



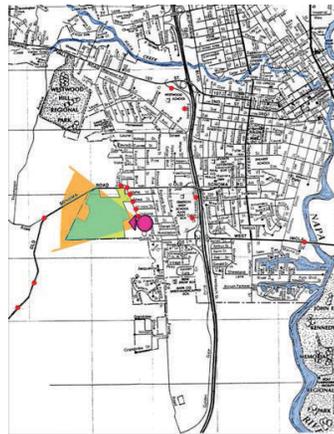
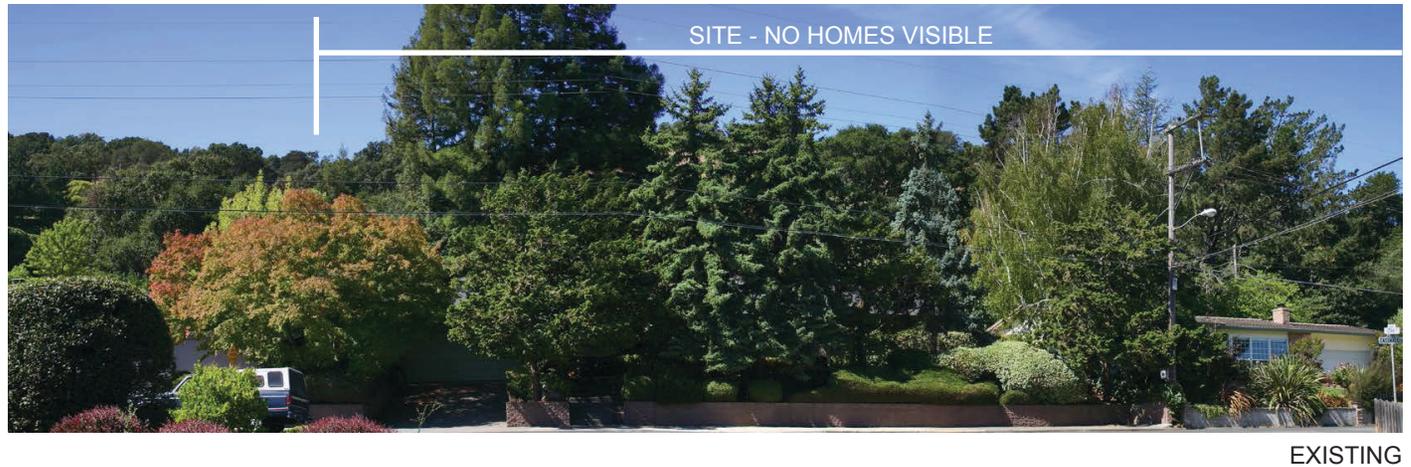
Figure 4.11b: View from Casswall Street at Indiana Street - Simulation (without landscaping)

Source: LCA Architects, dated August 15, 2012 (subsequent changes to the site plan would not affect this viewpoint)



Figure 4.11c: View from Casswall Street at Indiana Street - Simulation (with landscaping)

Source: LCA Architects, dated August 15, 2012 (subsequent changes to the site plan would not affect this viewpoint)



KEY MAP



■ PORTION OF SITE VISIBLE
■ HOMES POTENTIALLY VISIBLE

Figure 4.12a: View from Casswall Street at Utah Street - Existing View

Source: LCA Architects, dated August 15, 2012 (subsequent changes to the site plan would not affect this viewpoint)

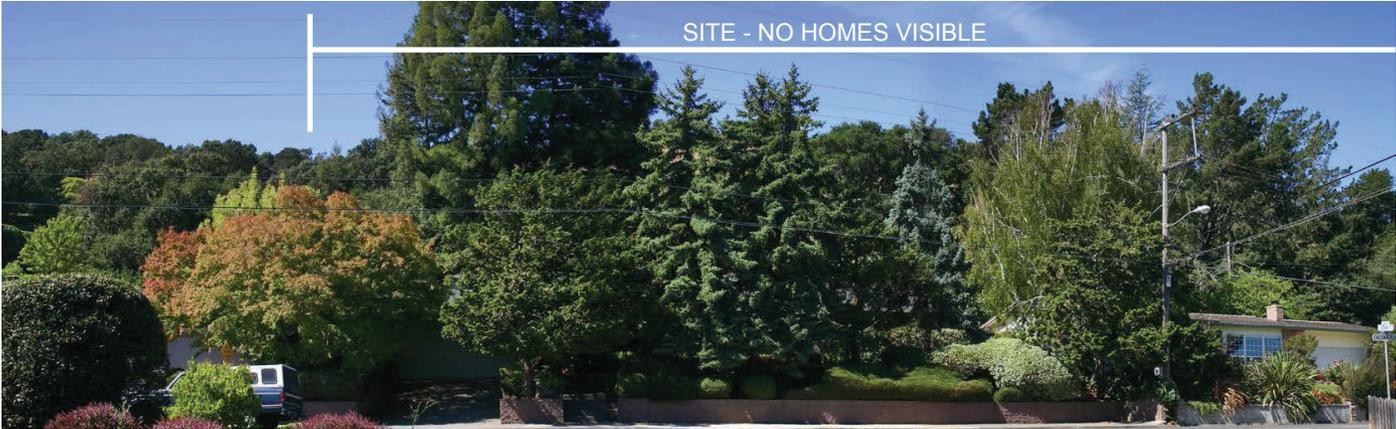


Figure 4.12b: View from Casswall Street at Utah Street - Simulation (without landscaping)

Source: LCA Architects, dated August 15, 2012 (subsequent changes to the site plan would not affect this viewpoint)



Figure 4.12c: View from Casswall Street at Utah Street - Simulation (with landscaping)

Source: LCA Architects, dated August 15, 2012 (subsequent changes to the site plan would not affect this viewpoint)

SCENIC HIGHWAYS

Impact Visual-2: Development within Scenic Corridors. The Project is located within the view corridors of CA-29 and CA-121, which are designated as city scenic corridors in the City of Napa General Plan and identified as eligible State Scenic Highways. However, the Project would not substantially obscure, detract from, or negatively affect the quality of the views from these routes or substantially obscure views of the hillside and ridgeline/treeline. The impact on these scenic corridors would be *less than significant*.

In the vicinity of the Project site, CA-29 and a portion of CA-121 are identified as eligible (though not officially designated) State Scenic Highways through the state's program.³ Additionally, these roadways are considered scenic corridors by the City of Napa, as discussed in the setting above.

