Traffic Noise Levels.** Motor vehicles are a dominant source of noise in Berkeley. 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 contribution roadway noise sources in Berkeley include I-80 and I-580 freeways and local streets including Shattuck Avenue, University Avenue, Ashby Avenue, San Pablo Avenue, Telegraph Avenue, Martin Luther King Jr. Way, and Solano Avenue.

To establish the baseline traffic contribution to the existing noise environment for purposes of calculating the Project’s contribution to traffic noise levels, existing traffic noise levels in the Project vicinity were calculated using the guidelines identified in the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA RD-77-108). Traffic data used in the model were obtained from the Transportation Impact Analysis prepared for the proposed Project (refer to Appendix D). In order to analyze the worst case scenario and highest traffic volumes for each of the modeled scenarios, PM peak hour traffic volumes were used to calculate the Average Daily Traffic (ADT) volumes, as PM volumes were higher overall than the AM traffic volumes.

Table IV.D-14 lists the calculated traffic noise levels along roadway segments in the Project site vicinity under existing conditions. These modeled noise levels do not account for other non-vehicle related noise sources, such as train noise, which is one of the predominant

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sources of noise in the project vicinity. It also does not account for the combination of noise levels from multiple roadways which may be in close proximity to one another. Results indicate that the contribution of traffic noise to existing noise levels from modeled roadway segments nearest the Project site range from approximately 46.3 dBA to 61.1 dBA L_{dn} as measured at 50 feet from the centerline of the outermost travel lane. The traffic noise model printouts are included in Appendix F.

Table IV.D-14: Existing Traffic Noise Levels

<table>
<thead>
<tr>
<th>Roadway Segment</th>
<th>Average Daily Trips a</th>
<th>Centerline to 70 dBA L_{dn} (feet)</th>
<th>Centerline to 65 dBA L_{dn} (feet)</th>
<th>Centerline to 60 dBA L_{dn} (feet)</th>
<th>L_{dn} (dBA) 50 Feet From Outermost Lane b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hearst Avenue – 2nd Street to 4th Street</td>
<td>2,200</td>
<td>&lt; 50</td>
<td>&lt; 50</td>
<td>&lt; 50</td>
<td>53.7</td>
</tr>
<tr>
<td>Hearst Avenue – 4th Street to 6th Street</td>
<td>4,860</td>
<td>&lt; 50</td>
<td>&lt; 50</td>
<td>&lt; 50</td>
<td>57.2</td>
</tr>
<tr>
<td>4th Street – north of Hearst Avenue</td>
<td>3,030</td>
<td>&lt; 50</td>
<td>&lt; 50</td>
<td>&lt; 50</td>
<td>55.1</td>
</tr>
<tr>
<td>4th Street – Hearst Avenue to University Avenue Frontage</td>
<td>4,080</td>
<td>&lt; 50</td>
<td>&lt; 50</td>
<td>&lt; 50</td>
<td>56.4</td>
</tr>
<tr>
<td>4th Street – south of University Avenue Frontage</td>
<td>3,990</td>
<td>&lt; 50</td>
<td>&lt; 50</td>
<td>&lt; 50</td>
<td>56.3</td>
</tr>
<tr>
<td>University Avenue Frontage – east of 4th Street</td>
<td>780</td>
<td>&lt; 50</td>
<td>&lt; 50</td>
<td>&lt; 50</td>
<td>49.2</td>
</tr>
<tr>
<td>University Avenue Frontage – west of 4th Street</td>
<td>400</td>
<td>&lt; 50</td>
<td>&lt; 50</td>
<td>&lt; 50</td>
<td>46.3</td>
</tr>
<tr>
<td>University Avenue – east of 6th Street</td>
<td>28,340</td>
<td>&lt; 50</td>
<td>65</td>
<td>122</td>
<td>62.6</td>
</tr>
<tr>
<td>University Avenue – west of 6th Street</td>
<td>20,080</td>
<td>&lt; 50</td>
<td>&lt; 50</td>
<td>100</td>
<td>61.1</td>
</tr>
<tr>
<td>6th Street – Hearst Avenue to University Avenue</td>
<td>13,360</td>
<td>&lt; 50</td>
<td>&lt; 50</td>
<td>71</td>
<td>61.6</td>
</tr>
<tr>
<td>2nd Street – south of Hearst Avenue</td>
<td>1,150</td>
<td>&lt; 50</td>
<td>&lt; 50</td>
<td>&lt; 50</td>
<td>50.9</td>
</tr>
<tr>
<td>University Avenue – west of San Pablo Avenue</td>
<td>19,380</td>
<td>&lt; 50</td>
<td>&lt; 50</td>
<td>94</td>
<td>61.7</td>
</tr>
</tbody>
</table>

Note: Shaded cells indicate roadway segments adjacent to the Project site.

a Average daily trips are estimated based on the peak hour traffic volumes.

b Traffic noise within 50 feet of the roadway centerline can be calculated manually with site specific information.


(4) Rail Noise Levels. Rail operations are also a source of noise within cities with existing rail networks such as Berkeley. An existing UPRR line is located immediately adjacent to and west of the Project site. This track currently has operations from both freight and passenger (Amtrak) trains. Trains operating adjacent to the site generate noise levels that are noticeable as compared to the ambient environment. As shown in Table IV.D-10, and based on noise measurements taken in April 2016, activity on the rail lines generates peak noise levels on the Project site of 105 dBA L_{max}. Based on information available at this time, noise levels generated from the existing rail line are not expected to substantially increase under future conditions. Based on the West Berkeley Circulation Master Plan Report, on peak days, the adjacent rail line has approximately 70 train passbys per day averaging 1 to 2 minutes per passby.

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11 A substantial increase in noise associated with trains in the vicinity would only be anticipated to occur if the number of trains would approximately double compared to existing conditions. A doubling of train passbys compared to existing conditions is not currently expected.

2. Impacts and Mitigation Measures

This section evaluates potential noise impacts associated with implementation of the proposed Project and recommends mitigation measures to address these impacts, where appropriate. This section begins with the criteria of significance applicable to noise impacts and then includes an analysis of Project-specific and cumulative noise impacts that could result from development of the proposed Project.

a. Criteria of Significance. The proposed Project would have a significant noise effect if it would substantially increase the ambient noise levels in the Project vicinity or conflict with adopted environmental plans and goals of applicable regulatory agencies, including, as appropriate, the City of Berkeley. 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 City of Berkeley Noise Ordinance or policies in the Berkeley General Plan for construction and/or operation of the Project;
- Expose persons to or generate excessive groundborne vibration or groundborne noise levels;
- Result in a substantial permanent increase of over 4 dBA in ambient noise levels in the Project vicinity above levels existing without the Project; or
- 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 General Plan or Noise Ordinance, or applicable standards of other agencies.

In California Building Industry Association (CBIA) v. Bay Area Air Quality Management District (BAAQMD), the California Supreme Court concluded that CEQA generally does not require analysis or mitigation of the impact of existing environmental conditions on a project, including a project's future users or residents. However, as with other laws and regulations enforced by other agencies that protect public health and safety, the City as the lead agency has authority, other than CEQA, to require measures to protect public health and safety. Therefore, this document includes an evaluation of the environment's impacts on the Project consistent with the current version of the CEQA Checklist provided in Appendix G of the CEQA Guidelines. The evaluation includes an assessment of the Project's potential to locate residential land uses in an area considered to be “unacceptable” in the City's Noise and Land Use Compatibility Guidelines and to expose persons to excessive groundborne vibration.

In addition, potential noise impacts associated with proximity to nearby airports are discussed in the Initial Study, and were determined to be less than significant. Refer to Appendix B of this EIR for additional information.

b. Project Impacts. This section analyzes the potential noise impacts that could result from development of the proposed Project. Mitigation measures are recommended as appropriate.

(1) Expose Persons to or Generate Noise Levels in Excess of Established Standards. The proposed Project could result in stationary or traffic noise levels that would exceed applicable standards and could expose sensitive receptors to noise levels in excess of the City’s land use compatibility standards. Associated impacts on sensitive receptors and the existing environment are discussed in detail below.

Stationary Noise. Stationary noise sources associated with the Project could include heating, ventilation, and air conditioning (HVAC) mechanical equipment, occasional truck delivery loading/unloading activities, and typical motor vehicle/parking area activities.

As described in the regulatory framework discussion, the City of Berkeley establishes the acceptable daytime and nighttime maximum noise levels at receiving land uses. The Project is located within the West Berkeley Commercial (C-W) zoning district; therefore, the maximum permissible noise level that may be generated by sources on a non-residential land use is 80 dBA during nighttime hours and 85 dBA during daytime hours. The maximum permissible noise generation level for the interior of any multi-family dwelling is 50 dBA during nighttime hours and 55 dBA during daytime hours.

Electrical transformers would be located adjacent to the loading docks at the northwestern corner of the Project site. The transformers would be located next to Hearst Avenue and the UPRR tracks. Additionally, mechanical noise sources (i.e., electrical generation facilities and HVAC systems) would be located on the roof of the proposed buildings. The noise levels associated with these stationary sources would be overshadowed by the existing noise environment dominated by traffic and train noise. As shown in Table IV.D-1, noise levels at the Project site range from 77.5 dBA to 85.0 dBA $L_{eq}$. According to data compiled by the American Society of Heating, Refrigeration, and Air Conditioning, noise levels associated with typical HVAC systems range from 56 dBA to 62 dBA; therefore, these Project elements would not cause a noticeable increase in existing noise levels on adjacent existing uses.

Of the on-site stationary noise sources during operation of the Project, noise generated by delivery truck activity would generate the highest maximum noise levels. Based on noise monitoring data collected by LSA for various outdoor noise sources (refer to Appendix F), 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. Generally, there are two types of loading that would occur on the site: small deliveries like parcels and packages or moving trucks, and large deliveries such as major retail items, weekly food deliveries for dining facilities, or supplies for the leasing office. The former are typically made via passenger car, van, or single-unit truck and would not be considered significant noise sources for the proposed Project. Large delivery activities are potential sporadic point sources of noise that could affect noise-sensitive receptors in the Project site vicinity.
There are two proposed loading docks located on the northwestern side of the Project site that would be accessed by the Hearst Avenue entrance. This location would be approximately 440 feet from the closest off-site residential use located at the northwest corner of Hearst Street and Fifth Street. Additional land uses surrounding the proposed Project include commercial and retail shops on Fourth Street approximately 60 to 120 feet to the northeast, industrial uses on the western side of the UPRR and 85 feet from the Project site, and mixed-use residential-retail located 125 feet to the south of the Project site, on the opposite side of University Avenue. Spenger's Fish Grotto, a restaurant, is located 55 feet to the east of the Project site, on Fourth Street.

Based on the Project design plans, residential units would be located directly above the loading areas. Activities associated with the loading areas typically occur for less than 1-minute and include opening or closing a door, or potential loading and/or unloading activities. Based on current Title 24 Standards, the floor/ceiling assembly would have a minimum impact insulation class (IIC) rating of 50. Therefore, due to the approximately 50 dBA reduction of the noise created by the floor/ceiling assembly between the loading area and the residential units above, it is expected that stationary noise impacts would be 35 dBA, which is well below the daytime and nighttime maximum noise level standards. Therefore loading dock activities would not result in a significant noise impact.

