significant increased cancer risks from construction-related emissions shall be avoided by delaying occupancy until after the completion of demolition and excavation activities, unless the Project Applicants perform a new Health Risk Assessment prior to the issuance of a building permit for the residential units, demonstrating that the health risk to Project residents from the remaining demolition and excavation activities would be less than significant.

**Mitigation Measure AIR-3e: Construction Plan.** Prior to the issuance of any demolition or construction permits, the Project Applicants shall prepare and provide to the City for City approval a written construction plan to minimize exposure of sensitive receptors to health risks. Such a plan shall include sufficient information as to the type, location, and duration and intensity of use of equipment so as to demonstrate that no significant health risk impacts will result during Project demolition and construction.

**Significance after Mitigation:** Because the required construction plan identified in Mitigation Measure AIR-3e has not yet been prepared, and the reductions associated with the implementation of Mitigation Measure AIR-3e have not been calculated or applied, at this time, this impact is considered Significant and Potentially Unavoidable.

---

**Toxic Air Contaminants – Project Operation**

The Project would expose persons to substantial levels of TACs during Project operations, which may lead to adverse health effects (Criterion 4). (Less than Significant)

Project operation would produce DPM and PM2.5 emissions due to motor vehicle traffic including employees, customers, deliveries, and new residences. These emissions could result in elevated concentrations of DPM and PM2.5. These elevated concentrations could lead to an increase in the risk of cancer or other health impacts.

**Maximum Commercial Scenario.** A summary of the health impacts related to Project operations of the Maximum Commercial scenario are found in Table 4.2-9.

<table>
<thead>
<tr>
<th>Receptor Type</th>
<th>Cancer Risk (persons per million)</th>
<th>Chronic Impact</th>
<th>Acute Impact</th>
<th>PM2.5 Concentration (µg/m3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Children</td>
<td>0.08</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
<td>0.02</td>
</tr>
<tr>
<td>Existing Residence (adult/child)</td>
<td>3.03/1.47</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
<td>0.07</td>
</tr>
<tr>
<td><strong>BAAQMD Significance Criteria</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Significant Impact?</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

a Detailed assumptions and methodology of the HRA are included in Appendix C.

As shown above in Table 4.2-9, the maximum cancer risk for an existing residence-adult and residence-child (located to the east of the Project Site) would be 3.0 and 1.5 persons per million, respectively. The maximum cancer risk for the nearest school (Las Lomas High School) receptor would be 0.1 persons per million. Thus, the cancer risk due to Project operations alone is below the BAAQMD threshold of 10 per million and would be less than significant.

The chronic HI would be less than 0.1 at all receptors. The chronic HI would be well below the BAAQMD threshold of 1 and the impact of the Project would be less than significant. The acute HI would be less than 0.1 at all receptors. The acute HI would be well below the BAAQMD threshold of 1 and the impact of the Project would be less than significant.

The maximum annual PM2.5 concentrations as a result of Project operation would be 0.02 and 0.07 µg/m³ for the nearest school and the existing residences, respectively. The operation-related annual PM2.5 concentration is below the BAAQMD threshold of 0.3 µg/m³, and hence is considered less than significant.

**Maximum Mixed-Use Scenario.** A summary of the health impacts related to Project operations of the Maximum Mixed-Use scenario are found in Table 4.2-10.

<table>
<thead>
<tr>
<th>Receiver Type</th>
<th>Cancer Risk (persons per million)</th>
<th>Chronic Impact</th>
<th>Acute Impact</th>
<th>PM2.5 Concentration (µg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Residence (adult/child)</td>
<td>1.81/0.88</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
<td>0.04</td>
</tr>
<tr>
<td>School Children</td>
<td>0.06</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Existing Residence (adult/child)</td>
<td>2.08/1.01</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
<td>0.04</td>
</tr>
</tbody>
</table>

**BAAQMD Significance Criteria**

- Significant Impact? No
- No
- No
- No

As shown above in Table 4.2-10, the maximum cancer risk for the new residence-adult and residence-child at the Project Site would be 1.8 and 0.8 persons per million, respectively. The maximum cancer risk for an existing residence-adult and residence-child (located to the east of the Project Site) would be 2.1 and 1.0 persons per million, respectively. The maximum cancer risk for the nearest school (Las Lomas High School) receptor would be 0.1 persons per million. Thus, the cancer risk due to Project operations alone is below the BAAQMD threshold of 10 per million and would be less than significant.

The chronic HI would be less than 0.1 at all receptors. The chronic HI would be well below the BAAQMD threshold of 1 and the impact of the Project would be less than significant. The acute HI
would be less than 0.1 at all receptors. The acute HI would be well below the BAAQMD threshold of 1 and the impact of the Project would be less than significant.

The maximum annual PM2.5 concentrations as a result of Project operation would be 0.04, 0.01, and 0.04 µg/m³ for the new residence at the Project Site, the nearest school, and the existing residences, respectively. The operation-related annual PM2.5 concentration is below the BAAQMD threshold of 0.3 µg/m³, and hence is considered less than significant.

Mitigation: None required.

---

Toxic Air Contaminants – New Receptors

The Project would expose persons (new receptors) to substantial levels of TACs, which may lead to adverse health effects (Criterion 4). (Less than Significant)

The BAAQMD’s CEQA Air Quality Guidelines include standards and methods for determining the significance of health risk impacts for new receptors resulting from the Project. The method for determining health risk requires the review of health risk from permitted sources and major roadways in the vicinity of a project (i.e., within a 1,000-foot radius of the source), then adding the project impacts to determine whether the health risk thresholds for new receptors are exceeded.

BAAQMD has developed a geo-referenced database of permitted emissions sources throughout the San Francisco Bay Area, and has developed the Stationary Source Risk & Hazard Analysis Tool (dated May 2011) for estimating cumulative health risks from permitted sources. Eight permitted sources are located within 1,000 feet of the fence line of the Project.

BAAQMD CEQA Air Quality Guidelines also require the inclusion of surface streets within 1,000 feet of the Project with annual average daily traffic (AADT) of 10,000 or greater. Upon review, the health impacts from Mt Diablo Boulevard with 25,000 AADT and located within 100 feet of the Project Site were included. Main Street with 15,064 AADT and located within 50 feet of the Project Site was included in the analysis. Finally, Newell Avenue with 27,900 AADT and located within 50 feet of the Project Site was included in the analysis.

A summary of the health impacts for the new residences to be developed under the Maximum Mixed-Use scenario of the Project is found in Table 4.2-11. No residences would be developed under the Maximum Commercial scenario.

Notably, for individual projects/new receptors, the threshold of significance is based the source with the highest cancer risk, PM2.5 concentration, or hazard in comparison to other sources within the 1,000 foot radius of the receptor.

---

6 BAAQMD County Surface Street Screening Tables, May 201 and CEHTP Traffic Linkage Service Demonstration, http://www.ehib.org/traffic_tool.jsp

7 BAAQMD, Recommended Methods for Screening and Modeling Local Risk and Hazards, May 2011.
4. Environmental Setting, Impacts, and Mitigation Measures
4.2 Air Quality

### TABLE 4.2-11
HEALTH IMPACTS FOR NEW RECEPTORS – MAXIMUM MIXED-USE SCENARIO

<table>
<thead>
<tr>
<th>Site #</th>
<th>Facility Type</th>
<th>Address</th>
<th>Cancer Risk (persons per million)</th>
<th>Chronic Hazard Impact</th>
<th>PM2.5 Concentration (µg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10016</td>
<td>Classic Cleaning</td>
<td>1350 Mt Diablo Blvd</td>
<td>2.57</td>
<td>0.04</td>
<td>0</td>
</tr>
<tr>
<td>19741</td>
<td>Nordstrom</td>
<td>1200 Broadway Plaza</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>G7639</td>
<td>Coast Service</td>
<td>1387 So California Blvd</td>
<td>1.07</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>G1735</td>
<td>Kaiser Shell</td>
<td>1599 Newell Avenue</td>
<td>1.26</td>
<td>0.002</td>
<td>0</td>
</tr>
<tr>
<td>G1729</td>
<td>Chevron Station</td>
<td>1700 Mt Diablo Boulevard</td>
<td>8.45</td>
<td>0.012</td>
<td>0</td>
</tr>
<tr>
<td>14452</td>
<td>Herald's Cleaners</td>
<td>1525 Cypress Street</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>16262</td>
<td>Macy's</td>
<td>1301 Broadway Plaza</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9254</td>
<td>Hosanna Cleaners</td>
<td>1280C Newell Ave</td>
<td>1.28</td>
<td>0.02</td>
<td>0</td>
</tr>
</tbody>
</table>

Roadway Sources

<table>
<thead>
<tr>
<th>Source</th>
<th>Cancer Risk (persons per million)</th>
<th>Chronic Hazard Impact</th>
<th>PM2.5 Concentration (µg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mt Diablo Blvd</td>
<td>2.26</td>
<td>0.02</td>
<td>0.08</td>
</tr>
<tr>
<td>Main Street</td>
<td>2.33</td>
<td>0.02</td>
<td>0.08</td>
</tr>
<tr>
<td>Newell Ave</td>
<td>2.97</td>
<td>0.02</td>
<td>0.11</td>
</tr>
</tbody>
</table>

Highest Source Impact: 8.45 0.04 0.11

**BAAQMD Significance Criteria (new receptor)**

<table>
<thead>
<tr>
<th>Source</th>
<th>Cancer Risk (persons per million)</th>
<th>Chronic Hazard Impact</th>
<th>PM2.5 Concentration (µg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

The health impacts from nearby sources in the area would have an impact on new residence receptors associated with the Maximum Mixed-Use scenario of the Project. The highest cancer risk from nearby sources would be 8.45 persons per million (due to the nearby Chevron Station). Thus, the cancer risk for new receptors is below the BAAQMD threshold of 10 per million and would be less than significant.

The highest hazard index from nearby sources would be 0.04; well below the BAAQMD threshold of 1 and the impact of the proposed residences of the Project would be less than significant. The highest annual PM2.5 concentrations would be 0.11 µg/m³ as a result of roadway traffic on Newell Avenue. This PM2.5 concentration at proposed residences would be below the BAAQMD threshold of 0.3 µg/m³, and hence is considered less than significant.

**Mitigation:** None required.
Cumulative Impacts

Geographic Context

The cumulative geographic context includes the Bay Area Air Basin as well as existing and potential future sources of TACs in the Project Site and surroundings.

Regional Criteria Pollutants

Impact AIR-4: The Project, together with anticipated cumulative development in the Bay Area Air Basin, would contribute to regional criteria pollutants (Criterion 3). (Less than Significant with Mitigation)

According to the BAAQMD, no single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project’s individual emissions contribute to existing cumulatively significant adverse air quality impacts. In addition, according to the BAAQMD CEQA Air Quality Guidelines, if a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region’s existing air quality conditions (BAAQMD, 2010a). Alternatively, if a project does not exceed the identified significance thresholds, then the project would not be considered cumulatively considerable and would result in less-than-significant air quality impacts.

As described above in Impacts AIR-1 and AIR-2, Project emissions from construction and operations, respectively, would be less than the BAAQMD thresholds after implementation of mitigation for both Scenarios. Consequently the Project would not result in a cumulatively considerable contribution to regional emissions of ROG, NOx, PM10 or PM2.5.

Toxic Air Contaminants – Cumulative Exposure

The Project would cumulatively expose persons to substantial levels of toxic air contaminants (TACs), which may lead to adverse health effects (Criterion 4). (Less than Significant)

The BAAQMD’s CEQA Air Quality Guidelines include standards and methods for determining the significance of cumulative health risk impacts for new projects. The method for determining health risk requires the review of health risk from permitted sources and major roadways in the vicinity of a project (i.e., within a 1,000-foot radius of the source), then adding the project impacts to determine whether the cumulative health risk thresholds are exceeded. A summary of the cumulative health impacts for the existing residences are found in Table 4.2-12.

The health impacts from the Project construction and operations plus other sources (permitted sources and roadways) in the area would have a cumulative impact on existing residence receptors. The maximum cumulative cancer risk for existing residence would be 25.1 and 39.8 persons per million for residence-adult and residence child, respectively. Thus, the cumulative cancer risk is below the BAAQMD threshold of 100 per million and would be less than significant.
TABLE 4.2-12
CUMULATIVE HEALTH IMPACTS*

<table>
<thead>
<tr>
<th>Site #</th>
<th>Facility Type</th>
<th>Address</th>
<th>Cancer Risk (persons per million)</th>
<th>Chronic Hazard Impact</th>
<th>PM2.5 Concentration (µg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10016</td>
<td>Classic Cleaning</td>
<td>1350 Mt Diablo Blvd</td>
<td>2.57</td>
<td>0.04</td>
<td>0</td>
</tr>
<tr>
<td>19741</td>
<td>Nordstrom</td>
<td>1200 Broadway Plaza</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>G7639</td>
<td>Coast Service</td>
<td>1387 So California Blvd</td>
<td>1.07</td>
<td>0.00</td>
<td>0</td>
</tr>
<tr>
<td>G1735</td>
<td>Kaiser Shell</td>
<td>1599 Newell Avenue</td>
<td>1.26</td>
<td>0.002</td>
<td>0</td>
</tr>
<tr>
<td>G1729</td>
<td>Chevron Station</td>
<td>1700 Mt Diablo Boulevard</td>
<td>8.45</td>
<td>0.012</td>
<td>0</td>
</tr>
<tr>
<td>14452</td>
<td>Herald's Cleaners</td>
<td>1525 Cypress Street</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>16262</td>
<td>Macy's</td>
<td>1301 Broadway Plaza</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9254</td>
<td>Hosanna Cleaners</td>
<td>1280C Newell Ave</td>
<td>1.28</td>
<td>0.02</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Permitted Sources Total</td>
<td></td>
<td>14.6</td>
<td>0.08</td>
<td>0</td>
</tr>
</tbody>
</table>

Roadway Sources

<table>
<thead>
<tr>
<th>Source</th>
<th>Cancer Risk (persons per million)</th>
<th>Chronic Hazard Impact</th>
<th>PM2.5 Concentration (µg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mt Diablo Blvd</td>
<td>2.26</td>
<td>0.02</td>
<td>0.08</td>
</tr>
<tr>
<td>Main Street</td>
<td>2.33</td>
<td>0.02</td>
<td>0.08</td>
</tr>
<tr>
<td>Newell Ave</td>
<td>2.97</td>
<td>0.02</td>
<td>0.11</td>
</tr>
<tr>
<td>Roadway Total</td>
<td>7.56</td>
<td>0.06</td>
<td>0.27</td>
</tr>
</tbody>
</table>

Project Adult/Child

<table>
<thead>
<tr>
<th>Source</th>
<th>Cancer Risk (persons per million)</th>
<th>Chronic Hazard Impact</th>
<th>PM2.5 Concentration (µg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>2.93/17.6</td>
<td>0.06</td>
<td>0.30</td>
</tr>
</tbody>
</table>

Grand Total

<table>
<thead>
<tr>
<th>Source</th>
<th>Cancer Risk (persons per million)</th>
<th>Chronic Hazard Impact</th>
<th>PM2.5 Concentration (µg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAAQMD Cumulative Significance Criteria</td>
<td>25.1/39.8</td>
<td>0.20</td>
<td>0.57</td>
</tr>
</tbody>
</table>

Significant Cumulative Impact? No

* Detailed assumptions and methodology of the HRA are included in Appendix C.


The cumulative HI would be 0.20. The HI would be well below the BAAQMD threshold of 10 and the impact of the Project would be less than significant. The maximum cumulative annual PM2.5 concentrations would be 0.57 µg/m³. The cumulative annual PM2.5 concentration is below the BAAQMD threshold of 0.8 µg/m³, and hence is considered less than significant.

**Mitigation:** None required.

### 4.2.4 References


4. Environmental Setting, Impacts, and Mitigation Measures

4.2 Air Quality


City of Walnut Creek, 2006. *Walnut Creek General Plan 2025, Chapter 4 Built Environment.* April 4, 2006.


Kirk, Allison, Senior Environmental Planner, Bay Area Air Quality Management District, e-mail correspondence to Chris Sanchez at Environmental Science Associates, January 27, 2012.

4.3 Biological Resources

This section identifies the existing biological resources at the Project Site; identifies the federal, state, and local regulations pertaining to biological resources within the region; evaluates the potential impacts of the Maximum Commercial and Maximum Mixed-Use project scenarios on biological resources; and identifies appropriate mitigation measures, as necessary. Information used in the preparation of this section was obtained from the California Natural Diversity Database (CNDDB) (California Department of Fish and Game [CDFG], 2011), California Native Plant Society (CNPS) Electronic Inventory (CNPS, 2011), U.S. Fish and Wildlife Service (USFWS, 2011), and standard biological literature.

In order to develop a preliminary characterization of biological resources on the Project Site, previous biological resources studies in the region were reviewed, as well as existing plans such as the Creek Restoration and Trails Master Plan (John Northmore Roberts and Associates, 1993). On September 13, 2011, a reconnaissance-level field survey covering the entire Project Site was conducted to gather first-hand information and verify existing data on vegetative communities, wildlife habitats, and wetlands.

4.3.1 Environmental Setting

Regional Setting

The Project Site is located in the western Contra Costa County city of Walnut Creek, in the San Francisco Bay Area. The Bay Area region supports a Mediterranean climate and a broad range of habitats, including mosaics of oak and mixed evergreen forests, native and non-native grasslands, chaparral, upland scrub, marsh and wetland communities, and riparian scrub and forests. The Project Site is almost entirely developed by commercial buildings and hardscape surfaces within downtown Walnut Creek, and is currently functions as a retail shopping mall; the only semi-natural habitat in the Project Site and surroundings are within the San Ramon Creek riparian corridor.

Project Site Setting

The Project Site includes several parcels of the Broadway Plaza shopping center, which are located between South Broadway and South Main Street in downtown Walnut Creek. The Project Site is depicted in Figure 4.3-1. To adequately assess wildlife and habitats potentially present at the Project Site, a larger Study Area consisting of the Walnut Creek and Las Trampas USGS 7.5-minute quadrangles was analyzed and is referred to when a larger regional context is necessary.

Historically, areas in the vicinity of downtown Walnut Creek and the Project Site consisted of a valley where several local creeks drained the surrounding hills of the Diablo Range. The confluence of Las Trampas Creek, San Ramon Creek, and Tice Creek formed Walnut Creek and was located directly north of the Project Site (Oakland Museum of California, 2011). Today, Tice Creek merges...
Figure 4.3-1
Project Site Location and Sensitive Habitats

SOURCE: ESRI, 2010
with Las Trampas Creek outside of the Project Site, just before Las Trampas Creek reaches Main Street. Walnut Creek then flowed north to a large wetland on Suisun Bay, west of the Carquinez Strait, which eventually emptied into San Francisco Bay and the Pacific Ocean.

Historically, the short reaches of San Ramon Creek and Las Trampas Creek within the Project Site supported a dense canopy of riparian woodland.

Rapid urban development in the latter half of the 20th century, which included construction of the Bay Area’s extensive freeway network and BART light rail system, resulted in channelization of creeks in the Walnut Creek watershed and large-scale removal of natural habitat. Reaches of San Ramon and Las Trampas Creeks are now contained in culverts and concrete channels for flood control. Despite this, native riparian vegetation still grows above the concrete creek channels along much of both the San Ramon and Las Trampas Creeks south of the Project Site.

On the Project Site, San Ramon Creek and Las Trampas Creek are almost completely covered by the Broadway Plaza shopping center. The exception is a short stretch of San Ramon Creek, north of Newell Avenue, where most of the creekbed is natural, some is channelized, and riparian vegetation grows on creekbanks (see Figure 4.3-1). Adjacent to the Project Site, a section of Las Trampas Creek directly west of Main Street contains habitats with some degree of natural function.

**Vegetation Communities and Wildlife Habitats**

The majority of the Project Site consists of developed areas with landscape vegetation. These areas, as well as any other habitats within and adjacent to the Project Site that are susceptible to direct or indirect impacts from the Project, are described below.

**Developed/Landscaped.** Roads, buildings, paved paths, and patches of landscape shrubs, grasses, and trees make up the developed/landscaped habitat within the Project Site. Vegetation present in this habitat type is regularly maintained and often disturbed. Tree species present include non-native southern magnolia (*Magnolia grandifolia*), tulip tree (*Liriodendron tulipifera*), and walnut (*Juglans* sp.), as well as native coast live oak (*Quercus agrifolia*). Redwood (*Sequoia sempervirens*) are also present in the Project Site, which are native to California but not to Walnut Creek.

Developed and landscaped areas provide foraging or nesting habitat for generalist1, and sometimes non-native, wildlife species that can tolerate human presence and activities. These include birds and small mammals such as western scrub jay (*Aphelocoma californica*), California towhee (*Pipilo crissalis*), house finch (*Carpodacus mexicanus*), raccoon (*Procyon lotor*), and house mouse (*Mus musculus*). Although these areas often do not provide suitable habitat for most native wildlife due to higher human activity levels, they may support native wildlife species under appropriate conditions. Even with high traffic levels on all streets surrounding the Project Site and human activity associated with commercial retail businesses, mature trees may provide nesting habitat for urban passerine species. Nesting raptors are not expected at the Project Site due to the lack of tall trees and constant human presence.

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1 Generalist species can occupy and thrive in a variety of natural or developed areas.
Riparian Vegetation. There is no riparian woodland on the Project Site. There is remnant riparian canopy on a small portion of the Project Site and adjacent to the Project Site.

The remnant riparian canopy is dominated by coast live oak trees present at the top of the creek’s bank, above the concrete channel. Other species present include maple (Acer sp.), fig (Ficus sp.), and willow (Salix sp.) trees. While riparian vegetation is not able to grow within the concrete channel, canopy cover from mature trees growing from the top of bank shades the creek bed and provides some riparian habitat function for both creeks.

Riparian areas provide nesting habitat and diverse insects that are attractive to many bird species, and despite being significantly disturbed, riparian areas near the Project Site host a variety of wildlife species. Foliage, bark, and ground substrates provide a variety of foraging areas. Birds that forage for insects in riparian habitats include Bewick’s wren (Thryomanes bewickii), chestnut-backed chickadee, northern flicker (Colaptes auratus), dark-eyed junco (Junco hyemalis), and black phoebe (Sayornis nigricans). Amphibians and mammals such as western toad (Bufo boreas), Sierran tree frog (Pseudacris sierra), western harvest mouse (Reithrodontomys megalotis), deer mouse (Peromyscus maniculatus), and raccoon could also occur in riparian habitats within and adjacent to the Project Site.

Wetland Communities

Freshwater Emergent Wetland. Small patches of in-stream wetlands are present in San Ramon Creek directly south of where the stream alignment runs underneath the Macy’s building, on Parcel 7A. These patches of wetland vegetation occur where enough sediment has accumulated in the concrete channel for vegetation to set roots and establish. A narrow channel of flowing water cuts through this habitat. This section of San Ramon Creek receives more sunlight than adjacent reaches, as the tree canopy extends only from the right bank of the creek. Vegetation present in this habitat includes horsetails (Equisetum sp.), cattails (Typha sp.), Bermuda grass (Cynadon dactylon), curly dock (Rumex crispus), water parsley (Oenanthe sarmentosa), and floating aquatic vegetation such as pondweed (Potamogeton sp.) and duckweed.

Wildlife that depend on open water and visit marshes regularly include coyotes (Canis latrans), foxes (red fox [Vulpes vulpes] or grey fox [Urocyon cinereoargenteus]), raccoons, rodents, most rabbit species (black-tailed jackrabbit (Lepus californicus) or desert cottontail (Sylvilagus audubonii)), and many species of birds. A number of species require standing or flowing water for breeding, including amphibians such as western toad, Sierran tree frog, western pond turtle (Actinemys marmorata), and the federal threatened and California species of special concern, California red-legged frog (Rana draytonii), as well as western aquatic garter snake (Thamnophis couchii), red-winged blackbird (Agelaius phoeniceus), and marsh wren (Cistothorus palustris). Freshwater marsh vegetation along streams and lakes can also provide some nesting and seasonal foraging opportunities and cover for waterbird species such as mallards (Anas platyrhynchos), green-winged teals (Anas crecca), great blue herons (Ardea herodias), and great egrets (Ardea alba).
Special-Status Species

A number of species known to occur in the vicinity of the Project Site are protected pursuant to federal and/or State of California endangered species laws, or have been designated Species of Special Concern by CDFG. In addition, Section 15380(b) of the CEQA Guidelines provides a definition of rare, endangered, or threatened species that are not included in any listing. Species recognized under these terms are collectively referred to as “special-status species.” For the purposes of this EIR, special-status species include:

- Plant and wildlife species listed as rare, threatened or endangered under the federal or state endangered species acts;
- Species that are candidates for listing under either federal or state law;
- Species formerly designated by the U.S. Fish and Wildlife Service (USFWS) as Species of Concern or designated by CDFG as Species of Special Concern;
- Species protected by the federal Migratory Bird Treaty Act (16 U.S.C. 703-711); and/or
- Species such as candidate species that may be considered rare or endangered pursuant to Section 15380(b) of the CEQA Guidelines.

Approximately 30 species have been documented from or have potential to occur in suitable habitat within the Study Area. Species information was obtained from the CNDDB (CDFG, 2011), California Native Plant Society Electronic Inventory (CNPS, 2011), and the U.S. Fish and Wildlife Service (USFWS, 2011). Based on review of the biological literature of the region and a reconnaissance survey at the Project Site, many of these species were eliminated from further evaluation because (1) the Project Site or the immediate area does not provide suitable habitat, or (2) the known range for a particular species is outside of the Project Site and/or the immediate area.

The special-status species list presented in Table 4.3-1 includes species for which potential habitat (i.e., general habitat types) occurs on or in the vicinity of the Project Site. Species for which generally suitable habitat occurs but that were nonetheless determined to have low potential to occur in the Project Site are also listed in Table 4.3-1. This table also provides the rationale for each potential-to-occur determination. Species observed or with a moderate to high potential to occur at the Project Site are discussed in further detail below.