Figures 4.1a, b and c and 4.2a, b and c show the change in the view toward the Project site from these routes. As shown in these figures, portions of the Project visible from these roadways would be generally limited to partial views of homes on lots 1 through 6. From the vantage point of these identified scenic routes, the new homes would remain below the existing ridgeline/treeline. The limited visibility of a few homes is not inconsistent with visible development existing or allowable on other hillsides within the City boundaries. This level of visible development appears consistent with the General Plan goal LU-1 under which the scenic corridors were identified, “[t]o maintain and enhance Napa’s small town qualities and unique community identity.”

Therefore, because of the limited views of development from these scenic corridors which are also eligible State Scenic Highways, the Project’s impact related to development within a scenic highway would be *less than significant*.

VISUAL CHARACTER

Impact Visual-3: Changed Visual Character. The proposed Project would construct a residential subdivision on a largely undeveloped site, currently characterized as a partially graded hillside with grassland and groupings of oak trees. The Project would retain the visible topography and much of the visible grassland and oak woodland, while hiding the majority of homes from view within the topography of the site. The changes proposed with the Project would not constitute substantial degradation of the visual character. This impact would be *less than significant*.

The Project site is within the city boundaries, and the city’s RUL forms the boundary with the county at the Project’s southern, western and part of the northern edge. Agricultural uses (vineyards) abut the Project site at the southern and western edges. Developed residential areas are located in the low-lying city of Napa to the east and (portions of the area to the) north. The largely undeveloped hillside to the north would be preserved as part of this Project as oak woodland habitat (see Chapter 7 for additional detail).

The Project site is currently characterized visually as largely undeveloped land. As such, any visible development on the site would constitute changed visual character. The standard of significance is whether the change would constitute a substantial degradation of the existing visual character or quality

³ California Department of Transportation, State Scenic Highway Mapping System, http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm

of the site and its surroundings. To avoid duplication of analysis between this threshold and that addressing scenic vistas, this threshold is interpreted narrowly, to assess whether the proposed development is demonstrably negative in character.

The CEQA Guidelines do not provide a threshold of significance, so consistency with applicable regulations related to visual character can be analyzed to assess the significance of the impact. The City's Hillside Overlay Zone is applicable (Chapter 17.40 of the Napa Municipal Code). The Project's relations to the purposes of this district are discussed below as they relate to visual character. Because development on hillside sites is not entirely disallowed, it must be assumed that development can meet the goals of the overlay zone and that the below items are not intended to be interpreted narrowly such that all development would be inconsistent with their intent.

- A. Ensure the preservation of the city's hills, ridges and ridgelines visible to area residents and persons traveling through the county on major arterials by promoting a harmonious visual and functional relationship between the natural hillside environment and the man-made environment;

The hillside and ridgelines would not be fully preserved in their undeveloped state. However, proposed development on the site would not substantially alter the visible topography of the site, but rather was designed such that home sites would be nestled within existing topographical features. Views of the site would not be blocked though could include some homes within any given view point. It would seem that with these characteristics, the proposed development could be considered a harmonious relationship between the natural hillside environment and the man-made environment. However, there is no detailed threshold for determining what constitutes a "harmonious relationship."

- B. Protect the health, safety and welfare of the community by establishing regulations for development of ridgelines and hillside areas within the city;

This item is not directly related to aesthetics and visual character.

- C. Implement goals, policies and programs of the General Plan concerning hillside and ridgeline development, development hazards and open space lands;

These items are considered under the Scenic Vistas discussion earlier in this chapter.

- D. Preserve predominant views from and of hillside areas;

Due to the topography of the site and location of the majority of development within valleys between knolls, the visual change in the site would be somewhat limited from off-site viewpoints. Again, no specific threshold is provided, but it would seem that the proposed development could be considered to preserve "predominant" views of the hillside.

- E. Retain the natural appearance that hillside areas impart to the city and its environs;

The topography of the site and location of proposed development within valleys between knolls would largely hide from view not only the new structures, but the loss of trees due to development. Additionally, the Project includes a landscaping plan that will include additional trees that will screen much of the otherwise visible development from view. There is not a specific threshold for how much can be changed or must be retained, but the Project would predominantly retain the natural appearance of the hillside, not inconsistent with the visual character of other existing development on hillsides nearby.

- F. Preserve and retain significant natural features (i.e., vegetation, terrain, rock formations, etc.) of hillside sites in essentially their natural state;

The Project would not substantially alter existing visible topography of the hillsides and ridgelines and as discussed above, the majority of the development and resultant loss of trees would not be visible from off-site locations and would be minimized through new tree plantings. There is not a specific threshold for what constitutes “essentially their natural state”, but the Project would leave in its existing state much of the visible hillside area, would preserve the grassland and woodland look of the site, and would retain the topography of existing ridgelines. Again, because it has to be assumed this item is not intended to disallow all development, the Project could be considered to be generally consistent.

- G. Minimize and control the scarring and cutting of hillsides and ridgelines and minimize water runoff and soil erosion problems incurred due to grading and development activities.

The grading proposed to allow development of the Project is largely constrained to valley areas that are not substantially visible from off-site locations. The visual topography of hillsides and ridgelines from off-site viewpoints would remain substantially unchanged. (Water runoff and soil erosion are not directly related to aesthetics and are discussed in Chapter 12: Hydrology and Water Quality.)

While the Project would be partially visible from various off-site viewpoints, the character of the site will remain largely that of grassland and oak woodland hillside and is not inconsistent with the character of other limited hillside development in the area or the stated purposes of the City’s Hillside Overlay Zone which applies to such areas. Therefore, the Project would not “substantially degrade” the visual quality of the Project area or its surroundings and the impact related to changed character would be considered *less than significant*. Note that this determination from an environmental perspective does not presuppose or constrain the City’s decision-making with regard to their policies and regulations regarding architecture and aesthetics, which go beyond environmental concerns.

LIGHT AND GLARE

Impact Visual-4: Increased Light and Glare. The Project would add additional sources of light to a currently undeveloped site adjacent to other residential uses. Lighting quality, intensity and design is required to meet City standards to minimize glare, light trespass and “sky glow” and would be within allowable levels for residential uses. Therefore, impacts related to light and glare would be *less than significant*.

Sources of light and glare in the Project vicinity include interior and exterior building lights and street lighting. Light and glare associated with vehicular traffic in the area also create sources of glare. The existing level and sources of light and glare are typical of those in a developed suburban setting and rural areas.

Development of the Project site has the potential to create additional light and glare. The specific of the lighting plan are not yet known. However, existing City regulations would ensure that new development does not create substantial adverse light and glare impacts through the design review process. With adherence to applicable regulations and policies, the Project would have a *less than significant* impact on light and glare.