**Project Land Use Compatibility.** The noise environment at the proposed Project site is dominated by vehicle traffic noise on University Avenue and I-80/I-580, as well as train activity on the adjacent rail line.

Based on the existing noise level measurements, noise levels on the Project site would be approximately 84 dBA Ldn at the building facades. Based on the City’s Noise and Land Use Compatibility Table shown in Table IV.D-7, this noise level is considered generally unacceptable. According to the City, new construction or development should generally not be undertaken in areas with such noise levels because feasible mitigation is usually not available to ensure compliance with the General Plan. Therefore, the land use may be permitted only after detailed analysis of the noise reduction features proposed to be incorporated in the Project design.

**Impact NOI-1:** The proposed Project would locate residential land uses in an area that, based on the City’s Noise and Land Use Compatibility Guidelines, is generally considered an unacceptable noise environment for residential land uses. (S)

As noted above, under the description of the CBIA v. BAAQMD decision, impacts of the environment on a project are not subject to CEQA review. However, based on the noise analysis conducted for the Project in order to comply with the City of Berkeley interior noise level requirement of 45 dBA Ldn, an exterior to interior noise level reduction of 39 dBA would be required. In order to calculate and estimate the noise reduction provided by an exterior wall assembly, the transmission loss at the octave band frequencies for wall material by type is combined to provide an overall noise reduction. The rating of the wall and window or windows within the assembly will have a rating often referred to as a Sound Transmission Class or STC rating. The following recommendations are based on broad assumptions for typical multi-family residential uses. The recommendations should be considered preliminary and confirmed upon final plan approval.
Based on typical stucco construction along with standard windows, an approximate 25-28 dBA exterior to interior noise reduction could be achieved. These assumptions assume a wall rating of STC-46\(^1\) and window rating of STC-25.\(^2\) In order to increase the noise reduction, exterior walls would need to be constructed with a higher STC rating than typical construction along with upgraded windows so that the combined noise attenuation rating for the wall assembly would provide 39 dBA or more noise attenuation. An upgraded wall with an STC rating of 50 would consist of 2 inch by 4 inch wood studs with one layer of 5/8 inch Type “X” gypsum board on each side of resilient channels on 24-inch centers and 3.5-inch fiberglass insulation.\(^3\) With the upgraded wall, and windows with a rating of STC-39 or higher, a reduction of 39 dBA CNEL could be achieved. Most major window companies sell windows specifically designed for loud exterior conditions. In order to achieve the expected reductions, windows would need to remain closed to achieve the necessary noise reduction, so a form of mechanical ventilation would be required; however, the Project would include mechanical heating and ventilation systems as part of the Project features so no additional ventilation system would be required beyond what is already proposed.

Implementation of the following multi-part mitigation measure, or similar measures, would provide sufficient noise reduction resulting in acceptable interior noise levels of 44 L\(_{dn}\) or lower, which is below the interior noise standard of 45 dBA L\(_{dn}\). Therefore, with mitigation, impacts related to compatibility with the existing noise environment would be less than significant.

**Mitigation Measure NOI-1:** The Project applicant shall implement the following measures, or similar combination of measures, which demonstrate that interior noise levels would be reduced to an acceptable level of 45 dBA L\(_{dn}\) or lower:

- In order for windows and doors to remain closed, mechanical ventilation such as air conditioning shall be provided for all units.

- All exterior walls shall be constructed with a minimum STC rating of 50, consisting of construction of 2 inch by 4 inch wood studs with one layer of 5/8 inch Type “X” gypsum board on each side of resilient channels on 24 inch centers and 3 ½ inch fiberglass insulation.

- All windows and glass doors shall be rated STC 39 or higher such that the noise reduction provided will satisfy the interior noise standard of 45 dBA L\(_{dn}\).

- An acoustical test report of all the sound-rated windows and doors shall be provided to the City for review by a qualified acoustical consultant to ensure that the selected windows and doors in combination with wall assemblies would reduce interior noise levels sufficiently to meet the City’s interior noise standard for residential uses.

\(^1\) Harris, 1998, op. cit.


All vent ducts connecting interior spaces to the exterior (i.e., bathroom exhaust, etc.) shall have at least two 90 degree turns in the duct.

All windows and doors shall be installed in an acoustically-effective manner. Sliding-window panels shall form an air-tight seal when in the closed position and the window frames shall be caulked to the wall opening around the perimeter with a non-hardening caulking compound to prevent sound infiltration. Exterior doors shall seal air-tight around the full perimeter when in the closed position.

Prior to issuance of a building permit, the applicant shall submit a report to the Building and Safety Division and the Zoning Officer by a qualified acoustic engineer certifying that the interior residential portions of the Project will achieve interior noise levels of no more than 45 Lₐn. Should the City determine that the proposed building specifications outlined in this mitigation measure do not provide sufficient noise reduction, further details to achieve the noise standard shall be required. If the adopted Building Code imposes a more restrictive standard for interior noise levels, the report shall certify compliance with this standard. (LTS)

With implementation of Mitigation Measure NOI-1, interior noise levels would meet the City’s interior noise standard and this impact would be less than significant. However, instantaneous noise levels could be an annoyance to future residents of the Project site. As a condition of approval, the City would require a disclosure to future residents that the property is adjacent to an active rail corridor which generates train noise including horns and vibration. The City would also require the property management of the apartment units to provide public education materials on rail safety to all future residents of the Project site. These measures are included in the recommendations below;

Recommended Measure NOI-1: As a condition of approval of the proposed Project, it is recommended that the Project applicant:

- Provide a disclosure to future Project residents that the property is adjacent to an active rail corridor which generates train noise and vibration and
- Ensures that the property manager provides public education materials on rail safety to all future residents of the Project site.

(2) Expose Persons to or Generate Excessive Groundborne Vibration or Groundborne Noise Levels. Construction and operation of the Project could expose sensitive structures and residential receptors to excessive groundborne vibration. Per the previous description of CBIA v. BAAQMD, this section provides for informational purposes an evaluation of the environment's impacts on the Project including an assessment of the Project’s potential to expose future residents of the site to excessive groundborne vibration or noise. The potential impacts were evaluated against Federal Transportation Authority thresholds for informational purposes.

Construction Vibration. Construction activities that would occur at the Project site have the potential to generate low levels of groundborne vibration. The Project would require demolition of the existing structure on the Project site, as well as site clearing and grading activities. These activities would occur within approximately 75 feet of existing
industrial and commercial uses. These uses are not considered to be sensitive to vibration. No impact pile driving would occur as part of the proposed Project.

For all other equipment associated with the proposed construction activities, vibration impacts would approach 0.089 inches per second at a distance of 25 feet. This level would not exceed the 0.12 inches per second threshold at which there is virtually no risk resulting in architectural damage to buildings extremely susceptible to vibration damage. It would be structurally safe from the construction activity and equipment operation for these adjacent buildings and no structural damages would occur as a result of on-site construction. Therefore, construction of the Project would not result in substantial groundborne vibration on properties adjacent to the Project site. Therefore, impacts associated with groundborne vibration during construction would be considered less than significant.

Operational Vibration. Long-term operational activities associated with the proposed Project would not involve the use of any equipment or processes that would result in potentially significant levels of ground vibration. Exposure to groundborne vibration would be primarily associated with trains traveling on the adjacent Union Pacific railroad tracks. Based on the West Berkeley Circulation Master Plan, approximately 70 train operations occur during busy days of operation along this rail corridor. According to the FTA guidelines, the suggested maximum vibration criterion for “frequent events” (more than 70 train events per day) is 72 VdB at residential land uses and for “occasional events” (between 30 and 70 vibration events of the same source per day) the criterion is 75 VdB. As presented above, groundborne vibration levels were measured by LSA at the nearest façade of the proposed building setback. Measurements were conducted on March 16, 2016 and indicate that Amtrak trains generate groundborne vibration levels of 81 VdB at 50 feet while freight trains generate groundborne vibration levels reaching 85 VdB at 50 feet from the centerline. With the construction of the proposed Project, some reduction in vibration would occur due to a large building of “mass” which would assist in dampening the vibration. However, the building façade that is closest to the train tracks would be exposed to vibration levels exceeding the 72 VdB threshold recommended for residential uses from frequent events. Based on the FTA Manual, a 2 VdB reduction is assumed at each floor above pad elevation. With the residential uses beginning on the second level, and applying a 2 VdB reduction for each floor, the vibration levels at the upper floors would be lower than the first floor units. Because measured groundborne vibration levels would exceed the FTA-recommended threshold of 72 VdB at on-site building setback locations, it is recommended that the proposed project implement design measures as a condition of approval.

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17 Berkeley, City of, 2009, op. cit.
Recommended Measure NOI-2: To reduce long-term exposure of sensitive receptors to groundborne vibration the Project applicant should ensure that the proposed residential structure incorporates vibration reduction design measures as necessary to reduce vibration levels to less than 72 VdB. Methods may include, but are not limited to, the use of elastomer pads to support the building foundation, deeper joists, shorter floor spans, and/or lally columns. Proposed building structures should be designed to minimize vibration amplification at the upper floors. These measures should be incorporated into the Project design as a condition of approval and to the satisfaction of the City Engineer prior to the issuance of a building permit. If it is determined that these methods would not reduce vibration impacts to the less than 72 VdB, other design features should be considered and incorporated into final design plans.

With implementation of the measures as described in Recommended Measure NOI-2, predicted groundborne vibration levels would not exceed the FTA’s vibration impact criteria.

(3) Create a Substantial Permanent Increase in Ambient Noise Levels. Off-site traffic noise impacts would create a significant impact if traffic noise increased by 4 dBA or more over ambient, noise levels without the Project. The guidelines included in the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA RD-77-108) were used to evaluate traffic-related noise conditions in the vicinity of the Project site. This approach requires various parameters, including traffic volumes, vehicle mix, vehicle speed, and roadway geometry to compute typical equivalent noise levels during daytime and nighttime hours. The resultant noise levels are weighted and summed over 24-hour periods to determine the Ldn values. The existing and future traffic volumes along the roadways in the Project study area were obtained from the traffic analysis prepared for the proposed Project.18 Table IV.D-15 lists the existing and future traffic noise levels adjacent to roadway segments in the Project vicinity. These noise levels represent worst-case scenarios, which assume that no shielding is provided between the traffic and the location where the noise contours are drawn. The increase in Project-related traffic noise levels for future conditions would range from 0.0 to 0.6 dBA along the segments in the Project vicinity that were analyzed, therefore, off-site traffic noise impacts will be less than significant and the Project would not create a substantial permanent increase in ambient noise levels.