Species Assessed in Detail

Potential impacts of the Project on special-status species were assessed based on literature review, professional judgment, and the following criteria:

1. A determination of susceptibility. This determination is a three-level process that evaluated, for each species, (a) potential occurrence in the Study Area (generally defined as the terrestrial and aquatic habitats of the Project Site and areas immediately adjacent to the Project Site with the potential to be affected by construction or ongoing operations of the
### TABLE 4.3-1

SPECIAL-STATUS SPECIES CONSIDERED IN EVALUATION OF PROJECT SITE

<table>
<thead>
<tr>
<th>Common Name Scientific Name</th>
<th>Listing Status USFWS/ CDFG/CNPS</th>
<th>General Habitat</th>
<th>Potential for Species Occurrence Within Project Site</th>
<th>Period of Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Animals</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Fish</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central California coast steelhead <em>Oncorhynchus mykiss</em></td>
<td>FT/CSC</td>
<td>Spawns and rears in coastal streams between the Russian River and Aptos Creek, as well as drainages tributary to San Francisco Bay, where gravelly substrate and shaded riparian habitat occurs.</td>
<td>Not Present. Channelization and significant creek barriers would prevent steelhead from migrating upstream into the Project Site.</td>
<td>Year–round</td>
</tr>
<tr>
<td><strong>Amphibians</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>California red-legged frog <em>Rana draytonii</em></td>
<td>FT/CSC</td>
<td>Breeds in stock ponds, pools, and slow-moving streams; adults move upland into small mammal burrows in annuals grasslands or riparian habitats.</td>
<td>Low. Nearest CNDDB records are approximately 3 miles from the Project Site, and urban development would prevent any upland movement in the vicinity of the Project Site. Records are present in Las Trampas Creek upstream of the Project Site, but fast-moving flows and lack of upland habitat preclude presence of this species.</td>
<td>May–August</td>
</tr>
<tr>
<td><strong>Animals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Reptiles</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Southern Pacific pond turtle <em>Actinemys marmorata pallida</em></td>
<td>*/CSC</td>
<td>Freshwater ponds and slow streams edged with sandy soils for laying eggs.</td>
<td>Low. Some concrete structures in reaches of San Ramon and Las Trampas Creeks facilitate ponding water, but reaches within the Project Site do not typically pond and support habitat for this species.</td>
<td>Year–round</td>
</tr>
<tr>
<td><strong>Birds</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Cooper’s hawk <em>Accipiter cooperi</em></td>
<td>*/3503.5</td>
<td>Nests in conifers or deciduous stands near riparian areas; also nests in urban areas near riparian corridors.</td>
<td>Low. Constant human disturbance, lack of tall mature trees, and little foraging habitat directly surrounding the Project Site precludes presence of this species.</td>
<td>Year–round</td>
</tr>
</tbody>
</table>

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2 For example, vascular plants listed as rare or endangered or as List 1 or 2 by the California Native Plant Society (CNPS) are considered subject to Section 15380(b).
## TABLE 4.3-1
SPECIAL-STATUS SPECIES CONSIDERED IN EVALUATION OF PROJECT SITE (CONTINUED)

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Listing Status USFWS/ CDFG/CNPS</th>
<th>General Habitat</th>
<th>Potential for Species Occurrence Within Project Site</th>
<th>Period of Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Birds (cont.)</strong></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red-shouldered hawk</td>
<td>Buteo lineatus</td>
<td>--/3503.5</td>
<td>usually nests in large trees, often in woodland or riparian deciduous habitats. Forages over open grasslands and woodlands.</td>
<td>Low. Constant human disturbance, lack of tall mature trees, and little foraging habitat directly surrounding the Project Site precludes presence of this species.</td>
<td>Year–round</td>
</tr>
<tr>
<td>Red-tailed hawk</td>
<td>Buteo jamaicensis</td>
<td>--/3503.5</td>
<td>usually nests in large trees, often in woodland or riparian deciduous habitats.</td>
<td>Low. Constant human disturbance, lack of tall mature trees, and little foraging habitat directly surrounding the Project Site precludes presence of this species.</td>
<td>Year–round</td>
</tr>
<tr>
<td>American kestrel</td>
<td>Falco sparverius</td>
<td>--/3503.5</td>
<td>nests in cavities in large trees near open areas.</td>
<td>Low. While cavities for nesting are present in riparian trees in the vicinity of the Project Site, high disturbance and little foraging habitat likely preclude presence of this species.</td>
<td>Year-round</td>
</tr>
<tr>
<td><strong>Mammals</strong></td>
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<tr>
<td>Pallid bat</td>
<td>Antrozous pallidus</td>
<td>--/CSC/WBWG-HP</td>
<td>occurs in various habitats including rocky arid deserts and canyonlands, shrub-steppe grasslands, and higher-elevation forests. Roosts include rocky outcrops and cliffs, caves, mines, trees and various human structures. Foraging habitat includes of grasslands, oak savannah, orchards, and vineyards.</td>
<td>Low. Potential roosting habitat is available in riparian trees in the vicinity of the Project Site, but no foraging habitat is present.</td>
<td>March–August</td>
</tr>
<tr>
<td>Hoary bat</td>
<td>Lasiurus cinereus</td>
<td>--/--/WBWG-MP</td>
<td>deserts, grasslands, shrublands, woodlands, and forests. Sensitive to disturbance of roosting sites.</td>
<td>Low. Roosting habitat in riparian trees in the vicinity of the Project Site and surroundings is too highly disturbed to support this species.</td>
<td>March–August</td>
</tr>
</tbody>
</table>
TABLE 4.3-1
SPECIAL-STATUS SPECIES CONSIDERED IN EVALUATION OF PROJECT SITE (CONTINUED)

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Listing Status</th>
<th>USFWS/ CDFG/CNPS</th>
<th>General Habitat</th>
<th>Potential for Species Occurrence Within Project Site</th>
<th>Period of Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATUS CODES</td>
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<tr>
<td>Federal (U.S. Fish and Wildlife Service [USFWS]):</td>
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<tr>
<td>FE = Listed as Endangered (in danger of extinction) by the federal government.</td>
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<tr>
<td>FT = Listed as Threatened (likely to become Endangered within the foreseeable future) by the federal government.</td>
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<tr>
<td>FP = Proposed for Listing as Endangered or Threatened.</td>
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<tr>
<td>FC = Candidate to become a proposed species.</td>
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<tr>
<td>State (California Department of Fish and Game [CDFG]):</td>
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<tr>
<td>CE = Listed as Endangered by the State of California.</td>
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<tr>
<td>CT = Listed as Threatened by the State of California.</td>
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<tr>
<td>CFP = Listed as Fully Protected by the State of California.</td>
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<tr>
<td>CR = Listed as Rare by the State of California (plants only).</td>
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<tr>
<td>CSC = California Species of Special Concern.</td>
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<tr>
<td>3503.5 = Protection for nesting species of Falconiformes (hawks) and Strigiformes (owls).</td>
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<tr>
<td>* Special animal—listed on CDFG’s Special Animals List.</td>
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</tbody>
</table>


2. If a species was determined to have the potential to occur in the Study Area, further analyses were made of life history and habitat requirements, as well as the suitability of habitat for the species found within the Study Area or its immediate vicinity. The results of this determination for each species are provided in the “Potential for Species Occurrence” column of Table 4.3-1.

3. If suitable habitat was determined present within the Study Area and the species has been documented as observed within the Study Area or has at least a moderate potential to occur, additional analysis considered whether the species would be affected by the Project. Both direct effects (e.g., displacement of habitat) and indirect effects (e.g., noise) were considered. In addition, life history and habitat requirements were evaluated to ascertain the likelihood and severity of impact.

No special-status plant species are expected to occur within the Project footprint. Although a number of special-status grassland, scrub, oak woodland plant species have been recorded in the Study Area, there are no intact native communities remaining within the Project footprint. Riparian habitats associated with San Ramon Creek have been heavily disturbed by construction of a concrete creek channel and extensive paving of the surrounding areas, and are not expected to contain special-status plant species. The distribution of many of the plant species occurring in the Study Area is restricted to specific habitat types or soils that are not, or never were, present within the Project Site, such as sandy, clay, or serpentine soils. Some of the plant species are also considered by CNPS (2011) to be extirpated from the Project Site vicinity due to a long-standing history of disturbance.
Of the special-status animals presented in Table 4.3-1, no specific species are expected to occur within the Project Site. Nesting birds, however, could occur at the Project Site.

Nesting Birds. It is not anticipated that raptors will nest in the vicinity of the Project Site due to the highly urban nature of the area, the lack of tall mature trees, and the lack of foraging habitat near the Project Site. However, many other species of birds could potentially nest in landscape or riparian trees within 250 feet of the Project Site. Most native nesting birds are protected by either the Migratory Bird Treaty Act or the California Department of Fish and Game Code, as described in more detail below in 4.3.4 Regulatory Setting. Birds accustomed to human presence and urban habitats such as California towhee, common raven (Corvus corax), American crow (Corvus brachyrhynchos), mourning dove (Zenadia macroura), house finch, and white-crowed sparrow (Zonotrichia leucophrys) are likely to nest at the Project Site. However, riparian species such as Wilson’s warbler (Wilsonia pusilla), Bewick’s wren, and black phoebe could also nest in the riparian corridors of San Ramon and Las Trampas Creeks adjacent to the Project Site.

4.3.2 Regulatory Setting

This subsection briefly describes federal, state, and local regulations, permits, and policies pertaining to biological resources and wetlands as they apply to the Project.

Special-Status Species

Federal Endangered Species Act

The USFWS (with jurisdiction over plants, wildlife, and most freshwater fish) and the National Marine Fisheries Service (NMFS) (with jurisdiction over anadromous fish, marine fish, and mammals) oversee implementation of the Federal Endangered Species Act (FESA). Section 7 of the FESA mandates that all federal agencies consult with the USFWS and NMFS to ensure that federal agency actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat for listed species. A federal agency is required to consult with USFWS and NMFS if it determines a “may affect” situation will occur in association with the Project. The FESA prohibits the “take”3 of any fish or wildlife species listed as threatened or endangered, including the destruction of habitat that could hinder species recovery.

Under Section 9 of the FESA, the take prohibition applies only to wildlife and fish species. However, Section 9 does prohibit the removal, possession, damage, or destruction of any endangered plant from federal land. Section 9 also prohibits acts to remove, cut, dig up, damage, or destroy an endangered plant species in non-federal areas in knowing violation of any state law.

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3 “Take,” as defined in Section 9 of the FESA, is broadly defined to include intentional or accidental “harassment” or “harm” to wildlife. “Harass” is further defined by the U.S. Fish and Wildlife Service as an intentional or negligent act or omission that creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns that include, but are not limited to, breeding, feeding, and sheltering. “Harm” is defined as an act that actually kills or injures wildlife. This may include significant habitat modification or degradation that actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.
or in the course of criminal trespass. Candidate species and species that are proposed or under petition for listing receive no protection under Section 9 of the FESA.

Section 10 of the FESA requires the issuance of an “incidental take” permit before any public or private action may be taken that would potentially harm, harass, injure, kill, capture, collect, or otherwise hurt (i.e., take) any individual of an endangered or threatened species. To offset the take of individuals that may occur incidental to implementation of the project, the permit requires preparation and implementation of a habitat conservation plan that provides for the overall preservation of the affected species through specific mitigation measures.

**Federal Migratory Bird Treaty Act**

The federal Migratory Bird Treaty Act (16 USC, Section 703, Supplement I, 1989) prohibits killing, possessing, or trading in migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs.

**California Endangered Species Act**

Under the California Endangered Species Act (CESA), CDFG has the responsibility for maintaining a list of threatened and endangered species (California Fish and Game Code Section 2070). CDFG also maintains a list of “candidate species,” which are species formally noticed as being under review for addition to either the list of endangered species or the list of threatened species. In addition, CDFG maintains lists of “species of special concern,” which serve as “watch lists.” Pursuant to the requirements of the CESA, an agency reviewing a Project within its jurisdiction must determine whether any state-listed endangered or threatened species could be present on the Project Site and determine whether the Project could have a potentially significant impact on such species. In addition, CDFG encourages informal consultation on any Project that may affect a candidate species.

**California Environmental Quality Act**

The intent of CEQA is to maintain “high-quality ecological systems and the general welfare of the people of the state.” It is the policy of the state to “prevent the elimination of fish or wildlife species due to man’s activities, ensure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities and examples of the major periods of California history.” CEQA forbids agencies from approving projects with significant adverse impacts when feasible alternatives or feasible mitigation measures can substantially reduce such impacts.4

CEQA requires consultation with CDFG on any project an agency initiates that is not statutorily or categorically exempt from CEQA. The CEQA Guidelines (Section 15065a) indicate that impacts on state- and federal-listed rare, threatened, or endangered plants or animals are significant.

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4 CEQA also provides that a project might be approved in spite of residual, unmitigated significant impacts, by adoption of a statement of overriding social and economic considerations in situations where mitigations or alternatives are deemed infeasible.
Although rare, threatened, and endangered species are protected by specific federal and state statutes, CEQA Guidelines Section 15380(b) provides that a species not listed on federal or state protected species lists may be considered rare, threatened, or endangered if the species can be shown to meet certain criteria (e.g., it can be shown that the species’ survival in the wild is in jeopardy or the species is at risk of becoming endangered in the near future). These criteria have been modeled after the definition in the FESA and the section of the California Fish and Game Code dealing with rare or endangered plants or animals. This section was included in the CEQA Guidelines primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on, for example, a “species of concern” that has not yet been listed by either the USFWS or CDFG. Thus, CEQA provides an agency with the ability to protect a species from a project’s potential impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted. Under CEQA Guidelines Section 15380, impacts on species that meet the specified criteria but are not officially listed may also be considered significant by the lead agency (for an EIR), depending on the applicability of other laws (e.g., Migratory Bird Treaty Act) and the discretion of the agency. For example, CDFG interprets Lists 1A, 1B, and 2 of the California Native Plant Society’s Inventory of Rare and Endangered Vascular Plants of California to consist of plants that, in a majority of cases, would qualify for listing as rare, threatened, or endangered. However, the determination of whether an impact is significant is a function of the lead agency, absent the protection of other laws. Projects subject to CEQA review must specifically address potential impacts on listed species and provide mitigation measures if the impact is significant.

**California Native Plant Protection Act**

State listing of plant species began in 1977 with the passage of the California Native Plant Protection Act (NPPA), which directed CDFG to carry out the legislature’s intent to “preserve, protect, and enhance endangered plants in this state.” The NPPA gave the California Fish and Game Commission the power to designate native plants as endangered or rare and to require permits for collecting, transporting, or selling such plants. The California Endangered Species Act expanded upon the original NPPA and enhanced legal protection for plants. The CESA established threatened and endangered species categories, and grandfathered all rare animals—but not rare plants—into the act as threatened species. There are three listing categories for plants in California: rare, threatened, and endangered.

**California Fish and Game Code**

Under Section 3503 of the California Fish and Game Code, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.3 of the California Fish and Game Code prohibits take, possession, or destruction of any birds in the orders Falconiformes (hawks) or Strigiformes (owls), or of their nests and eggs.

Fish and Game Code (Sections 3511-birds, 4700-mammals, 5050-reptiles and amphibians, and 5515-fish) allows the designation of a species as Fully Protected. This is a greater level of
protection than is afforded by the California Endangered Species Act, since such a designation means the listed species cannot be taken at any time.

**Sensitive Natural Communities**

Special-status natural communities are identified as such by CDFG’s Natural Heritage Division and include those that are naturally rare and those whose extent has been greatly diminished through changes in land use. The CNDDB tracks 135 such natural communities in the same way that it tracks occurrences of special-status species: information is maintained on each site’s location, extent, habitat quality, level of disturbance, and current protection measures. CDFG is mandated to seek the long-term perpetuation of the areas in which these communities occur. While there is no statewide law that requires protection of all special-status natural communities, CEQA requires consideration of a project’s potential impacts on biological resources of statewide or regional significance.

**Jurisdictional Waters (Including Wetlands)**

**Definitions**

**Waters of the United States**

The term “waters of the United States,” as defined in the Code of Federal Regulations (33 C.F.R. § 328.3[a]; 40 C.F.R. § 230.3[s]), refers to:

1. All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

2. All interstate waters including interstate wetlands;

3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce including any such waters:
   - which are or could be used by interstate or foreign travelers for recreational or other purposes; or
   - from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
   - which are used or could be used for industrial purposes by industries in interstate commerce.

4. All impoundments of waters otherwise defined as waters of the United States under the definition;

5. Tributaries of waters identified in paragraphs (1) through (4);

6. Territorial seas; and
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (1) through (6).

8. Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area’s status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act (CWA), the final authority regarding Clean Water Act jurisdiction remains with the U.S. Environmental Protection Agency (EPA) (33 CFR 328.3[a][8]).

Wetlands are ecologically productive habitats that support a rich variety of both plant and animal life. The importance of wetlands has increased due to their value as recharge areas and filters for water supplies and to their widespread filling and destruction to enable urban and agricultural development. Examples of wetlands may include freshwater marsh, seasonal wetlands, and vernal pool complexes that are adjacent to waters of the U.S. In a jurisdictional sense, there are two commonly used wetland definitions, one adopted by the EPA and Corps and a separate definition, originally developed by USFWS, which has been adopted by agencies in the State of California that have regulatory authority over wetlands. Both definitions are presented below.

**Federal Wetland Definition**

Under federal law, wetlands are a subset of “waters of the United States” and receive protection under Section 404 of the CWA. Wetlands are defined as those areas that are inundated or saturated by surface or ground water at a frequency and duration that are sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetland determination under the federal wetland definition adopted by the Corps requires the presence of three factors: (1) wetland hydrology; (2) plants adapted to wet conditions; and (3) soils that are routinely wet or flooded [33 C.F.R. § 328.3(b)]. In January 2001, the Supreme Court of the United States ruled that certain isolated wetlands do not fall under the jurisdiction of the CWA (Solid Waste Agency of Northwestern Cook County v. United States Army Corps of Engineers et al.).

**California Wetland Definition**

The CDFG and the California Coastal Commission (CCC) have adopted the USFWS Cowardin (1979) definition of wetlands. While the federal definition of wetlands requires three wetland identification parameters to be met, the Cowardin definition can be satisfied under some circumstances with the presence of only one parameter. Thus, identification of wetlands by State agencies may include areas that are permanently or periodically inundated or saturated and without wetland vegetation or soils, such as rocky shores, or areas that presume wetland hydrology based on the presence of at least one of the following: a) a seasonal or perennial dominance by hydrophytes\(^5\) or b) the presence of hydric\(^6\) soils. CDFG does not normally assert jurisdiction over wetlands unless they are subject to Streambed Alteration Agreements (CDFG Code Sections 1600–1616) or they support state-listed endangered species.

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\(^5\) A *hydrophyte* is, literally, a water loving plant, i.e., one that is adapted to growing in conditions where the soil lacks oxygen, at least periodically during the year, due to saturation with water.

\(^6\) A *hydric soil* is one that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile.
Other Waters of the U.S

“Other waters of the U.S.” refers to additional features that are regulated by the CWA but are not wetlands (33 CFR 328.4). To be considered jurisdictional, these features must exhibit a defined bed and bank and an ordinary high water mark. The term ordinary high water mark refers to a line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other means appropriate to the characteristics of the surrounding areas. Examples of other waters of the U.S. include rivers, creeks, ponds, and lakes.

U.S. Army Corps of Engineers and U.S. Environmental Protection Agency Regulations

The U.S. Army Corps of Engineers (Corps) and the U.S. EPA regulate the discharge of dredged or fill material into waters of the U.S., including wetlands, under Sections 404 and 401 of the CWA. Projects that would result in the placement of dredged or fill material into waters of the U.S. require a Section 404 permit from the Corps. Some classes of fill activities may be authorized under General or Nationwide permits if specific conditions are met. Nationwide permits do not authorize activities that are likely to jeopardize the existence of a threatened or endangered species (listed or proposed for listing under the FESA). In addition to conditions outlined under each Nationwide Permit, project-specific conditions may be required by the Corps as part of the Section 404 permitting process. When a project’s activities do not meet the conditions for a Nationwide Permit, an Individual Permit may be issued.

Section 401 of the CWA requires an applicant for a Corps permit to obtain state certification that the activity associated with the permit will comply with applicable state effluent limitations and water quality standards. In California, water quality certification, or a waiver, must be obtained from the Regional Water Quality Control Board (RWQCB) for both Individual and Nationwide Permits.

The Corps also regulates activities in navigable waters under Section 10 of the Rivers and Harbors Act. The construction of structures, such as tidegates, bridges, or piers, or work that could interfere with navigation, including dredging or stream channelization, may require a Section 10 permit, in addition to a Section 404 permit if the activity involves the discharge of fill.

Finally, the federal government also supports a policy of minimizing “the destruction, loss, or degradation of wetlands.” Executive Order 11990 (May 24, 1977) requires that each federal agency take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.

In recent years, several Supreme Court cases have challenged the scope and extent of the Corps’ jurisdiction over waters of the United States and have led to several reinterpretations of that authority. The most recent of these decisions include the case of Solid Waste Agency of Northern Cook County (SWANCC) v. the Army Corps of Engineers (January 9, 2001) and Rapanos v. United States (June, 2006). The SWANCC decision found that jurisdiction over non-navigable,
isolated, intrastate waters could not be based solely on the use of such waters by migratory birds. The reasoning behind the SWANCC decision could be extended to suggest that waters need a demonstrable connection with a ‘navigable water’ to be protected under the CWA. The introduction of the term isolated has led to the consideration of the relative connectivity between waters and wetlands as a jurisdictionally relevant factor. The more recent Rapanos case further questioned the definition of “waters of the United States” and the scope of federal regulatory jurisdiction over such waters. The case resulted in a split decision which did not provide definitive answers but expanded on the concept that a ‘significant nexus’ with traditional navigable waters was needed for certain waters to be considered jurisdictional.

On June 5, 2007, the EPA and the Corps released guidance on CWA jurisdiction in response to the Rapanos Supreme Court decision, which can be used to support a finding of CWA coverage for a particular water body when either a) there is a significant nexus between the stream or wetland in question and navigable waters in the traditional sense; or b) a relatively permanent water body is hydrologically connected to traditional navigable waters and/or a wetland has a surface connection with that water. According to this guidance, the Corps and the EPA will take jurisdiction over the following waters:

1. Traditional navigable waters, which are defined as all waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

2. Wetlands adjacent to traditional navigable waters; including adjacent wetlands that do not have a continuous surface connection to traditional navigable waters;

3. Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months);

4. Wetlands adjacent to non-navigable tributaries as defined above; that have a continuous surface connection to such tributaries (e.g., they are not separated by uplands, a berm, dike, or similar feature).

The EPA and the Corps decide jurisdiction over the following waters, based on a fact-specific analysis to determine if there is a significant nexus, as defined below, to a traditional navigable water:

1. Non-navigable tributaries that are not relatively permanent;

2. Wetlands adjacent to non-navigable tributaries that are not relatively permanent;

3. Wetlands adjacent to, but that do not directly abut a relatively permanent non-navigable tributary.

The EPA and the Corps generally do not assert jurisdiction over the following features:

1. Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent or short duration flow);
2. Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

The EPA and the Corps have defined the significant nexus standard as follows:

1. A significant nexus analysis assesses the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical and biological integrity of downstream traditional navigable waters;

2. Significant nexus analysis includes consideration of hydrologic and ecologic factors including:
   a. volume, duration, and frequency of flow, including consideration of certain physical characteristics of the tributary,
   b. proximity to a traditional navigable water,
   c. size of the watershed,
   d. average annual rainfall,
   e. average annual winter snow pack,
   f. potential of tributaries to carry pollutants and flood waters to traditional navigable waters,
   g. provision of aquatic habitat that supports a traditional navigable water,
   h. potential of wetlands to trap and filter pollutants or store flood waters, and
   i. maintenance of water quality in traditional navigable waters.

State Policies and Regulations for Waters and Wetlands

State regulation of activities in waters and wetlands resides primarily with CDFG and the State Water Resources Control Board (SWRCB). In addition, the CCC has review authority for wetland permits within its planning jurisdiction.

CDFG provides comment on Corps permit actions under the Fish and Wildlife Coordination Act. CDFG is also authorized under the California Fish and Game Code, Sections 1600–1616, to enter into a Streambed Alteration Agreement with applicants and to develop mitigation measures when a Project would obstruct the flow or alter the bed, channel, or bank of a river or stream in which there is a fish or wildlife resource, including intermittent and ephemeral streams. The SWRCB, acting through the nine RWQCBs, must certify that a Corps permit action meets state water quality objectives (Section 401, CWA).

Local Regulations

City of Walnut Creek General Plan 2025

Walnut Creek’s General Plan was finalized in 2006, with the goal of creating a comprehensive and long-term strategy for development of Walnut Creek while preserving open space and the natural character of the city. Walnut Creek has more than 2,700 acres of open space within the
city limits, some of which occurs as parks and plazas integrated into urban areas. The City also contains a vast network of sub-watersheds in the hills surrounding downtown Walnut Creek, which drain into creeks that flow through developed and natural areas of Walnut Creek. Goals and policies outlined in Chapter 3, Natural Environment and Public Spaces of the General Plan that are relevant to the Project are summarized below.

- **Goal 3**: Maintain and enhance the area’s creek systems, their riparian environments, and their recreational amenities.
  - *Policy 3.1*: Restore riparian corridors and waterways throughout the city.
  - *Policy 3.2*: Make downtown creeks a central feature in new development.
    - Action 3.2.1: Implement the 1993 Creeks Restoration and Trails Master Plan.
    - Action 3.2.2: Incorporate the downtown creeks in project designs for new development and redevelopment in the Core Area.
    - Action 3.2.3: Expose covered creeks and incorporate open creeks in new development and redevelopment wherever possible.
    - Action 3.2.4: Encourage the use of volunteers to implement the 1993 Creeks Restoration and Trails Master Plan.

**Creek Restoration and Trails Master Plan**

The Creek Restoration and Trails Master Plan for the City of Walnut Creek was published in 1993 with the goal of retrofitting the built environment to integrate nature in a positive and mutually-supportive way, while enabling people to experience the creekside greenway. One of the foremost goals of the Master Plan is to create continuous and accessible creekside trails that enable safe transportation through a natural setting within Walnut Creek. *Action 3.2.1* in the Walnut Creek General Plan specifically requires implementation of the Creek Restoration and Trails Master Plan. Major Guidelines of the Master Plan are summarized below.

1. Create a linear park and greenbelt along three creek corridors, Las Trampas, San Ramon, and Walnut Creek in the downtown which balances human access with the protection, enhancement, and restoration of natural systems.
2. Create a continuous bicycle and hiking trail system along the creek corridors, and connect the trails through the commercial and civic downtown area where the creeks have been undergrounded.
3. Create passive recreational areas related to the creeks and trails within the downtown.
4. Enhance the downtown setting by encouraging the orientation of commercial enterprises towards the creeks.
5. Improve the existing riparian habitat, upland wildlife habitat, fisheries and fish passage throughout the creek corridors and restore the degraded natural habitats to the greatest extent feasible.
6. Preserve (or improve, if feasible) the existing flood capacity of the creek channels while providing for improved riparian habitat and trails.
7. Link the restored riparian and fisheries habitat within the natural channels to restoration treatments within the concrete channelized portions of the creek.

8. Reach voluntary agreements with property owners on right-of-way acquisition wherever possible.

9. Increase public awareness of the creeks, the creek ecology, the effects of human activities on the creeks, and the creek-related heritage of the City through education, interpretive programs, public events, and support facilities along the creek trails.

The Master Plan also contains a conceptual design for a recreation path along San Ramon Creek, which if implemented, would cause potentially significant impacts to riparian resources, and alterations of natural flows. These activities would not be permitted or would be discouraged by resource agencies. The design is only conceptual and intended to be illustrative of how the goals might be implemented.

Accordingly, the Creek Restoration and Trails Master Plan is interpreted and applied by the City to encourage achievement of its goals without requiring development of aspects of the conceptual plan that would harm riparian resources. The Project proposes a recreational path along the east side of San Ramon Creek on the top of bank, outside of the creek channel.