CUMULATIVE AESTHETIC IMPACTS

The Project is located within the City's RUL. The majority of surrounding visible undeveloped hillside areas are not located within City limits. Any development on hillsides within the City of Napa would be constrained by the Hillside Overlay Zone, which would limit aesthetic impacts of development.

Because of the limitation on other hillside development in the area, there would be no additional significant cumulative aesthetic impacts.

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AGRICULTURAL, FOREST AND MINERAL RESOURCES

INTRODUCTION

This chapter of the Draft EIR contains discussion regarding the CEQA topic areas of Agricultural, Forest and Mineral Resources.

AGRICULTURAL RESOURCES

AGRICULTURAL SETTING

The Department of Conservation's Farmland Mapping and Monitoring Program (FMMP) identifies agricultural land that is lost or gained during two-year periods. Farmland monitoring is dependent upon farmland classifications, which are largely based on soil surveys. Agricultural land is quantified based upon acreage and classified as Prime, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance. The FMMP also quantifies the amount of urban land and grazing lands as well as built-up land and "other land."

The entire Project site is classified as "other land" with the following description: Other land is land not included in any other mapping category. Common examples include low density rural developments, brush, timber, wetland, and riparian areas not suitable for livestock grazing, confined livestock, poultry, or aquaculture facilities, strip mines, borrow pits, and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as other land.¹

The land to the east of the Project is classified as urban/built-up land, to the north is more "other land" classification. Adjacent areas to the south and west are classified as "unique farmland," described as follows: Unique farmland consists of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyards as

¹ State of California, Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program, *Napa County Important Farmland 2010*, May 2011.

found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.

Los Carneros AVA

The Project site located within the Los Carneros American Viticultural Area (AVA). An AVA is a designated wine grape-growing region in the United States, with boundaries defined by the Alcohol and Tobacco Tax and Trade Bureau (TTB), generally at the request of wineries and other petitioners based upon geographic and/or growing conditions that make the area distinctive. Prior to the installation of the AVA system, wine appellations of origin in the United States were designated based on state or county boundaries. AVAs restrict use of the name to only those wines (at least 85% per volume) grown within their boundaries. AVA designations are not accompanied by regulation to preserve land exclusively for the growing of grapes and often include areas in which the growing conditions are not appropriate for wine grapes as well as areas with urban development.

The Los Carneros AVA covers approximately 37,213 acres, substantial portions of which overlap the City of Napa city limits, including the Project site and nearby developed neighborhood, as shown in **Figure 5.1**. Approximately 5,749 acres of this AVA are planted with wine grapes, representing about 15% of the total AVA area.²

FOREST RESOURCES AND RANGELAND SETTING

Public Resources Code section 12220(g): "Forest land" is land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. . . . (l) "Woodlands" are forest lands composed mostly of hardwood species such as oak.

Public Resources Code section 4526: "Timberland" means land, other than land owned by the federal government and land designated by the board as experimental forest land, which is available for, and capable of, growing a crop of trees of a commercial species used to produce lumber and other forest products, including Christmas trees. Commercial species shall be determined by the board on a district basis.

For over 30 years, state law (PRC 4789) has mandated periodic assessments of California's forest and rangeland resources. In 2008, the Federal Farm Bill added a provision to federal law that required states to do assessments of forest resources. To comply with these requirements, the California Department of Forestry and Fire Protection has prepared the California's Forests and Rangelands: 2010 Assessment (June 2010). This 2010 assessment identified "Priority Landscapes" identified as areas where ecosystems are at greatest risk from projected local development generalized at the landscape level. It was created by overlaying data on development threat and ecosystems. Areas identified as Priority Landscapes are designated high, medium or low.

The Project site is mapped largely as medium priority landscape with an area of high priority landscape in approximately the center of the site extending through the southern boundary. This designation qualifies the site for state and federal programs to support forest and rangeland stewardship but does not include restrictions on conversion or requirements for mitigation.

² Everyvine website, Los Carneros AVA page, http://www.everyvine.com/wine-regions/region/Los_Carneros/