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### Table IV.D-15: Summary of Traffic Noise Levels

<table>
<thead>
<tr>
<th>Roadway Segment</th>
<th>ADT</th>
<th>L_{eq,\text{Existing}} (dBA) 50 feet from Centerline of Outermost Lane</th>
<th>ADT</th>
<th>L_{eq,\text{Existing Plus Project}} (dBA) 50 feet from Centerline of Outermost Lane</th>
<th>Increase over Existing No Project Conditions</th>
<th>ADT</th>
<th>L_{eq,\text{Cumulative}} (dBA) 50 feet from Centerline of Outermost Lane</th>
<th>Increase over Existing No Project Conditions</th>
<th>ADT</th>
<th>L_{eq,\text{Cumulative Plus Project}} (dBA) 50 feet from Centerline of Outermost Lane</th>
<th>Increase over Cumulative No Project Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hearst Avenue – 2nd Street to 4th Street</td>
<td>2,200</td>
<td>53.7</td>
<td>2,720</td>
<td>54.7</td>
<td>1.0</td>
<td>2,660</td>
<td>54.6</td>
<td>0.9</td>
<td>2,810</td>
<td>54.8</td>
<td>1.1</td>
</tr>
<tr>
<td>Hearst Avenue – 4th Street to 6th Street</td>
<td>4,860</td>
<td>57.2</td>
<td>5,480</td>
<td>57.7</td>
<td>0.5</td>
<td>5,820</td>
<td>58.0</td>
<td>0.8</td>
<td>6,440</td>
<td>58.4</td>
<td>1.2</td>
</tr>
<tr>
<td>4th Street – north of Hearst Avenue</td>
<td>3,030</td>
<td>55.1</td>
<td>3,120</td>
<td>55.3</td>
<td>0.2</td>
<td>3,960</td>
<td>56.3</td>
<td>1.1</td>
<td>4,050</td>
<td>56.4</td>
<td>1.3</td>
</tr>
<tr>
<td>4th Street – Hearst Avenue to University Avenue Frontage</td>
<td>4,080</td>
<td>56.4</td>
<td>4,330</td>
<td>56.7</td>
<td>0.3</td>
<td>4,870</td>
<td>57.2</td>
<td>0.6</td>
<td>5,570</td>
<td>57.8</td>
<td>1.4</td>
</tr>
<tr>
<td>4th Street – south of University Avenue Frontage</td>
<td>3,990</td>
<td>56.3</td>
<td>4,130</td>
<td>56.5</td>
<td>0.2</td>
<td>5,020</td>
<td>57.3</td>
<td>1.1</td>
<td>5,160</td>
<td>57.4</td>
<td>1.1</td>
</tr>
<tr>
<td>University Avenue Frontage – east of 4th Street</td>
<td>780</td>
<td>49.2</td>
<td>830</td>
<td>49.5</td>
<td>0.3</td>
<td>1,330</td>
<td>51.6</td>
<td>1.8</td>
<td>1,380</td>
<td>51.7</td>
<td>2.5</td>
</tr>
<tr>
<td>University Avenue Frontage – west of 4th Street</td>
<td>400</td>
<td>46.3</td>
<td>400</td>
<td>46.3</td>
<td>0.0</td>
<td>500</td>
<td>47.3</td>
<td>1.0</td>
<td>500</td>
<td>47.3</td>
<td>1.0</td>
</tr>
<tr>
<td>University Avenue – east of 6th Street</td>
<td>28,340</td>
<td>62.6</td>
<td>29,910</td>
<td>62.9</td>
<td>0.3</td>
<td>40,500</td>
<td>64.2</td>
<td>0.1</td>
<td>40,900</td>
<td>64.2</td>
<td>1.6</td>
</tr>
<tr>
<td>University Avenue – west of 6th Street</td>
<td>20,080</td>
<td>61.1</td>
<td>20,520</td>
<td>61.2</td>
<td>0.1</td>
<td>28,680</td>
<td>62.7</td>
<td>3.1</td>
<td>28,820</td>
<td>62.7</td>
<td>1.6</td>
</tr>
<tr>
<td>6th Street – Hearst Avenue to University Avenue</td>
<td>13,360</td>
<td>61.6</td>
<td>14,030</td>
<td>61.8</td>
<td>0.2</td>
<td>20,210</td>
<td>63.4</td>
<td>1.3</td>
<td>20,620</td>
<td>63.5</td>
<td>1.9</td>
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<tr>
<td>2nd Street – south of Hearst Avenue</td>
<td>1,150</td>
<td>50.9</td>
<td>1,240</td>
<td>51.3</td>
<td>0.4</td>
<td>1,300</td>
<td>51.5</td>
<td>0.4</td>
<td>1,390</td>
<td>51.8</td>
<td>0.9</td>
</tr>
<tr>
<td>University Avenue – west of San Pablo Avenue</td>
<td>19,380</td>
<td>61.7</td>
<td>19,820</td>
<td>61.8</td>
<td>0.1</td>
<td>23,710</td>
<td>62.6</td>
<td>0.9</td>
<td>23,850</td>
<td>62.6</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Notes: ADT = Average Daily Traffic  
Shaded cells indicate roadway segments adjacent to the Project site  
(4) Create a Substantial Temporary Increase in Ambient Noise Levels.

Implementation of the proposed Project would include construction activities that would result in substantial temporary increase in ambient noise levels in the Project site vicinity. Potential impacts are discussed in detail below. According to the City’s Noise Ordinance, noise from construction activities may exceed the established maximum allowable noise performance standards, provided that the activities occur during the permissible hours for construction and all technically and economically feasible noise reduction measures are incorporated.

Impact NOI-2: Noise from construction activities would 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 construction 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. Pile driving would not occur as part of the Project.

Normal construction operations, specifically during the site preparation phase which includes excavation and grading, may generate high noise levels from the active construction area. Earthmoving equipment includes excavating machinery such as backfillers, bulldozers, and front-end loaders. Earthmoving and compacting equipment includes compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full-power operation followed by 3 or 4 minutes at lower power settings.

As shown in Table IV.D-16, noise associated with the use of earthmoving construction equipment is estimated between 55 and 85 dBA $L_{\text{max}}$ at a distance of 50 feet from each piece of equipment. The maximum noise level generated by each excavator, bulldozer and pick-up truck is assumed to be approximately 85 dBA $L_{\text{max}}$, 85 dBA $L_{\text{max}}$, and 55 dBA $L_{\text{max}}$ at 50 feet, respectively. Each piece of construction equipment operates as an individual point source. Utilizing the following equation, a composite noise level can be calculated when multiple sources of noise operate simultaneously:

\[
L_{\text{com}} = 10 \log_{10} \left( \sum_{i=1}^{n} 10^{L_{\text{Lmax},i}/10} \right)
\]

Table IV.D-16: Typical Construction Equipment Noise Levels, $L_{\text{max}}$

<table>
<thead>
<tr>
<th>Type of Equipment</th>
<th>Suggested Maximum Sound Levels for Analysis (dBA at 50 feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backhoes</td>
<td>80</td>
</tr>
<tr>
<td>Compactor (ground)</td>
<td>80</td>
</tr>
<tr>
<td>Cranes</td>
<td>85</td>
</tr>
<tr>
<td>Dozers</td>
<td>85</td>
</tr>
<tr>
<td>Dump Trucks</td>
<td>84</td>
</tr>
<tr>
<td>Excavators</td>
<td>85</td>
</tr>
<tr>
<td>Flat Bed Trucks</td>
<td>84</td>
</tr>
<tr>
<td>Front-end Loaders</td>
<td>80</td>
</tr>
<tr>
<td>Graders</td>
<td>85</td>
</tr>
<tr>
<td>Impact Pile Drivers</td>
<td>95</td>
</tr>
<tr>
<td>Jackhammers</td>
<td>85</td>
</tr>
<tr>
<td>Pick-up Truck</td>
<td>55</td>
</tr>
<tr>
<td>Pneumatic Tools</td>
<td>85</td>
</tr>
<tr>
<td>Pumps</td>
<td>77</td>
</tr>
<tr>
<td>Rock Drills</td>
<td>85</td>
</tr>
<tr>
<td>Rollers</td>
<td>85</td>
</tr>
<tr>
<td>Scrapers</td>
<td>85</td>
</tr>
<tr>
<td>Tractors</td>
<td>84</td>
</tr>
</tbody>
</table>

1 Equipment shown in **bold** is expected to be used on site.
2 Maximum noise levels were developed based on Spec 721.560 from the Central Artery/Tunnel (CA/T) program to be consistent with the City of Boston’s Noise Code for the “Big Dig” project.

$L_{\text{max}}$ = maximum instantaneous sound level

Note: Noise levels reported in this table are rounded to the nearest whole number.

The conservative composite noise level during this phase of construction would be 88 dBA \( L_{max} \) at a distance of 50 feet from an active construction area.

Once composite noise levels are calculated, reference noise levels can then be adjusted for distance using the following equation:

\[
L_{max} (\text{at distance } X) = L_{max} (\text{at 50 feet}) - 20 \times \log_{10} \left( \frac{X}{50} \right)
\]

In general, this equation shows that doubling the distance would decrease noise levels by 6 dBA while a halving the distance would increase noise levels by 6 dBA.

Surrounding land uses include the commercial and retail uses in the Fourth Street shopping district to the northeast of the Project site, industrial uses to the northwest, west, and southwest of the Project site, and commercial uses to the east. Residential uses are located further northeast, east and southeast. The southern Project site boundary is approximately 120 feet north of the closest noise-sensitive receptors (residential uses) located on the opposite side of University Avenue, due south. The 120 foot distance would provide a noise reduction of 7.6 dBA compared to the noise level measured at 50 feet from the construction activity.

During the construction period, if multiple pieces of heavy construction equipment are operated simultaneously at the nearest construction border, noise levels could range up to 81 dBA \( L_{max} \) at the nearest residential sensitive receptor 120 feet away. The nearest commercial building façades, located 60 feet away from the Project site boundary, across Fourth Street and Hearst Avenue, could experience noise levels up to 88 dBA \( L_{max} \). Construction noise impacts at above listed land uses, although permitted and exempted during the construction hours specified by the City, would exceed the suggested maximum noise levels for stationary sources as established by the City. Therefore, construction noise would result in a potentially adverse impact.

Implementation of the following mitigation measures would help reduce construction noise impacts on the off-site near-by sensitive receptors and would require the applicant to implement all technically and economically feasible measures to reduce construction noise, consistent with the requirements of BMC Section 13.40.070.

Mitigation Measure NOI-2a: At least two weeks prior to initiating any construction activities at the Project site, the applicant shall provide notice to businesses and residents within 500 feet of the Project site, including: 1) a description of the Project; 2) description of construction activities; 3) daily construction schedule (i.e., time of day) and expected duration (number of weeks of months); 4) the name and phone number of the “Noise Management Individual” for the Project; 5) commitment to notify neighbors at least four days in advance of any authorized extended work hours and
the reason for extended hours; 6) that construction work is about to commence; and 7) designate a “Noise Management Individual” who would be responsible for responding to any local complaints about construction noise. The noise manager would determine the cause of the noise complaints (e.g., starting too early, bad muffler, etc.) and institute reasonable measures to correct the problem. A copy of such notice and methodology for distributing the notice shall be provided in advance to the City for review and approval.