**City of Walnut Creek Municipal Code**

**Preservation of Trees on Private Property**

Chapter 8 of Title 3 of the Walnut Creek Municipal Code requires a tree removal permit for removal of trees. “Trees” under this ordinance are defined in section 3-8.02(j), as the following:

- Any live woody plant having a single perennial stem of 28 inches or more in circumference measured 4.5 feet above the natural grade;

- Any multi-stemmed perennial plant having an aggregate circumference of 40 inches or more measured 4.5 feet above the natural grade;

- Any multi-stemmed plant having one stem of 28 inches or more in circumference;

- A tree of any size which is part of a grove.

The ordinance also defines “highly protected trees,” which are subject to heightened standards of approval. Highly protected trees include the following native tree species that meet the size criteria set forth above: valley oak (*Quercus lobata*), blue oak (*Q. douglasii*), coast live oak (*Q. agrifolia*), California black oak (*Q. kellogii*), canyon live oak (*Q. chrysolepis*), interior live oak (*Q. wislizenii var. wislizenii*), madrone (*Arbutus menziesii*), California buckeye (*Aesculus californica*), California black walnut (*Juglans hindsii*), and grey pine (*Pinus sabiniana*). Walnut Creek Municipal Code section 3-8.02(h).
Street Trees

Removal and planting of street trees is regulated by Article 4 of Chapter 1 of Title 7 of the Walnut Creek Municipal Code. A street tree is defined in section 7-1.403 as any tree located within six feet from the back edge of the sidewalk, or if there is no sidewalk, within 11 feet from the curb line. The Code requires a permit for planting any street tree, and allows removal of street trees provided 1:1 replacement is provided. In addition, for projects requiring Design Review, section 7-1.405 provides “The Design Review Commission shall review the type, size and location of street trees for new development as a part of the design review plan proposed for the project. Design Review Commission approval shall constitute the planting permit required under Section 7-1.404. Planting or re-planting of street trees must adhere to planting standards in the City’s Master Street Tree Planting Plan.”

4.3.3 Impacts and Mitigation Measures

Significance Criteria

The Project would have a significant effect on the environment if it were to:

1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS;

2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFG or USFWS;

3. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;

4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;

5. Fundamentally conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or

6. Fundamentally conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

The following sections of the CEQA Guidelines, which expand and define some of the terms used in the criteria presented above, were also considered when using the criteria to determine impact significance.

1. CEQA Guidelines Section 15065 directs lead agencies to find that a project may have a significant effect on the environment if it has the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish and wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to
eliminate a plant or wildlife community, substantially reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory.

2. CEQA Guidelines Section 15380 further provides that a plant or wildlife species, even if not on one of the official lists, may be treated as “rare or endangered” if, for example, it is likely to become endangered in the foreseeable future.

3. CEQA Guidelines Section 15382 identifies a significant effect on the environment 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.”

**Approach to Analysis**

- Potential impacts resulting from implementation of the Project elements were evaluated based on field reconnaissance surveys performed by a qualified ESA biologist and a review of the following sources: Existing resource maps and aerial photographs of the Project Site;

- Data presented in the CNDD, the **CNPS Electronic Inventory of Rare and Endangered Vascular Plants of California**, and an official species list for the Walnut Creek and Las Trampas Ridge USGS 7.5 minute topographic quadrangles, which includes the Project Site and surrounding areas, from the USFWS (2011);

- Standard biological references (e.g., Hickman, 1993; Mayer and Laudenslayer, 1988; Sibley, 2001);

- Other available literature regarding the natural resources of the area.

Once site surveys were completed and all sources reviewed, a list was prepared of special-status species that were observed or had the potential to occur due to the presence of the basic habitat types that they inhabit within the Project Site. Species were then further evaluated to determine their actual potential to occur, given conditions within the Project Site. Species with a low potential to occur are species whose known current distribution or range does not include the Project Site, are those for whom only limited or marginally suitable habitat is present within the Project Site, species whose specific habitat requirements (e.g., serpentine grasslands, as opposed to grasslands occurring on other soils) are not present, or species that are presumed, based on the best scientific information available, to have been extirpated from the Project Site or region. Species with a moderate potential to occur are those for whom low to moderate quality suitable habitat is present within the Project Site or immediately adjacent areas, even though the species have not necessarily been observed during general biological surveys conducted in the Project Site. A species was determined to have high potential for occurrence if moderate to high quality habitat is present within the Project Site in addition to the site being included in the documented range of the species.

For the analysis presented below, impacts resulting from implementation of the Project were considered to be significant if they had the potential to:
• Have a substantial adverse effect on special-status species that were found to have moderate or high potential to occur;
• Result in the fill of or otherwise cause degradation of potentially jurisdictional waters;
• Have a substantial adverse effect on areas designated as sensitive habitat in this EIR;
• Otherwise exceed the significance criteria outlined above.

**Topics Briefly Addressed**

As discussed in Section 4.9, *Land Use and Planning*, regarding Criterion 3 for that topic, the Project Site is not located within a habitat or natural community conservation plan area. Therefore, the Project would have no impact to such plans since none exist in the Project Site. This topic, Significance Criterion 6, is considered No Impact and is not discussed further in this EIR.

**Impacts by Project Scenario**

For all significance criteria relating to biological resources, the impacts are the same for the Maximum Commercial Scenario and the Maximum Mixed Use Scenario. Therefore, both scenarios are discussed under a single Impact Statement for each criterion.

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**Impacts**

**Special-Status Species**

**Impact BIO-1: The Project could negatively impact special-status wildlife species (Criterion 1). (Potentially Significant)**

The Project Site and much of the Study Area are highly urbanized, no special status wildlife species were detected during the Project Site surveys, and most special-status species in the region could not occur at the Project Site. No special-status plant species were detected, and no habitat for special-status plant species exists. However, there is a moderate potential for nesting birds to be present in the Project Site.

Native birds could nest in trees or shrubs present in all portions of the Project Site, and could be negatively impacted by project construction. Existing levels of disturbance at the Broadway Plaza shopping center are extremely high, with constant vehicle traffic, human presence, and pet presence for the entirety of the day and much of the night. Despite this, some disturbance-tolerant species and habituated individuals are capable of nesting in trees, shrubs, and buildings in or within 250 feet of the Project Site. Direct impacts on nesting birds could occur as a result of tree removal and building demolition. Constant or impulse construction noise produced by the Project would be louder than current conditions, and could indirectly impact nesting birds by altering behavior, making eggs or nestlings more vulnerable to predators, or causing nest abandonment.
Any disturbance of nesting birds or destruction of nests would be considered a significant impact. The following mitigation measure will reduce this impact to less-than-significant levels.

**Mitigation Measure BIO-1:** The Project Applicants shall take the following steps to avoid direct losses of nests, eggs, and nestlings and indirect impacts to avian breeding success:

- If construction activities for the Project occur only during the non-breeding season, between August 31 and February 1, no surveys shall be required.

- During the breeding bird season (February 1 through August 31) a qualified biologist shall survey the Project Site for nesting passerine birds not more than 14 days prior to any tree removal, grading, excavation or project construction. Surveys shall include all line-of-sight trees and all vegetation within 250 feet of construction activities. If nesting passerine birds are found, the qualified biologist shall recommend measures necessary to avoid direct losses of nests, eggs, and nestlings and indirect impacts to avian breeding success, which may include construction buffer areas or seasonal avoidance.

- Based on the results of the surveys, avoidance procedures shall be adopted, as recommended by the qualified biologist.

**Significance after Mitigation:** Less than Significant.

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**Sensitive Natural Communities**

**Impact BIO-2:** The Project would not impact sensitive natural communities recognized by CDFG, such as riparian woodland or freshwater wetland (Criterion 2). (Less than Significant)

Implementation of the Project would have no impact on sensitive natural communities recognized by CDFG. The Project includes construction of a recreational trail along the West side of Capwell Street, directly east of riparian vegetation within San Ramon Creek. If any trimming or removal of any riparian trees is proposed, the Project Applicant would be required to notify CDFG and comply with applicable codes and regulations administered by CDFG.

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**Wetlands and Waters of the U.S.**

**Impact BIO-3:** The Project would not impact jurisdictional waters, including wetlands and other waters of the U.S. within San Ramon Creek (Criterion 3). (Less than Significant)

Project activities will not directly impact any jurisdictional waters or wetlands, as no Project elements are proposed within San Ramon or Las Trampas Creeks, and no other wetlands occur within the Project Site. While the Project could indirectly impact jurisdictional waters and wetlands associated with either creek through stormwater runoff containing sediment or
hazardous materials, the regulatory requirements discussed in Chapter 4.8 *Hydrology and Water Quality* will ensure that these impacts are less-than-significant.

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**Wildlife Movement, Corridors, and Nursery Sites**

**Impact BIO-4: The Project would not impact movement of wildlife species, active wildlife corridors, or wildlife nursery sites (Criterion 4). (Less than Significant)**

The Project Site is almost completely developed, and no identified wildlife corridors will be affected by Project construction. Potential impacts to nesting birds, including those that nest in the riparian vegetation, will be mitigated to less-than-significant levels through Mitigation Measure BIO-1.

Additionally, lighting and ongoing noise at the Project Site will not increase in amounts significant enough to impact migratory birds flying over the area; downtown Walnut Creek is already heavily urbanized, and implementation of the Project will not illuminate the Broadway Plaza shopping center more than surrounding buildings, parking lots, and residential streets.

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**Local Policies and Ordinances**

**The Project would not conflict with the City of Walnut Creek’s Tree Ordinance (Criterion 5). (Less than Significant)**

The Project will be required to comply with all City of Walnut Creek Municipal Code ordinances governing the treatment of trees within the city. As previously mentioned, the City may attach reasonable conditions to ensure compliance with the intent and purpose of these ordinances, including the protection of any trees that are to remain on the Project Site. Conditions may require replacement plantings or monetary equivalent. As the Project will not conflict with the relevant Walnut Creek tree ordinances, the impact is less than significant.

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**Cumulative Impacts**

**The Project, combined with cumulative development, including past, present, and reasonably foreseeable future development, would not result in significant cumulative impacts on biological resources. (Less than Significant)**

The geographic context for analysis of cumulative impacts to biological resources generally includes the area surrounding the Project Site, including projects located close to San Ramon Creek. The range of projects considered included those listed in Appendix B. The majority of these projects are in previously developed or disturbed areas.
Impacts on biological resources associated with the Project include the potential disturbance of nesting birds during construction activities and removal and potential trimming of trees within the Project Site. However, these impacts would be confined to the Project Site and would be less than significant with Mitigation Measure BIO-1 and compliance with regulatory requirements.

Past projects, including the development of civic facilities, residences, commercial and industrial areas, and infrastructure, have already caused substantial adverse changes to biological resources in the Walnut Creek area. For example, construction of commercial retail and residential areas in downtown Walnut Creek have removed almost all natural habitat from properties on all sides of the Project Site. These urban areas provide habitat for some wildlife species that are accustomed to, or can benefit from, human presence. Overall, this is true of many areas throughout the region.

The minor biological impacts of the Project are confined to the Project Site and do not combine with potential impacts to biological resources on other sites. In any event, the cumulative contribution of any impacts resulting from the Project, as mitigated, are not cumulatively considerable.

Mitigation: None required.

4.3.4 References

California Department of Fish and Game (CDFG), California Natural Diversity Database (CNDDB) version 3.1.0, data request for the Walnut Creek and Las Trampas Ridge U.S. Geological Survey 7.5-minute topographic quadrangles, commercial version 10/1/2011, expires 4/01/2012, retrieved 11/3/2011.

California Native Plant Society (CNPS), CNPS Electronic Inventory, version 7-11 (5/5/11), data request for San Francisco South U.S. Geological Survey 7.5-minute topographic quadrangles, online application, cnps.web.aplus.net/cgi-bin/inv/inventory.cgi, information retrieved 11/3/2011.


U.S. Fish and Wildlife Service (USFWS), Official List of Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Walnut Creek and Las Trampas Ridge USGS 7.5 Minute Quadrangles, database retrieved 11/4/2011.
4.4 Cultural Resources

This section describes existing cultural resources within the Project Site and surroundings and existing regulations regarding those resources. It also identifies potential impacts that the Project may have on existing cultural and historical resources and recommends mitigation measures to reduce and/or avoid potentially significant impacts to those resources. Cultural and historical resources discussed in this section of the DEIR include:

- Prehistoric or historic-era archaeological sites,
- Properties of cultural or historic significance, and
- Paleontological resources.

Significance thresholds for impacts on these resources would generally be reached if redevelopment activity would disrupt or adversely affect the resources, further defined as alteration or destruction of the site or property, including both direct and indirect effects.

Environmental Science Associates (ESA) prepared a Cultural Resources Survey Report (CRSR) for the City on behalf of the Project Applicants because many of the buildings scheduled for demolition are over 50 years old. The CRSR is attached to this document as Appendix D.

4.4.1 Environmental Setting

Natural Environment

The City of Walnut Creek occupies a valley nestled between the Berkeley and Diablo Foothill Ranges, at the foot of Mount Diablo. Upland areas surround the City on three sides, including the Briones Hills and Lafayette Ridge to the northwest, Mount Diablo and the surrounding hills of Acalanes Ridge to the east, Shell Ridge to the southeast, and Las Trampas Ridge to the south.

The City and surrounding areas are underlain by Tertiary-age marine and non-marine sedimentary bedrock units that have been folded and faulted. Interlayered units range from erosion resistant, ridge-forming sandstones and conglomerates to relatively weak, soil-like, valley-forming siltstones and claystones. Erosion of the less-resistant units has produced a number of parallel valleys and linear ridges in which streams have deposited alluvium (gravel, sand, silt, and clay). The urban core, including the Project Site, is situated on the broad alluvial plain deposited by Walnut Creek and its tributary streams (City of Walnut Creek, 2005).

Vegetation in the Project vicinity is dominated by a cover of suburban landscaping, bordered by the remaining undeveloped grasslands and woodlands of the surrounding hillside, and traversed by the bands of riparian forest and scrub along the numerous creeks and drainages. The valley floor containing the Project Site been developed with urban and suburban uses, supporting a cover of primarily ornamental landscaping. Remnant native valley oaks and coast live oaks occur in scattered locations throughout the developed valley floor. Prior to development, this region would have supported extensive oak woodlands and native grasslands, which would have provided habitat...
for a variety of birds, mammals, and reptiles. Salmon reportedly used tributaries of Walnut Creek for annual spawning, prior to modern creek modifications (City of Walnut Creek, 2005).

**Geoarchaeological Context**

In many places in the greater San Francisco Bay Area, the interfaces between older land surfaces and alluvial fans are marked by a well-developed buried soil profile, or paleosol. Paleosols preserve the composition and character of the earth’s surface prior to subsequent sediment deposition; thus, paleosols have the potential to preserve archaeological resources if the area was occupied or settled by humans prior to such deposition (Meyer and Rosenthal, 2007). Because human populations have grown since the arrival of the area’s first inhabitants, more recent paleosols (late Holocene) are more likely to yield archaeological resources than older paleosols (early Holocene or Pleistocene).

The Project Site and surroundings are mapped as marine and non-marine sedimentary bedrock overlain by Quaternary-age interbedded terrace deposits of gravel, sand, silt and clay on the valley floor (Dibblee, 1980; Saul, 1973). Saul (1973) notes that Pleistocene-age fossils have been found in association with the terrace deposits from 0 to 100 feet below the surface. Pleistocene-age sediments have a lower potential for containing deeply-buried paleosols with associated archaeological deposits when compared to more recent sediments (Meyer and Rosenthal, 2007).

**Prehistory**

Archaeologists have developed individual cultural chronological sequences tailored to the archaeology and material culture of each subregion of California. Each of these sequences is based principally on the presence of distinctive cultural traits and stratigraphic separation of deposits. A framework for the interpretation of the San Francisco Bay Area is provided by Milliken et al. (2007), who have divided human history in California into three broad periods: the Early Period, the Middle Period, and the Late Period. Economic patterns, stylistic aspects, and regional phases further subdivide cultural patterns into shorter phases. This scheme uses economic and technological types, socio-politics, trade networks, population density, and variations of artifact types to differentiate between cultural periods, as described below.

The *Paleoindian Period* (13,500 to 10,000 before present [B.P.]) was characterized by big-game hunters occupying broad geographic areas. Evidence of human habitation during the *Paleoindian Period* has not yet been discovered in the San Francisco Bay Area. During the *Lower Archaic* of the *Early Period* (10,000 to 5500 B.P.), geographic mobility continued and is characterized by the millingslab and handstone as well as large wide-stemmed and leaf-shaped projectile points. The first cut shell beads and the mortar and pestle are documented in burials during the *Middle Archaic* of the *Early Period* (5500 to 2500 B.P.), indicating the beginning of a shift to sedentism. During the *Middle Period* (2500 to 950 B.P.), geographic mobility may have continued, although groups began to establish longer-term base camps in localities from which a more diverse range
of resources could be exploited. The first rich black middens\(^1\) are recorded from this period. By the *Upper Middle Period*, mobility was being replaced by the development of numerous small villages. During the *Initial Late Period (Lower Emergent; 950 to 450 B.P.*)*, social complexity developed toward lifeways of large, central villages with resident political leaders and specialized activity sites. Artifacts associated with the period include the bow and arrow, small corner-notched projectile points, and a diversity of beads and ornaments.

### Archaeological Research in the Vicinity

Archaeological sites that have been investigated in and around Walnut Creek represent an almost continuous period of nearly 4,000 years of habitation. Inadvertent discovery of sites during construction of buildings in downtown Walnut Creek in the early 1910s raised interest in the area’s past inhabitants, but no formal excavations were carried out until later in the 20th century. In the early 1960s, several archaeological sites in the Walnut Creek and Alamo areas of Contra Costa County were investigated. Excavations at four sites – La Serena (CA-CCO-30), Stone Valley (CA-CCO-308), Rossmoor (CA-CCO-309), and Alamo (CA-CCO-311) – identified seven different prehistoric components assignable to the Central California cultural sequence. Together, these sites represent an almost continuous chronological sequence extending from possibly 2000 B.C. to A.D. 1700 (Milliken et al., 2007).

Based on his assessment of the sites, Fredrickson (1965) suggests that cultural influences on Middle Horizon components in the Walnut Creek-Danville vicinity appear to have come from the lower Sacramento Valley, with some influence also from the Napa Valley. One of the striking characteristics of both Middle Horizon components at CA-CCO-308 was the vast area encompassed, estimated to cover approximately 200,000 square feet. During the Middle Horizon-Late Horizon Transition Phase, the cultural affiliation of the Walnut Creek-Danville vicinity appears to have been with the San Francisco Bay region rather than with the Sacramento Valley (Bennyhoff, 1968).

### Ethnography

During the late prehistoric and early historic periods, the San Francisco Bay Area was occupied by scores of small independent tribal territories, dubbed ‘tribelets’ by famed U.C. Berkeley ethnologist and linguist Alfred Kroeber (1925). The tribes around San Francisco Bay spoke dialects of five distinct languages: Bay Miwok, Costanoan, Plains Miwok, Patwin, and Wappo (Shipley, 1978). Of these language groups, the Bay Miwok speakers occupied the eastern portions of Contra Costa County, from Walnut Creek east to the Sacramento-San Joaquin Delta, and including the northern slopes of Mount Diablo (Milliken, 1995). Their area of dominance was limited to the interior valleys of the East Bay, but may have included access to the bayshore in the present East Oakland area. The Bay Miwok believed that Mount Diablo was a sacred place, and the mountain featured prominently in their mythology (Bennyhoff, 1977).

\(^1\) A midden is a mound of domestic refuse generally containing culturally darkened soils, shells and animal bones, as well as other indices of past human life and habitation. Middens mark the site of an indigenous settlement, and may contain human burials related to that settlement.
The rich and diverse ecosystems of the San Francisco Bay and surrounding areas sustained a very small number of inhabitants by today’s standards, but the population was actually quite dense for a nonagricultural society. Direct estimates of Bay Miwok populations are limited to one account from April 3, 1776, in which members of the Anza expedition visited a village near Antioch and estimated the population to be 400 persons. Based on this figure and the known number of villages from which later mission neophytes hailed, the total Bay Miwok population circa 1776 has been roughly estimated at about 1,700 persons (Levy, 1978).

The Bay Miwok were the first of the Eastern Miwok to undergo missionization, with the first recorded Bay Miwok converts coming from the Saclan village in the Tice Valley to Mission San Francisco in 1794. The first baptisms of Bay Miwok occurred between 1805 and 1812. Many Bay Miwok tribelets disappeared completely due to the combined effects of missionization and epidemics of European diseases, which killed thousands in the first half of the nineteenth century (Milliken, 1995).

**History**

In 1772, the Spanish began exploring the inner coastal region of California. During these explorations, Captain Pedro Fages encountered the Bay Miwok-speaking Saclan people (discussed under *Ethnology*, above) in the area that now encompasses Walnut Creek. Other expeditions followed, and soon the Spanish established a permanent presence in the Bay Area. The Bay Miwok and other indigenous groups were gathered together in missions and converted, by agreement or by force, to Christian agriculturalists and laborers (Milliken, 1995).

When Mexico became independent from Spain in 1822, it secularized the Spanish missions and sold off their lands. Large parcels were developed into cattle ranches maintained by Mexican grantees. Four land grants were awarded in the Walnut Creek area: Rancho San Ramon (1826), Rancho Arroyo de las Nueces y Bolbones (1834), Rancho Cañada del Hambre (1842) and Rancho Las Juntas (1844). These four grants converged at what later became downtown Walnut Creek. They were sparsely settled by a few families, who used the land primarily for cattle pasture (Emanuels, 1991).

During the Gold Rush and following California statehood in 1850, Contra Costa County was settled as an agricultural area (Gudde, 1969). A commercial center began to develop at “The Corners,” where the two major crossroads leading to Oakland and Pacheco met. Today, “The Corners” is the intersection of Mt. Diablo Boulevard and Main Street, at the northwest corner of the Project Site (City of Walnut Creek, 2005).

In 1849, William Slusher became the first white settler to build a home along Nuts Creek, now known as Walnut Creek, in the area of Liberty Bell Plaza. The Walnut Creek House, the first hotel and store in Walnut Creek, opened in 1855 where the Broadway Plaza parking structure on South Main Street stands today. Between 1856 and 1860, Hiram Penniman subdivided the land at The Corners and realigned the road leading to Pacheco, which had previously followed Walnut Creek. The new Main Street became the town’s primary business thoroughfare. In 1858, Michael Kirsch arrived in Walnut Creek, and built a blacksmith shop and a home off Main Street, on the
northwest corner of the Project Site. A U.S. Post Office was established in 1862 and The Corners was officially renamed Walnut Creek. The post office was housed in what is now the city’s oldest surviving commercial building, the Sherburne Brothers store at 1315 North Main Street near the corner of Mt. Diablo Boulevard, now La Fogata Mexican restaurant less than a block north from the Project Site. In 1917, Michael Kirsch’s blacksmith shop and home were purchased by James Symmons, who in 1932 rebuilt the blacksmith shop. The blacksmith operation continued until 1945 (Rovanpera, 1998).

The first railroad arrived in Walnut Creek in 1891. A portion of this Southern Pacific grade, now abandoned, forms the Iron Horse Regional Trail, nearly adjacent to the southeast side of the Project Site. A desire to pave the downtown streets led to a movement to incorporate the former rural crossroads as a city in 1914. Main Street was paved in 1921, and became part of State Highway 21 during the 1920s. In 1937, after multiple delays, the new Caldecott Tunnel officially opened, allowing quicker and easier trips between Walnut Creek and Oakland. Walnut Creek’s population boomed after the Second World War, spurred by the same factors that propelled suburban growth nationally. Farmland surrounding the old village was developed as tract houses, shopping centers, and highways. Traffic signals appeared in 1948 at the Mt. Diablo Boulevard/Main Street intersection. The City’s location at the junction of two major highways, Highway 24 and Highway 21 (later Interstate 680), made it an ideal location for retail development (City of Walnut Creek, 2005).

In November 1949, an agent for MacDonald Products Company of San Francisco chose an undeveloped parcel of land on South Main Street for the site of a commercial venture that would eventually transform Walnut Creek into a regional shopping destination. Edith Apgar was a representative of Graeme MacDonald, a developer who owned MacDonald Products Company. The J.C. Penney retail chain asked the firm to find a suitable location for its newest store in Walnut Creek. Ms. Apgar secured an option on a 30-acre tract of land as the ideal spot for a new shopping development (Rovanpera, 2009). The property was centrally located just southeast of The Corners intersection of Main Street and Mt. Diablo Boulevard, and would have easy access to two proposed freeways (future Highway 24 and I-680). A large portion of the site, located between Las Trampas and San Ramon Creeks, was locally known as “Botelho’s Island” after the original property owner, the Botelho family.

Construction of the new shopping center, known then as the “Broadway-Walnut Creek Shopping Center,” began in 1950 under the guidance of Ms. Apgar, who became one of the first female construction supervisors in the country. After MacDonald’s initial investment of $3.5 million, the center opened on October 11, 1951 with major stores including J.C. Penny, Sears, Joseph Magnin, Woolworth’s, and a Lucky supermarket. A total of 38 stores were initially constructed, making the shopping center one of the largest retail destinations in the region (see Figure 4.4-1, Plate 1, page 4.4-13). Opening-day celebrations featured comedian Harpo Marx and other entertainers, and attracted attention from all around the region (Oakland Tribune, 1951). The portions of both Las Trampas and San Ramon Creeks which ran through the Project Site were culverted and covered over during the initial construction of the shopping center, as well as during
Plate 1
1951 Aerial photograph of the newly completed Broadway-Walnut Creek Shopping Center
(SOURCE: Rovanpera, 2009)

Plate 2
Broadway-Walnut Creek Shopping Center, 1950s Postcard
SOURCE: City of Walnut Creek
later expansions. The center was expanded in 1954 to include a Capwell’s department store, which was eventually built and later converted into a Macy’s department store (Rovanpera, 2009).

The Modern style shopping center was not the country’s first auto-oriented, open air shopping district. That distinction belongs to Country Club Plaza, which opened in 1924 in Kansas City, Missouri. However, with its 1,500 parking spaces, Broadway Shopping Center was recognized as one of the country’s earliest examples of a post-war, automobile-oriented retail mall (Rovanpera, 2009). Other early post-war, auto-oriented, open-air malls include the Northgate Shopping Center which opened in Seattle in 1950, and was designed by renowned architect John Graham Jr. Also opening in 1951 were Valley Plaza in North Hollywood, California, and Shoppers World in Framingham, Massachusetts (ECSU, 2011). Numerous similar shopping malls were constructed throughout the country in the 1950s and 1960s, beginning a trend that culminated in the country’s largest, the Mall of America, which opened in 1992 in Bloomington, Minnesota.

With its many free parking spaces, the shopping center embraced the post-war automobile culture in a way that foreshadowed the next few decades of suburban retail design, as well as urban planning in general (see Figure 4.4-1, Plate 2, page 4.4-13). According to Walnut Creek historian Brad Rovanpera, “The debut of Broadway Shopping Center was the seminal moment in the modern history of Walnut Creek. Its singular effect on virtually every aspect of life in the tiny community cannot be overstated. In one broad stroke, the opening of the center changed the financial fortunes of a sleepy downtown that would one day become a major regional retail destination” Nearly all of the City’s estimated 1951–1952 sales-tax revenue ($202,186) was generated by the 38-store mall (Rovanpera, 2009). During the decades that followed, the population of Walnut Creek skyrocketed from 1,587 in 1940 to 53,643 in 1980 (City of Walnut Creek, 2011).