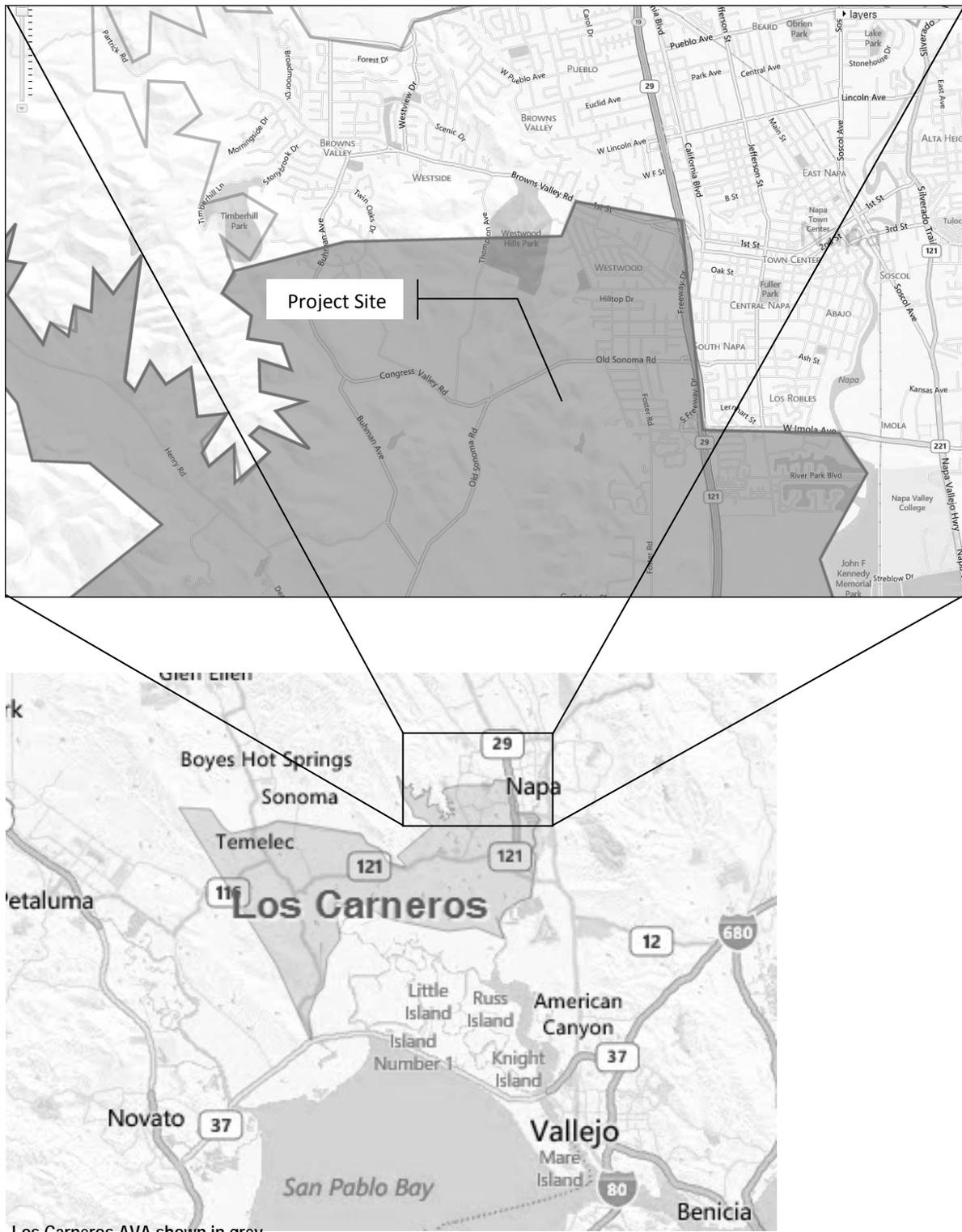


Figure 5.1: Los Carneros AVA

Source: http://www.everyvine.com/wine-regions/region/Los_Carneros/

Note that Oak Woodlands are not considered a productive forest/timber resource. Oak Woodlands are discussed instead in Chapter 7: Biological Resources.

AGRICULTURAL AND FOREST RESOURCES IMPACT ANALYSIS

Under the CEQA Guidelines, Appendix G – Environmental Checklist Form, development of the Project area as proposed would have a significant environmental impact if it were to result in:

1. Conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) as shown on maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;
2. A conflict with existing zoning for agricultural use, or a Williamson Act contract; or
3. A conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)).
4. The loss of forest land or conversion of forest land to non-forest land.
5. Changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use.

Farmland/Agricultural: Conflict with Zoning, Williamson Act Contracts, and Conversion

Impact Ag-2: Loss of Agricultural Land. Approval of the Project would rezone 78 acres from Agricultural Resource with grazing activities to non-agricultural use. No portion of the site is under Williamson Act contract or identified as important Farmland and consistency with regulations regarding buffers and right-to-farm would reduce indirect pressures on adjacent agriculture. The Project's impact on agricultural/Farmland would be *less-than-significant*.

The majority of the Project site is currently zoned as "AR" Agricultural Resource (Municipal Code Chapter 17.16) with a General Plan designation of "RA – Resource Area." As part of the Project approval process, the City would rezone the site as part of a Planned Development Overlay district to allow for the clustering of residences and related preservation of natural areas. As discussed in more detail in Chapter 13, Land Use, approval of the Project would remove the conflict with the land use designation and zoning for the site.

As discussed in the setting, the Project site does not contain important Farmland as defined by the California Resources Agency and no land on the Project site is under a Williamson Act contract. While the Project site is within the Los Carneros AVA, there is no history of use of the site for growing wine grapes, no designation as Unique Farmland and no constraints on land within the AVA to be reserved for this use.

While the site is currently used for grazing cattle, the site is not designated by the Department of Conservation's Farmland Mapping and Monitoring Program as Grazing Land nor is grazing land considered important Farmland such that conversion would result in a potentially significant environmental impact.

The proposed Project would result in residential uses in proximity to continuing agricultural uses. Areas to the south and west are and are expected to remain active agricultural vineyard land. Conflicts can occur between urban development and agricultural lands, particularly along the edges of developed land. Agricultural operations often produce noise, odor and slow traffic that residents can find annoying or disruptive. Complaints and other actions from residents who do not accept the conditions that result from living in proximity to agricultural operations can impede agricultural activity and/or create pressure for farmers to convert their land to urban uses.

Pesticide use is regulated by both the federal and State governments to ensure that pesticide application does not create a health hazard for adjacent uses. Since these regulations would minimize pesticides drifting into residential areas, residents should not be subject to either health risks or substantial odors from pesticides.

Note that Napa County enforces their own agricultural preservation policies including Measure P, which prohibits re-designation of agricultural lands without a vote of the people. Pressures to convert adjacent agricultural land within the county is counteracted by existing agricultural preservation policies, the City's urban limit, and LAFCO policies against annexation of agricultural lands. The Project site is within the City of Napa urban limit and not subject to County policies or annexation policies. However, consistent with City requirements for a buffer between development near city limits and adjacent agricultural in the County (Section 17.52.040 of the Municipal Code), the Project has included an agricultural buffer of at least 80 feet in project plans (see Chapter 3, Project Description) to ensure new residences would be separated from nearby agricultural uses, consistent with Napa County agricultural preservation policies.

Deeds recorded for each residential parcel in the Project site will include notification consistent with Napa County's Right-to-Farm Ordinance (Napa County Municipal Code section 2.94.030) that the residence is located in proximity to ongoing, active agricultural activities, and list the types of annoyances that could occur, including but not limited to noise, odors, dust, chemicals, smoke. The notification will also state that neither the County nor the City will take action against property owners of agricultural land who engage in agricultural practices that are consistent with accepted customs and standards.

While the development of the Project would result in the rezoning of 78 acres from Agricultural Resource with active grazing activities to non-agricultural uses and zoning, no portion of the site is identified by the California Resources Agency as important Farmland or Grazing Land or is under William Act contract for agricultural use. Additionally, through incorporation of agricultural buffers in the Project and deeded right-to-farm provisions, conversion pressures on adjacent agriculture would be minimized. Given the above and with approval of rezoning proposed as part of the Project, the loss of land zoned for agricultural uses would be a *less-than-significant* impact.

Additionally, the following condition of approvals for the Project would further ensure new residences would be constructed such that indoor noise levels would remain within acceptable levels even with use of agricultural machinery at adjacent sites, and therefore further reduce potential conflicts between the existing agricultural and new residential uses:

- **Design Level Acoustical Analysis and Construction Methods.** A design level acoustical analysis of each proposed residence shall be conducted by a noise specialist once the final site and building plans are available. For residences that are found to exceed the City of Napa's interior noise standards or those considered protective of sleep during wind machine or tractor operations, sound rated window and wall construction shall be provided that would:
 - reduce interior noise levels to achieve 45 dBA CNEL or less, and

- reduce maximum instantaneous noise levels to be 40 dBA or less within bedrooms, so as to minimize sleep interference.
- **Mechanical Ventilation.** To allow occupants the option of keeping windows closed to control noise, mechanical ventilation capable of providing a habitable interior environment with windows closed shall be provided to all residences as recommended by a mechanical engineer.