Mitigation Measure NOI-2b: The Project applicant shall develop a site specific noise reduction program prepared by a qualified acoustical consultant to reduce construction noise impacts to the maximum extent feasible, subject to review and approval of the Zoning Officer. The noise reduction program shall include time limits for construction and all technically and economically feasible measures to ensure that construction complies with BMC Section 13.40.070. The noise reduction program should include, but shall not be limited to, the following available controls to reduce construction noise levels as low as practical:

- Construction activities (including the loading and unloading of materials and truck movements) shall be limited to the hours of 7:00 a.m. and 7:00 p.m. on weekdays and between the hours of 9:00 a.m. and 8:00 p.m. on weekends or holidays.
- Construction equipment should be well maintained and used judiciously to be as quiet as practical.
- All internal combustion engine-driven equipment shall be equipped with mufflers, which are in good condition and appropriate for the equipment.
- Utilize “quiet” models of air compressors and other stationary noise sources where technology exists. Select hydraulically or electrically powered equipment and avoid pneumatically powered equipment where feasible.
- Locate stationary noise-generating equipment as far as possible from sensitive receptors when adjoining construction sites. Construct temporary noise barriers or partial enclosures to acoustically shield such equipment where feasible.
- Prohibit unnecessary idling of internal combustion engines. Construction equipment that would not be used for more than 5 minutes should be turned off completely.
- Construct solid plywood fences around construction sites adjacent to operational business, residences or other noise-sensitive land uses where the noise control plan analysis determines that a barrier would be effective at reducing noise.
- Erect temporary noise control blanket barriers, if necessary, along building facades facing construction sites. This mitigation would only be necessary if conflicts occurred which were irresolvable by proper scheduling. Noise control blanket barriers can be rented and quickly erected.
- Route construction related traffic along major roadways and away from sensitive receptors where feasible. (LTS)
Implementation of Mitigation Measures NOI-2a and NOI-2b would reduce the construction noise impacts to the extent feasible, as required by BMC Section 13.40.070. With implementation of Mitigation Measure NOI-2a and NOI-2b, construction noise impacts would be reduced to a less-than-significant impact.

c. Cumulative Impacts. Implementation of the proposed Project would result in potentially adverse noise impacts from construction activities. However, construction-related noise impacts would be temporary and would no longer occur once construction of the Project is completed. Project construction activities would conform to the City’s Construction Noise Standards (Mitigation Measures NOI-2a and NOI-2b.) Additionally, any other proposed project in the surrounding study area would also be required to comply with the applicable City standards, therefore, the Project’s construction activities would not be considered a cumulatively considerable contribution to the total noise environment in the Project vicinity and this impact would be less-than-significant.

A significant cumulative impact would also occur if implementation of the proposed Project would result in any permanent increase of 4 dBA or more in traffic noise levels at existing sensitive receptors in the Project vicinity that are currently exposed to traffic noise levels above the City’s normally acceptable threshold for that type of land use. As shown in Table IV.D-15, the increase in Project-related traffic noise levels would range from 0.0 to 0.6 dBA along the segments analyzed, therefore, off-site cumulative traffic noise impacts would be less than significant.
V. CEQA-REQUIRED ASSESSMENT CONCLUSIONS

As required by CEQA, this chapter discusses the following types of impacts that could result from implementation of the proposed Project: growth-inducing impacts; significant irreversible changes; effects found not to be significant; and significant unavoidable effects.

A. GROWTH INDUCING IMPACTS

This section summarizes the Project’s potential growth-inducing impacts on the surrounding community. A project is typically considered growth-inducing if it would foster economic or population growth or the construction of additional housing; if it would remove obstacles to population growth or tax community services to the extent that the construction of new facilities would be necessary; or if it would encourage or facilitate other activities that cause significant environmental effects.\footnote{CEQA Guidelines, 2015 §15126.2(d).} Examples of projects likely to have significant growth-inducing impacts include extensions or expansions of infrastructure systems beyond what is needed to serve project-specific demand, and development of new residential subdivisions or industrial parks in areas that are currently only sparsely developed or are undeveloped.

Development of the proposed Project would result in direct population growth within the City of Berkeley through the construction of 155 dwelling units. As discussed in Section XIII, Population and Housing, in the Initial Study (Appendix B), the proposed Project could increase the local population by up to 354 persons. This growth would account for about one half of one percent of the City’s current estimated population (115,688)\footnote{United States Census Bureau, 2014. American Community Survey.} and approximately one quarter of one percent of the City’s projected 2040 population (140,100).\footnote{Association of Bay Area Governments, 2013. Plan Bay Area Projections 2013.} Commercial uses on the site are projected to support approximately 75 employees (assuming approximately 2.5 employees per 1,000 square feet of commercial/office space). This anticipated job growth associated with the Project represents approximately less than one tenth of one percent of both the City’s current number of jobs (approximately 80,740) and projected 2035 number of jobs (87,150).\footnote{Ibid.} This level of population and job growth is included within the anticipated growth identified by the City and the Association of Bay Area Governments (ABAG), and would be a less-than-significant impact. As such, the proposed Project would neither directly nor indirectly lead to substantial or unforeseen economic or population growth, but would instead contribute to the City’s housing supply.

\footnote{Ibid.}
Additionally, the Project would involve infill development within an existing urbanized area and would not require the extension of utilities or roads into undeveloped areas or directly or indirectly lead to the development of greenfield sites. Due to the location of the Project site, the presence of existing uses on and in the vicinity of the site, and consistency with the West Berkeley Plan, construction of the proposed Project would not induce unplanned growth in the area. Therefore, the growth that would occur as a result of the proposed Project would not be substantial or adverse.

B. SIGNIFICANT IRREVERSIBLE CHANGES

An EIR must identify any significant irreversible environmental changes that could result from implementation of a proposed Project. These may include current or future uses of non-renewable resources, and secondary growth-inducing impacts that commit future generations to similar uses. CEQA suggests that irretrievable commitments of resources should be evaluated to assure that such current consumption is justified. The CEQA Guidelines describe three categories of significant irreversible changes that should be considered, as further detailed below.

1. Changes in Land Use Which Commit Future Generations

The Project site is located in West Berkeley and is generally surrounded by commercial, light industrial, and mixed-use residential uses. The approximately 2.21-acre Project site is currently developed with a commercial office building and a surface parking lot. Development associated with the proposed Project would occur on a site that has been developed with urban uses for at least the last 100 years. While the proposed Project would result in development of commercial and residential uses at the Project site, it would be compatible with the existing uses already occurring within the immediate vicinity of the site and within West Berkeley. The proposed Project would not commit future generations to more intense development and there would be nothing to preclude the location or redevelopment of some other type of use on the Project site in the future.

2. Irreversible Damage from Environmental Accidents

No significant environmental damage, such as accidental spills or explosion of a hazardous material, is anticipated with implementation of the proposed Project. Compliance with federal, State and local regulations, and implementation of Mitigation Measures HAZ-1a, HAZ-1b, HAZ-1c, and HAZ-1d as outlined in the Initial Study (Appendix B), would ensure this potential impact would be reduced to a less-than-significant level. As such, no irreversible changes – such as those that might result from construction of a large-scale mining project, a hydroelectric dam project, or other industrial project – would result from development of the proposed Project.

3. Consumption of Nonrenewable Resources

Consumption of nonrenewable resources includes increased energy consumption, conversion of agricultural lands, and lost access to mining reserves. As discussed in the Initial Study (Appendix B), the State Department of Conservation designates the site as “Urban and Built-Up Land,” and the site is located in an urbanized area of Berkeley. Therefore, no existing agricultural lands would be converted to non-agricultural uses. In
addition, the Project site does not contain known mineral resources and does not serve as a mining reserve; thus, development of the proposed Project would not result in the loss of access to mining reserves. Please refer to the Initial Study included in Appendix B for a discussion of impacts related to agricultural and mining resources.

Construction of the proposed Project would require the use of energy, including energy produced from non-renewable resources. Energy consumption would also occur during the operational period of the proposed Project. The proposed Project would be required to incorporate green building features consistent with the City’s applicable “Build It Green” checklist that are anticipated to result in additional reductions in greenhouse gas (GHG) emissions. As discussed in Section VII, Greenhouse Gas Emissions, of the Initial Study, the proposed Project would not result in any significant impacts associated with an increase in GHG emissions or conflict with measures adopted for the purpose of reducing such emissions. Additionally, the proposed Project would not require the construction of major new lines to deliver energy or natural gas as these services are already provided in the area. Therefore, the proposed Project would not result in a significant impact associated with the consumption of nonrenewable resources.

C. EFFECTS FOUND NOT TO BE SIGNIFICANT

Based on the analysis provided in the Initial Study, included in Appendix B, the proposed Project would not result in significant impacts related to the following topics, which are not further evaluated in the EIR. Some topics considered in the Initial Study would require implementation of standard mitigation measures to be implemented prior to or during the construction period to reduce impacts to a less-than-significant level. These measures would likely apply to any redevelopment or construction activities that could occur within the City of Berkeley and are summarized below. Table II-1 in Chapter II, Summary, of this EIR also contains a summary of the significant environmental impacts and mitigation measures identified in the Initial Study.

1. Aesthetics

Public Resources Code Section 21099(d), effective January 1, 2014, provides that among other items, “aesthetics...impacts of a residential, mixed-use residential, or employment center Project on an infill site located within a transit priority area shall not be considered significant impacts on the environment.” The proposed Project meets the definition of a mixed-use project located on an infill site located within a transit priority area. Accordingly, an evaluation of aesthetic impacts is not required. Project elements that relate to changes to aesthetic conditions at the site and vicinity, such as proposed building heights, architecture, and effects of new light and glare, among others, will, however, be considered as part of the planning approval process, including through design review.
2. **Agricultural and Forestry Resources**

The Project site and vicinity are located within an urban area in the City of Berkeley. The site is currently zoned as West Berkeley Commercial (C-W) on the City’s Zoning Map and is classified as "Urban and Built-Up Land" by the State Department of Conservation. The Project site is not used for agricultural production nor does it support forestry resources. Therefore, there would be no impact to agricultural and forestry resources.

3. **Biological Resources**

No special-status plant or animal species are expected to occur on or in the vicinity of the site due to its completely urbanized condition and lack of suitable habitats. The Project would not interfere with local wildlife movement or corridors. Common wildlife species that are adapted to urban environments would continue to use the site after redevelopment. No riparian vegetation, other sensitive natural communities, federally protected wetlands, or other aquatic features are present on the site. The site is not subject to a local, regional, or State habitat conservation or natural community plan.

4. **Cultural (Historic Architectural and Paleontological) Resources**

The Project site contains one built-environment resource, consisting of a single-story, approximately 1,600 square foot, rectangular commercial building constructed in 1955 at 701 University Avenue. The proposed Project would demolish this building; however, this building was determined not to be a historical resource for the purposes of CEQA.

There are no identified paleontological resources or unique geologic features or sites within, or in the vicinity of, the Project site. However, demolition, site preparation, and construction activities associated with the proposed Project could adversely impact previously unidentified fossils. Implementation of Mitigation Measure CUL-1 would reduce this impact to a less-than-significant level.

5. **Geology and Soils**

The Project site is not located within or adjacent to an Alquist-Priolo Earthquake Fault Zone. Therefore, the Project would have a less-than-significant impact on people and structures related to fault rupture. The Geotechnical Engineering Study prepared for the Project site recommends seismic design parameters to be used in accordance with the 2013 California Building Code to account for earthquake ground motions. The Project design includes deep foundations and therefore must comply with 2013 California Building Code Section 1803.5.5, Deep Foundations, which specifies that "where deep foundations will be..."
used, a geotechnical investigation shall be conducted…” The design and construction is required to conform with, or exceed, current best standards for earthquake resistant construction in accordance with the 2013 California Building Code and with the generally accepted standards of geotechnical practice for seismic design in Northern California. Therefore, compliance with the California Building Code would ensure that the potential impacts associated with ground shaking would be less than significant.