The original Lucky supermarket was demolished in the mid-1970s and replaced with Bullock’s Department Store, which was later remodeled and expanded to become Nordstrom in the mid-1980s. In 1985, the Macerich Company purchased most of the Broadway-Walnut Creek Shopping Center from its original developer, Graeme MacDonald. The Macerich Company renamed the shopping center Broadway Plaza and undertook a 10-year renovation. In addition to façade updates, a former horseshoe-shaped parking area was replaced with pedestrian pathways, shops and a restaurant, and a fountain. A five-level parking structure was constructed on South Main Street, and two more restaurants were added. Finally, “The Lane” was created adding boutique shops between Macy’s and Nordstrom, and screening some of the parking garage from pedestrians. Nordstrom undertook a major renovation and façade update in late 2010, and construction of the new Neiman Marcus store, opening in March, 2012, will complete the latest renovations to Broadway Plaza (Macerich, 2011).

**Paleontology**

Paleontological resources are the fossilized remains of plants and animals, including vertebrates (animals with backbones), invertebrates (e.g., starfish, clams, ammonites, and marine coral), and fossils of microscopic plants and animals (microfossils). The age and abundance of fossils depend on the location, topographic setting, and particular geologic formation in which they are found.
Fossil discoveries not only provide a historical record of past plant and animal life but can assist geologists in dating rock formations. Fossil discoveries can expand our understanding of the time periods and the geographic range of existing and extinct flora or fauna.

**Geologic and Paleontological Setting**

The regional bedrock underlying the entire Project Site and surroundings are Miocene-age marine sedimentary rock, described by Dibblee (1980) as “sandstone, locally pebbly, fossiliferous.” This is overlain in the Project Site by Quaternary-age alluvium and terrace deposits that have been noted by geologists to contain Pleistocene-age fossils (Saul, 1973).

### 4.4.2 Regulatory Setting

#### Federal

The National Historic Preservation Act (NHPA) of 1966, as amended (16 U.S.C. 470 et seq.), establishes the National Register of Historic Places (NRHP) as the authoritative list of significant historical resources, including districts, sites, buildings, structures and objects. For a property to be eligible for listing in the NRHP, it must be significant in American history, architecture, archaeology, engineering or culture, and must retain several of the seven aspects of integrity: location, design, setting, materials, workmanship, feeling and association. Resources less than 50 years of age, unless of exceptional importance, are not eligible for the NRHP. Listing in the NRHP does not prohibit demolition or alteration of that property, but Project effects on properties listed in or eligible for the NRHP must be evaluated under applicable federal and state environmental regulations. Resources of potential significance must meet one or more of the following four criteria (36 CFR 60.4) to establish eligibility for the NRHP. Eligible resources are those that:

- A. Are associated with events that have made a significant contribution to the broad patterns of our history;
- B. Are associated with the lives of persons significant in our past;
- C. Embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. Have yielded, or may be likely to yield, information important in prehistory or history.

#### State

The State of California implements the NHPA of 1966 (as amended) through its statewide comprehensive cultural resource surveys and preservation programs. The California Office of Historic Preservation (OHP), as an office of the California Department of Parks and Recreation (DPR), implements the policies of the NHPA on a statewide level. The OHP also maintains the California Historical Resources Inventory. The State Historic Preservation Officer (SHPO) is an appointed official who implements historic preservation programs within the state’s jurisdictions.
California Environmental Quality Act

CEQA, as codified in Public Resources Code (PRC) Sections 21000 et seq., is the principal statute governing the environmental review of projects in the state. CEQA requires lead agencies to determine if a proposed project would have a significant effect on historical resources, including archaeological resources. The CEQA Guidelines define a historical resource as: (1) a resource in the California Register of Historical Resources (CRHR); (2) a resource included in a local register of historical resources, as defined in PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); or (3) any object, building, structure, site, area, place, record, or manuscript that 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, provided the lead agency’s determination is supported by substantial evidence in light of the whole record.

If a lead agency determines that an archaeological site is a historical resource, the provisions of PRC Section 21084.1 and CEQA Guidelines Section 15064.5 would apply. If an archaeological site does not meet the CEQA Guidelines criteria for a historical resource, then the site may meet the threshold of PRC Section 21083 regarding unique archaeological resources. A unique archaeological resource is “an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.

3) Is directly associated with a scientifically recognized important prehistoric or historic event or person” (PRC Section 21083.2 [g]).

The CEQA Guidelines note that if a resource is neither a unique archaeological resource nor a historical resource, the effects of the project on that resource shall not be considered a significant effect on the environment (CEQA Guidelines Section 15064[c][4]).

California Register of Historical Resources

The CRHR is “an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change” (PRC Section 5024.1[a]). The criteria for eligibility to the CRHR are based on NRHP criteria (PRC Section 5024.1[b]). Certain resources are determined by the statute to be automatically included in the CRHR, including California properties formally determined eligible for or listed in the NRHP.

To be eligible for the CRHR a historical resource must be significant at the local, state, and/or federal level under one or more of the following criteria:
1) Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage;

2) Is associated with the lives of persons important in our past;

3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or,

4) Has yielded, or may be likely to yield, information important in prehistory or history (PRC Section 5024.1[c]).

For a resource to be eligible for the CRHR, it must also retain enough integrity to be recognizable as a historical resource and to convey its significance. There are seven aspects or qualities of integrity, defined as location, design, setting, materials, workmanship, feeling, and association.

Forty-five years is the standard age threshold used by OHP for determining potential historical significance. As such, any property located on the Project Site built prior to 1966 could be eligible for listing in the CRHR if it meets any one of the four criteria listed above and retains sufficient integrity to convey its historical significance.

**Paleontological Assessment Standards**

CEQA also directs agencies to assess whether a project would have an adverse effect on *unique paleontological resources*. The Society of Vertebrate Paleontology (SVP) has established guidelines for the identification, assessment, and mitigation of adverse impacts on nonrenewable paleontological resources. Most practicing paleontologists in the United States adhere closely to the SVP’s assessment, mitigation, and monitoring requirements as outlined in these guidelines, which were approved through a consensus of professional paleontologists. Many federal, state, county, and city agencies have either formally or informally adopted the SVP’s standard guidelines for the mitigation of adverse construction-related impacts on paleontological resources. The SVP has helped define the value of paleontological resources and, in particular, indicates that geologic units of *high* paleontological potential are those from which vertebrate or significant invertebrate or plant fossils have been recovered in the past (i.e., are represented in institutional collections). Only invertebrate fossils that provide new information on existing flora or fauna or on the age of a rock unit would be considered significant. Geologic units of *low* paleontological potential are those that are not known to have produced a substantial body of significant paleontological material. As such, the sensitivity of an area with respect to paleontological resources hinges on its geologic setting and whether significant fossils have been discovered in the area or in similar geologic units.

**Local**

The Walnut Creek General Plan 2025 (General Plan) contains the following goals, policies and actions regarding cultural resources. These directives call for preservation, restoration, and compatible reuse of historically significant architectural resources, and require records searches and appropriate mitigation measures to identify and protect archaeological and paleontological
resources. The goals, policies and actions regarding cultural resources include the following, from the Built Environment Chapter of the General Plan:

- **Goal 16**: Maintain and enhance Walnut Creek’s identity and sense of place.
  - **Policy 16.1**: Foster the preservation, restoration and compatible reuse of architecturally significant structures and sites.
    
    Action 16.1.1: Develop an inventory and map of architecturally significant properties and landmarks.

- **Goal 24**: Protect and conserve archaeological and paleontological resources.
  - **Policy 24.1**: Review the potential for the presence of archaeological and paleontological resources and remains in or near identified archaeological sites.
    
    Action 24.1.1: Require (a) review by the California Archaeological Inventory, Northeast [sic] Information Center, Sonoma State University, of all major new projects and all projects of any size within 660 feet of a site identified on the City’s map of sensitive archaeological sites, and (b) add appropriate mitigations as conditions of project approval as may be recommended by the California Archaeological Inventory.

    Action 24.1.2: Require developers to halt all work if cultural resources are encountered during a project, and to retain a qualified archaeologist to evaluate and make recommendations for conservation and mitigation.

- **Goal 25**: Maintain and enhance Walnut Creek’s historic resources.
  - **Policy 25.1**: Foster the preservation, restoration, and compatible reuse of historically significant structures and sites.
    
    Action 25.1.1: Develop an inventory and map of historically significant properties.

    Action 25.1.2: Develop a historic preservation plan and supporting ordinances.

### 4.4.3 Impacts and Mitigation Measures

**Significance Criteria**

The Project would have a significant impact on the environment if it were to:

1. Cause a substantial adverse change in the significance of a *historical resource* as defined in Sec. 15064.5.
2. Cause a substantial adverse change in the significance of a *unique archaeological resource* pursuant to Sec. 15064.5.
3. Directly or indirectly destroy a *unique paleontological resource* or site or unique geologic feature.
4. Disturb any human remains, including those interred outside of formal cemeteries.
Approach to Analysis

Impacts by Project Scenario

For all significance criteria relating to cultural resources, the impacts are the same for the Maximum Commercial Scenario and the Maximum Mixed-Use Scenario because the Area of Potential Effects (APE) would be the same under both scenarios. Therefore, both scenarios are discussed under a single Impact Statement for each criterion.

Areas of Potential Effects

The definition of the areas that could be affected by various project components is modeled after that of the federal APE defined in 36 CFR 800.16(d):

The APE is the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historical properties [i.e., CRHR-eligible resources], if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

The area of potential direct impacts related to the Project would include all areas of proposed demolition and ground-disturbing activity. Construction equipment and materials staging areas would be accommodated mostly on the Project Site and are included in the area of potential direct impacts. Excavation related to construction of new underground parking would reach a maximum estimated depth below grade of 15 feet for foundations and 23 feet for footing excavations. This depth is included within a vertical APE component. Additional areas would be included for an area of potential indirect impacts; i.e., surrounding properties that are within the immediate viewshed of the Project. The areas of potential direct and indirect impacts are shown on Figure 4.4-2.

Research Methods

A qualified ESA archaeologist conducted a records search for the Project Site at the Northwest Information Center (NWIC) of the California Historical Resources Information System on October 10, 2011 (File No. 11-0409). The purpose of the records search was to (1) determine whether known cultural resources have been recorded within or adjacent to the Project Site; (2) assess the likelihood for unrecorded cultural resources to be present based on historical references and the distribution of nearby sites; and (3) develop a context for the identification and preliminary evaluation of cultural resources. The records search consisted of an examination of the following documents:

- **NWIC base maps** (U.S. Geological Survey [USGS] Walnut Creek 7.5-minute topographic maps), to identify recorded archaeological sites and studies within a ½-mile radius of the Project Site.
- **NWIC base maps** (USGS Walnut Creek 7.5-minute topographic maps), to identify recorded historic-period resources of the built environment (building, structures, and objects) within a ½-mile radius of the Project Site.
Figure 4.4-2
Areas of Potential Direct and Indirect Effects
 Resource Inventories: California Inventory of Historical Resources, California Historical Landmarks, Historic Properties Directory Listing by City (through August 15, 2011).


 Historic Maps: An extensive on-line historic map collection with over 300 maps and views of California and Contra Costa County is available online at http://davidrumsey.com; Sanborn Fire Insurance maps for 1891, 1897, 1908, and 1915 were also consulted from the online source http://www.historicmapworks.com.

 Aerial Photos: Aerial photographs of the Project Site just prior to its development in 1949, as well as during its initial stages of construction in 1951, are available in Walnut Creek: An Illustrated History (Rovanpera, 2009).


 Records Search Results

 The records search indicated that 15 cultural resources studies have been completed within the Project Site or within a 0.5-mile surrounding radius (Table 4.4-1). Nineteen cultural resources have been recorded within the records search radius, including 17 historic-period resources and two prehistoric sites (Table 4.4-2).

 The Project Site is located within an area that has been identified in the City’s General Plan as having a high potential for cultural resources. The two known prehistoric archaeological sites within the records search radius are both north of the Project Site, along the banks of Walnut Creek. These resources have been characterized as habitation mounds with burials, and contain midden soil with a variety of marine shell types (mussel, clam and oyster), faunal bone, flaked-stone and groundstone artifacts as well as human remains. The larger and more thoroughly documented of the two sites contained deposits at least as deep as 4.5 feet below the ground surface; at least 25 burials were removed in 1913 during construction of the First National Bank building. Both sites are presumed to have been destroyed by urban development and creek channelization (Fredrickson, 1980:30; Kandler and Rudo, 1980:7).

 The historic-period resources within the records search radius include a segment of the former Southern Pacific Railroad grade (now the Iron Horse Recreational Trail), and various residential, commercial, and civic buildings and structures. Many of these are clustered in the historic downtown area of the City, north of Mt. Diablo Boulevard.
## TABLE 4.4-1

### CULTURAL RESOURCES STUDIES WITHIN 0.5-MILE RADIUS OF THE PROJECT SITE

<table>
<thead>
<tr>
<th>Study No.</th>
<th>Title</th>
<th>Author</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>727</td>
<td>An Archaeological Reconnaissance of Two New Proposed Waste Water Pipeline Routes, Livermore-Amador Valley Water Management Agency, Alameda County, California</td>
<td>Holman, Miley and David Chavez</td>
<td>1977</td>
</tr>
<tr>
<td>1452</td>
<td>Report of a Cultural Resource Investigation of the South Broadway Extension Study Area- City of Walnut Creek</td>
<td>Milliken, Randall</td>
<td>1979</td>
</tr>
<tr>
<td>2231</td>
<td>Cultural Resource Survey- Walnut Creek Project Area, Contra Costa County, California</td>
<td>Kandler, Edward R., Mark O. Rudo</td>
<td>1980</td>
</tr>
<tr>
<td>2969</td>
<td>Archaeological Overview and Research Design for the Walnut Creek Project, Contra Costa County, California</td>
<td>Fredrickson, David A.</td>
<td>1980</td>
</tr>
<tr>
<td>11234</td>
<td>Archaeological Survey Report for a Proposed Commuter Bikepath from Rudgear Road in Walnut Creek to Monument Boulevard, Contra Costa County</td>
<td>Kelly, Marcia K.</td>
<td>1989</td>
</tr>
<tr>
<td>16729</td>
<td>Cultural Resource Evaluation: Kaiser Walnut Creek Phase III Expansion, County of Contra Costa</td>
<td>Archaeological Resource Management</td>
<td>1994</td>
</tr>
<tr>
<td>19798</td>
<td>EBMUD San Ramon Valley Water Master Plan EIR Contra Costa County, California</td>
<td>David Chavez &amp; Associates</td>
<td>1997</td>
</tr>
<tr>
<td>21158</td>
<td>Cultural Resources Monitoring Program: Bank of America Site, Broadway Pointe Project, City of Walnut Creek, Contra Costa County, California</td>
<td>Basin Research Associates, Inc.</td>
<td>1997</td>
</tr>
<tr>
<td>21183</td>
<td>Cultural Resources Records and Preliminary Literature Review, 1500 Botelho Drive, City of Walnut Creek, Contra Costa County, California</td>
<td>Basin Research Associates, Inc.</td>
<td>1997</td>
</tr>
<tr>
<td>23069</td>
<td>Cultural Resources Review and Monitoring Program, Simons Property Project, 1500 Botelho Drive (APN 184-440-019), City of Walnut Creek, Contra Costa County, California</td>
<td>Basin Research Associates, Inc.</td>
<td>1999</td>
</tr>
<tr>
<td>24951</td>
<td>Cultural Resources Assessment- 1501 Mt. Diablo Boulevard (APN 184-060-018), City of Walnut Creek, Contra Costa County</td>
<td>Basin Research Associates, Inc.</td>
<td>2000</td>
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<tr>
<td>28024</td>
<td>Cultural Resources Assessment- Talbot Site (APNs 184-44-16 and 184-44-06), 1201 S. Main Street, City of Walnut Creek, Contra Costa County</td>
<td>Basin Research Associates, Inc.</td>
<td>2003</td>
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<tr>
<td>35006</td>
<td>Archaeological Literature Review and Field Inspection of the Block C/1250 Locust Street Project, Walnut Creek, Contra Costa County, CA</td>
<td>Holman &amp; Associates</td>
<td>2008</td>
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<td>N/A</td>
<td>Historic Resource Evaluation for the Walnut Creek Plan</td>
<td>Page &amp; Turnbull</td>
<td>2004</td>
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Source: Northwest Information Center, 2011
TABLE 4.4-2
CULTURAL RESOURCES WITHIN 0.5-MILE RADIUS OF THE PROJECT SITE

<table>
<thead>
<tr>
<th>Primary</th>
<th>Trinomial</th>
<th>HPD Number</th>
<th>Age</th>
<th>Description</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>P-07-000120</td>
<td>CA-CCO-238</td>
<td>N/A</td>
<td>Unknown</td>
<td>Prehistoric Habitation and burial site</td>
<td>Less than ¼ mile north of Project Site</td>
</tr>
<tr>
<td>P-07-000124</td>
<td>CA-CCO-242</td>
<td>N/A</td>
<td>Unknown</td>
<td>Prehistoric Habitation and burial site</td>
<td>Less than ¼ mile north of Project Site</td>
</tr>
<tr>
<td>P-07-000196*</td>
<td>CA-CCO-388H</td>
<td>N/A</td>
<td>1890</td>
<td>Southern Pacific Railroad Line; now Iron Horse Recreational Trail</td>
<td>Southeast of Project Site between Newell Avenue and Rudgear Road</td>
</tr>
<tr>
<td>P-07-001141</td>
<td>N/A</td>
<td>010681</td>
<td>Unknown</td>
<td>Historic Heritage Tree, Brubaker residence</td>
<td>30 Brubaker Drive</td>
</tr>
<tr>
<td>P-07-001142</td>
<td>N/A</td>
<td>010682</td>
<td>Unknown</td>
<td>Walnut Creek Women’s Club</td>
<td>Carmel Drive</td>
</tr>
<tr>
<td>P-07-001143</td>
<td>N/A</td>
<td>010683</td>
<td>Unknown</td>
<td>Larrieu residence</td>
<td>196 El Camino Corto</td>
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<tr>
<td>P-07-001144</td>
<td>N/A</td>
<td>010684</td>
<td>Unknown</td>
<td>Bronson residence**</td>
<td>210 El Camino Corto</td>
</tr>
<tr>
<td>P-07-001145</td>
<td>N/A</td>
<td>010685</td>
<td>1907</td>
<td>San Ramon Bank**</td>
<td>1332 Main Street</td>
</tr>
<tr>
<td>P-07-001146</td>
<td>N/A</td>
<td>010686</td>
<td>1883</td>
<td>Ye Old Yarn Shop/Dole House</td>
<td>1614 Mt. Diablo Boulevard</td>
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<tr>
<td>P-07-001148</td>
<td>N/A</td>
<td>010688</td>
<td>1910</td>
<td>Lawrence Meat Company</td>
<td>1432 N. Main Street</td>
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<tr>
<td>P-07-001149</td>
<td>N/A</td>
<td>010689</td>
<td>Unknown</td>
<td>Leach home</td>
<td>1533 N. Main Street</td>
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<tr>
<td>P-07-001152</td>
<td>N/A</td>
<td>010692</td>
<td>Unknown</td>
<td>Adams residence</td>
<td>2030 San Miguel Drive</td>
</tr>
<tr>
<td>P-07-001153*</td>
<td>N/A</td>
<td>010693</td>
<td>1891</td>
<td>Walnut Creek Southern Pacific Railroad Depot</td>
<td>Moved from Project Site to 850 South Broadway in 1973</td>
</tr>
<tr>
<td>P-07-001154</td>
<td>N/A</td>
<td>010694</td>
<td>1876</td>
<td>Stow residence</td>
<td>1721 Stow Avenue</td>
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<tr>
<td>P-07-001156</td>
<td>N/A</td>
<td>010696</td>
<td>Unknown</td>
<td>Chapel of St. Paul’s Episcopal Church</td>
<td>1924 Trinity Avenue</td>
</tr>
<tr>
<td>P-07-001157</td>
<td>N/A</td>
<td>010697</td>
<td>1931</td>
<td>California Water Pumping Plant</td>
<td>Walker Avenue</td>
</tr>
<tr>
<td>P-07-001159</td>
<td>N/A</td>
<td>010699</td>
<td>Unknown</td>
<td>Civic Park Bridge</td>
<td>Civic Park Drive N.</td>
</tr>
<tr>
<td>P-07-002641</td>
<td>N/A</td>
<td>N/A</td>
<td>1932</td>
<td>Casa Christina</td>
<td>1632 Live Oak Way</td>
</tr>
<tr>
<td>N/A</td>
<td>N/A</td>
<td>154815</td>
<td>1955</td>
<td>Walnut Creek Armory</td>
<td>1800 Carmel Drive</td>
</tr>
</tbody>
</table>

NOTES: * resource is located at least partially within the C-APE. ** demolished.
SOURCE: Northwest Information Center, 2011

None of the recorded resources are located within the Project Site itself, although one of the historic buildings is adjacent to the Project Site; specifically, the 1891 Southern Pacific Railroad Depot at 850 South Broadway. Originally built within the Project Site in approximately the location now occupied by the parking structure on the west side of South Broadway, the depot was moved to its current spot on the east side of South Broadway in 1973 (Vic Stewart’s, 2011). A note in the Historic Resources Inventory states that this building appears to be eligible for the NRHP as an individual property, although a formal determination has not been conducted. The
depot currently houses Vic Stewart’s Famous for Steaks restaurant, and retains many of its historic features, including a Pullman rail car located behind the building. A segment of the Iron Horse Trail also passes through the area of potential indirect impacts, although this linear resource no longer conveys its historic appearance and use as a railroad because it has been converted to a bike and pedestrian path, and likely would not meet the criteria for inclusion on any federal, state, or local registers of historical resources. One other potentially historic building has been noted within the area of potential indirect effects: the First Commercial Building/ Sherburne Brothers’ store (now La Fogata Restaurant) at 1315 North Main Street. An architectural assessment of this building in 2004 determined that it does not retain sufficient integrity for inclusion on the CRHR (Page & Turnbull, 2004).

Historic maps of the City of Walnut Creek show a blacksmith’s shop/wagon maker on the northwest corner of the Project Site, in the location of the Neiman Marcus store currently under construction (Sanborn Map 1891, 1897, 1908). Several additional buildings are shown within the Project Site on the 1915 Sanborn Map, including ones labeled “impl’t stge” and “auto,” and a 30-foot-high water tank.

Based on the results of the background research, no cultural resources have been recorded within the Project Site; however, prehistoric sites and historic-period resources could be present given the proximity to existing waterways. Prehistoric sites would most likely be found along the natural channels of Las Trampas and San Ramon Creeks, although the intensive earthwork that was performed in the 1950s to channelize these creeks may have destroyed or obscured evidence of early occupations. Potential subsurface features or artifacts indicative of Native American occupation could include, but would not be limited to: hearths or scatters of fire-affected rock, midden soils with or without shell deposits, lithic reduction flakes and cores, projectile points or other flaked-stone tools, and grinding or milling tools, such as mortars, pestles, and handstones. Human remains could also be associated with Native American sites, as was found at the two nearby prehistoric resources. Unreported historic-period archaeological remains could also occur, especially buried features such as structural foundations or footings, privies, refuse from the blacksmith’s forges (i.e., coal slag), or trash dumps.

**Historic Architectural Survey Results**

A reconnaissance-level architectural field survey completed by a qualified ESA architectural historian in October, 2011, found that although numerous buildings constructed prior to 1966 still exist in the Project Site, including many that date to the first phase of construction in 1951, extensive façade remodels, demolitions, and new construction within the last 45 years, especially in the 1980s and 1990s, has occurred. These changes over time have resulted in a near-total loss of integrity of the original Broadway-Walnut Creek Shopping Center (ESA, 2011). Street closures and newer in-fill construction, particularly around the former ‘horseshoe’ in the 1990s, have added to this loss of integrity. Exterior façade remodels and alterations include newer plaster parapet walls with ceramic tile details, steel and fabric awnings, replacement aluminum shop windows and pedestrian doors, and newer signage. In general, Broadway Plaza no longer retains the architectural appearance of post-war era outdoor shopping center. Any potential historical significance that Broadway Plaza might have had as one of the nation’s first post-war, auto-
oriented, open-air shopping malls no longer exists due to this loss of integrity. In addition, any associations that the development once had with important local persons, such as Edith Apgar or Graeme MacDonald, also no longer exist due to the loss of integrity. As such, none of the individual buildings within Broadway Plaza, nor the shopping center as a whole, are eligible for listing in the CRHR. Broadway Plaza is not considered a historical resource according to CEQA Section 15064.5 (ESA, 2011).

**Organizational Contacts**

ESA submitted a sacred lands search request to the Native American Heritage Commission (NAHC) on October 12, 2011. ESA received a response on October 18, 2011. A records search of their sacred land file failed to indicate the presence of Native American cultural resources in the immediate vicinity of the Project. A list of Native American individuals/organizations who might have additional information or concerns was provided. Consultation letters to these individuals were sent on October 19, 2011 by ESA on behalf of the City. No response from the representatives on the NAHC’s list has been received as of publication of this report.

**Paleontological Search Results**

A search of the fossil collections database at the University of California Museum of Paleontology (UCMP) reveals one potential vertebrate fossil locality within the greater Project Site and surroundings. This find is listed as a now-extinct species of bison dating from the Pleistocene, found at the “San Ramon Creek” locality (UCMP, 2011). Other invertebrate fossils (notably mollusks) have been reported in the literature within the Miocene sandstone surrounding and underlying the Project Site (Dibblee, 1980). The geologic units in the Project Site and surroundings are therefore considered to have a moderate to high paleontological potential per SVP (1995) criteria.

**Impacts**

**Impact CUL-1: The Project could result in a substantial adverse change in the significance of a historical resource (Criterion 1). (Potentially Significant)**

As noted above, a *historical resource* can be a district, site, building, structure or object that meets the eligibility criteria for the CRHR, or that is otherwise designated by a lead agency. The potential for impacts to above-ground (architectural) and subsurface (archaeological) historical resources is discussed separately.

**Historic-period Architectural Resources**

While many of the buildings on the Project Site that were constructed prior to 1966 would be demolished to accommodate the Project, none of these buildings could be considered historical resources under federal, state or local standards primarily due to a loss of integrity. As such, their proposed demolition and replacement would have no impact on historical resources. The alterations proposed for the remainder of the Project Site would not have significant impacts for
similar reasons. No direct impacts to historic architectural resources would occur as a result of the Project; therefore no mitigation measures are required.

The Project would have no indirect impact to the setting of nearby historical resources, including the former Southern Pacific Railroad Depot at 850 South Broadway (Vic Stewart’s Restaurant), due to the relatively large distance between the Project Site and this resource (about 100 feet) including the intervening, multi-lane arterial road of South Broadway. The setting of other historical resources within the historic downtown area would be similarly unaffected by the Project due to their distance from the Project Site and the many intervening modern buildings and roads such as Mt. Diablo Boulevard. No indirect impacts to historic architectural resources would occur as a result of the Project; therefore no mitigation measures are required.