Forest Land: Conflict with Zoning and Direct Conversion

Impact Ag-2: Direct Conversion of Forest Land. Construction of the Project would result in conversion of approximately 9.36 acres of woodland. This is a *potentially significant* impact.

The majority of the Project site is currently zoned as “AR” Agricultural Resource (Municipal Code Chapter 17.16) with a General Plan designation of “RA – Resource Area.” As part of the Project approval process, the City would rezone the site as part of a Planned Development Overlay district to allow for the clustering of residences and related preservation of natural areas. As discussed in more detail in Chapter 13, Land Use, approval of the Project would remove the conflict with the land use designation and zoning for the site.

As discussed in the setting, there are no forest or timber operations on the site. Portions of the Project site would qualify as forest land, and particularly woodland, under the Public Resources Code. The site is not managed as commercial forest or timberland, so the impacts of loss of woodland relates largely to aesthetics (Chapter 4) and biological resources (Chapter 7).

The following mitigation would address the impact related to conversion of forest land.

Mitigation Measure Bio-2a: Oak Woodland Preserves would also mitigate Impact Ag-1 through establishment of oak woodland preserves totaling at least 28.08 acres to mitigate the loss of oak woodlands due to construction of the project at a mitigation ratio of 3:1.

Mitigation Measure Bio-2b: Tree Replacement Plan would also mitigate Impact Ag-1 through implementation of an Oak Woodland Mitigation Plan that will specify an on-site tree replacement plan to mitigate the loss of on-site trees and a construction-period tree protection plan to minimize indirect impacts to remain trees.

Mitigation Measures Bio-2a and Bio-2b would require tree replacement and a mixture of onsite and off-site woodland preservation at a 3 to 1 ratio consistent with accepted mitigation practices and regulations to reduce impacts to woodlands, and the Project’s impact on loss of forest land would be reduced to *less than significant*.

Cumulative Agricultural and Forest Land Impacts

The above analysis takes into account the cumulative context of agricultural and farmland throughout Napa County and the region in general. The Project site is relatively small compared to agriculture and farmland acreage in the region and would not substantially contribute to additional cumulatively considerable impacts.

MINERAL RESOURCES

SETTING

The California Department of Conservation is the primary agency with regard to mineral resource protection. The Department is charged with conserving earth resources (Public Resources Code Sections 600-690) and has five program divisions that address mineral resource issues: Division of Mines and Geology; Division of Oil, Gas and Geothermal Resources; Division of Land Resource Protection; Division of Recycling; and Office of Mine Reclamation. Additionally, the State Mining and Geology Board develops policy direction regarding the development and conservation of mineral resources and reclamation of mined lands.

Mineral resources can include metals, industrial minerals (e.g., aggregate, sand and gravel), oil and gas, and geothermal resources that would be of value to the region and residents of the state. Loss of mineral resources would primarily be the result of conversion of lands underlain by these resources to other uses, or within close proximity to the resources, such that the construction and occupancy of the Project would restrict or eliminate safe and environmentally sound measures to implement extractive operations. Loss of access could also be the result of changes in land ownership.

Important mineral resource areas are recognized at the federal and state levels through environmental resource management plans and adopted mineral resource mapping, and at the local level through land use planning documents such as General Plans that incorporate such information.

MINERAL RESOURCES IMPACT ANALYSIS

Under the CEQA Guidelines, Appendix G – Environmental Checklist Form, development of the Project site as proposed would have a significant environmental impact if it were to result in:

1. Loss of availability of a known mineral resource that would be of future value to the region and the residents of the state; or,
2. Loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Mineral Resources

No known mineral resources are located on the site according to the USDS Mineral Resources Data System.³

The City of Napa General Plan does not identify any significant mineral resources within City limits. The County of Napa General Plan identifies one mineral resource near the City of Napa, as excerpted following:

³ US Geological Survey, Mineral Resources Data System, publication date 2005, edition 20120127, accessed at <http://mrddata.usgs.gov/mrds/>.

Only one of these—Napa Quarry—is a significant mine. Located on hill slopes southeast of the City of Napa, the Napa Quarry (formerly Basalt Rock Quarry) first opened in the early 1900s. Today it generates about 500,000 tons of basalt rock each year for use as concrete aggregate.⁴

This quarry is not located proximate to the Project site.

No mineral resources of value to the region and the residents of the state have been identified at or in the immediate vicinity of the Project site. Therefore, the proposed Project would have *no impact* on mineral resources.

⁴ County of Napa, *Napa County General Plan*, Adopted June 2008, p. CON-18.

AIR QUALITY

INTRODUCTION

This analysis evaluates the air quality impacts of the Project. The impacts associated with implementation of the Project were evaluated consistent with guidance provided by the Bay Area Air Quality Management District (BAAQMD).¹

This section utilizes information from the following reports prepared for this Project or analysis:

Emissions Model and Construction Health Risk Assessment Results compiled by Lamphier-Gregory for this analysis in July 2013 (included in Appendix B).

SETTING

METEOROLOGY

The City of Napa is located in the Napa Valley subregion of the air basin, with the following description from BAAQMD:

The Napa Valley is bordered by relatively high mountains. With an average ridge line height of about 2000 feet, with some peaks approaching 3000 to 4000 feet, these mountains are effective barriers to the prevailing northwesterly winds. The Napa Valley is widest at its southern end and narrows in the north.

During the day, the prevailing winds flow upvalley from the south about half of the time. A strong upvalley wind frequently develops during warm summer afternoons, drawing air in from the San Pablo Bay. Daytime winds sometimes flow downvalley from the north. During the evening, especially in the winter, downvalley drainage often occurs. Wind speeds are generally low, with almost 50 percent of the winds less than 4 mph. Only 5 percent of the winds are between 16 and 18 mph, representing strong summertime upvalley winds and winter storms.

Summer average maximum temperatures are in the low-80s at the southern end of the valley and in the low-90s at the northern end. Winter average maximum temperatures are in the high-50s and low-60s, and minimum temperatures are in the high to mid-30s with the slightly cooler temperatures in the northern end.