According to the Geotechnical Engineering Study, the Project site is located within a Seismic Hazard Zone for liquefaction. Final grading, foundation, and building plans must be designed in accordance with California Building Code. These designs would include measures that would address the potential for differential settlement related to liquefaction. Therefore, compliance with the California Building Code would ensure that the potential impacts associated with liquefaction would be less than significant. The Geotechnical Engineering Study indicates that the Project site is not considered to be susceptible to lateral spreading due to the lack of a nearby free slope face. Therefore, the Project would have a less-than-significant impact related to lateral spreading. According to the Geotechnical Engineering Study, the Project site is not located within a Seismic Hazard Zone for seismically-induced landslides. Therefore, the Project would have a less-than-significant impact related to seismically-induced landslides.

The proposed Project does not propose any changes to site conditions that would cause soil erosion or the loss of topsoil. The Geotechnical Engineering Study determined that the highly expansive soils beneath the Project site would not provide suitable support for building structures due to potential differential settlement of the soils. Final designs prepared in compliance with the California Building Code would include measures to excavate the existing fill materials that are susceptible to expansion and either replace the materials with engineered fill or further evaluate the possible reuse of the materials as engineered fill. Currently, it is assumed that the proposed Project would excavate and off-haul all soils occurring at a depth of up to 8 feet across the entire Project site. Incorporation of the recommendations of the Geotechnical Engineering Study into the final geotechnical report (which is required by 2013 California Building Code 1803.5.5) would ensure that the potential impacts associated with expansive soils would be less than significant.


During construction of the Project, greenhouse gas (GHG) emissions 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. It is estimated that the Project would generate approximately 536 metric tons of CO$_2$e during construction of the Project. The BAAQMD does not have a threshold for construction emissions. However, implementation of Mitigation Measure AIR-1 would reduce construction GHG emissions by limiting construction idling emissions. Construction emissions would not be considered significant.

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12 Ibid.
Long-term operation of the proposed Project would generate GHG emissions from area and mobile sources, and indirect emissions from sources associated with energy consumption. The calculated GHG emissions for the proposed Project indicate motor vehicle emissions as the largest source at approximately 76 percent of the total. Model results indicate the Project would generate approximately 1,899 metric tons per year CO₂e; these emissions would exceed the BAAQMD significance criteria of 1,100 metric tons CO₂e per year. Based on 2015 US Census data the average persons per household within the City is 2.29. Therefore, the Project would support a population of 355 persons.\footnote{United States Census Bureau, 2015. QuickFacts, Berkeley, California, Persons per household, 2010-2014. Website: www.census.gov/quickfacts/table/PST045215/0606000 (access April 11, 2015).} Assuming a service population of 2.5 employees per 1,000 square feet, the Project would result in approximately 75 employees. The total service population (employees plus population) would be 430. The Project would result in per service population emissions of 4.4 metric tons CO₂e, which is below the BAAQMD criteria of 4.6 tons CO₂e. Therefore, long-term operation of the Project would not generate greenhouse gas emissions that would have a significant effect on the environment.

The Project is an urban in-fill redevelopment Project that would replace a vacant building and surface parking lot and develop a new high density mixed-use residential development. The Project is located within walking distance of a variety of uses and has easy access to public transportation. The Project would be required to incorporate green building features consistent with the applicable “Build It Green” checklist features that are anticipated to result in additional reductions in GHG emissions. The Project would be subject to all applicable permit and planning requirements in place or adopted by the City. Therefore, the proposed Project would not conflict with the City of Berkeley’s Climate Action Plan. The proposed Project would not exceed the Project level significance criteria established by the BAAQMD and, therefore, the proposed Project would not conflict with plans adopted for the purpose of reducing GHG emissions.

7. Hazards and Hazardous Materials

The Project site is not located within an airport land use plan, or within 2 miles of a public or private airport. Therefore, residents and employees at the site would not be exposed to significant aircraft-related hazards. Based on a review of regulatory databases performed as part of the Phase I Environmental Site Assessment\footnote{Partner Engineering Science, Inc. 2015. Phase I Environmental Site Assessment Report, Parking Lot – Spenger’s Plaza, University Avenue & Fourth Street, Berkeley, California 94710. June 2.} prepared for the Project site, including listed hazardous materials release sites compiled pursuant to Government Code Section 65962.5 (Cortese List), the Project site is not listed as a hazardous materials release site due to activities and land uses in the past.

During Project construction, hazardous materials such as fuel, lubricants, paint, sealants, and adhesives would be transported and used at the Project site. Accidental spills or leaks during transport, use, or disposal of these hazardous materials during construction activities could adversely affect the public or the environment; however, compliance with existing regulations would ensure that this impact would be less than significant.
The Phase I Environmental Site Assessment (ESA)\textsuperscript{15} prepared for the Project site did not identify potential sources of soil or groundwater contamination at the Project site; however, the Phase I ESA did indicate that due to the age of the structure on the Project site, there is a potential that asbestos-containing materials (ACMs) and/or lead-based paint (LBP) are present. Compliance with the City’s Condition of Approval - Toxics, would ensure that hazardous building materials are treated and disposed of in accordance with applicable regulations and that potential impacts associated with hazardous building materials would be less than significant.

Fill material beneath the Project site may be contaminated with hazardous materials such as metals, asbestos, petroleum hydrocarbons, volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs), which are commonly present in similar historic fill materials. The decomposing of organic matter in the fill material could also potentially generate elevated concentrations of methane in soil gas; however, the organic matter in the underlying marshland deposits is a more significant potential source of methane in soil gas due to the length of time over which organic matter was deposited in the former marshland. Removal or re-use of fill material from the Project site could potentially expose workers and the surrounding public to hazardous materials in dust or vapors that could be released from the fill material if the fill material is contaminated. Elevated concentrations of methane in soil gas can potentially pose explosion hazards, as vapor intrusion from the subsurface can cause methane to accumulate in potentially explosive concentrations in subsurface utility conduits, vaults, or other poorly ventilated/confined spaces that may be subject to vapor intrusion. Implementation of multi-part Mitigation Measure HAZ-1 would be required to ensure that potential impacts to construction workers and the public associated with exposure to existing hazardous materials on the site would be less than significant.

8. Hydrology and Water Quality

Construction and demolition activities of the proposed Project would involve disturbance, grading, and excavation of soil, which could result in temporary erosion and movement of sediments into the storm drain system, particularly during precipitation events. The potential for chemical releases is present at most construction sites due to the use of paints, solvents, fuels, lubricants, and other hazardous materials associated with heavy construction equipment. Once released, these hazardous materials could be transported to nearby surface waterways in stormwater runoff, wash water, and dust control water, potentially reducing the quality of the receiving waters. The release of sediments and other pollutants during construction and demolition could adversely affect water quality in receiving waters.

Because the proposed Project would involve construction activities that would disturb over 1 acre of soil, the Project would be required to comply with the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activity (Construction General Permit [CGP]).

\textsuperscript{15} Partner Engineering Science, Inc. 2015, op. cit.
Long-term degradation of runoff water quality from Project operation could adversely affect water quality in the receiving waters and San Francisco Bay. Compliance with existing stormwater control regulations, the City’s Conditions of Approval, and NPDES requirements would reduce potential construction phase and operational phase impacts on water quality to a less-than-significant level. The proposed Project would result in a decrease of impervious surfaces on the Project site and would include stormwater control features that would enhance infiltration of stormwater to the subsurface (e.g., flow-through planters and stormwater treatment planters), and would therefore increase the amount of groundwater recharge compared to existing conditions.

The proposed Project would connect to the EBMUD water system and would not use groundwater at the site. Although no use of groundwater is proposed as part of the Project, some dewatering may be required during construction depending on the depths of excavations performed. This dewatering would be temporary and would focus on the uppermost shallow groundwater zone. Therefore, potential impacts related to depletion of groundwater supplies would be less than significant.

The Project would not place housing or other structures within a 100-year flood hazard zone; would not pose a significant risk to people or structures as a result of levee or dam failure; and would not be subject to inundation by a seiche, tsunami, or mudflows.

9. Land Use and Planning

Redevelopment of the existing site with residential and commercial uses would represent a general continuation of the mix of uses within the Project vicinity and would be generally consistent with the zoning and General Plan designations for the site. The addition of 155 residential units would be consistent with the type and intensity of other residential development in the area, and the configuration of the existing city block that the site occupies would not be altered. Therefore, the proposed Project would not result in the physical division of an established community or adversely affect the continuity of land uses in the vicinity.

The proposed Project would generally be consistent with the overall vision and intent as well as the goals and policies of the General Plan, West Berkeley Plan, University Avenue Strategic Plan, and Zoning Ordinance (refer to the Initial Study for a discussion of the Project’s consistency with General Plan and West Berkeley Plan policies). The Project site is within the Commercial district, and within a development node. The development standards outlined in the zoning district provisions are applicable to redevelopment of the Project site. Because the proposed Project includes affordable housing units and is therefore entitled to a density bonus, the Project applicant is also requesting waivers/modifications per the State Density Bonus Law. Under Government Code Section 65915(f), the Project’s density bonus would be granted “over the [City’s] otherwise maximum allowable residential density,” and under Section 65915(j), “the granting of a concession or incentive, in and of itself, shall not be interpreted to require a general plan amendment ... zoning change, or other discretionary approval.” Therefore, the proposed Project would be consistent with the City’s Zoning Ordinance and General Plan.
10. Mineral Resources
The Project site is located within an urban area on a developed site. Additionally, the Berkeley General Plan does not identify known mineral resources or mineral recovery sites within or adjacent to the Project site. Therefore, the proposed Project would not result in the loss of availability of a known mineral resource of value to the region or residents of the State or the loss of availability of a locally-important mineral resource recovery site.

11. Population and Housing
The proposed Project could increase the local population by up to 354 persons and also contribute to job growth. The projected population and job growth is included within the anticipated growth projections identified by the Association of Bay Area Governments and the City of Berkeley. The proposed Project would neither directly nor indirectly lead to substantial or unforeseen economic or population growth in Berkeley beyond that planned for by the City, nor displace housing or people necessitating the construction of replacement housing elsewhere.

12. Public Services
The proposed Project would be adequately served by existing public services, such as police, fire protection, and school services. New facilities would not be required to provide police and fire services in order to meet service standards. Compliance with SB 50 would ensure that any impact to schools that could result from the proposed Project would be offset by development fees, and in effect, reduce potential impacts to schools to a less-than-significant level. Although the Project would incrementally increase use of area parks and community and regional recreational facilities, this increase is not expected to result in substantial physical deterioration of local parks and recreational facilities. Therefore, the proposed Project would not result in an adverse effect on police, fire, school, or recreational services and would not require the construction of new facilities.

13. Recreation
Residents and employees of the proposed Project would be expected to use local parks and community facilities in Berkeley as well as regional recreational facilities. Although the Project would incrementally increase use of these facilities this minor increase in use is not expected to result in substantial physical deterioration of local parks, trails, and community centers and this impact would be less than significant.