Archaeological Resources
The developed nature of the Project Site, including previous construction of a basement level at the existing stores, and the fact that excavation and grading for the Neiman Marcus store revealed no significant archaeological resources, reduces the likelihood of encountering unknown archaeological resources that could qualify as historical resources under the definition provided in the CEQA Guidelines (Section 15064.5). However, given the location of the Project Site in an area designated in the General Plan as high sensitivity for archaeological resources, the historic use of portions of the Project Site as a blacksmith shop and other civic/industrial uses, and the lack of a pre-development cultural resources survey, there is a reasonable potential for archaeological resources within the Project Site. Project construction could potentially expose and damage or destroy as-yet undiscovered prehistoric and historic-period sites that could qualify as historical resources.

In the unlikely event that archaeological resources are uncovered during ground-disturbing activities, it would not be feasible to preserve the resources in place while still developing the Project. Mitigation measures designed to preserve resources in place would therefore have to focus on altering or reducing the location and/or amount of ground disturbance. The Relocated Parking alternative proposes to conduct the extensive excavation needed for an underground garage at a different onsite location. However, the low likelihood of encountering as-yet undiscovered prehistoric and historic-period archaeological sites is the same across the entire Project Site, such that relocating the garage excavation would not reduce the level of potential significance. Reducing the size of the Project would, by reducing the need for excavation and grading, allow a greater portion of any as-yet-undiscovered prehistoric or historic-period archaeological resource to be preserved in place. The feasibility of reducing the Project size is addressed in Chapter 5, Alternatives in connection with the reduced size alternatives, and decision-makers will address the feasibility of those alternatives. However, reducing the size of the Project would not reduce the potential for exposing and damaging as-yet undiscovered prehistoric and historic-period archaeological sites to a less-than-significant level.
The following mitigation measure is recommended to ensure that impacts resulting from an inadvertent discovery of archaeological resources would be less than significant:

**Mitigation Measure CUL-1:** If prehistoric or historic-period archaeological resources are encountered during earth-moving activities, all construction activities within 50 feet must stop and the City shall be notified. A qualified archaeologist shall inspect the findings within 24 hours of discovery. Cultural resources shall be recorded on California Department of Parks and Recreation (DPR) Form 523 (Historic Resource Recordation form). If it is determined that the proposed development could damage a historical resource or a unique archaeological resource (as defined pursuant to the CEQA Guidelines), mitigation shall be implemented in accordance with Public Resources Code Section 21083.2 and Section 15126.4 of the CEQA Guidelines, with a preference for preservation in place. Additionally, in accordance with Public Resource Code Section 5097.993, the Project Applicants shall inform project personnel that the collection of any Native American artifact is prohibited by law.

**Significance after Mitigation:** Less than Significant.

**Impact CUL-2:** The Project could result in a substantial adverse change in the significance of a unique archaeological resource (Criterion 2). (Potentially Significant)

As discussed above in Section 4.4.2 (Regulatory Setting), subsurface archaeological resources that do not qualify as historical resources under CEQA may still be considered significant as unique archaeological resources. The discussion of archaeological resources under Impact CUL-1 also applies to those potential unknown sites that could qualify as unique archaeological resources pursuant to the CEQA Guidelines, because such resources are likely to include similar elements and would be found in similar locations. Likewise, implementation of Mitigation Measure CUL-1 would apply to those subsurface cultural sites that meet this definition.

**Mitigation Measure CUL-2:** Implement Mitigation Measure CUL-1.

**Significance after Mitigation:** Less than Significant.

**Impact CUL-3:** The Project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature (Criterion 3). (Potentially Significant)

As discussed above, at least one vertebrate fossil has been previously recovered in the vicinity of the Project from the same Quaternary-age terrace deposits that cover the Project Site. The underlying Miocene-age marine sandstone is also known to have yielded invertebrate fossils in the greater Project Site and surroundings. While this qualifies the local rock units as having a high paleontological potential under SVP criteria, the probability that earthwork would uncover significant vertebrate fossils is low. Much of the excavation would consist of foundation
excavation within surface soils or the zone of highly weathered bedrock where fractures, fissures and chemical processes have damaged the integrity of the original, *in-situ* rock formation.

Activities of highest concern for impacts to paleontological resources typically consist of projects that involve large-scale mining, tunneling, or deep trenching that excavate large volumes of sensitive, unweathered rock units rather than the relatively shallow excavations for foundation excavation that typify the Project. Nevertheless, Project-related grading and excavation would disturb substantial quantities of soil, some of which may consist of “fresh” bedrock. As such, inadvertent disturbance of unique or significant fossils cannot be ruled out. For this reason, and because the significance of fossil resources cannot be known until assessed by a professional paleontologist, any unanticipated discovery or disturbance of a fossil of unknown importance would be a potentially significant impact. Implementation of the following mitigation measure would reduce the potential impact to a less-than-significant level.

**Mitigation Measure CUL-3:** A qualified paleontologist shall be present during all excavation of previously-undisturbed soils that a qualified geologist has determined are unlikely to consist of highly weathered bedrock. If paleontological resources are discovered during earthmoving activities, the construction crew shall immediately cease work within at least 25 feet of the find. The paleontologist shall evaluate the resource and prepare a proposed mitigation plan in conformance with SVP guidelines (1995). The proposed mitigation plan, which shall be reviewed and approved by the City, may include a field survey, construction monitoring, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. The applicant shall implement the recommendations of the paleontologist before construction activities can resume at the site where the paleontological resources were discovered.

**Significance after Mitigation:** Less than Significant.

**Impact CUL-4: The Project could disturb human remains (Criterion 4). (Potentially Significant)**

While there is no indication that the immediate Project Site has been used for human burials, the possibility cannot be discounted entirely. Although unlikely, the unearthing of human remains during construction would be a significant impact. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level.

**Mitigation Measure CUL-4:** If human remains are discovered during construction, the measures specified in Section 15064.5(e)(1) of the CEQA Guidelines shall be followed, which are as follows:

In the event of the accidental discovery or recognition of any human remains in any location other than a dedicated cemetery, the following steps shall be taken:

1. There shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until:
4. Environmental Setting, Impacts and Mitigation Measures

4.4 Cultural Resources

a. The Contra Costa County coroner is contacted to determine that no investigation of the death is required, and

b. If the coroner determines the remains to be Native American:
   i. The Coroner shall contact the NAHC within 24 hours;
   ii. The NAHC shall identify the person or persons it believes to be most likely descended from the deceased Native American;
   iii. The most likely descendent (MLD) may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98; or

2. Where the following conditions occur, the landowner or his authorized representative shall rebury the Native American remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance:
   a. The NAHC is unable to identify an MLD or the MLD failed to make a recommendation within 24 hours after being notified by the Commission;
   b. The MLD identified fails to make a recommendation; or
   c. The landowner or his authorized representative rejects the recommendation of the descendent, and mediation by the NAHC fails to provide measures acceptable to the landowner.

Significance after Mitigation: Less than Significant.

Cumulative Impacts

Geographic Context

The cumulative geographic context for cultural resources includes the Project Site and surroundings, in addition to all parts of the City.

Impact CUL-5: The Project, combined with cumulative development, including past, present, and reasonably foreseeable future development, could result in a significant adverse cumulative cultural resources impact. (Potentially Significant)

The 31 approved and pending projects listed in Appendix B (Cumulative Projects) are relevant to the cumulative impact analysis for cultural resources, as is existing development, as they represent past projects. Most cumulative development has or will likely involve ground-disturbing activities, which have the potential to inadvertently impact unknown archaeological or paleontological resources or unmarked burials. Most cumulative development has or may likely involve demolition of one or more existing buildings to accommodate new construction, which could result in a significant impact if the buildings subject to demolition are more than 45 years old and are historic resources pursuant to CEQA Guidelines Section 15064.5.
Because the Project has no impact on above-ground historic resources, it would not contribute to a cumulative impact to any such resources. The Project, together with other past, present and reasonably foreseeable future development, could potentially cause a substantial adverse change in the significance of an archaeological resource that is a historical resource or a unique archaeological resource, or directly or indirectly destroy a unique paleontological resource, or inadvertently disturb human remains. Thus, a cumulative impact could result, and the Project (and other cumulative development) would contribute in some part to combined adverse impact.

However, as with past and present projects and the Project, all future cumulative projects would be subject to an environmental review process similar to the Project, and, if warranted, mitigation measures similar in effect to those identified for the Project would be required to reduce Project-related impacts to a less-than-significant level. Further, implementation of Walnut Creek General Plan policies, along with compliance with federal, state and local laws, regulations and policies addressing cultural resources, would also address potential adverse effects to these resources from cumulative projects. The implementation of Mitigation Measures CUL-1 through CUL-4 would reduce the Project’s contribution to the potential cumulative impact to cultural resources to a less-than-significant level.

**Mitigation Measure CUL-5:** Implement Mitigation Measures CUL-1, CUL-2, CUL-3 and CUL-4.

**Significance after Mitigation:** Less than Significant.

### 4.4.4 References


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Rovanpera, Brad. *Walnut Creek: An Illustrated History*. Published by the Walnut Creek Historical Society and the City of Walnut Creek. 2009.

Ross, Martha. Broadway Plaza Turns the Big 6-0. Online article for the *Walnut Creek Patch*. Published June 13, 2011 at http://walnutcreek.patch.com/articles/broadway-plaza-turns-the-big-6-0.


4.5 Geology, Soils and Seismicity

This section describes geologic and seismic conditions in the Project Site and surroundings to provide relevant background information with respect to soils and potential geologic and seismic hazards. Based on the evaluation of geologic and seismic conditions in the project vicinity, potential impacts are discussed and evaluated and appropriate mitigation are identified, as necessary.

4.5.1 Environmental Setting

Regional Geology

The Project Site and surroundings lie within the geologically complex region of California referred to as the Coast Ranges geomorphic province. The Coast Ranges province lies between the Pacific Ocean and the Great Valley (Sacramento and San Joaquin valleys) provinces and stretches from the Oregon border to the Santa Ynez Mountains near Santa Barbara. Much of the Coast Range province is composed of marine sedimentary deposits and volcanic rocks that form northwest trending mountain ridges and valleys, running subparallel to the San Andreas Fault Zone. The relatively thick marine sediments dip east beneath the alluvium of the Great Valley. The Coast Ranges can be further divided into the northern and southern ranges, which are separated by the San Francisco Bay. The San Francisco Bay lies within a broad depression created from an east-west expansion between the San Andreas and the Hayward fault systems. West of the San Andreas Fault lies the Salinian Block, a granitic core that extends from the southern end of the province to north of the Farallon Islands.

The Northern Coast Ranges are comprised largely of the Franciscan Complex or Assemblage, which consists primarily of graywacke, shale, greenstone (altered volcanic rocks), basalt, chert (ancient silica-rich ocean deposits), and sandstone that originated as ancient sea floor sediments. Franciscan rocks are overlain by volcanic cones and flows of the Quien Sabe, Sonoma and Clear Lake volcanic fields (CGS, 2002a).

Local Geology

The Project Site and surroundings are underlain by weakly consolidated, medium- and coarse-grained alluvial deposits with estimated ages ranging between 10 and 70 thousand years old (Helley and LaJoie, 1979). These deposits originate in the uplands to the west and south as weathered bedrock that is dislodged and transported by water towards the valley. At the valley margins, the younger, less consolidated sediments occur as alluvial fans while older, more consolidated deposits cover the valley floor. The alluvium consists of interbedded clay, silt, sand, and gravel deposits of variable and irregular thickness. Surficial materials are highly variable, typically easy to excavate, and, when wet, tend to be unstable on steep slopes and in excavations.

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1 A geomorphic province is an area that possesses similar bedrock, structure, history, and age. California has 11 geomorphic provinces.
West and south of the Project Site and surroundings the bedrock uplands consist of moderately deformed sedimentary rocks of Tertiary age (65 to 1.6 million years ago) consisting of the San Pablo Group and the nonmarine sedimentary rocks of the Contra Costa Group. The San Pablo Group consists primarily of marine deposits including sandstone, mudstone, siltstone, and shale with minor tuff. The Contra Costa Group consists primarily of non-marine sandstone, conglomerate, shale and minor claystone, limestone and tuff.

Soils

Native surface soil in the Project Site and surroundings are characterized by Tierra Loam as part of the Tierra Series, as defined by the United States Department of Agriculture (“USDA”) Natural Resource Conservation Service (NRCS). These soils occur on moderate slopes and formed from weathered sedimentary terrace deposits. They drain slowly due to clay content. In general, the soils have high shrink-swell potential (USDA NRCS, 1982). The Tierra Loam is associated with the Los Osos clay loam and Misllskholm loam. Runoff is medium to rapid and there is a moderate to high erosion hazard when exposed. The Tierra Loam is also characterized by very slow permeability, high shrink swell potential and high corrosivity.

Subsurface soil investigations conducted in the vicinity of the Project Site and surroundings have revealed that artificial fill materials immediately underlie the ground surface to depths that average approximately four feet. However, fill depths increase in the area of the box culverts. Bedrock in the form of a highly weathered sandstone was encountered at depths ranging from approximately 19 to 65 feet below ground surface (“bgs”). The sandstone is overlain by alluvial deposits that include clays and sands with varying silty contents (Smith-Emery, 2011).

Topography

The Project Site and surroundings are situated on the southern end of the Walnut Creek Valley, sandwiched between the Briones Hills and Shell Ridge near the base of Mount Diablo. The natural slope of the valley is gradual to the north, however the Project Site and vicinity are relatively level. The Project Site and surrounding elevations are approximately in the range of 140 to 150 feet above mean sea level (“msl”) (Smith Emery, 2011).

Seismicity

The Project Site and surroundings lie within a region of California that contains many active and potentially active faults and is considered an area of high seismic activity (Figure 4.5-1). The USGS along with the California Geological Survey and the Southern California Earthquake Center formed the 2007 Working Group on California Earthquake Probabilities which has evaluated the

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2 An “active” fault is defined by the State of California as a fault that has had surface displacement within Holocene time (approximately the last 11,000 years). A “potentially active” fault is defined as a fault that has shown evidence of surface displacement during the Quaternary (last 1.6 million years), unless direct geologic evidence demonstrates inactivity for all of the Holocene or longer. This definition does not, of course, mean that faults lacking evidence of surface displacement are necessarily inactive. “Sufficiently active” is also used to describe a fault if there is some evidence that Holocene displacement occurred on one or more of its segments or branches (Hart, 1997).
TABLE 4.5-1
ACTIVE FAULTS IN THE PROJECT AREA

<table>
<thead>
<tr>
<th>Fault</th>
<th>Location Relative to Project Area</th>
<th>History of Recent Movement</th>
<th>Fault Classificationa</th>
<th>Historical Seismicityb</th>
<th>Maximum Moment Magnitude Earthquake (“Mw”)c</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calaveras</td>
<td>4 miles South</td>
<td>Historic (1861 rupture)</td>
<td>Active</td>
<td>M5.6-M6.4, 1861 M4 to M4.5 swarms 1970, 1990</td>
<td>6.6-6.8</td>
</tr>
<tr>
<td>Hayward (southern)</td>
<td>10 miles West-Southwest</td>
<td>Historic (1868 rupture)</td>
<td>Active</td>
<td>M6.8, 1868 Many &lt;M4.5</td>
<td>6.7-7.5</td>
</tr>
<tr>
<td>Greenville-Marsh Creek</td>
<td>8 miles East-Northeast</td>
<td>Historic (1980 rupture)</td>
<td>Active</td>
<td>M5.6, 1980</td>
<td>6.6-7.3</td>
</tr>
<tr>
<td>Concord-Green Valley</td>
<td>4 miles Northeast</td>
<td>Holocene</td>
<td>Active</td>
<td>Active Creepd</td>
<td>6.9</td>
</tr>
<tr>
<td>San Andreas</td>
<td>28 miles West-Southwest</td>
<td>Historic (1906; 1989 ruptures)</td>
<td>Active</td>
<td>M7.1, 1989 M8.25, 1906 M7.0, 1838 Many &lt;M6</td>
<td>7.8-8.0</td>
</tr>
<tr>
<td>Mt. Diablo Thrust</td>
<td>0.5 miles east</td>
<td>Likely Holocene</td>
<td>Likely Active</td>
<td>n/a</td>
<td>6.0</td>
</tr>
</tbody>
</table>

a An “Active Fault” is defined by the State Mining and Geology Board as one that has displayed surface displacement within Holocene time (about the last 10,000 years).
b Richter magnitude (“M”) and year for recent and/or large events.
c The Maximum Moment Magnitude Earthquake (“Mw”) is the strongest earthquake that is likely to be generated along a fault zone based on empirical relationships among Mw, surface rupture length, down-dip rupture width, rupture area, and fault type from Wells and Coppersmith (1994).
d Slow fault movement that occurs over time without producing an earthquake.

SOURCES: Hart, 1997; Jennings, 1994; Peterson, 1996.

probability of one or more earthquakes of magnitude 6.7 or higher occurring in the state of California over the next 30 years. The result of the evaluation indicated a 63 percent likelihood that such an earthquake event will occur in the Bay Area (USGS, 2008).

Richter magnitude is a measure of the size of an earthquake as recorded by a seismograph, a standard instrument that records groundshaking at the location of the instrument. The reported Richter magnitude for an earthquake represents the highest amplitude measured by the seismograph at a distance of 100 kilometers from the epicenter. Richter magnitudes vary logarithmically with each whole number step representing a tenfold increase in the amplitude of the recorded seismic waves. Earthquake magnitudes are also measured by their Moment Magnitude (“Mw”) which is related to the physical characteristics of a fault including the rigidity of the rock, the size of fault rupture, and movement or displacement across a fault (CGS, 2002b).

Ground movement during an earthquake can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geologic material. The composition of underlying soils, even those relatively distant from faults, can intensify ground shaking. For this reason, earthquake intensities are also measured in terms of their observed effects at a given locality. The Modified Mercalli (“MM”) intensity scale (Table 4.5-2) is commonly used to
measure earthquake damage due to ground shaking. The MM values for intensity range from I (earthquake not felt) to XII (damage nearly total), and intensities ranging from IV to X could cause moderate to significant structural damage. The intensities of an earthquake will vary over the region of a fault and generally decrease with distance from the epicenter of the earthquake.

**TABLE 4.5-2**
MODIFIED MERCALLI INTENSITY SCALE

<table>
<thead>
<tr>
<th>Intensity Value</th>
<th>Intensity Description</th>
<th>Average Peak Acceleration (% ga)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Not felt except by a very few persons under especially favorable circumstances.</td>
<td>&lt; 0.17 g</td>
</tr>
<tr>
<td>II</td>
<td>Felt only by a few persons at rest, especially on upper floors on buildings. Delicately suspended objects may swing.</td>
<td>0.17-1.4 g</td>
</tr>
<tr>
<td>III</td>
<td>Felt noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motor cars may rock slightly, vibration similar to a passing truck. Duration estimated.</td>
<td>0.17-1.4 g</td>
</tr>
<tr>
<td>IV</td>
<td>During the day felt indoors by many, outdoors by few. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.</td>
<td>1.4–3.9 g</td>
</tr>
<tr>
<td>V</td>
<td>Felt by nearly everyone, many awakened. Some dishes and windows broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles may be noticed. Pendulums clocks may stop.</td>
<td>3.5 – 9.2 g</td>
</tr>
<tr>
<td>VI</td>
<td>Felt by all, many frightened and run outdoors. Some heavy furniture moved; and fallen plaster or damaged chimneys. Damage slight.</td>
<td>9.2 – 18 g</td>
</tr>
<tr>
<td>VII</td>
<td>Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars.</td>
<td>18 – 34 g</td>
</tr>
<tr>
<td>VIII</td>
<td>Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motor cars disturbed.</td>
<td>34 – 65 g</td>
</tr>
<tr>
<td>IX</td>
<td>Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.</td>
<td>65 – 124 g</td>
</tr>
<tr>
<td>X</td>
<td>Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from riverbanks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.</td>
<td>&gt; 124 g</td>
</tr>
<tr>
<td>XI</td>
<td>Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.</td>
<td>&gt; 124 g</td>
</tr>
<tr>
<td>XII</td>
<td>Damage total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted. Objects are thrown upward into the air.</td>
<td>&gt; 124 g</td>
</tr>
</tbody>
</table>

\( g \) (gravity) = 980 centimeters per second squared. 1.0 g of acceleration is a rate of increase in speed equivalent to a car traveling 328 feet from rest in 4.5 seconds.

SOURCE: ABAG, 2003; CGS, 2003

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3 The damage level represents the estimated overall level of damage that will occur for various MM intensity levels. The damage, however, will not be uniform. Not all buildings perform identically in an earthquake. The age, material, type, method of construction, size, and shape of a building all affect its performance.
Regional Faults

The San Andreas, Hayward, and Calaveras Faults pose the greatest threat of significant damage in the Bay Area according to the USGS Working Group (USGS, 2003). These three strike-slip faults have experienced movement within the last 150 years. Other principal faults capable of producing significant ground shaking in the Bay Area are listed on Table 4.5-1 and include the Concord–Green Valley, Marsh Creek–Greenville, San Gregorio, and Rodgers Creek Faults.

An “active” fault is defined by the state as a fault that has had surface displacement within approximately the last 11,000 years. This definition does not mean that faults lacking evidence of surface displacement are necessarily inactive. “Sufficiently active” is also used to describe a fault if there is some evidence that displacement occurred in the last 11,000 years on one or more of its segments or branches. These faults are considered either active or potentially active. Inactive faults are located throughout the Bay Area. Inactive faults with a long period of inactivity do not provide any guarantee that a considerable seismic event could occur. Occasionally, faults classified as inactive can exhibit secondary movement during a major event on another active fault.

San Andreas Fault

The San Andreas Fault zone is a major structural feature that forms at the boundary between the North American and Pacific tectonic plates, extending from the Salton Sea in southern California near the border with Mexico to north of Point Arena, where the fault trace extends into the Pacific Ocean. The main trace of the San Andreas Fault through the Bay Area trends northwest through the Santa Cruz Mountains and the eastern side of the San Francisco Peninsula. As the principal strike-slip boundary between the Pacific plate to the west and the North American plate to the east, the San Andreas is often a highly visible topographic feature, such as between Pacifica and San Mateo, where Crystal Springs Reservoir and San Andreas Lake clearly mark the rupture zone. Near San Francisco, the San Andreas Fault trace is located immediately off-shore near Daly City and continues northwest through the Pacific Ocean approximately six miles due west of the Golden Gate Bridge.

The San Andreas Fault zone was the source of the two major seismic events in recent history that affected the San Francisco Bay Area. The 1906 San Francisco earthquake was estimated at Richter magnitude of M 7.9 and resulted in approximately 290 miles of surface fault rupture, the longest of any known continental strike slip fault. Horizontal displacement along the fault approached 17 feet near the epicenter. The more recent 1989 Loma Prieta earthquake, with a moment magnitude of Mw 6.9, resulted in widespread damage throughout the Bay Area.

Hayward Fault

The Hayward Fault zone is the southern extension of a fracture zone that includes the Rodgers Creek Fault (north of San Pablo Bay), the Healdsburg Fault (County of Sonoma), and the Maacama Fault (County of Mendocino). The Hayward Fault trends to the northwest within the East Bay, extending from San Pablo Bay in Richmond, 60 miles south to San Jose. The Hayward

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4 A strike-slip fault is a fault on which movement is parallel to the fault’s strike or lateral expression at the surface.
Fault in San Jose converges with the Calaveras Fault, a similar fault that extends north to Suisun Bay. The Hayward Fault is designated by the Alquist-Priolo Earthquake Fault Zoning Act as an active fault.

Historically, the Hayward Fault generated one sizable earthquake in the 1800s. In 1868, a Richter magnitude 7 earthquake on the southern segment of the Hayward Fault ruptured the ground for a distance of about 30 miles. Recent analysis of geodetic data indicates surface deformation may have extended as far north as Berkeley. Lateral ground surface displacement during these events was at least three feet.

A characteristic feature of the Hayward Fault is its well-expressed and relatively consistent fault creep. Although large earthquakes on the Hayward Fault have been rare since 1868, slow fault creep has continued to occur and has caused measurable offset. Fault creep on the East Bay segment of the Hayward Fault is estimated at 9 millimeters per year (mm/yr) (Peterson, et al., 1996). However, a large earthquake could occur on the Hayward Fault with an estimated moment magnitude of about Mw 7.1 (Table 4.5-2). The USGS Working Group on California Earthquake Probabilities includes the Hayward–Rodgers Creek Fault systems in the list of those faults that have the highest probability of generating earthquakes of Richter magnitude M 6.7 or greater in the Bay Area (USGS, 2003).

**Calaveras Fault**

The Calaveras Fault is a major right-lateral strike-slip fault that has been active during the last 11,000 years. The Calaveras Fault is located in the eastern San Francisco Bay region and generally trends along the eastern side of the East Bay hills, west of San Ramon Valley, and extends into the western Diablo Range, and eventually joins the San Andreas Fault zone south of Hollister. The northern extent of the fault zone is somewhat conjectural and could be linked with the Concord Fault.

The fault separates rocks of different ages, with older rocks west of the fault and younger sedimentary rocks to the east. The location of the main, active fault trace is defined by youthful geomorphic features (linear scarps and troughs, right-laterally deflected drainage, sag ponds) and local groundwater barriers. The Calaveras Fault is designated as an Alquist-Priolo Earthquake Hazard Zone (see discussion on this zone designation below). There is a distinct change in slip rate and fault behavior north and south of the vicinity of Calaveras Reservoir. North of Calaveras Reservoir, the fault is characterized by a relatively low slip rate of 5-6 mm/yr and sparse seismicity. South of Calaveras Reservoir, the fault zone is characterized by a higher rate of surface fault creep that has been evidenced in historic times. The Calaveras Fault has been the source of numerous moderate magnitude earthquakes and the probability of a large earthquake (greater than M6.7) is much lower than on the San Andreas or Hayward Faults (USGS, 2003). However, this fault is considered capable of generating earthquakes with upper bound moment magnitudes ranging from Mw 6.6 to Mw 6.8.

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5 Prior to the early 1990s, it was thought that a Richter magnitude 7 earthquake occurred on the northern section of the Hayward Fault in 1836. However, a study of historical documents by the California Geological Survey concluded that the 1836 earthquake was not on the Hayward Fault (Bryant, 2000).
Concord-Green Valley Fault

The Concord-Green Valley Fault extends from Walnut Creek north to Wooden Valley (east of Napa Valley). Historical records indicate that no large earthquakes have occurred on the Concord or Green Valley Faults (USGS, 2003). However, a moderate earthquake of Richter magnitude M5.4 occurred on the Concord Fault segment in 1955. The Concord and Green Valley Faults exhibit active fault creep and are considered to have a small probability of causing a significant earthquake.

Greenville – Marsh Creek Fault

The Greenville Fault, also known as the Marsh Creek-Greenville Fault, extends along the base of the Altamont Hills, which form the eastern margin of the Livermore Valley. The fault is recognized as a major structural feature and has demonstrated activity in the last 11,000 years. A Richter magnitude M5.6 earthquake on the Greenville Fault in 1980 produced a small amount of surface rupture (approximately three centimeters) on the fault near Vasco Road.