¹ Bay Area Air Quality Management District. May 2011. *California Environmental Quality Act Air Quality Guidelines*.

The air pollution potential in the Napa Valley could be high if there were sufficient sources of air contaminants nearby. Summer and fall prevailing winds can transport ozone precursors northward from the Carquinez Strait Region to the Napa Valley, effectively trapping and concentrating the pollutants when stable conditions are present. The local upslope and downslope flows created by the surrounding mountains may also recirculate pollutants already present, contributing to buildup of air pollution. High ozone concentrations are a potential problem to sensitive crops such as wine grapes, as well as to human health. The high frequency of light winds and stable conditions during the late fall and winter contribute to the buildup of particulate matter from motor vehicles, agriculture and wood burning in fireplaces and stoves.

CRITERIA AIR POLLUTANTS

Ambient air quality standards have been established by state and federal environmental agencies for specific air pollutants most pervasive in urban environments. These pollutants are referred to as criteria air pollutants because the standards established for them were developed to meet specific health and welfare criteria set forth in the enabling legislation. The criteria air pollutants emitted by development, traffic and other activities anticipated under the proposed development include ozone, ozone precursors oxides of nitrogen and reactive organic gases (NO_x and ROG), carbon monoxide (CO), nitrogen dioxide (NO₂), and suspended particulate matter (PM₁₀ and PM_{2.5}). Other criteria pollutants, such as lead and sulfur dioxide (SO₂), would not be substantially emitted by the proposed development or traffic, and air quality standards for them are being met throughout the Bay Area.

Ozone

While ozone serves a beneficial purpose in the upper atmosphere (stratosphere) by reducing ultraviolet radiation potentially harmful to humans, when it reaches elevated concentrations in the lower atmosphere it can be harmful to the human respiratory system and to sensitive species of plants. Ozone concentrations build to peak levels during periods of light winds, bright sunshine, and high temperatures. Short-term ozone exposure can reduce lung function in children, make persons susceptible to respiratory infection, and produce symptoms that cause people to seek medical treatment for respiratory distress. Long-term exposure can impair lung defense mechanisms and lead to emphysema and chronic bronchitis. Sensitivity to ozone varies among individuals, but about 20 percent of the population is sensitive to ozone, with exercising children being particularly vulnerable. Ozone is formed in the atmosphere by a complex series of photochemical reactions that involve “ozone precursors” that are two families of pollutants: NO_x and ROG. NO_x and ROG are emitted from a variety of stationary and mobile sources. While NO₂, an oxide of nitrogen, is another criteria pollutant itself, ROGs are not in that category, but are included in this discussion as ozone precursors.

Carbon Monoxide (CO)

Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause dizziness and fatigue, impair central nervous system function, and induce angina in persons with serious heart disease. Primary sources of CO in ambient air are passenger cars, light-duty trucks, and residential wood burning. Emission controls placed on automobiles and the reformulation of vehicle fuels have resulted in a sharp decline in CO levels, especially since 1991.

Nitrogen Dioxide (NO₂)

The major health effect from exposure to high levels of NO₂ is the risk of acute and chronic respiratory disease. NO₂ is a combustion by-product, but it can also form in the atmosphere by chemical reaction. NO₂ is a reddish-brown colored gas often observed during the same conditions that produce high levels

of ozone and can affect regional visibility. NO_2 is one compound in a group of compounds consisting of NO_x . As described above, NO_x is an ozone precursor compound.

Particulate Matter (PM)

Respirable particulate matter, PM_{10} , and fine particulate matter, $\text{PM}_{2.5}$, consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively. PM_{10} and $\text{PM}_{2.5}$ represent fractions of particulate matter that can be inhaled and cause adverse health effects. PM_{10} and $\text{PM}_{2.5}$ are a health concern, particularly at levels above the federal and State ambient air quality standards. $\text{PM}_{2.5}$ (including diesel exhaust particles) is thought to have greater effects on health because minute particles are able to penetrate to the deepest parts of the lungs. Scientific studies have suggested links between fine particulate matter and numerous health problems including asthma, bronchitis, acute and chronic respiratory symptoms such as shortness of breath and painful breathing. Children are more susceptible to the health risks of $\text{PM}_{2.5}$ because their immune and respiratory systems are still developing. Very small particles of certain substances (e.g., sulfates and nitrates) can also directly cause lung damage or can contain absorbed gases (e.g., chlorides or ammonium) that may be injurious to health.

Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of particulate matter, such as mining and demolition and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. In addition to health effects, particulates also can damage materials and reduce visibility. Dust comprised of large particles (diameter greater than 10 microns) settles out rapidly and is more easily filtered by human breathing passages. This type of dust is considered more of a soiling nuisance rather than a health hazard.

In 1983, the California Air Resources Board (CARB) replaced the standard for "suspended particulate matter" with a standard for suspended PM_{10} or "respirable particulate matter." This standard was set at $50 \mu\text{g}/\text{m}^3$ for a 24-hour average and $30 \mu\text{g}/\text{m}^3$ for an annual average. CARB revised the annual PM_{10} standard in 2002, pursuant to the Children's Environmental Health Protection Act. The revised PM_{10} standard is $20 \mu\text{g}/\text{m}^3$ for an annual average. $\text{PM}_{2.5}$ standards were first promulgated by the EPA in 1997, and were recently revised to lower the 24-hour $\text{PM}_{2.5}$ standard to $35 \mu\text{g}/\text{m}^3$ for 24-hour exposures and revoked the annual PM_{10} standard due to lack of scientific evidence correlating long-term exposures of ambient PM_{10} with health effects. CARB has adopted an annual average $\text{PM}_{2.5}$ standard, which is set at $12 \mu\text{g}/\text{m}^3$ and is more stringent than the Federal standard of $15 \mu\text{g}/\text{m}^3$.

TOXIC AIR CONTAMINANTS

Besides the "criteria" air pollutants, there is another group of substances found in ambient air referred to as Hazardous Air Pollutants under the Federal Clean Air Act and Toxic Air Contaminants (TACs) under the California Clean Air Act. These contaminants tend to be localized and are found in relatively low concentrations in ambient air. However, they can result in adverse chronic health effects if exposure to low concentrations occurs for long periods. They are regulated at the local, state, and federal level.

TACs are a broad class of compounds known to cause morbidity or mortality (cancer risk), and include, but are not limited to, the criteria air pollutants listed above. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., benzene near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and federal level.