In addition, the proposed Project would provide approximately 13,032 square feet of open space within the ground level, second-story, and rooftop. Private residential open space would consist of common courtyards and roof deck areas, totaling approximately 6,450 square feet. Common outdoor courtyards for residents would be located at the second-story of the larger building and would consist of an approximately 2,967 square-foot outdoor fitness courtyard facing Fourth Street and adjacent to the indoor residential fitness center and multi-purpose room, and an approximately 2,733 square-foot passive courtyard. These spaces would include seating areas, a barbeque area, and other similar amenities. Private balcony space would total approximately 2,611 square feet and would be provided with some residential units, facing either surrounding street frontages or the interior of the site.
Publicly accessible open space on the Project site would consist of the approximately 6,852 square-foot paseo that would provide access to the site interior and also provide space for outdoor dining. The provision of community open space on the site would further ensure that the Project’s impacts on local parks and recreational facilities would be less than significant.

The Project would not increase use of area parks and community and regional recreational facilities such that it would result in substantial physical deterioration of local parks and recreational facilities. Therefore, the proposed Project would not result in an adverse effect on recreational services and would not require the construction of new facilities.

14. Utilities and Service Systems

The proposed Project is an infill development. The Project located in an urban area already served by existing utility systems. The proposed Project would need to install and/or upgrade the following utility connections to the satisfaction of the applicable utility providers: water, wastewater, stormwater drainage, power, and telecommunications services. The proposed Project would increase water demand, wastewater generated, and solid waste; however, as discussed in the Initial Study, these increases could be met by existing service providers and existing facilities and impacts to utilities and service systems would be less than significant.

D. SIGNIFICANT UNAVOIDABLE ENVIRONMENTAL IMPACTS

Even with implementation of the mitigation measures recommended in this EIR, the proposed Project would result in significant unavoidable impacts at the following study intersections during Cumulative Plus Project Conditions:

- Fourth Street/Hearst Avenue
- Sixth Street/Hearst Avenue
- Sixth Street/University Avenue
- San Pablo Avenue/University Avenue
VI. ALTERNATIVES

In accordance with CEQA and the CEQA Guidelines (Section 15126.6), an EIR must describe a reasonable range of alternatives to the Project, or to the location of the Project, that could attain most of the Project’s basic objectives, while avoiding or substantially lessening any of the significantly adverse environmental effects of the Project. An EIR does not need to consider every conceivable alternative to a Project, rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation.

As an EIR identifies ways to mitigate or avoid significant effects that a Project may have on the environment, the discussion of alternatives should focus on alternatives to the Project or its location that are capable of avoiding or substantially lessening significant effects of the Project. The EIR needs to include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed Project. If an alternative would cause one or more significant effects in addition to those that would be caused by the Project, the significant effects of the alternative should be discussed, but in less detail than the significant effects of the Project. The range of alternatives required in an EIR is governed by a “rule of reason” that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. CEQA states that an EIR should not consider alternatives “whose effect cannot be ascertained and whose implementation is remote and speculative.”

The proposed Project would involve demolition of the existing 900 square-foot, one-story structure and approximately 350-space surface parking lot on the site and redevelopment of the site with 155 residential units, including 13 affordable units, and 30,000 square feet of commercial uses within two separate buildings totaling 191,362 gross square feet, as well as associated parking and circulation, open space, landscaping, and utility improvements, as described in detail in Chapter III, Project Description. The following Project objectives are also listed in Chapter III, Project Description, of this EIR and are repeated here to help inform this evaluation of Project alternatives. The applicant’s Project objectives are as follows:

1. Enhance and extend the Fourth Street retail environment.
   a. Replace an auto-oriented surface parking lot with walkable, well-articulated retail opportunities and amenities, including open-air paseos and quality landscaping and pedestrian features that complement the Fourth Street shopping area.
   b. Complement the pedestrian-oriented retail character of the Fourth Street shopping area while bridging the character of the shopping area to the north and the higher density residential developments to the south.
c. Create a careful balance of retail and residential floor areas that will generate the revenue needed to allow for generous street fronting and ground level articulation, including the substantial paseos.

d. Provide the potential for additional parking to support nearby retail uses that serve both neighborhood uses and the greater Fourth Street area’s regional retail draw.

2. Contribute to solving the housing shortage in Berkeley with the provision of transit-proximate residential units, including units affordable to families at 50 percent AMI.

a. Create needed market rate and below market rate housing units in an economically feasible manner in a location proximate to transit options and neighborhood amenities and attractions.

b. Provide a variety of housing options by offering a mix of unit types, including smaller units at lower price points up to larger two bedroom units suitable for small families.

c. Enhance and further activate the Fourth Street shopping area with new residents.

3. Promote best practices in green construction through:

a. Encouraging and providing access to alternative modes of transportation for residents, employees, and retail customers of the Project

b. Committing to Build It Green certification, and including numerous additional sustainability features, that are a part of the project’s careful balance of economic feasibility and community benefit that are not requirements of the development project. These features include but are not limited to the following:

i) AC Transit passes for residents

ii) Secure bicycle storage and amenities for residents and for businesses, as well as for the general public that will exceed Zoning Ordinance requirements.

4. Provide residential and retail development consistent with multiple local and regional land use policies.

a. Fulfill policies of the General Plan that encourage sustainable infill development that is compatible with neighboring land uses, design, and scale, as well as policies that support improving Avenue Commercial areas as pedestrian-friendly areas that serve both neighborhood needs and the needs of Fourth Street’s broader regional retail draw.

b. Fulfill policies of the West Berkeley Plan, including: supporting commercial districts that foster the continued vitality of West Berkeley’s neighborhood and regional serving retail trade in a pedestrian-friendly manner; assuring that new development is of a scale and design that is appropriate to its surroundings while respecting the genuine economic and physical needs of the development; supporting the clustering of retail uses to strengthen existing walkable retail areas; encouraging infill buildings on vacant and low intensity use sites along corridors with retail as the ground level use in nodes and residential or office
uses above the ground floor; and encouraging appropriately scaled and located housing development.

c. Fulfill the design guidelines of the University Avenue Strategic Plan, which identifies Avenue nodes such as the Project site as target areas for higher-intensity mixed-use buildings, and which encourages higher-intensity buildings to create a more urban environment and provide as many residential units as possible within proximity to University Avenue and transit, while also conforming to guidelines encouraging high levels of articulation, detailing, and variations to create an interesting and active public realm.

5. Generate significant new revenue for the City of Berkeley by constructing an economically feasible development project that will result in increased property taxes, retail revenue, affordable housing mitigation and other impact fees, public art, creation of jobs, and a new residential population that supports West Berkeley businesses.

The potential environmental effects of implementing the proposed Project are analyzed in Chapter IV, Setting, Impacts and Mitigation Measures. The proposed Project has been described and analyzed in the previous chapters and in the Initial Study (included as Appendix B), with an emphasis on evaluating significant impacts resulting from the Project and identifying mitigation measures to avoid or reduce these impacts to a less-than-significant level. It should be noted that with the exception of transportation-related level of service impacts at four study intersections (Fourth Street/Hearst Avenue, Sixth Street/Hearst Avenue, Sixth Street/University Avenue and San Pablo Avenue/University Avenue), all of the impacts identified for the proposed Project can be mitigated to a less-than-significant level with implementation of the recommended mitigation measures.

The following discussion provides a comparison and discussion of three potential alternatives to the proposed Project, and to relate how the alternatives compare to the objectives, impacts and mitigation measures identified for the proposed Project. The three alternatives to the proposed Project that are discussed and evaluated in this chapter are the following:

- **No Project Alternative.** Under the No Project alternative, the existing Project site would remain in its current condition and use as a parking lot.

- **Reduced Commercial Use Alternative.** Under the Reduced Commercial Use alternative the existing building and surface parking lot on the site would be demolished and the site would be redeveloped with two five-story mixed-use buildings that would include 155 residential units and 22,500 square feet of commercial retail/restaurant space and associated improvements.

- **Reduced Building Alternative.** Under the Reduced Building alternative, the existing building and surface parking lot on the site would be demolished and the site would be redeveloped with a single two-story mixed-use building that includes 50 residential units and 7,500 square feet of commercial retail/restaurant space and associated improvements.
A. NO PROJECT ALTERNATIVE

1. Principal Characteristics

The No Project alternative assumes that the Project site would not be redeveloped and the existing site would generally remain in its current condition, with the 900 square-foot, one-story structure and approximately 350-space surface parking lot. The existing commercial structure on the site, which is currently vacant, could be remodeled and re-occupied with a new commercial tenant and the remainder of the site would continue to operate as a public surface parking lot.

2. Analysis of the No Project Alternative

The Project site would not be redeveloped under the No Project alternative and the Project site would continue to be underutilized. The No Project alternative would not achieve any of the objectives of the proposed Project. Specifically, no new commercial and residential uses would be developed, and thus the Project would not support the policies of the General Plan, West Berkeley Plan, or University Avenue Strategic Plan related to the development of high-density, mixed-use infill projects; enhance the Fourth Street retail environment; or contribute to the City’s affordable housing stock.

a. Cultural Resources. Under the No Project alternative, the existing building on the Project site, which is not a historical resource under CEQA, would not be demolished and would remain in its current condition. The existing surface parking lot also would not be demolished and the site would not be subject to subsurface disturbance such as excavation, grading, or other site preparation activities. As such, there would be no change in the historical significance of the West Berkeley Shellmound (City Landmark #227) and no possibility of uncovering paleontological resources or Native American human remains interred outside of a formal cemetery. Therefore, the No Project alternative would not result in any significant impacts to cultural resources within or in the vicinity of the site and Mitigation Measures CUL-1 (as identified in the Initial Study), CUL-2a through CUL-2d would not be required. In addition, AB 52 Measures CUL-1 and CUL-2 and Recommended Measure CUL-1 would not be implemented.

b. Traffic and Circulation. Implementation of the No Project alternative would not cause any substantial increase in traffic congestion within the vicinity of the Project site. The No Project alternative would not add vehicle trips to study area intersections and the existing and Near-Term traffic Conditions described in the setting section of Section IV.B, Traffic and Circulation, would be the same for the No Project alternative. As described in that section, under Existing and Near-Term Conditions, the intersections of Second Street/Hearst Avenue, Fourth Street/Hearst Avenue, Sixth Street/Hearst Avenue, Fourth Street/University Avenue (North), and Fourth Street/University Avenue (South) operate at Level of Service (LOS) B or better during the AM, PM, and Weekend peak hours and the intersections of Sixth Street/University Avenue and San Pablo Avenue/University Avenue operate at LOS D during the AM, PM and Weekend peak hours. Under this alternative, no decreases in the level of service would result under Near-Term Conditions.
Furthermore, although intersection level of service would degrade at study area intersections under Cumulative Conditions, specifically to LOS F at the Fourth Street/Hearst Avenue, Sixth Street/Hearst Avenue, Sixth Street/University Avenue, and San Pablo/University Avenue intersections during the AM, PM, and Weekend peak hours, the No Project alternative would not contribute to this decrease in intersection level of service operations. Therefore, the No Project alternative would not result in any significant impacts related to transportation and circulation and the significant and unavoidable cumulative level of service impacts identified for the proposed Project at the Fourth Street/Hearst Avenue, Sixth Street/Hearst Avenue, Sixth Street/University Avenue and San Pablo Avenue/University Avenue intersections would not occur.

c. Air Quality. Implementation of the No Project alternative would not result in demolition or construction activity within the Project site. As a result, this alternative would not substantially increase pollutant or odor concentrations and would not generate dust, exhaust, and organic emissions related to construction; therefore, implementation of Mitigation Measure AIR-1 would not be required to reduce construction-period air quality impacts. Similarly, this alternative would not result in the development of residential and commercial uses on the site and would not result in an increase in operational vehicle trips in the City of Berkeley; therefore the No Project would not result in the less than significant increase of mobile-source pollutants attributed to the proposed Project.

d. Noise and Vibration. No construction activities would take place as part of the No Project alternative. Therefore, the No Project alternative would not expose surrounding land uses to short-term noise or vibration during construction and implementation of Mitigation Measure NOI-2 would not be required. Noise at the Project site would not increase above that already occurring on the site and no increase in traffic noise would occur. In addition, the No Project alternative would not locate residential land uses in an area that is generally considered an unacceptable noise environment for these uses, and implementation of Mitigation Measure NOI-1 would not be required.