Mt. Diablo Thrust

The Mt. Diablo Thrust fault along with the Monte Vista Shannon thrust fault, located in Santa Clara Valley, are among the few thrust faults in the east Bay Area. Thrust faults are less well understood than strike-slip faults. The most active thrust fault in the Bay Area is the Mt. Diablo thrust fault which has made Mt. Diablo the fastest growing mountain in the Bay Area. According to the USGS working group, the Mt. Diablo Thrust fault has a three percent probability of causing an earthquake larger than M6.7.

Seismic Hazards

Surface Fault Rupture

Seismically induced ground rupture is defined as the physical displacement of surface deposits in response to an earthquake’s seismic waves. The magnitude, sense, and nature of fault rupture can vary for different faults or even along different strands of the same fault. Ground rupture is considered more likely along active faults, which are referenced in Table 4.5-1.

The Project Site and surroundings are not within an Alquist-Priolo Fault Rupture Hazard Zone, as designated through the Alquist-Priolo Earthquake Fault Zoning Act, and no mapped active faults are known to pass through the immediate region.

Ground Shaking

Strong ground shaking from a major earthquake could affect the Project Site and surroundings during the next 30 years. Earthquakes on the active faults (listed in Table 4.5-1) are expected to produce a range of ground shaking intensities in the Project Site and surroundings. Ground shaking may affect areas hundreds of miles distant from the earthquake’s epicenter. Historic earthquakes have caused strong ground shaking and damage in the San Francisco Bay Area, the
most recent being the M 6.9 Loma Prieta earthquake in October 1989. The epicenter was approximately 60 miles southeast of the Project Site, but this earthquake nevertheless caused strong ground shaking for about 20 seconds and resulted in varying degrees of structural damage throughout the Bay Area.

The common way to describe ground motion during an earthquake is with the motion parameters of acceleration and velocity in addition to the duration of the shaking. A common measure of ground motion is the peak ground acceleration (“PGA”). The PGA for a given component of motion is the largest value of horizontal acceleration obtained from a seismograph. PGA is expressed as the percentage of the acceleration due to gravity (“g”), which is approximately 980 centimeters per second squared. In terms of automobile accelerations, one “g” of acceleration is a rate of increase in speed equivalent to a car traveling 328 feet from rest in 4.5 seconds. For comparison purposes, the maximum peak acceleration value recorded during the Loma Prieta earthquake was in the vicinity of the epicenter, near Santa Cruz, at 0.64 g. The highest value measured in the East Bay was 0.29 g, recorded at the Oakland Wharf near the Naval Supply Center where the soils are artificial fill overlying Bay Mud. The lowest values recorded were 0.06 g in the bedrock on Yerba Buena Island. However, an earthquake on the nearby Hayward Fault would likely produce far more severe ground shaking at the site than was observed during the Loma Prieta earthquake. Probabilistic seismic hazard maps indicate that peak ground acceleration in the region could reach or exceed 0.58g (CGS, 2011).6 The potential hazards related to ground shaking are discussed further in the Impacts and Mitigations section of this chapter.

**Liquefaction**

Liquefaction is a transformation of soil from a solid to a liquefied state during which saturated soil temporarily loses strength resulting from the buildup of excess pore water pressure, especially during earthquake-induced cyclic loading. Soil susceptible to liquefaction includes loose to medium dense sand and gravel, low-plasticity silt, and some low-plasticity clay deposits. Four kinds of ground failure commonly result from liquefaction: lateral spread, flow failure, ground oscillation, and loss of bearing strength. Lateral spreading is the horizontal displacement of surficial blocks of sediments resulting from liquefaction in a subsurface layer that occurs on slopes ranging between 0.3 and 3 percent and commonly displaces the surface by several meters to tens of meters. Flow failures occur on slopes greater than 3 degrees and are primarily liquefied soil or blocks of intact material riding on a liquefied subsurface zone. Ground oscillation occurs on gentle slopes when liquefaction occurs at depth and no lateral displacement takes place. Soil units that are not liquefied may pull apart and oscillate on the liquefied zone. The loss of bearing

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6 A probabilistic seismic hazard map shows the predicted level of hazard from earthquakes that seismologists and geologist believe could occur. The map’s analysis takes into consideration uncertainties in the size and location of earthquakes and the resulting ground motions that can affect a particular site. The maps are typically expressed in terms of probability of exceeding a certain ground motion. These maps depict a 10 percent probability of being exceeded in 50 years. There is a 90 percent chance that these ground motions will NOT be exceeded. This probability level allows engineers to design buildings for larger ground motions than seismologists think will occur during a 50-year interval, making buildings safer than if they were only designed for the ground motions that are expected to occur in the 50 years. Seismic shaking maps are prepared using consensus information on historical earthquakes and faults. These levels of ground shaking are used primarily for formulating building codes and for designing buildings.
pressure can occur beneath a structure when the underlying soil loses strength and liquefies. When this occurs, the structure can settle, tip, or even become buoyant and “float” upwards. Liquefaction and associated failures could damage foundations, roads, underground cables and pipelines, and disrupt utility service. According to some mapping of quaternary deposits by the USGS, soils with the potential to liquefy exist in the Project Site and surroundings (DCE, 2005). However, the geotechnical report prepared for the Project Site and surroundings concluded that the high clay content of subsurface soils indicated that the liquefaction potential was practically nil (Smith Emery, 2011).

**Earthquake-Induced Settlement**

Settlement of the ground surface can be accelerated and accentuated by earthquakes. During an earthquake, settlement can occur as a result of the relatively rapid compaction and settling of subsurface materials (particularly loose, uncompacted, and variable sandy sediments above the water table) due to the rearrangement of soil particles during prolonged ground shaking. Settlement can occur both uniformly and differentially (i.e., where adjoining areas settle at different amounts). Areas underlain by artificial fill will be susceptible to this type of settlement. Since the Project Site and surroundings likely has been developed previously under the recommendations of a licensed geotechnical engineer, the majority of the areas that may have once been susceptible to differential settlement have been eliminated prior to development. Regardless, future development would re-evaluate site soils and fills to determine the potential for settlement according to accepted geotechnical practices.

**Geologic Hazards**

Considering the geologic context of the Project Site and surroundings, other typical geologic hazards could include slope instability, soil erosion, settlement, expansive soil materials, tsunamis, and seiches. These hazards are discussed briefly below and provide the initial context for further evaluation in this environmental impact analysis.

**Corrosive Soils**

The corrosivity of soils is commonly related to several key parameters including soil resistivity, the presence of chlorides and sulfates, oxygen content, and pH. Typically, the most corrosive soils are those with the lowest pH and highest concentration of chlorides and sulfates. Wet/dry conditions can result in a concentration of chlorides and sulfates as well as movement in the soil that tends to break down protective corrosion films and coatings on the surface of building materials. High-sulfate soils are also corrosive to concrete and may prevent complete curing, reducing its strength considerably. Low pH and/or low-resistivity soils can corrode buried or partially buried metal structures. Depending on the degree of corrosivity of the subsurface soils, building materials such as concrete, reinforcing steel in concrete structures, and bare-metal structures exposed to these soils can deteriorate, eventually leading to structural failures. According to the geotechnical investigation, the pH levels in the subsurface soils at the site are an indication of potentially corrosivity (Smith-Emery, 2011).
Expansive Soils
Expansive soils possess a “shrink-swell” behavior. Shrink-swell is the cyclic change in volume (expansion and contraction) that occurs in fine-grained clay sediments from the process of wetting and drying. Structural damage may occur over a long period of time, usually the result of inadequate soil and foundation engineering or the placement of structures directly on expansive soils. The native soils underlying the Project Site and surroundings are described as moderately to highly expansive (USDA, 1982).

Soil Erosion
Erosion is the wearing away of soil and rock by processes such as mechanical or chemical weathering, mass wasting, the action of waves, wind or underground water. Excessive soil erosion can eventually lead to damage of building foundations and roadways. In the Project Site and surroundings, areas that are susceptible to erosion are those that would be exposed during the construction phase. Typically, the soil erosion potential is reduced once the soil is graded and covered with concrete, structures, asphalt, or slope protection. Soil erosion is not considered a potential significant issue at the site considering the likelihood that site soils disturbed during construction would be managed according to local regulations which minimize erosion potential.

Settlement
Settlement can occur from immediate settlement, consolidation, shrinkage of expansive soil, and liquefaction (discussed above). Immediate settlement occurs when a load from a structure or placement of new fill material is applied, causing distortion in the underlying materials. This settlement occurs quickly and is typically complete after placement of the final load. Consolidation settlement occurs in saturated clay from the volume change caused by squeezing out water from the pore spaces. Consolidation occurs over a period of time and is followed by secondary compression, which is a continued change in void ratio under the continued application of the final load.

Soils tend to settle at different rates and by varying amounts depending on the load weight or changes in properties over an area, which is referred to as differential settlement. Soils in the Project Site and surroundings consist of clays, silts, and sands and/or engineered soils that have a low susceptibility to differential settlement.

Landslides and Slope Failure
Slope failures, commonly referred to as landslides, include many phenomena that involve the downslope displacement and movement of material, either triggered by static (i.e., gravity) or dynamic (i.e., earthquake) forces. A slope failure is a mass of rock, soil, and debris displaced downslope by sliding, flowing, or falling. Exposed rock slopes undergo rockfalls, rockslides, or rock avalanches, while soil slopes experience shallow soil slides, rapid debris flows, and deep-seated rotational slides. Landslides may occur on slopes of 15 percent or less; however, the probability is greater on steeper slopes that exhibit old landslide features such as scarps, slanted...
vegetation, and transverse ridges. The Project Site and surroundings are located in a predominantly level part of the City that has a low potential for landslides or slope failure.

### 4.5.2 Regulatory Setting

**Federal**

There are no federal regulations related to geology and soil resources.

**State**

**California Building Code**

The California Building Code (CBC) has been codified in the California Code of Regulations (CCR) as Title 24, Part 2. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under state law, all building standards must be centralized in Title 24 or they are not enforceable. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety, and general welfare through structural strength, means of egress facilities, and general stability by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all building and structures within its jurisdiction. The CBC is based on the International Building Code (IBC), previously known as the Uniform Building Code. The 2010 CBC is based on the 2009 IBC published by the International Code Conference. In addition, the CBC contains necessary California amendments, which are based on reference standards obtained from various technical committees and organizations such as the American Society of Civil Engineers (ASCE), the American Institute of Steel Construction (AISC), and the American Concrete Institute (ACI). ASCE Minimum Design Standard 7-05 provides requirements for general structural design and includes means for determining earthquake loads as well as other loads (flood, snow, wind, etc.) for inclusion into building codes. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients, which are used to determine a Seismic Design Category (SDC) for a project. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site and ranges from SDC A (very small seismic vulnerability) to SDC E (very high seismic vulnerability and near a major fault). Design specifications are then determined according to the SDC.
Local

General Plan 2025 Policies

The General Plan 2025 Safety and Noise Chapter contains the following goal, policies and actions, which call for the maintenance of data on geologic hazards and require geotechnical investigation and mitigations for projects in areas subject to geologic hazards.

Safety and Noise

- **Goal 1:** Protect life and property from geologic hazards.

  - *Policy 1.1:* Reduce the potential effects of seismic and other geologic hazards, including slope instability.
    
    Action 1.1.1: Identify areas prone to seismic and other geologic hazards, including slope instability.
    
    Action 1.1.2: Establish minimum road widths and clearances around structures at risk from known geologic hazards.
    
    Action 1.1.3: Review and update the existing maps of geologic hazards.
    
    Action 1.1.4: Require appropriate mitigations for new development or redevelopment in areas prone to seismic and other geologic hazards.

  - *Policy 1.2:* Limit development within high-risk geologic areas to a maximum density of one dwelling unit per 20 acres.
    
    Action 1.2.1: Identify high risk areas after taking into account soil stability, history of soil slippage, proximity to earthquake faults, slope grad, accessibility, and drainage conditions, and continue to assign low intensity uses, not exceeding a density of one dwelling unit per twenty acres, to such areas.
    
    Action 1.2.2: As updated seismic-hazard zone maps become available, incorporate them in the general plan.
    
    Action 1.2.3: Identify areas where surface ruptures are most likely to occur and cause damage to human-made structures, such as dams.
    
    Action 1.2.4: For development proposals submitted in areas near earthquake fault zones listed under the Alquist-Priolo Act, require a geotechnical evaluation to identify hazard mitigation measures needed to reduce the risk to life and property from earthquake-induced hazards.
    
    Action 1.2.5: For development proposals submitted in areas near high or very high liquefaction-susceptibility areas, require a geotechnical evaluation to identify hazard mitigation measures needed to reduce the risk to life and property from liquefaction-induced hazards.
4.5.3 Impacts and Mitigation Measures

Significance Criteria

The Project would have a significant impact if it were to cause impacts to the environment as a result of any of the following:

1. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
   (a) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publication 42);
   (b) Strong seismic ground shaking;
   (c) Seismic-related ground failure, including liquefaction; or
   (d) Landslides
2. Result in substantial soil erosion or the loss of topsoil;
3. Be located on geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse;
4. Be located on expansive soil, as defined in Table 18.1.B of the Uniform Building Code (1994), creating substantial risks to life or property; or
5. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

Under CEQA, the analysis extends only to whether the Project would cause impacts on the existing environment. Geologic and soils impacts to future residents and workers of the Project are not within the scope of a CEQA analysis. However, the City has directed that this EIR also evaluate such issues within the Project. Accordingly, the above criteria are applied to non-CEQA issues as well. For ease of reference, both CEQA and non-CEQA issues are addressed together, which means that phrases such as “impact” and “mitigation measure” are applied to both CEQA and non-CEQA analysis. However, insofar as the non-CEQA issues are concerned, “impacts” are regulatory issues, and “mitigation measures” is used to refer to recommended conditions of approval.

Approach to Analysis

The site specific geotechnical characteristics determine the potential for geotechnical hazards that could occur at the Project Site under both the Maximum Commercial Scenario and the Maximum Mixed-Use Scenario. Available U.S. and California Geological Survey maps, the City’s General Plan, and other studies and reports were consulted in order to determine the potential for geological hazard that would occur from the proposed developments.
**Topics Briefly Addressed**

The Project presents no potential for a significant impact for three of the above CEQA criteria based upon the project characteristics, the geographic context, and data research. Therefore, they will not be evaluated further in this EIR. These criteria are:

- **Fault Rupture (Criterion 1(a)).** The faults most susceptible to earthquake rupture are active faults, which are faults that have experienced surface displacement within the last 11,000 years. There are no active faults that cross the Project Site, and the nearest active fault (Mt. Diablo thrust fault) is approximately 0.5 miles away. Therefore, the potential for fault rupture to affect the Project Site and surroundings is very low.

- **Landslides (Criterion 1(d)).** The Project Site contains slopes that are less than 15 percent in grade and not considered susceptible to landslides or slope failure. The gentle sloping topography of the area puts the potential for landslides or slope failure to affect any of the proposed development or redevelopment in the Project Site and surroundings very low and is therefore not discussed further.

- **Wastewater Disposal (Criterion 5).** The Project is located within an urban area where all development would be able to tie into existing wastewater infrastructure. Therefore, none of the development or redevelopment will require the use of septic or other alternative disposal wastewater systems, and therefore no impact is associated with this hazard.

**Impacts by Project Scenario**

The following analysis is relevant to both the Maximum Commercial Scenario and the Maximum Mixed-Use Scenario. Because potential geotechnical hazards would largely affect either scenario equally, they are not differentiated; both scenarios are discussed under a single Impact Statement for each criterion. While the Maximum Mixed-Use Scenario may ultimately result in an increased number of people residing at the Project Site, the approach taken in design and construction of proposed improvements would be similar.

**Impacts**

**Expose People or Structures to Potential Substantial Adverse Effects**

In the event of a major earthquake in the region, ground shaking and associated secondary effects, such as localized liquefaction, could potentially cause damage, destruction or injury to development and persons resulting from development facilitated by the Project (Criteria 1(b) and 1(c)). (Less than Significant)

According to modeling conducted by the USGS in conjunction with the California Geological Survey, the San Francisco Bay Area would likely experience at least one major earthquake with a greater than moment magnitude 6.7 within the next 30 years. The intensity of such an event would depend on the causative fault and the distance to the epicenter, the magnitude, the duration of shaking, and the characteristics of the underlying geologic materials. The potential for damage or loss during an earthquake of this magnitude is considered a potentially significant impact.
In general, ground shaking tends to be more severe in softer sediments such as alluvial deposits, where surface waves can be amplified causing a longer duration of ground shaking compared to bedrock materials. An area where bedrock is exposed or located relatively shallow tends to experience surface waves from an earthquake as more of a sharp jolt. As discussed above in the setting, groundshaking in the Project Site and surroundings has a 1 in 475 chance of exceeding 0.48g each year. Groundshaking of this magnitude could cause significant damage in structures that are not adequately engineered.

Liquefaction typically occurs in areas underlain with loose, saturated, cohesionless soils within the upper 50 feet of subsurface materials. These soils, when subjected to groundshaking, can lose their strength resulting from the buildup of excess pore water pressure causing them to behave closer to a liquidified state. According to the geotechnical investigation report prepared for the Project, liquefaction susceptibility in the Project Site and surroundings is practically nil (Emery Smith, 2011).

For new construction, all of the aforementioned seismic hazards can be mitigated through the application of current industry standard geotechnical practices and seismic structural design according to the requirements found in the most recent version of the California Building Code, which includes or exceeds the requirements of the Uniform Building Code or International Building Code. After decades of study of past earthquakes and the performance of structures and other improvements, building codes have incorporated measures to reduce the potential for catastrophic damage to occur in buildings, roadways, and utility connections. Although damage and injury cannot be completely avoided during a significant seismic event, construction or renovation in accordance with the California Building Code would reduce the potential damage and personal injury to less than significant levels.

Mitigation: None required.

Erosion and Loss of Topsoil

Development facilitated by the Project could potentially involve grading and other ground-disturbing construction activities, which could expose soils to erosion and loss of topsoil (Criterion 2). (Less than Significant)

The Project Site is currently largely developed with a majority of the land area covered by impervious surface such as asphalt, buildings, and concrete. The pervious areas are generally landscaped and vegetated. However, development under the Project could require removing the existing cover and thereby exposing underlying soils to the effects of wind and water. The relatively flat topography of the area significantly reduces the potential for erosion and loss of topsoil during construction activities. Nonetheless, areas of the Project Site are subject to concentrated runoff, or areas of unprotected slopes or piles of bare soil, would still pose erosion hazards if left unmitigated. Once covered by asphalt, a new structure, or vegetated at the conclusion of construction, the potential for erosion is significantly reduced.
Protection of soils during construction can generally be mitigated through well established erosion control measures. Every construction project in the State of California that causes a disturbance of one acre or more of soil through grading, clearing, and or excavation is subject to the General Construction Stormwater Permit (General Construction Permit), also referred to as the General Permit, adopted by the State Water Resources Control Board (SWRCB). In order to complete the General Permit application, the applicant must first submit a Notice of Intent (NOI) to obtain coverage under the General Permit. This General Permit requires dischargers to develop and implement a Storm Water Pollution Prevention Plan (SWPPP), which specifies the Best Management Practices (BMPs) that would prevent construction pollutants, including sediment, from reaching storm drains, with the intent of keeping all products of erosion from moving off-site into receiving waters. Furthermore, the SWPPP would also include BMPs to control erosion associated with grading, trenching, and other ground surface-disturbing activities (See also discussion of SWPPP in Section 4.8, Hydrology and Water Quality). As a condition of the permits required for the project, which would require compliance with the requirements of the General Permit, impacts from construction would be less than significant.

**Mitigation:** None required.

### Unstable Soils

Development facilitated by the Project could potentially be subjected to geologic hazards, including expansive soils, settlement, corrosivity and differential settlement (Criteria 3 and 4). (Less than Significant)

The geologic materials within the Project Site and surroundings vary and include varying types and thickness of compressible native and/or fill materials that could also be subject to differential settlement or expansive properties. Exposure to one or more of these geologic hazards could cause significant damage to the foundation of structures if not engineered appropriately. However, with appropriate geotechnical engineering or proposed structures, the resulting risk would not impact the existing environment.

Typically, soils that exhibit expansive characteristics are found within the upper five feet of ground surface. Over a long-term exposure to wetting and drying cycles, expansive soils can experience volumetric changes. The effects of expansive soils could damage foundations of above-ground structures, paved roads and streets, and concrete slabs. Expansion and contraction of soils, depending on the season and the amount of surface water infiltration, could exert enough pressure on structures to result in cracking, settlement, and uplift.

Differential settlement could occur where the engineering characteristics of underlying materials vary over an area proposed for new loading. Materials most susceptible to settlement would be undocumented fill materials that did not receive adequate compaction or loose unconsolidated alluvial or floodplain deposits. Differential settlement could damage building foundations and roads, and could affect underground utilities. Settlement would be a concern in redevelopment.
areas that have not previously supported structures and where new structures would place loads heavier than the soils could tolerate.

Based on pH levels of site soils, the geotechnical investigation determined that potentially corrosive soils could be present at the Project site. However, soluble chloride and sulfate concentrations were indications that corrosive resistant cement would not be necessary. Final testing of any imported fill materials and potential corrosivity would be included as part of the final geotechnical design in accordance with local building code requirements. Therefore, any potentially corrosive soils present at the site would easily addressed through application of widely accepted geotechnical practices.

Building code requirements required by the City in accordance with the California Building Code, would require detailed investigation of subsurface materials and their engineering characteristics. These geotechnical investigations would consider proposed plans and evaluate potential hazards and provide recommendations to mitigate them. Current geotechnical engineering practices have incorporated effective mitigations in accordance with building code requirements to reduce potential damage and personal injury from geologic hazards by ensuring that industry standard controls are implemented in any future development. Therefore, this would be a less than significant impact.

**Mitigation:** None required.

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**Cumulative Impact**

**Geographic Context**

Although the entire Bay Area is situated within a seismically active region with a wide range of geologic and soil conditions, these conditions can vary widely within a short distance, making the cumulative context for potential impacts resulting from exposing people and structures to related risks one that is more localized or even site-specific. Potential cumulative geology and seismic impacts do not extend far beyond a project’s boundaries, since such geological impacts are typically confined to discrete spatial locations and do not combine to create an extensive cumulative impact. The exception to this generalization would occur where a large geologic feature (e.g., fault zone, massive landslide) might affect an extensive area, or where the development effects from the Project could affect the geology of an off-site location. These circumstances are not likely to occur at the Project Site as there are no large landslide features or fault zones.

**Cumulative Geologic and Seismic Hazards**

Development facilitated by the Project, combined with other past, present, existing, approved, pending, and reasonably foreseeable future development in the surrounding region, could potentially result in cumulative impacts to geologic and seismic hazards. (Less than Significant)
The Project, combined with other present and foreseeable development in the area, may result in increased population and development in a region susceptible to seismic risks and hazards. While the number of people visiting, living and working in the area might increase incrementally, exposing additional people to seismic and geologic hazards, the risk to people and property would be reduced through the upgrading or demolishing of older buildings that were constructed under less stringent building code requirements. Older buildings would be seismically retrofitted and newer buildings would be constructed to stricter building codes. Implementation of the Project in accordance with the provisions of the California Building Code would reduce the potential hazards associated with seismic ground shaking and ground failure. Other current and future development/redevelopment projects in the region would similarly be required to adhere to standards and practices that include stringent geologic and seismic hazard mitigations. With implementation of these required building standards, the impacts of geologic hazards and seismic ground shaking would be reduced to less than cumulatively considerable for new development and redevelopment consistent with the Project.

Mitigation: None required.

4.5.4 References

Association of Bay Area Governments ("ABAG"), Modified Mercalli Intensity Scale


Smith Emery San Francisco, *Geotechnical Investigation Broadway Plaza Shopping Center, Walnut Creek California*, July 15, 2011.


4.6 Greenhouse Gases and Climate Change

This section evaluates the potential for the Project to result in impacts associated with greenhouse gas (GHG) emissions during construction and operation activities.

4.6.1 Environmental Setting

Global warming is the name given to the increase in the average temperature of the Earth’s near-surface air and oceans since the mid-20th century and its projected continuation. Warming of the climate system is now considered to be unequivocal (International Panel on Climate Change [IPCC], 2007) with global surface temperature increasing approximately 1.33 degrees Fahrenheit (°F) over the last one hundred years. Continued warming is projected to increase global average temperature between 2 and 11 °F over the next one hundred years.

The causes of this warming have been identified as both natural processes and as the result of human actions. The IPCC concludes that variations in natural phenomena such as solar radiation and volcanoes produced most of the warming from pre-industrial times to 1950 and had a small cooling effect afterward. However, after 1950, increasing GHG concentrations resulting from human activity such as fossil fuel burning and deforestation have been responsible for most of the observed temperature increase. These basic conclusions have been endorsed by more than 45 scientific societies and academies of science, including all of the national academies of science of the major industrialized countries. Since 2007, no scientific body of national or international standing has maintained a dissenting opinion.

Increases in GHG concentrations in the Earth’s atmosphere are thought to be the main cause of human-induced climate change. GHGs naturally trap heat by impeding the exit of solar radiation that has hit the Earth and is reflected back into space. Some GHGs occur naturally and are necessary for keeping the Earth’s surface inhabitable. However, increases in the concentrations of these gases in the atmosphere during the last hundred years have decreased the amount of solar radiation that is reflected back into space, intensifying the natural greenhouse effect and resulting in the increase of global average temperature.

The principal GHGs of concern are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), perfluorocarbons (PFCs), and hydrofluorocarbons (HFCs). Each of the principal GHGs has a long atmospheric lifetime (one year to several thousand years). In addition, the potential heat trapping ability of each of these gases vary significantly from one another. CH₄ is 23 times as potent as CO₂, while SF₆ is 22,200 times more potent than CO₂. Conventionally, GHGs have been reported as CO₂ equivalents (CO₂e). CO₂e takes into account the relative potency of non-CO₂ GHGs and converts their quantities to an equivalent amount of CO₂ so that all emissions can be reported as a single quantity.

The primary man-made processes that release these gases include: burning of fossil fuels for transportation, heating, and electricity generation; agricultural practices that release CH₄ such as livestock grazing and crop residue decomposition; and industrial processes that release smaller
amounts of high global warming potential gases such as SF₆, PFCs, and HFCs. Deforestation and land cover conversion have also been identified as contributing to global warming by reducing the Earth’s capacity to remove CO₂ from the air and altering the Earth’s albedo or surface reflectance, allowing more solar radiation to be absorbed.

**Global Climate Trends and Associated Impacts**

The rate of increase in global average surface temperature over the last hundred years has not been consistent; the last three decades have warmed at a much faster rate – on average 0.32 °F per decade. Eleven of the twelve years from 1995 to 2006, rank among the twelve warmest years in the instrumental record of global average surface temperature (going back to 1850) (IPCC, 2007).

During the same period over which this increased global warming has occurred, many other changes have occurred in other natural systems. Sea levels have risen on average 1.8 millimeters per year (mm/yr); precipitation patterns throughout the world have shifted, with some areas becoming wetter and others drier; tropical cyclone activity in the North Atlantic has increased; peak runoff timing of many glacial and snow fed rivers has shifted earlier; as well as numerous other observed conditions. Though it is difficult to prove a definitive cause and effect relationship between global warming and other observed changes to natural systems, there is high confidence in the scientific community that these changes are a direct result of increased global temperatures (IPCC, 2007).