Diesel exhaust is the predominant TAC in urban air, and is estimated to represent about two-thirds of the cancer risk from TACs (based on the statewide average). According to CARB, diesel exhaust is a complex mixture of gases, vapors and fine particles. This complexity makes the evaluation of health

effects of diesel exhaust a complex scientific issue. Some chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by CARB, and are listed as carcinogens either under State Proposition 65 or under the Federal Hazardous Air Pollutants programs.

CARB reports that recent air pollution studies have shown an association that diesel exhaust and other cancer-causing toxic air contaminants emitted from vehicles are responsible for much of the overall cancer risk from TACs in California. Particulate matter emitted from diesel-fueled engines (diesel particulate matter [DPM]) was found to comprise much of that risk. In August, 1998, CARB formally identified DPM as a TAC. DPM is of particular concern, since it can be distributed over large regions, thus leading to widespread public exposure. The particles emitted by diesel engines are coated with chemicals, many of which have been identified by EPA as hazardous air pollutants, and by CARB as TACs. Diesel engines emit particulate matter at a rate about 20 times greater than comparable gasoline engines. The vast majority of diesel exhaust particles (over 90 percent) consist of PM_{2.5}, which are the particles that can be inhaled deep into the lung. Like other particles of this size, a portion will eventually become trapped within the lung, possibly leading to adverse health effects. While the gaseous portion of diesel exhaust also contains TACs, CARB's 1998 action was specific to DPM, which accounts for much of the cancer-causing potential from diesel exhaust. California has adopted a comprehensive diesel risk reduction program to reduce DPM emissions 85 percent by 2020. The U.S. EPA and CARB adopted low sulfur diesel fuel standards in 2006 that reduce diesel particulate matter substantially.

In cooler weather, smoke from residential wood combustion can be a source of TACs. Localized high TAC concentrations can result when cold stagnant air traps smoke near the ground and, with no wind, the pollution can persist for many hours, especially in sheltered valleys during winter. Wood smoke also contains a significant amount of PM₁₀ and PM_{2.5}. Wood smoke is an irritant, and is implicated in worsening asthma and other chronic lung problems. BAAQMD Regulation 6, Rule 3, disallows wood-burning devices in new construction, except those meeting U.S. EPA emissions targets and approved by the Air Pollution Control Officer of the Bay Area Air Quality Management. Compliance with this rule can be assumed.

ODORS

Objectionable odors may be associated with a variety of pollutants. Common sources of odors include wastewater treatment plants, landfills, composting facilities, refineries and chemical plants. Odors rarely have direct health impacts, but they can be very unpleasant and can lead to concern over possible health effects among the public. Each year the Air District receives thousands of citizen complaints about objectionable odors.²

STATE OF CALIFORNIA AND FEDERAL AIR QUALITY STANDARDS

Both the California Air Resource Board and the U.S. Environmental Protection Agency have established ambient air quality standards for common pollutants, including ozone, CO, NO₂, PM₁₀ and PM_{2.5}.³ These ambient air quality standards represent safe levels that avoid specific adverse health effects associated with each pollutant. Individuals vary widely in their sensitivity to air pollutants, and standards are set to protect more pollution-sensitive populations (e.g., children and the elderly). National and state standards are reviewed and updated periodically based on new health studies. California ambient standards tend to be at least as protective as national ambient standards, and are

² BAAQMD, BAAQMD CEQA Guidelines, December 2009, as amended.

³ Other pollutants (e.g., lead, sulfur dioxide) also have ambient standards, but they are not discussed in this document because emissions of these pollutants from the Project are expected to be negligible.

often more stringent. National and California ambient air quality standards are shown in **Table 6.1**, below.

For planning purposes, regions like the San Francisco Bay Area Air Basin are given an air quality status designation by the federal and state regulatory agencies. Areas with monitored pollutant concentrations that are lower than ambient air quality standards are designated “attainment” on a pollutant-by-pollutant basis. When monitored concentrations exceed ambient standards within an air basin, it is designated “nonattainment” for that pollutant. U.S. EPA designates areas as “unclassified” when insufficient data are available to determine the attainment status; however, these areas are typically considered to be in attainment of the standard.

Table 6.1: Health-Based Ambient Air Quality Standards

Pollutant	Averaging Time	California Standard	National Standard
Ozone	1 Hour	0.09 ppm	---
	8 Hour	0.070 ppm	0.075 ppm
Carbon Monoxide	1 Hour	20 ppm	35 ppm
	8 Hour	9.0 ppm	9 ppm
Nitrogen Dioxide	1 Hour	0.18 ppm	0.100 ppm
	Annual	0.030 ppm	0.053 ppm
Sulfur Dioxide	24 Hour	0.04 ppm	0.14 ppm
	Annual	---	0.030 ppm
Particulates < 10 microns	24 Hour	50 $\mu\text{g}/\text{m}^3$	150 $\mu\text{g}/\text{m}^3$
	Annual	20 $\mu\text{g}/\text{m}^3$	---
Particulates < 2.5 microns	24 Hour	---	35 $\mu\text{g}/\text{m}^3$
	Annual	12 $\mu\text{g}/\text{m}^3$	15 $\mu\text{g}/\text{m}^3$

Concentrations: ppm = parts per million $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter
 Source: Bay Area Air Quality Management District, Bay Area Pollution Summary – 2010.

EXISTING AIR QUALITY

Air quality in the region is controlled by the rate of pollutant emissions and meteorological conditions. Meteorological conditions such as wind speed, atmospheric stability, and mixing height may all affect the atmosphere’s ability to mix and disperse pollutants. Long-term variations in air quality typically result from changes in air pollutant emissions, while frequent, short-term variations result from changes in atmospheric conditions. The San Francisco Bay Area is considered to be one of the cleanest metropolitan areas in the country with respect to air quality. BAAQMD monitors air quality conditions at more than 30 locations throughout the Bay Area, including a monitoring station in Livermore. Monitoring station measurements indicate that air quality in the vicinity of the Project generally performs well against State standards for criteria air pollutants with few exceedances of pollutant standards between 2008 and 2010, the most recent year available. **Table 6.2** summarizes exceedances of the state and federal standards at the San Francisco monitoring site and Bay Area-wide.

Table 6.2 shows that air quality as a result of exceedances of ozone and $\text{PM}_{2.5}$ and PM_{10} standards are problematic in the San Francisco Bay Area. In recent years, the State and federal ozone standards have been exceeded at least somewhere in the Bay Area on 3 to 10 days per year.

The Bay Area has exceeded the $\text{PM}_{2.5}$ standard on 3 to 13 sampling days per year. The Napa monitoring site logged 0 to 1 exceedances per year its first two years in operation (2013 and 2014).