B. REDUCED COMMERCIAL USE ALTERNATIVE

1. Principal Characteristics

The Reduced Commercial Use alternative assumes that the Project site would be developed with fewer square feet of commercial uses as compared to the proposed Project. The existing building and surface parking lot on the site would be demolished and the site would be redeveloped with residential and commercial uses within two three- to five-story buildings, similar to the proposed Project. A total of 155 residential units and 22,500 square feet of commercial uses, including 2,500 square feet of restaurant space, would be developed, for a total reduction of 7,500 square feet of commercial space as compared to the proposed Project. Parking, open space, circulation, and infrastructure improvements identified for the proposed Project would be similar under this alternative.

2. Analysis of the Reduced Commercial Use Alternative

Under the Reduced Commercial Use alternative, the Project site would be developed with a mix of residential and commercial uses, although with less commercial square footage as
compared to the proposed Project. The Reduced Commercial Use alternative would achieve most of the Project objectives, although to a lesser extent than the proposed Project. In particular, those objectives that are related to the provision of a mix of high-density residential and commercial uses on the Project site would be achieved under this alternative, although those objectives related to the provision of retail uses within the Fourth Street Shopping area would not be achieved to the same extent at the proposed Project because less commercial development would occur. Similar to the proposed Project, this alternative would enhance the Fourth Street retail environment; contribute to solving the housing shortage in Berkeley with the provision of transit-proximate residential and affordable units; promote best practices in green construction; provide residential and retail development consistent with the General Plan, West Berkeley Plan, and University Avenue Strategic Plan; and generate significant new revenue for the City of Berkeley (although to a lesser extent than the proposed Project). In addition, the Reduced Commercial Use alternative would avoid the significant unavoidable traffic impact at the Sixth Street/Hearst Avenue intersection that would occur with the proposed Project, as further detailed below.

**a. Cultural Resources.** Under the Reduced Commercial Use alternative, the existing building on the Project site, which is not a historical resource under CEQA, as well as the existing surface parking lot, would be demolished. The site would be redeveloped with two three- to five-story mixed-use residential and commercial buildings, similar to the proposed Project. As with the proposed Project, the site would be subject to subsurface disturbance and grading activities, including excavation. Consequently, similar to the proposed Project, the Reduced Commercial Use alternative would result in a change to the historical significance of the West Berkeley Shellmound (City Landmark #227) and the potential to uncover paleontological resources or Native American human remains interred outside of a formal cemetery. Therefore, similar to the proposed Project, the Reduced Commercial Use alternative would result in a significant impact to cultural resources within and in the vicinity of the site and Mitigation Measures CUL-1 (as identified in the Initial Study) and CUL-2a through CUL-2d would be required to reduce these impacts to a less-than-significant level. In addition, AB 52 Measures CUL-1 and CUL-2 and Recommended Measure CUL-1 (or similar measures) would also likely be implemented as conditions of approval.

**b. Traffic and Circulation.** Implementation of the Reduced Commercial Use alternative would result in an increase in traffic congestion within the vicinity of the Project site, although to a lesser extent than the proposed Project. As shown in Table VI-1, below, compared to the proposed Project, the Reduced Commercial Use alternative would result in 849 fewer average daily trips and 35, 27, and 45 fewer AM, PM, and Weekend trips, respectively.1

Under Near-Term Conditions, and similar to the proposed Project, the intersections of Second Street/Hearst Avenue, Fourth Street/Hearst Avenue, Sixth Street/Hearst Avenue, Fourth Street/University Avenue (North), and Fourth Street/University Avenue (South) would continue to operate at LOS B or better during the AM, PM, and Weekend peak hours and the intersections of Sixth Street/University Avenue and San Pablo Avenue/University Avenue

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operate at LOS D during the AM, PM and Weekend peak hours, under this alternative. Similar to the proposed Project, no decreases in the level of service would result under Near-Term Conditions.

Table VI-1: Comparison of Reduced Commercial Use Alternative and Proposed Project Vehicle Trip Estimates

<table>
<thead>
<tr>
<th>Land Use/ITE Code (^a)</th>
<th>Units</th>
<th>Daily Trips</th>
<th>AM Peak Hour</th>
<th>PM Peak Hour</th>
<th>Weekend Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reduced Commercial Use Alternative Vehicle Trip Estimates</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential – Apartment</td>
<td>220</td>
<td>155 DU</td>
<td>1,740</td>
<td>131</td>
<td>103</td>
</tr>
<tr>
<td>Commercial – Retail</td>
<td>826</td>
<td>20,000 SF</td>
<td></td>
<td>131</td>
<td>103</td>
</tr>
<tr>
<td>Commercial – Restaurant</td>
<td>931</td>
<td>2,500 SF</td>
<td></td>
<td>103</td>
<td>82</td>
</tr>
<tr>
<td><strong>Project Vehicle Trip Estimates</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential – Apartment</td>
<td>220</td>
<td>155 DU</td>
<td>2,589</td>
<td>166</td>
<td>130</td>
</tr>
<tr>
<td>Commercial – Retail</td>
<td>826</td>
<td>25,000 SF</td>
<td></td>
<td>166</td>
<td>130</td>
</tr>
<tr>
<td>Commercial – Restaurant</td>
<td>931</td>
<td>5,000 SF</td>
<td></td>
<td>130</td>
<td>103</td>
</tr>
<tr>
<td><strong>Total Reduced Commercial Use Alternative Trips Compared to Proposed Project</strong></td>
<td></td>
<td></td>
<td>(849)</td>
<td>(35)</td>
<td>(27)</td>
</tr>
</tbody>
</table>

Notes:
DU = dwelling unit
SF = square feet


Similar to the proposed Project, the level of service during Cumulative Conditions would also degrade to LOS F at the Fourth Street/Hearst Avenue, Sixth Street/University Avenue, and San Pablo/University Avenue intersections during the AM, PM, and Weekend peak hours, under the Reduced Commercial Use alternative, although the increase in congestion at these intersections would be slightly reduced because fewer vehicle trips would be generated as compared to the proposed Project. This alternative would avoid the intersection level of service impact at the Sixth Street/Hearst Avenue intersection during the Cumulative Conditions due to the decrease in vehicle trips added to the intersection as compared to the proposed Project. Therefore, the Reduced Commercial Use alternative would result in significant and unavoidable impacts to three study intersections rather than the four identified for the proposed Project.

c. **Air Quality.** Development of the Reduced Commercial Use alternative would result in demolition and construction activity within the Project site, although the construction period would be slightly less with the reduced Project size. Similar to the proposed Project, this alternative would result in an increase in pollutant and odor concentrations during the construction period and would generate dust, exhaust, and organic emissions related to construction; therefore, implementation of Mitigation Measure AIR-1 would also be required to reduce construction-period air quality impacts. Similar to the proposed Project, this alternative would result in development of residential and commercial uses on the site and would result in an increase in operational vehicle trips and thus mobile source pollutants in the City of Berkeley, although to a lesser extent than the proposed Project. This impact would be less than significant under both the proposed Project and the Reduced Commercial Use alternative.
d. **Noise and Vibration.** Similar to the proposed Project, construction activities would take place under the Reduced Commercial Use alternative. Therefore, the Reduced Commercial Use alternative would expose surrounding land uses to short-term noise and vibration during construction and implementation of Mitigation Measure NOI-2 would be required. Noise at the existing Project site would also increase above that already occurring on the site, although to a lesser extent than the proposed Project due to the reduction in commercial activity. Increased traffic noise would also occur, but to a lesser degree than under the proposed Project. This impact would be less than significant under both the proposed Project and the Reduced Commercial Use alternative. In addition, similar to the proposed Project, the Reduced Commercial Use alternative would locate residential land uses in an area that is generally considered an unacceptable noise environment for these uses and implementation of Mitigation Measure NOI-1 would be required.

C. **REDUCED BUILDING ALTERNATIVE**

1. **Principal Characteristics**

The Reduced Building Density alternative assumes that the Project site would be developed with a reduced level of building intensity as compared to the proposed Project and similar in terms of density, building height, and use to what was contemplated for the site in the University Avenue Strategic Plan (refer to Section X, Land Use and Planning, in the Initial Study included as Appendix B of this EIR for a description of this planning document).² The University Avenue Strategic Plan identifies the development potential for the Project site as follows:

Spenger’s parking lot on Fourth Street between Hearst and University Avenue has been suggested in the West Berkeley Redevelopment Plan as a prime location for a new parking structure that would serve both local parking needs in and around Fourth Street and satellite parking for Downtown and U.C. Berkeley commuters. The facility could also include a future train station for a regional transit connection via Amtrak, a platform for a Caltrain-type service, as well as a major stop and transfer point for the University Avenue Electric Shuttle. There is also sufficient land on this property to incorporate a mix of office, ground floor retail, entertainment, and outdoor plazas. Workshop participants expressed concern that any new development on the site should fit with the scale of the surrounding area and not tower over the University Avenue overpass. To facilitate easy freeway access, the design should consider the feasibility of a special off-ramp connection into the parking structure. As an initial first step, a Master Plan should be prepared for this site.

Within the University Avenue Strategic Plan, the following general design guidelines apply to the Project site: 1) buildings should front University Avenue and Fourth Street; 2) ground floor space should be occupied with retail shops or services, while upper levels must be occupied by residential units or offices; 2) building massing should be such that the street edge is two to four stories high; 3) building facades should create an active, interesting

streetscape; and 4) parking should be located in ground-level parking areas integrated into the building facade and screened from the street, or behind buildings. The Design Guidelines also state that the Spenger’s Parking Lot site should support buildings that are no more than 40 feet tall and echo the rhythm of surrounding smaller-scale buildings. Ground floor retail uses should be provided on both Fourth Street and Hearst Avenue, with office uses or other entertainment uses, such as a cinema. The site should also provide a plaza and midblock passage to access the Amtrak stop from Fourth Street. Parking should also be located at the interior of the site or adjacent to the University Avenue overpass.

The Reduced Building alternative would involve development of the site at a similar scale as that contemplated in the University Avenue Strategic Plan and consistent with the design guidelines, although no entertainment uses would be included. Under the Reduced Building alternative, the existing building and surface parking lot on the site would be demolished and the site would be redeveloped with residential and commercial uses within two two-story buildings. A total of 50 residential units and 7,500 square feet of commercial uses would be developed, for a total reduction of 105 residential units and 22,500 square feet of commercial space as compared to the proposed Project. Commercial uses would be located on the ground floor with residential uses above. Storefronts would face University Avenue and Fourth Street and, similar to what was contemplated in the University Avenue Strategic Plan design guidelines a mid-block passage would provide access to parking at the rear of the site and to the adjacent Amtrak station platform. Parking would be provided at the ground level and integrated into building facades or behind the buildings. Open space, circulation, and infrastructure improvements identified for the proposed Project would be similar under this alternative.