**California Climate Trends and Associated Impacts**

Maximum (daytime) and minimum (nighttime) temperatures are increasing almost everywhere in California but at different rates. The annual minimum temperature averaged over all of California has increased 0.33 °F per decade during the period 1920 to 2003, while the average annual maximum temperature has increased 0.1 °F per decade (Moser et al., 2009).

With respect to California’s water resources, the most significant impacts of global warming have been changes to the water cycle and sea level rise. Over the past century, the precipitation mix between snow and rain has shifted in favor of more rainfall and less snow (Mote et al., 2005; Knowles and Cayan, 2006) and snow pack in the Sierra Nevada is melting earlier in the spring (Kapnick and Hall, 2009). The average early spring snowpack in the Sierra Nevada has decreased by about 10 percent during the last century, a loss of 1.5 million acre-feet of snowpack storage (DWR, 2008). These changes have significant implications for water supply, flooding, aquatic ecosystems, energy generation, and recreation throughout the state. During the same period, sea levels along California’s coast rose seven inches (DWR, 2008). Sea level rise associated with global warming will continue to threaten coastal lands and infrastructure, increase flooding at the mouths of rivers, place additional stress on levees in the Sacramento-San Joaquin Delta, and will intensify the difficulty of managing the Sacramento-San Joaquin Delta as the heart of the state’s water supply system.
Bay Area Emissions
In the San Francisco Bay Area, GHG emissions from the transportation sector and industrial/commercial sector represent the largest sources of the Bay Area’s GHG emissions, accounting for 36.4 percent each of the Bay Area’s 95.8 million tons of CO₂e in 2007. Electricity/co-generation sources account for about 15.9 percent of the Bay Area’s GHG emissions, followed by residential fuel usage at about 7.1 percent. Off-road equipment and agricultural/farming sources currently account for approximately 3 percent and 1.2 percent of the total Bay Area GHG emissions, respectively (BAAQMD, 2010).

City of Walnut Creek Emissions
Walnut Creek GHG emissions from the transportation sector represent the largest sources of the community’s GHG emissions, accounting for 59 percent of Walnut Creek’s 643,596 metric tons of CO₂e in 2005. The residential sector accounted for 18 percent, as did the commercial/industrial sector. The waste and off-road sectors each accounted for two percent of the inventory, followed by water at one percent and BART accounting for less than one percent (City of Walnut Creek, 2011).

4.6.2 Regulatory Setting

Federal

U.S. Environmental Protection Agency Endangerment and Cause and Contribute Findings
In the past, the U.S. Environmental Protection Agency (EPA) has not regulated GHGs under the Clean Air Act because it asserted that the act did not authorize the U.S. EPA to issue mandatory regulations to address global climate change and that such regulation would be unwise without an unequivocally established causal link between GHGs and the increase in global surface air temperatures. However, the U.S. Supreme Court held that the U.S. EPA must consider regulation of motor vehicle GHG emissions. In Massachusetts v. Environmental Protection Agency et al., twelve states and cities, including California, together with several environmental organizations, sued to require the U.S. EPA to regulate GHGs as pollutants under the Clean Air Act (127 S. Ct. 1438 (2007)). The Court ruled that GHGs fit within the Clean Air Act’s definition of a pollutant and the U.S. EPA did not have a valid rationale for not regulating GHGs. On December 7, 2009, the Administrator signed two distinct findings regarding GHGs under Section 202(a) of the federal CAA:

- **Endangerment Finding**: the current and projected concentrations of the six key well-mixed GHGs—CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆—in the atmosphere threaten the public health and welfare of current and future generations.

- **Cause or Contribute Finding**: The Administrator found that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution which threatens public health and welfare.
Mandatory Greenhouse Gas Reporting Rule

On September 22, 2009, U.S. EPA released its final Greenhouse Gas Reporting Rule (Reporting Rule). The Reporting Rule is a response to the fiscal year (FY) 2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110-161), that required U.S. EPA to develop “… mandatory reporting of GHGs above appropriate thresholds in all sectors of the economy….” The Reporting Rule will apply to most entities that emit 25,000 metric tons of CO2e or more per year. Starting in 2010, facility owners are required to submit an annual GHG emissions report with detailed calculations of facility GHG emissions. The Reporting Rule also mandates recordkeeping and administrative requirements in order for U.S. EPA to verify annual GHG emissions reports.

State

California Environmental Quality Act and Climate Change

The California Environmental Quality Act (CEQA) requires lead agencies to consider the reasonably foreseeable adverse environmental effects of projects they are considering for approval. GHG emissions have the potential to adversely affect the environment because they contribute to global climate change. In turn, global climate change has the potential to: raise sea levels, affect rainfall and snowfall, and affect habitat.

Assembly Bill 1493

In 2002, then-Governor Gray Davis signed AB 1493, which required the California Air Resources Board (CARB) to develop and adopt, by January 1, 2005, regulations that achieve “the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty trucks and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the state.”

To meet the requirements of AB 1493, the CARB approved amendments to the California Code of Regulations (CCR) in 2004, adding GHG emissions standards to California’s existing standards for motor vehicle emissions. Amendments to CCR Title 13, Sections 1900 and 1961 (13 CCR 1900, 1961), and adoption of Section 1961.1 (13 CCR 1961.1), require automobile manufacturers to meet fleet-average GHG emissions limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes (i.e., any medium-duty vehicle with a gross vehicle weight [GVW] rating of less than 10,000 pounds and which is designed primarily for the transportation of persons), beginning with model year 2009. For passenger cars and light-duty trucks with a loaded vehicle weight (LVW) of 3,750 pounds or less, the GHG emission limits for model year 2016 are approximately 37 percent lower than the limits for the first year of the regulations, model year 2009. For light-duty trucks with an LVW of 3,751 pounds to a GVW of 8,500 pounds, as well as for medium-duty passenger vehicles, GHG emissions will be reduced approximately 24 percent between 2009 and 2016.

Because the Pavley standards (named for the bill’s author, state Senator Fran Pavley) would impose stricter standards than those under the federal CAA, California applied to the U.S. EPA
for a waiver under the federal CAA; this waiver was denied in 2008. In 2009, however, the U.S. EPA granted the waiver.

**Executive Order S-3-05**

In 2005, in recognition of California’s vulnerability to the effects of climate change, then-Governor Schwarzenegger established Executive Order S-3-05, which sets forth a series of target dates by which statewide GHG emissions would be progressively reduced: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80 percent below 1990 levels.

**Assembly Bill 32 and the California Climate Change Scoping Plan**

In 2006, the California legislature passed Assembly Bill 32 (California Health and Safety Code Division 25.5, Sections 38500, et seq., or AB 32), also known as the Global Warming Solutions Act. AB 32 requires the CARB to design and implement emission limits, regulations, and other measures, such that feasible and cost-effective statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25 percent reduction in emissions).

Pursuant to AB 32, the CARB adopted a Scoping Plan in December 2008, which was re-approved by CARB on August 24, 2011 (CARB, 2008), outlining measures to meet the 2020 GHG reduction limits. In order to meet these goals, California must reduce its GHG emissions by 30 percent below projected 2020 business as usual emissions levels or about 15 percent from today’s levels. The Scoping Plan recommends measures that are worth studying further, and which the State may implement, such as new fuel regulations. It estimates that a reduction of 174 million metric tons of CO₂e (about 191 million U.S. tons) from the transportation, energy, agriculture, forestry, and other sources, could be achieved should the State implement all the measures summarized in Table 4.6-1 below. The CARB has identified an implementation timeline for the GHG reduction strategies in the Scoping Plan. Some measures may require new legislation to implement, some will require subsidies, some have already been developed, and some will require additional effort to evaluate and quantify. Additionally, some emissions reductions strategies may require their own environmental review under CEQA or the National Environmental Policy Act (NEPA).

AB 32 also anticipates that local government actions will result in reduced GHG emissions. CARB has identified a GHG reduction target of 15 percent from current levels for local governments themselves and notes that successful implementation of the plan relies on local governments’ land use planning and urban growth decisions because local governments have primary authority to plan, zone, approve, and permit land development to accommodate population growth and the changing needs of their jurisdictions.

The Scoping Plan relies on the requirements of Senate Bill 375 (discussed below) to implement the carbon emission reductions anticipated from land use decisions. SB 375 was enacted to align local land use and transportation planning to further achieve the state’s GHG reduction goals. SB 375 requires regional transportation plans (RTPs), developed by Metropolitan Planning Organizations
TABLE 4.6-1
LIST OF RECOMMENDED ACTIONS BY SECTOR

<table>
<thead>
<tr>
<th>Measure No.</th>
<th>Measure Description</th>
<th>GHG Reductions (Annual Million Metric Tons CO₂e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-2</td>
<td>Low Carbon Fuel Standard (Discrete Early Action)</td>
<td>15</td>
</tr>
<tr>
<td>T-3¹</td>
<td>Regional Transportation-Related Greenhouse Gas Targets</td>
<td>5</td>
</tr>
<tr>
<td>T-4</td>
<td>Vehicle Efficiency Measures</td>
<td>4.5</td>
</tr>
<tr>
<td>T-5</td>
<td>Ship Electrification at Ports (Discrete Early Action)</td>
<td>0.2</td>
</tr>
<tr>
<td>T-6</td>
<td>Goods Movement Efficiency Measures.</td>
<td>3.5</td>
</tr>
<tr>
<td></td>
<td>• Ship Electrification at Ports</td>
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</tr>
<tr>
<td></td>
<td>• System-Wide Efficiency Improvements</td>
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</tr>
<tr>
<td>T-7</td>
<td>Heavy-Duty Vehicle Greenhouse Gas Emission Reduction Measure – Aerodynamic Efficiency (Discrete Early Action)</td>
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<tr>
<td>T-8</td>
<td>Medium- and Heavy-Duty Vehicle Hybridization</td>
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</tr>
<tr>
<td>T-9</td>
<td>High Speed Rail</td>
<td>1</td>
</tr>
<tr>
<td>E-1</td>
<td>Energy Efficiency (32,000 GWh of Reduced Demand)</td>
<td>15.2</td>
</tr>
<tr>
<td></td>
<td>• Increased Utility Energy Efficiency Programs</td>
<td></td>
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<tr>
<td></td>
<td>• More Stringent Building &amp; Appliance Standards</td>
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</tr>
<tr>
<td></td>
<td>Additional Efficiency and Conservation Programs</td>
<td></td>
</tr>
<tr>
<td>E-2</td>
<td>Increase Combined Heat and Power Use by 30,000 GWh (Net reductions include avoided transmission line loss)</td>
<td>6.7</td>
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<tr>
<td>E-3</td>
<td>Renewables Portfolio Standard (33% by 2020)</td>
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<tr>
<td>E-4</td>
<td>Million Solar Roofs (including California Solar Initiative, New Solar Homes Partnership and solar programs of publicly owned utilities)</td>
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<tr>
<td></td>
<td>• Target of 3000 MW Total Installation by 2020</td>
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<td>CR-1</td>
<td>Energy Efficiency (800 Million Therms Reduced Consumptions)</td>
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</tr>
<tr>
<td></td>
<td>• Utility Energy Efficiency Programs</td>
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<tr>
<td></td>
<td>• Building and Appliance Standards</td>
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<tr>
<td></td>
<td>Additional Efficiency and Conservation Programs</td>
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</tr>
<tr>
<td>CR-2</td>
<td>Solar Water Heating (AB 1470 goal)</td>
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<td>GB-1</td>
<td>Green Buildings</td>
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<td>W-1</td>
<td>Water Use Efficiency</td>
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<tr>
<td>W-2</td>
<td>Water Recycling</td>
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</tr>
<tr>
<td>W-3</td>
<td>Water System Energy Efficiency</td>
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<tr>
<td>W-4</td>
<td>Reuse Urban Runoff</td>
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<tr>
<td>W-5</td>
<td>Increase Renewable Energy Production</td>
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<td>W-6</td>
<td>Public Goods Charge (Water)</td>
<td>TBD†</td>
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<tr>
<td>I-1</td>
<td>Energy Efficiency and Co-Benefits Audits for Large Industrial Sources</td>
<td>TBD</td>
</tr>
<tr>
<td>I-2</td>
<td>Oil and Gas Extraction GHG Emission Reduction</td>
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<td>I-3</td>
<td>GHG Leak Reduction from Oil and Gas Transmission</td>
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<td>I-4</td>
<td>Refinery Flare Recovery Process Improvements</td>
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<tr>
<td>I-5</td>
<td>Removal of Methane Exemption from Existing Refinery Regulations</td>
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### TABLE 4.6-1 (Continued)
LIST OF RECOMMENDED ACTIONS BY SECTOR

<table>
<thead>
<tr>
<th>Measure No.</th>
<th>Measure Description</th>
<th>GHG Reductions (Annual Million Metric Tons CO₂e)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recycling and Waste Management</strong></td>
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</tr>
<tr>
<td>RW-1</td>
<td>Landfill Methane Control (Discrete Early Action)</td>
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<tr>
<td>RW-2</td>
<td>Additional Reductions in Landfill Methane</td>
<td>TBD†</td>
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<tr>
<td></td>
<td>• Increase the Efficiency of Landfill Methane Capture</td>
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<tr>
<td>RW-3</td>
<td>High Recycling/Zero Waste</td>
<td>9†</td>
</tr>
<tr>
<td></td>
<td>• Commercial Recycling</td>
<td></td>
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<tr>
<td></td>
<td>• Increase Production and Markets for Compost</td>
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<td></td>
<td>• Anaerobic Digestion</td>
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<tr>
<td></td>
<td>• Extended Producer Responsibility</td>
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<tr>
<td></td>
<td>• Environmentally Preferable Purchasing</td>
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<tr>
<td><strong>Forests</strong></td>
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<td>F-1</td>
<td>Sustainable Forest Target</td>
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<tr>
<td><strong>High Global Warming Potential (GWP) Gases</strong></td>
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<td>H-1</td>
<td>Motor Vehicle Air Conditioning Systems: Reduction of Refrigerant Emissions from Non-Professional Services (Discrete Early Action)</td>
<td>0.26</td>
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<tr>
<td>H-2</td>
<td>SF₆ Limits in Non-Utility and Non-Semiconductor Applications (Discrete Early Action)</td>
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<tr>
<td>H-3</td>
<td>Reduction of Perfluorocarbons in Semiconductor Manufacturing (Discrete Early Action)</td>
<td>0.15</td>
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<td>H-4</td>
<td>Limit High GWP Use in Consumer Products Discrete Early Action (Adopted June 2008)</td>
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<td>H-5</td>
<td>High GWP Reductions from Mobile Sources</td>
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<tr>
<td></td>
<td>• Low GWP Refrigerants for New Motor Vehicle Air Conditioning Systems</td>
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<tr>
<td></td>
<td>• Air Conditioner Refrigerant Leak Test During Vehicle Smog Check</td>
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<td></td>
<td>• Refrigerant Recovery from Decommissioned Refrigerated Shipping Containers</td>
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<td></td>
<td>• Enforcement of Federal Ban on Refrigerant Release during Servicing or Dismantling of Motor Vehicle Air Conditioning Systems</td>
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<tr>
<td>H-6</td>
<td>High GWP Reductions from Stationary Sources</td>
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<tr>
<td></td>
<td>• High GWP Stationary Equipment Refrigerant Management Program:</td>
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<td></td>
<td>‒ Refrigerant Tracking/Reporting/Repair Deposit Program</td>
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<tr>
<td></td>
<td>‒ Specifications for Commercial and Industrial Refrigeration Systems</td>
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<td></td>
<td>• Foam Recovery and Destruction Program</td>
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<td></td>
<td>• SF Leak Reduction and Recycling in Electrical Applications</td>
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<td></td>
<td>• Alternative Suppressants in Fire Protection Systems</td>
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<td>• Residential Refrigeration Early Retirement Program</td>
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<td>H-7</td>
<td>Mitigation Fee on High GWP Gases</td>
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<tr>
<td><strong>Agriculture</strong></td>
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<tr>
<td>A-1</td>
<td>Methane Capture at Large Dairies</td>
<td>1.0†</td>
</tr>
</tbody>
</table>

1 This is not the SB 375 regional target. CARB will establish regional targets for each Metropolitan Planning Organization (MPO) region following the input of the regional targets advisory committee and a consultation process with MPO’s and other stakeholders per SB 375.

† GHG emission reduction estimates are not included in calculating the total reductions needed to meet the 2020 target.

(MPOs), to incorporate a “sustainable communities strategy” that would achieve GHG emission reduction targets set by the CARB. SB 375 also includes provisions for streamlined CEQA review for some infill projects, such as transit-oriented development. SB 375 would be implemented over the next several years. The Metropolitan Transportation Commission (MTC) is responsible for developing RTPs for the Bay Area. MTC’s 2013 RTP will be its first plan subject to SB 375.
Executive Order S-1-07

Executive Order S-1-07, signed by then-Governor Schwarzenegger in 2007, proclaimed that the transportation sector is the main source of GHG emissions in California, at over 40 percent of statewide emissions. The order established a goal of reducing the carbon intensity of transportation fuels sold in California by a minimum of 10 percent by 2020. It also directed the CARB to determine whether this Low Carbon Fuel Standard could be adopted as a discrete, early-action measure after meeting the mandates in AB 32. The CARB adopted the Low Carbon Fuel Standard on April 23, 2009.

Senate Bill 1078 and 107 and Executive Order S-14-08 and S-21-09

SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010. In November 2008, then-Governor Schwarzenegger signed Executive Order S-14-08, which expands the state’s Renewable Portfolio Standard to 33 percent renewable power by 2020. In September 2009, then-Governor Schwarzenegger continued California’s commitment to the Renewable Portfolio Standard by signing Executive Order S-21-09, which directs the CARB under its AB 32 authority to enact regulations to help the state meet its Renewable Portfolio Standard goal of 33 percent renewable energy by 2020. The 33 percent by 2020 goal was codified in April 2011 with Senate Bill X1-2, which was signed by Governor Edmund G. Brown, Jr. This new RPS preempts the CARB 33 percent Renewable Electricity Standard and applies to all electricity retailers in the state including publicly owned utilities (POUs), investor-owned utilities, electricity service providers, and community choice aggregators. All of these entities must adopt the new RPS goals of 20 percent of retail sales from renewables by the end of 2013, 25 percent by the end of 2016, and the 33 percent requirement being met by the end of 2020.

Senate Bill 1368

SB 1368 is the companion bill of AB 32 and was signed by Governor Schwarzenegger in September 2006. SB 1368 requires the California Public Utilities Commission (PUC) to establish a GHG emission performance standard for baseload generation from investor owned utilities by February 1, 2007. The California Energy Commission (CEC) was also required to establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the GHG emission rate from a baseload combined-cycle natural gas-fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the PUC and CEC.

Senate Bill 97

SB 97, signed in August 2007, acknowledges that climate change is a prominent environmental issue requiring analysis under CEQA. This bill directed the Governor’s Office of Planning and Research (OPR) to prepare, develop, and transmit to the California Natural Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, no later than July 1, 2009. The California Natural Resources Agency was
required to certify or adopt those guidelines by January 1, 2010. On December 30, 2009, the Natural Resources Agency adopted the state CEQA Guidelines amendments, as required by SB 97. These state CEQA Guidelines amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in draft CEQA documents. The amendments were reviewed by the Office of Administrative Law and became effective March 18, 2010.

**Senate Bill 375**

In addition to policy directly guided by AB 32, the legislature in 2008 passed SB 375, which provides for regional coordination in land use and transportation planning and funding to help meet the AB 32 GHG reduction goals. SB 375 aligns regional transportation planning efforts, regional GHG emissions reduction targets, and land use and housing allocations. SB 375 requires RTPs developed by the state’s 18 MPOs to incorporate a “sustainable communities strategy” (SCS) that will achieve GHG emission reduction targets set by the CARB.

**Local**

**Bay Area Air Quality Management District**

In June 2010, BAAQMD issued its **CEQA Air Quality Guidelines**, replacing former guidelines adopted in December 1999, and adopted new thresholds of significance to assist lead agencies in determining when potential air quality impacts would be considered significant under CEQA. Updated in May 2011, these guidelines include recommendations for analytical methodologies to determine air quality impacts and identify mitigation measures that can be used to avoid or reduce air quality impacts, including for GHGs (BAAQMD, 2011). Separate thresholds are established for operational emissions from stationary sources (such as generators, furnaces, and boilers) and non-stationary sources (such as on-road vehicles). As no threshold has been established for construction-related emissions, operational emissions standards apply. The threshold for stationary sources is 10,000 MT of CO₂e/year. For non-stationary sources, three separate thresholds have been established:

- Compliance with Qualified Greenhouse Gas Reduction Strategy (i.e., if a project is found to be out of compliance with a Qualified Greenhouse Gas Reduction Strategy, its GHG emissions may be considered significant); or
- 1,100 MT of CO₂e/yr; or
- 4.6 MT CO₂e/service population/yr (service population is the sum of residents plus employees expected for a development project).

For quantifying a project’s GHG emissions, BAAQMD recommends that all GHG emissions from a project be estimated, including a project’s direct and indirect GHG emissions from operations. Direct emissions refer to emissions produced from onsite combustion of energy, such as natural gas used in furnaces and boilers, emissions from industrial processes, and fuel

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1 For retail and mixed-use projects, this threshold counts trips from retail customers but does not include retail customers in the service population. Consequently, it overestimates the contribution of these projects to greenhouse gas emissions.
combustion from mobile sources. Indirect emissions are emissions produced offsite from energy production and water conveyance due to a project’s energy use and water consumption. The District has provided guidance on detailed methods for modeling GHG emissions from proposed projects (BAAQMD, 2011).

The thresholds BAAQMD adopted were called into question by an order issued March 5, 2012 in California Building Industry Association v. BAAQMD. The order requires the BAAQMD thresholds to be subject to further environmental review. The claims made in the case concerned the CEQA impacts of adopting the thresholds, i.e., how the thresholds would affect land use development patterns, and petitioners argued that the thresholds for greenhouse gases favor residential projects at the expense of mixed use projects. The land use development effects of adopting the thresholds are not relevant to this Project, because the proposal to expand Broadway Plaza was not influenced by the BAAQMD guidelines. Moreover, the claims indicate that the BAAQMD thresholds are overly-conservative (i.e., overly protective of the environment) when applied to retail or mixed use projects. Accordingly, use of the BAAQMD thresholds will not understate the project’s contribution towards global warming.

City of Walnut Creek

Chapter 4, Built Environment, of the Walnut Creek General Plan 2025 (City of Walnut Creek, 2006) includes the following goals and policies that are relevant to GHGs in Walnut Creek:

- **Goal 3**: Encourage housing and commercial mixed-use development in selected locations that enhances pedestrian access and reduces traffic.
  - *Policy 3.1*: Create opportunities for mixed-use developments.

- **Goal 12**: Make more efficient use of the regional and subregional transportation system.
  - *Policy 12.1*: Promote the use of carpooling and vanpooling.
  - *Policy 12.2*: Support infill and redevelopment in existing urban areas.

- **Goal 27**: Promote “green” development and redevelopment.
  - *Policy 27.1*: Encourage resource-efficient building techniques, materials, and technologies in new construction and renovation.

- **Goal 28**: Promote energy conservation.
  - *Policy 28.2*: Promote energy conservation throughout the city.

- **Goal 29**: Promote water conservation.
  - *Policy 29.2*: Promote water conservation throughout the community.

- **Goal 30**: Meet or exceed State goals for source reduction and waste diversion.
  - *Policy 30.2*: Promote source reduction and recycling throughout the community.
  - *Policy 30.3*: Provide opportunities for residents and businesses to divert organic waste from landfill disposal.
4. Environmental Setting, Impacts, and Mitigation Measures

4.6 Greenhouse Gases and Climate Change

- **Goal 31**: Strive to meet State and federal air-quality standards for the region.
  - *Policy 31.1*: Work with the Bay Area Air Quality Management District (BAAQMD) and the County in promoting better air quality.
  - *Policy 31.2*: Consider additional land use and development criteria, standards, and decisions that have positive impacts on air quality and quality of life in general.

The City of Walnut Creek released its draft *Climate Action Plan* in August 2011. This plan presents a number of reduction strategies that focus on municipal and community-wide energy use, transportation, land use, and solid waste GHG sources. The plan focuses primarily on steps needed to reach the 15 percent reduction below 2005 levels by 2020 (City of Walnut Creek, 2011). The plan may be adopted before this Project is considered by the Council, and the Project’s consistency with the draft CAP is therefore evaluated. More specifically, the draft Climate Action Plan:

- Identifies sources of greenhouse gas emissions from sources within the City of Walnut Creek’s jurisdictional/political boundary and estimates how these emissions may change over time;
- Outlines ways in which the City can prepare for and adapt to the consequences of climate change;
- Discusses the various outcomes of reduction efforts and how these reduction efforts can be implemented and advertised;
- Provides energy use, transportation, land use and solid waste strategies to reduce Walnut Creek’s greenhouse gas emissions levels to 15 percent below 2005 levels by 2020;
- Mitigates Walnut Creek’s impacts on climate change by reducing greenhouse gas emissions consistent with AB32, Governor’s Order S-03-05, and Public Resources Code Section 21083.3;
- Provides substantial evidence that the emission reductions estimated in the Climate Change Action Plan are feasible;
- Meets the requirements of the BAAQMD criteria for a qualified greenhouse gas reduction strategy as defined in the Districts CEQA Air Quality Guidelines.

### 4.6.3 Impacts and Mitigation Measures

#### Significance Criteria

The Project would have a significant effect if it were to:

1. Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
2. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHG.
Significance Thresholds

In accordance with the BAAQMD CEQA Air Quality Guidelines, this Project would be considered to have a significant impact if it would emit GHGs greater than 1,100 metric tons per year CO₂e from sources other than permitted stationary sources or more than 4.6 metric tons of CO₂e per service population annually. The BAAQMD CEQA Guidelines also state that a project or plan that is consistent with an adopted GHG Reduction Strategy would be considered to have a less than significant impact. As noted above, the City of Walnut Creek has released a draft Climate Action Plan (e.g., Reduction Strategy) for reducing GHG emissions from municipal and community-wide sources.

Approach to Analysis

This analysis uses both a quantitative and a qualitative approach. The quantitative approach is used to answer the first threshold: would the Project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. The quantitative threshold discussed above is used to determine if this threshold is met.

The qualitative approach addresses the second threshold: would the Project conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs. If a project implements reduction strategies identified in AB 32, the Governor’s E.O. S-3-05, or other strategies to help toward reducing GHGs to the level proposed by the Governor and targeted by the City of Walnut Creek, it could reasonably follow that the project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs. In addition, a project could reduce a potential cumulative contribution to GHG emissions through energy efficiency features, density and locale (e.g., compact development near transit and activity nodes of work or shopping) or by contributing to available mitigation programs, such as reforestation, tree planting, or carbon trading.