2. Analysis of the Reduced Building Alternative

Under the Reduced Building Alternative, the Project site would be developed with a mix of residential and commercial uses, although with substantially fewer residential units and less commercial square footage as compared to the proposed Project. The Reduced Building alternative would achieve most of the Project objectives, although to a lesser extent than the proposed Project. This alternative would enhance the Fourth Street retail environment, although with fewer retail and restaurant options than would be available with the proposed Project; contribute to solving the housing shortage in Berkeley with the provision of transit-proximate residential and affordable units, although to a lesser extent than the proposed Project; promote best practices in green construction; provide residential and retail development consistent with the General Plan, West Berkeley Plan, and University Avenue Strategic Plan, although at a much lower density than contemplated for this area of the City in the General Plan and West Berkeley Plan; and generate new revenue for the City of Berkeley, although to a lesser extent than the proposed Project. In addition, the Reduced Building alternative would avoid the significant unavoidable impacts at the Fourth Street/Hearst Avenue and Sixth Street/Hearst Avenue intersections that would occur with the proposed Project, as further detailed below.

a. Cultural Resources. Under the Reduced Building alternative, the existing building on the Project site, which is not a historical resource under CEQA, as well as the existing surface parking lot, would be demolished. The site would be redeveloped with two two-story mixed-use residential and commercial buildings, similar to the proposed Project. As with the
proposed Project, the site would be subject to subsurface disturbance and grading activities, including excavation. Therefore, similar to the proposed Project, the Reduced Building alternative would result in a change to the historical significance of the West Berkeley Shellmound (City Landmark #227) and the potential to uncover paleontological resources or Native American human remains interred outside of a formal cemetery. Therefore, similar to the proposed Project, the Reduced Building alternative would result in a significant impact to cultural resources within and in the vicinity of the site and Mitigation Measures CUL-1 (as identified in the Initial Study) and CUL-2a through CUL-2d would be required to reduce these impacts to a less-than-significant level. In addition, AB 52 Measures CUL-1 and CUL-2 and Recommended Measure CUL-1 (or similar measures) would also likely be implemented as conditions of approval.

**b. Traffic and Circulation.** Implementation of the Reduced Building alternative would result in an increase in traffic congestion within the vicinity of the Project site, although to a lesser extent than the proposed Project. The Reduced Building alternative would add approximately 540 average daily vehicle trips to study intersections and would contribute 50 AM, 32 PM, and 43 Weekend peak hour trips. Compared to the proposed Project, the Reduced Building alternative would result in 2,049 fewer average daily trips and 116, 98, and 144 fewer AM, PM, and Weekend trips, respectively.\(^3\)

**Table VI-2: Comparison of Reduced Building Alternative and Proposed Project Vehicle Trip Estimates**

<table>
<thead>
<tr>
<th>Land Use/ITE Code(^a)</th>
<th>Units</th>
<th>Daily Trips</th>
<th>AM Peak Hour</th>
<th>PM Peak Hour</th>
<th>Weekend Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reduced Building Alternative Vehicle Trip Estimates</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential – Apartment</td>
<td>220 50 DU</td>
<td>540</td>
<td>50</td>
<td>32</td>
<td>43</td>
</tr>
<tr>
<td>Commercial – Retail</td>
<td>826 7,500 SF</td>
<td>2,589</td>
<td>166</td>
<td>130</td>
<td>187</td>
</tr>
<tr>
<td><strong>Project Vehicle Trip Estimates</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential – Apartment</td>
<td>220 155 DU</td>
<td>2,589</td>
<td>166</td>
<td>130</td>
<td>187</td>
</tr>
<tr>
<td>Commercial – Retail</td>
<td>826 25,000 SF</td>
<td>2,589</td>
<td>166</td>
<td>130</td>
<td>187</td>
</tr>
<tr>
<td>Commercial – Restaurant</td>
<td>931 5,000 SF</td>
<td>2,589</td>
<td>166</td>
<td>130</td>
<td>187</td>
</tr>
<tr>
<td><strong>Total Reduced Building Alternative Trips Compared to Proposed Project</strong></td>
<td></td>
<td>(2,049)</td>
<td>(116)</td>
<td>(98)</td>
<td>(144)</td>
</tr>
</tbody>
</table>

Notes:
DU = dwelling unit
SF = square feet


Under Near-Term Conditions and similar to the proposed Project, the intersections of Second Street/Hearst Avenue, Fourth Street/Hearst Avenue, Sixth Street/Hearst Avenue, Fourth Street/University Avenue (North), and Fourth Street/University Avenue (South) would continue to operate at LOS B or better during the AM, PM, and Weekend peak hours and the intersections of Sixth Street/University Avenue and San Pablo Avenue/University

Avenue operate at LOS D during the AM, PM and Weekend peak hours under the Reduced Building alternative. Similar to the proposed Project, under this alternative, no decreases in the level of service would result under Near-Term Conditions.

Similar to the proposed Project, during Cumulative Conditions the level of service under the Reduced Building Alternative would also degrade to LOS F at the Sixth Street/University Avenue and San Pablo/University Avenue intersections during the AM, PM, and Weekend peak hours. However, the increase in congestion at these intersections would be reduced compared to the proposed Project because fewer vehicle trips would be generated. However, this alternative would avoid the significant intersection level of service impacts at the Sixth Street/Hearst Avenue and Fourth Street/Hearst Avenue intersections during the Cumulative Conditions due to the decrease in vehicle trips added to these intersections as compared to the proposed Project. Therefore, the Reduced Building alternative would result in significant and unavoidable impacts to two study intersections rather than the four identified for the proposed Project.

c. Air Quality. Development of the Reduced Building alternative would result in demolition and construction activity within the Project site, although the construction period would be slightly less with the reduced Project size. Similar to the proposed Project, this alternative would result in an increase in pollutant and odor concentrations during the construction period and would generate dust, exhaust, and organic emissions related to construction; therefore, implementation of Mitigation Measure AIR-1 would also be required to reduce construction-period air quality impacts. Similar to the proposed Project, this alternative would result in the development of residential and commercial uses on the site and would result in an increase in operational vehicle trips and thus mobile source pollutants in the City of Berkeley, although to a lesser extent than the proposed Project. This impact would be less than significant under both the proposed Project and the Reduced Building alternative.

d. Noise and Vibration. Similar to the proposed Project, construction activities would take place under the Reduced Building alternative. Therefore, the Reduced Building alternative would expose surrounding land uses to short-term noise and vibration during construction and implementation of Mitigation Measure NOI-2 would be required. Noise at the existing Project site would also increase above that already occurring on the site, although to a lesser extent than the proposed Project. Increased traffic noise would also occur. This impact would be less than significant under both the proposed Project and the Reduced Building alternative. Similar to the proposed Project, the Reduced Building alternative would locate residential land uses in an area that is generally considered an unacceptable noise environment for these uses and implementation of Mitigation Measure NOI-1 would also be required.

D. ALTERNATIVES CONSIDERED BUT NOT SELECTED FOR FURTHER EVALUATION

The following describes various potential alternatives that were identified and considered and the reasons why these were ultimately not selected for further evaluation in the EIR:
• **Public Open Space/Recreation.** During the Notice of Preparation comment period, a commenter suggested that the Project site could be redeveloped as a public park or open space/recreation area. Such an alternative was not considered for analysis because the Project site is privately owned and the City of Berkeley does not have the authority to gain control of the site for the purposes of developing an open space or recreation area.

• **Alternative Location.** An alternative location was not considered for analysis because the applicant does not own or would not feasibly otherwise be able to gain control of a suitable vacant site within the City. In addition, a major objective of the Project is to enhance the retail environment of the Fourth Street shopping area and an alternative location outside of the Fourth Street shopping area would fail to meet this Project objective. Redevelopment of other sites in West Berkeley could result in the loss of or interfere with industrial or manufacturing uses, which are also encouraged in West Berkeley. Furthermore, redevelopment of other infill sites within the area could result in more demolition activity and waste than required at the Project site, which consists of a surface parking lot and small commercial structure. Redevelopment of the Project site therefore could likely generate less demolition waste compared to a site developed with a larger structure and thus the site is a desirable location for the redevelopment.

• **Office/Commercial Use.** An alternative to the Project that would redevelop the site with a mix of office and commercial uses was not analyzed because a major objective of the Project is to redevelop the site with a mix of residential and commercial uses in order to balance the mix of uses on site. In addition, such an alternative would not contribute to the City’s housing stock and would not result in the location of residential uses within close proximity to transit, which are major objectives of the proposed Project. Furthermore, the Project site is identified as a desirable location for redevelopment with a mix of residential and commercial uses as identified in the West Berkeley Plan and the University Strategic Plan. Development of the site with a mix of office and commercial uses without the residential component would not support the vision and intent of these planning documents.

E. **ENVIRONMENTALLY SUPERIOR ALTERNATIVE**

Based on the above analysis, the No Project alternative would have the fewest impacts and would be the environmentally superior alternative. Under CEQA, if the No Project alternative is the environmentally superior alternative, the EIR must identify an environmentally superior alternative from among the other alternatives (CEQA Guidelines Section 15126.6(e)(2)). While the No Project alternative would be environmentally superior in the technical sense that contribution to the aforementioned impacts would not occur, it would also fail to achieve any of the Project’s objectives.

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4 Mark Rhoades Planning Group, 2016. Written communication with Shannon Allen, Principal Planner, City of Berkeley. October 10.
As discussed above, the Reduced Building alternative would avoid two of the significant unavoidable Project impacts related to transportation and circulation. Therefore, the Reduced Building alternative is considered the environmentally superior alternative. However, this alternative would not be consistent with the vision and intent of the General Plan and West Berkeley Plan, which call for increased development intensities and high density housing in this area of the City. Furthermore, this alternative would not fully achieve some of the basic project objectives related to the provision of high density housing. Specifically, it would provide fewer housing opportunities in close proximity to existing alternative transportation options and existing goods, services, and job opportunities. The Reduced Commercial Use alternative would avoid one of the significant unavoidable Project impacts related to transportation and circulation and would be the next best alternative compared to the proposed Project. However, this alternative would also not achieve some of the Project objectives to the same extent that the proposed Project would.
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VII. REPORT PREPARATION

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**B. REFERENCES**


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C. COMMUNICATION

Berkeley, City of, 2016. Written communication to Andrew Galvan, President, Board of Directors, The Ohlone Indian Tribe, Inc. Subject: Conclusion of Assembly Bill 52 Consultation for the 1900 Fourth Street Project, Berkeley, Alameda County. October 6.

Galvan, Andrew, 2016. President, Board of Directors, The Ohlone Indian Tribe, Inc. Personal communication with Shannon Allen, Principal Planner, City of Berkeley. September 6.

Galvan, Andrew, 2016. President, Board of Directors, The Ohlone Indian Tribe, Inc. Written communication with Shannon Allen, City of Berkeley, Principal Planner. RE: Request for Funding to Conduct Improvements at the Ohlone Indian Cemetery in the Mission San Jose District in the City of Fremont, California. September 7.

Mark Rhoades Planning Group, 2016. Written communication with Shannon Allen, Principal Planner, City of Berkeley. October 10.
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