Methods

GHG emissions resulting from the Project were estimated using the California Emissions Estimator Model (CalEEMod). BAAQMD acknowledges CalEEMod as an appropriate tool for assessment of air quality impacts relative to CEQA. (Kirk, 2012.) Vehicle trips assumed default trip lengths for urban land uses, which are embedded in CalEEMod. The model makes adjustments for implementation of Pavley vehicle standards and Low Carbon Fuel Standards. Model data and additional assumptions are included in Appendix E to this Draft EIR.

Construction emissions were also estimated using CalEEMod for equipment and truck exhaust and construction worker vehicles.

Area and indirect sources associated with the Project would primarily result from electrical usage, water and wastewater transport (the energy used to pump water and wastewater to and from the Project) and solid waste generation. GHG emissions from electrical usage are generated when energy consumed on the site is generated by fuel combustion. GHG emissions from water and wastewater transport are also indirect emissions resulting from the energy required to transport
water from its source, and the energy required to treat wastewater and transport it to its treated discharge point. Solid waste emissions are generated when the increased waste generated by the Project are taken to a landfill to decompose. GHG emissions from electrical usage, water and wastewater conveyance, and solid waste were estimated using the CalEEMod model.

**Cumulative Approach**

There is no potential for this single Project to emit enough greenhouse gases to cause global warming or climate change. The impact of greenhouse gases is by its nature only cumulative in scope because the impact of climate change is global. Therefore, there are no separate project-specific impact discussions for greenhouse gases. In addition, it is important to acknowledge that new development does not necessarily create entirely new GHG emissions. Since most of the persons who will visit or occupy new development will come from other locations where they were already causing such GHG emissions, new development tends to redistribute the location of emissions sources.

**Contribution Toward Cumulative Impacts by Project Scenario**

For all significance criteria relating to greenhouse gases, Project-related emissions are discussed together under a single Impact Statement for each criterion. Where appropriate, specific discussions are provided for the Maximum Commercial Scenario and the Maximum Mixed-Use Scenario under each criterion.

**Impacts**

**Generation of GHG Emissions**

**Impact GHG-1:** Construction and operation of the Project would result in a cumulatively considerable contribution towards global climate change (Criterion 1). (Significant)

Application of BAAQMD’s project-specific GHG emissions thresholds is to include both direct emissions from a project’s vehicle trip generation and onsite water and space heating and other stationary sources, as well as indirect emissions from off-site electrical generation and water conveyance and treatment.

Overall, the following activities associated with the Project could contribute to the generation of GHG emissions:

- **Construction Activities.** The Project would involve construction. Construction equipment typically uses fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as CO₂, methane and N₂O. Furthermore, methane is emitted during the fueling of heavy equipment.

- **Solid Waste Disposal Emissions.** The Project would generate solid waste. Resulting emissions associated with waste generation and disposal in landfills are indirect. Landfills emit anthropogenic methane from the anaerobic breakdown of material.
Gas, Electric and Water Use. The Project would utilize gas, electricity and water. Natural gas use results in the emissions of two GHGs: methane (the major component of natural gas) and CO₂ from the combustion of natural gas. Methane is released prior to initiation of combustion of the natural gas (as before a flame on a stove is sparked), and from the small amount of methane that is uncombusted in a natural gas flame. Electricity use can result in GHG production if the electricity is generated by combusting fossil fuel. California’s water conveyance system is energy intensive.

Motor Vehicle Use. The Project would generate motor vehicle trips. Transportation associated with the Project would result in GHG emissions from the combustion of fossil fuels in daily automobile and truck trips. However, these emissions would not be “new” since drivers are likely relocated from another area.

Stationary Sources. The Project does not propose any new or expanded stationary sources that emit GHGs.

GHG emissions associated with the construction phase of either the Maximum Commercial Scenario or the Maximum Mixed-Use Scenario would result in a maximum annual generation of 1,937 metric tons of CO₂e, as shown in Appendix E to this Draft EIR. In addition, Tables 4.6-2 and 4.6-3 present a gross estimate of each scenario’s unmitigated and mitigated operational CO₂e emissions resulting from the increases in motor vehicle trips resulting from each scenario’s grid electricity usage, solid waste, as well as from other sources (including area sources, natural gas combustion, and water/wastewater conveyance). Data in Tables 4.6-2 and 4.6-3 indicate that GHG emissions that would result from both Project scenarios would exceed the 1,100 metric tons per year and the 4.6 metric tons of CO₂e annually per service population thresholds established by BAAQMD. This would represent a cumulatively significant impact.

Mitigation Measure GHG-1: The applicant shall submit for review and approval to the City of Walnut Creek a Greenhouse Gases Emissions Reduction Plan (GHG plan) containing strategies to increase energy efficiency and reduce GHG emissions from the Project to the greatest extent feasible. The applicant shall implement the approved GHG plan. The GHG plan shall include strategies that exceed those already identified in the Project Description, or required by law, and shall particularly include strategies that reduce emissions generated by motor vehicle emissions (which represent the most significant contribution to total Project GHG emissions). The following strategies were assumed in the mitigated scenario for calculation of GHG emissions after mitigation for the Maximum Commercial Scenario in Table 4.6-2:

- Provide a ride sharing program for which 50 percent of employees are eligible;
- Exceed current Title 24 energy saving requirements by 20 percent;
- Use electrically powered landscape equipment;
- Install low-flow bathroom faucets and toilets; and
- Use Water efficient irrigation systems and landscaping.

The same strategies were assumed in the mitigated scenario for the Maximum Mixed-Use Scenario in Table 4.6-3 but also included:
4.6 Greenhouse Gases and Climate Change

TABLE 4.6-2
ESTIMATED EMISSIONS OF GREENHOUSE GASES
FROM THE MAXIMUM COMMERCIAL SCENARIO OPERATIONS

<table>
<thead>
<tr>
<th>Source</th>
<th>Emissions (metric tons CO₂e per year)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unmitigated Emissions</strong></td>
<td></td>
</tr>
<tr>
<td>Motor Vehicle Trips</td>
<td>6,908</td>
</tr>
<tr>
<td>Energy</td>
<td>1,067</td>
</tr>
<tr>
<td>Solid Waste</td>
<td>143</td>
</tr>
<tr>
<td>Other Sources (i.e., Area Sources, Water/Wastewater)</td>
<td>69</td>
</tr>
<tr>
<td><strong>Total Unmitigated Operational GHG Emissions</strong></td>
<td>8,187</td>
</tr>
<tr>
<td><strong>BAAQMD GHG Brightline Threshold</strong>&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1,100</td>
</tr>
<tr>
<td><strong>Significant (Yes or No)?</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Operational GHG Emissions per Service Population (670 jobs)</strong></td>
<td>12.2</td>
</tr>
<tr>
<td><strong>BAAQMD Efficiency Threshold</strong></td>
<td>4.6</td>
</tr>
<tr>
<td><strong>Significant (Yes or No)?</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Mitigated Emissions</strong>&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Motor Vehicle Trips</td>
<td>6,366</td>
</tr>
<tr>
<td>Energy</td>
<td>1,000</td>
</tr>
<tr>
<td>Solid Waste</td>
<td>143</td>
</tr>
<tr>
<td>Other Sources (i.e., Area Sources, Water/Wastewater)</td>
<td>61</td>
</tr>
<tr>
<td><strong>Total Mitigated Operational GHG Emissions</strong></td>
<td>7,570</td>
</tr>
<tr>
<td><strong>BAAQMD GHG Brightline Threshold</strong>&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1,100</td>
</tr>
<tr>
<td><strong>Significant (Yes or No)?</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Operational GHG Emissions per Service Population (670 jobs)</strong></td>
<td>11.3</td>
</tr>
<tr>
<td><strong>BAAQMD Efficiency Threshold</strong></td>
<td>4.6</td>
</tr>
<tr>
<td><strong>Significant (Yes or No)?</strong></td>
<td>Yes</td>
</tr>
</tbody>
</table>

---

<sup>a</sup> GHG emissions from vehicles and area sources (including natural gas combustion) associated with the Project scenarios were calculated using CalEEMod model Version 2011.1.1 and trip generation data from the Project scenario traffic analysis. Additional data and assumptions are included in Appendix E.

<sup>b</sup> Mitigation Measure GHG-1 was incorporated into CalEEMod using default model reduction percentages that factored into the GHG emissions from the respective sources of GHGs for the mitigated scenario. Mitigations were not identified that applied to solid waste. Additional assumptions are included in Appendix E.

- Install low-flow kitchen faucets and showers; and
- Install energy efficient appliances (washing machines, refrigerators, dishwashers, and fans)

The GHG plan shall also include, but is not limited to, adopting feasible and appropriate greenhouse gas emissions reductions strategies as set forth in the “Community Wide Reduction Measures” section of the City of Walnut Creek Climate Action Plan, which is anticipated to be adopted prior to Project approval.
4. Environmental Setting, Impacts, and Mitigation Measures
4.6 Greenhouse Gases and Climate Change

TABLE 4.6-3
ESTIMATED EMISSIONS OF GREENHOUSE GASES FROM THE MAXIMUM MIXED-USE SCENARIO OPERATIONS

<table>
<thead>
<tr>
<th>Source</th>
<th>Emissions (metric tons CO₂e per year)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unmitigated Emissions</strong></td>
<td></td>
</tr>
<tr>
<td>Motor Vehicle Trips</td>
<td>4,258</td>
</tr>
<tr>
<td>Energy</td>
<td>1,214</td>
</tr>
<tr>
<td>Solid Waste</td>
<td>137</td>
</tr>
<tr>
<td>Other Sources (i.e., Area Sources, Water/Wastewater)</td>
<td>130</td>
</tr>
<tr>
<td>Total Unmitigated Operational GHG Emissions</td>
<td>5,740</td>
</tr>
<tr>
<td><strong>BAAQMD GHG Brightline Threshold</strong></td>
<td>1,100</td>
</tr>
<tr>
<td>Significant (Yes or No)?</td>
<td>Yes</td>
</tr>
<tr>
<td>Operational GHG Emissions per Service Population (866 service population (448 jobs + 418 residents))</td>
<td>6.6</td>
</tr>
<tr>
<td><strong>BAAQMD Efficiency Threshold</strong></td>
<td>4.6</td>
</tr>
<tr>
<td>Significant (Yes or No)?</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Mitigated Emissions</strong></td>
<td></td>
</tr>
<tr>
<td>Motor Vehicle Trips</td>
<td>4,258</td>
</tr>
<tr>
<td>Energy</td>
<td>1,115</td>
</tr>
<tr>
<td>Solid Waste</td>
<td>137</td>
</tr>
<tr>
<td>Other Sources (i.e., Area Sources, Water/Wastewater)</td>
<td>111</td>
</tr>
<tr>
<td>Total Mitigated Operational GHG Emissions</td>
<td>5,622</td>
</tr>
<tr>
<td><strong>BAAQMD GHG Brightline Threshold</strong></td>
<td>1,100</td>
</tr>
<tr>
<td>Significant (Yes or No)?</td>
<td>Yes</td>
</tr>
<tr>
<td>Operational GHG Emissions per Service Population (866 service population (448 jobs + 418 residents))</td>
<td>6.5</td>
</tr>
<tr>
<td><strong>BAAQMD Efficiency Threshold</strong></td>
<td>4.6</td>
</tr>
<tr>
<td>Significant (Yes or No)?</td>
<td>Yes</td>
</tr>
</tbody>
</table>

a GHG emissions from vehicles and area sources (including natural gas combustion) associated with the Project scenarios were calculated using CalEEMod model Version 2011.1.1 and trip generation data from the Project scenario traffic analysis. Additional data and assumptions are included in Appendix E.

b Mitigation Measure GHG-1 was incorporated into CalEEMod using default model reduction percentages that factored into the GHG emissions from the respective sources of GHGs for the mitigated scenario. Mitigations were not identified that applied to solid waste. Additional assumptions are included in Appendix E.

Significance after Mitigation: While the measures in Mitigation Measure GHG-1 would reduce the cumulative GHG emissions associated with the Project, the actual reduction would depend on the combination and extent of the measures employed. As shown in Tables 4.6-2 and 4.6-3, although these criteria (as assumed using default reductions) would reduce GHG emissions, the Project under either scenario would still result in a cumulatively considerable contribution towards a significant cumulative impact after mitigation, that would be unavoidable.
Conflict with an Applicable Plan, Policy, or Regulation

The Project would not conflict with an applicable plan, policy, or regulation of an appropriate regulatory agency adopted for the purpose of reducing greenhouse gas emissions (Criterion 2). (Less than Significant)

Project GHG emissions are not anticipated to conflict with the goals targeted by the City of Walnut Creek which is currently in the process of adopting a Climate Action Plan. The Climate Action Plan strives for a 15 percent reduction in GHGs in year 2020 compared to a baseline of 2005. By implementing infill uses, implementation of either scenario would be consistent with Transportation and Land Use goals within the Climate Action Plan. The plan looks to reductions targets, but does not adopt specific emissions limits. As such, assuming there are no substantial changes made to the Climate Action Plan before it is adopted by the City Council, there are no anticipated conflicts between the Project as proposed and the goals of the Climate Action Plan.

Mitigation: None required.

4.6.4 References


City of Walnut Creek, 2006. Walnut Creek General Plan 2025, adopted April 4, 2006.


Kirk, Allison, Senior Environmental Planner, Bay Area Air Quality Management District, e-mail correspondence to Chris Sanchez at Environmental Science Associates, January 27, 2012


4.7 Hazards and Hazardous Materials

This section describes the existing setting related to hazards and hazardous materials based on the current conditions, a regulatory database search for the Project Site and surroundings, and the federal, state, and local regulations related to hazardous materials that would apply to the Project.

4.7.1 Environmental Setting

Background

Materials and waste may be considered hazardous if they are poisonous (toxicity), can be ignited by open flame (ignitability), corrode other materials (corrosivity), or react violently, explode or generate vapors when mixed with water (reactivity). The term “hazardous material” is defined in law as any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment. In some cases, past industrial or commercial uses on a site can result in spills or leaks of hazardous materials and petroleum, causing contamination of underlying soil and groundwater. Federal and state laws require that soils and groundwater having concentrations of contaminants such as lead, gasoline, or industrial solvents that are higher than certain acceptable levels must be handled and disposed as hazardous waste during excavation, transportation, and disposal. The California Code of Regulations (CCR), Title 22, §66261.20–24 contains technical descriptions of characteristics that would cause a soil to be classified as a hazardous waste. The use of hazardous materials and disposal of hazardous wastes are subject to numerous laws and regulations at all levels of government (see Regulatory Setting below).

Hazardous Building Materials

Development and redevelopment projects often involve the need to demolish existing older structures. Many older buildings contain building materials that consist of hazardous materials, which can be hazardous to people and the environment once disturbed. These materials include lead-based paint, asbestos-containing materials (ACM), and polychlorinated biphenyls (PCBs).

Prior to the EPA ban in 1978, lead-based paint was commonly used on interior and exterior surfaces of buildings. Through such disturbances as sanding and scraping activities, or renovation work, or gradual wear and tear, old peeling paint, or paint dust particulates have been found to contaminate surface soils or cause lead dust to migrate and affect indoor air quality. Exposure to residual lead can cause severe adverse health effects especially in children.

Asbestos is a naturally-occurring fibrous material that was extensively used as a fireproofing and insulating agent in building construction materials before such uses were banned by the U.S. Environmental Protection Agency (EPA) in the 1970s. ACM were commonly used for insulation of heating ducts as well as ceiling and floor tiles to name a few typical types of materials. Similar to lead-based paint, ACM contained within the building materials present no

1 State of California, Health and Safety Code, Chapter 6.95, Section 25501(o).
significant health risk because there is no exposure pathway. However, once these tiny fibers are disturbed, they can become airborne and become a respiratory hazard. The fibers are very small and cannot be seen with the naked eye. Once they are inhaled, they can become lodged into the lung potentially causing lung disease or other pulmonary complications.

PCBs are organic oils that were formerly used primarily as insulators in many types of electrical equipment including transformers and capacitors. After PCBs were determined to be a carcinogen in the mid to late 1970s, the U.S. EPA banned PCB use in most new equipment and began a program to phase out certain existing PCB-containing equipment. Fluorescent lighting ballasts manufactured after January 1, 1978, do not contain PCBs and are required to have a label clearly stating that PCBs are not present in the unit.

**Local Setting**

Land use within the Project Site and surroundings are a mix of commercial, retail, residential and light industrial use. Commercial and light industrial operations have the potential to release hazardous materials to soil and groundwater in the vicinity of the Project Site. Potential sources include gasoline service stations and commercial uses that handle solvents or other hazardous materials. Residential land use can also result in the release of hazardous materials.

A regulatory database search of existing sites within and immediately adjacent to the Project Site was conducted for the purpose of this analysis (Department of Toxic Substances Control [DTSC] and State Water Resources Control Board [SWRCB], 2011). A limited buffer was chosen based on professional judgment considering the general use of hazardous materials in the Project Site and surroundings and the size of the Project Site. The database search involved a search of the DTSC (EnviroStor) and SWRCB (GeoTracker) environmental databases for sites with documented use, storage, or release of hazardous materials or petroleum products. The databases identified sites that have had reported releases of hazardous materials or waste including active contaminated sites that are currently under assessment and/or remediation. Some of the sites found on these databases include facilities or sites that are closed because the contamination levels were found to be below regulatory thresholds requiring remediation or remediation has satisfied the regulatory agency overseeing the effort.

The GeoTracker database includes sites found on the Spills, Leaks, Investigations, and Cleanups (SLIC) program as well as the Leaking Underground Fuel Tank (LUFT) program, both of which are overseen by the Regional Water Quality Control Board (RWQCB). The GeoTracker search results indicated a total of two SLIC sites and 11 LUFT sites within a quarter mile of the Project Site. The two SLIC sites are summarized below (SWRCB, 2011):

- **Former Virginia Cleaners (currently retail apparel store and 7-11 convenience store), 1305-1335 Main Street**: A release of solvents associated with past dry cleaning operations was reported at this site and is currently undergoing further characterization to determine the full lateral and vertical extent of contamination (Chlorinated Hydrocarbons, Tetrachloroethylene (PCE), Trichloroethylene (TCE), Vinyl Chloride). Several environmental investigations have been performed at the site. Solvents have been detected in soil, groundwater, and soil vapor beneath the former dry cleaning location in the
southern portion of the site. The dissolved plume extends north (downgradient) toward the Las Trampas Creek, bounding the site to the northwest. Solvents have not been detected in creek water. The plume has not been fully delineated.

- **Kaiser Sand and Gravel, 1333 North California Boulevard:** A release was first recorded in 1995 but no other details regarding any further action are available. The site is currently listed as inactive.

Among the 11LUFT sites, the majority of the sites or cases have been closed and only three remain open. A summary of the open cases are provided below:

- **Former Standard Oil Station, 1500 Mt. Diablo Boulevard:** A release of petroleum products was reported at this site and is currently undergoing further characterization to determine the full lateral and vertical extent of contamination.

- **BP No. 11141 (Former), 1611 Newell Avenue:** A release of waste oil/hydraulic fluid/lubricating oil was reported for the site which is currently undergoing remediation to reduce the potential exposure to human health and the environment to minimal risks.

- **Shell Service Station, 1599 Newell Avenue:** This site has been under investigation since 2007 for a petroleum fuel release that has not been fully characterized in its lateral and vertical extent. Continued site assessment activities are being conducted at the site.

No Superfund sites, State Response Sites, Voluntary Cleanup Sites, or School Cleanup sites are located within the Project Site and surroundings according to the Envirostor database (DTSC, 2011). In addition, there were no military evaluations or DTSC corrective actions located within the Project Site and surroundings.

### 4.7.2 Regulatory Setting

**Federal**

The U.S. EPA is the lead agency responsible for enforcing federal regulations that affect public health or the environment. The primary federal laws and regulations include the Resource Conservation and Recovery Act of 1976 (RCRA) and the Hazardous and Solid Waste Amendments enacted in 1984; the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA); and the Superfund Act and Reauthorization Act of 1986 (SARA). Federal statutes pertaining to hazardous materials and wastes are contained in the Code of Federal Regulations (CFR), Title 40. These include 40 CFR Part 745 which covers lead-based paint poisoning prevention in certain residential structures. Part 745 identifies lead-based paint hazards and provides standards for lead-based paint hazards that apply to target housing and child-occupied facilities. There are no Superfund sites at or near this Project Site, so Superfund would not apply.

**RCRA**

RCRA Subtitle C regulates the generation, transportation, treatment, storage and disposal of hazardous waste by “large-quantity generators” (1,000 kilograms per month or more) through
comprehensive life cycle or “cradle to grave” tracking requirements. The requirements include maintaining inspection logs of hazardous waste storage locations, records of quantities being generated and stored, and manifests of pick-ups and deliveries to licensed treatment/storage/disposal facilities. RCRA also identifies standards for treatment, storage, and disposal.

According to RCRA Subpart C and the US EPA, materials and waste are considered hazardous based on four characteristics:

- **Ignitability.** Ignitable wastes can create fires under certain conditions, are spontaneously combustible, or have a flash point less than 60 °C (140 °F). Examples include waste oils and used solvents.

- **Corrosivity.** Corrosive wastes are acids or bases (pH less than or equal to 2, or greater than or equal to 12.5) that are capable of corroding metal containers, such as storage tanks, drums, and barrels. Battery acid is an example.

- **Reactivity.** Reactive wastes are unstable under “normal” conditions. They can cause explosions, toxic fumes, gases, or vapors when heated, compressed, or mixed with water. Examples include lithium-sulfur batteries and explosives.

- **Toxicity.** Toxic wastes are harmful or fatal when ingested or absorbed (e.g., containing mercury, lead, etc.).

**Occupational Safety and Health Act**

The OSHA administers the Occupational Safety and Health Act, which requires special training of handlers of hazardous materials, notification to employees who work in the vicinity of hazardous materials, and acquisition from the manufacturer of material safety data sheets (MSDS). An MSDS describes the proper use of hazardous materials. The Act also requires and training of employees to remediate any hazardous material accidental releases.

**State and Local**

**Hazardous Materials and Waste Handling**

The California Environmental Protection Agency (Cal EPA), DTSC regulates the generation, transportation, treatment, storage, and disposal of hazardous waste. State and federal laws require detailed planning to ensure that hazardous materials are properly handled, used, stored, and disposed of, and in the event that such materials are accidentally released, to prevent or to mitigate injury to health or the environment. These laws require hazardous materials users to prepare written plans, such as Hazard Communication Plans and Hazardous Materials Business Plans. Laws and regulations require hazardous materials users to store these materials appropriately and to train employees to manage them safely. A number of agencies participate in enforcing hazardous materials management requirements, including DTSC, the RWQCB and the Contra Costa Department of Environmental Health.

Throughout Contra Costa County, a Hazardous Materials Management Plan must be prepared and submitted to the County by businesses that use or store certain quantities of hazardous materials.
As discussed above, the federal RCRA established a “cradle-to-grave” regulatory program for governing the generation, transportation, treatment, storage and disposal of hazardous waste. Under RCRA, individual states may implement their own hazardous waste programs in lieu of RCRA as long as the state program is at least as stringent as federal RCRA requirements. In California, the DTSC regulates the generation, transportation, treatment, storage, and disposal of hazardous material waste. The hazardous waste regulations establish criteria for identifying, packaging, and labeling hazardous wastes; dictate the management of hazardous waste; establish permit requirements for hazardous waste treatment, storage, disposal, and transportation; and identify hazardous wastes that cannot be disposed of in landfills.

**Hazardous Materials Transportation**

The United States Department of Transportation regulates hazardous materials transportation on all interstate roads. Within California, the state agencies with primary responsibility for enforcing federal and state regulations and for responding to transportation emergencies are the California Highway Patrol (CHP) and the California Department of Transportation (Caltrans). Together, federal and state agencies determine driver-training requirements, load labeling procedures, and container specifications. Although special requirements apply to transporting hazardous materials, requirements for transporting hazardous waste are more stringent, and hazardous waste haulers must be licensed to transport hazardous waste on public roads.

**Soil and Groundwater Contamination**

In Contra Costa County, remediation of contaminated sites is generally performed under the oversight of DTSC, the RWQCB, and/or the Contra Costa Department of Environmental Health. At sites where contamination is suspected or known to occur, the project sponsor is required to perform a site investigation and draw up a remediation plan, if necessary. For typical development projects, site remediation is completed either before or during the construction phase of the project.

**Underground Storage Tanks**

State laws governing underground storage tanks (USTs) specify requirements for permitting, monitoring, closure, and cleanup. Regulations set forth construction and monitoring standards for existing tanks, release reporting requirements, and closure requirements. Generally speaking, the Contra Costa Department of Environmental Health is the local agency designated to permit and inspect USTs and to implement applicable regulations. A closure plan for each UST to be removed must be prepared and submitted to the County prior to tank removal. Upon approval of the UST closure plan by the County, the In Contra Costa County, the Contra Costa Hazardous Materials Program is the designated Certified Unified Program Agency (CUPA) and would oversee UST removal and the subsequent collection of subsurface soil samples from beneath a removed UST.
**Worker Safety**

Occupational safety standards exist in federal and state laws to minimize worker safety risks from both physical and chemical hazards in the workplace. The California Division of Occupational Safety and Health (Cal OSHA) and the federal OSHA are the agencies responsible for ensuring worker safety in the workplace.

Cal OSHA assumes primary responsibility for developing and enforcing standards for safe workplaces and work practices. At sites known to be contaminated, a Site Safety Plan must be prepared to protect workers. The Site Safety Plan establishes policies and procedures to protect workers and the public from exposure to potential hazards at the contaminated site.

**Emergency Response**

California has developed an emergency response plan to coordinate emergency services provided by federal, state, and local government and private agencies. Responding to hazardous materials incidents is one part of this plan. The plan is administered by the State Office of Emergency Services (OES), which coordinates the responses of other agencies, including Cal EPA, CHP, the Department of Fish and Game, the RWQCB, and the local fire department. The Contra Costa Hazardous Materials Program provides first response capabilities, if needed, for hazardous materials emergencies within the city.

**Structural and Building Components**

**Asbestos-Containing Materials**

Similar to federal laws, state laws and regulations also pertain to building materials containing asbestos. Inhalation of airborne fibers is the primary mode of asbestos entry into the body, making friable (easily crumbled) materials a respiratory health threat. These existing laws and regulations prohibit emissions of asbestos from asbestos-related manufacturing, demolition, or construction activities; require medical examinations and monitoring of employees engaged in activities that could disturb asbestos; specify precautions and safe work practices that must be followed to minimize the potential for release of asbestos fibers; and require notice to federal and local governmental agencies prior to beginning renovation or demolition that could disturb asbestos.

**Polychlorinated Biphenyls (PCBs)**

PCBs are organic oils that were formerly placed in many types of electrical equipment, including transformers and capacitors, primarily as electrical insulators. Years after widespread and commonplace installation, it was discovered that exposure to PCBs may cause various health effects, and that PCBs are highly persistent in the environment.

In 1979, the U.S. EPA banned the use of PCBs in most new electrical equipment and began a program to phase out certain existing PCB-containing equipment. The use and management of PCBs in electrical equipment is regulated pursuant to the Toxic Substances Control Act, 15 U.S.C. § 2601 et seq. (TSCA). Regulations generally require labeling and periodic inspection.