Standards for CO and NO₂, or any other criteria air pollutant, were not exceeded anywhere in the Bay Area during this time period.⁴

Table 6.2: Summary of Criteria Air Pollution Monitoring Data

Pollutant	Standard	Monitoring Site	Days Standard Exceeded		
			2012	2013	2014
Ozone	State 1-Hour	Napa	0	0	0
		SF Bay Area Air	3	3	3
Ozone	Federal 8-Hour	Napa	0	1	0
		SF Bay Area Air	4	3	5
Ozone	State 8-Hour	Napa	0	2	0
		SF Bay Area Air	8	3	10
PM ₁₀	Federal 24-Hour	Napa	0	0	0
		SF Bay Area Air	0	0	0
PM ₁₀	State 24-Hour	Napa	0	0	0
		SF Bay Area Air	2	6	2
PM _{2.5}	Federal 24-Hour	Napa	-	1	0
		SF Bay Area Air	3	13	3
Carbon Monoxide	State/Federal 8-Hour	Napa	0	0	0
		SF Bay Area Air	0	0	0
Nitrogen Dioxide	State 1-Hour	Napa	0	0	0
		SF Bay Area Air	0	0	0

Notes:

PM_{2.5} monitoring using federally accepted method began at the Napa Station in December 2012 and became available starting in 2013.

PM₁₀ and PM_{2.5} are measured every sixth day in San Francisco and other Bay Area sites, so the number of days exceeding the standard is estimated.

Source: Bay Area Air Quality Management District Air Pollution Summaries

(<http://www.baaqmd.gov/Divisions/Communications-and-Outreach/Air-Quality-in-the-Bay-Area/Air-Quality-Summaries.aspx>)

ATTAINMENT STATUS

Areas that do not violate ambient air quality standards are considered to have attained the standard. Violations of ambient air quality standards are based on air pollutant monitoring data and are judged for each air pollutant. The attainment status for the area is summarized in **Table 6.3**, below. The Bay Area as a whole does not meet state or federal ambient air quality standards for ground level ozone and PM_{2.5}, and State standards for PM₁₀.

⁴ BAAQMD, Air Pollution Summaries, <http://www.baaqmd.gov/Divisions/Communications-and-Outreach/Air-Quality-in-the-Bay-Area/Air-Quality-Summaries.aspx>, accessed April 29, 2015.

Table 6.3: Regional Attainment Status

Pollutant	Federal Status	State Status
Ozone (O ₃) – 1-Hour Standard	Unclassified	Nonattainment
Ozone (O ₃) – 8-Hour Standard	Nonattainment	Nonattainment
Respirable Particulate Matter (PM ₁₀)	Unclassified	Nonattainment
Fine Particulate Matter (PM _{2.5})	Nonattainment	Nonattainment
Carbon Monoxide (CO)	Attainment	Attainment
Nitrogen Dioxide (NO ₂)	Unclassified	Unclassified/Attainment
Sulfur Dioxide (SO ₂)	Attainment	Attainment
Sulfates	Unclassified	Attainment
Lead	Attainment	Unclassified
Hydrogen Sulfide	Unclassified	Unclassified
Visibility Reducing Particles	Unclassified	Unclassified

Source: Bay Area Air Quality Management District. http://hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm

At the State level, the region is considered non-attainment for ground level ozone and non-attainment for PM₁₀ and PM_{2.5}. The area is considered attainment or unclassified for all other pollutants. At the federal level, the region is considered non-attainment for ground level ozone and PM_{2.5}. The area is considered attainment or unclassified for all other pollutants.

In 1988, California passed the California Clean Air Act (CCAA, California Health and Safety Code § 39600 *et seq.*). Under the CCAA, the Bay Area Air Basin is required to have a Clean Air Plan (CAP) to achieve and maintain ozone standards.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Napa is located within the nine county San Francisco Bay Area Air Basin and therefore within the jurisdiction of BAAQMD. BAAQMD enforces rules and regulations regarding air pollution sources and is the primary agency preparing the regional air quality plans mandated under state and federal law.

According to the standards of the federal Clean Air Act, the Bay Area is in attainment with all ambient air quality standards except for state and national ozone standards and national particulate matter ambient air quality standards. The nonattainment status is attributed to the region's development history. Past, present and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. By its very nature, air pollution is largely a cumulative impact. 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. If a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant.

Clean Air Plan

In 1991, the BAAQMD, MTC and ABAG prepared the Bay Area 1991 Clean Air Plan or CAP. This air quality plan addresses the California Clean Air Act. The plans were meant to demonstrate progress toward meeting the more stringent 1-hour ozone CAAQS. The latest update to the plan, which was adopted in September 2010, is called the Bay Area 2010 Clean Air Plan. The plan includes the following:

- Updates the recent Bay Area 2005 Ozone Strategy in accordance with the requirements of the California Clean Air Act to implement “all feasible measures” to reduce ozone;
- Provide a control strategy to reduce ozone, PM, TACs, and greenhouse gases in a single, integrated plan;
- Review progress in improving air quality in recent years; and
- Establish emission control measures.

BAAQMD Guidelines

BAAQMD also provides a document titled *California Environmental Quality Act Air Quality Guidelines* (“BAAQMD Guidelines”), which provides guidance for consideration by lead agencies, consultants, and other parties evaluating air quality impacts in the San Francisco Bay Area Air Basin conducted pursuant to CEQA. The document provides guidance on evaluating air quality impacts of development projects and local plans, determining whether an impact is significant, and mitigating significant air quality impacts.

BAAQMD has recently updated these Guidelines in coordination with adoption of new thresholds of significance on June 2, 2010.⁵ The most recent version of the Guidelines including these thresholds is dated May 2011.⁶ (See a discussion of the status of these thresholds under the Thresholds of Significance header.) The updated CEQA Guidelines revised significance thresholds, assessment methodologies, and mitigation strategies for criteria pollutants, air toxics, odors, and greenhouse gas emissions.

IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Appendix G of the CEQA Guidelines (Environmental Checklist) contains a list of air quality effects that may be considered significant. Implementation of the Project would have a significant effect on the environment if it were to:

1. Conflict with or obstruct implementation of the applicable air quality plan;
2. Violate any air quality standard or contribute substantially to an existing or projected air quality violation;

⁵ Bay Area Air Quality Management District. June 2, 2010. News Release http://www.baaqmd.gov/~media/Files/Communications%20and%20Outreach/Publications/News%20Releases/2010/ceqa_100602.ashx .

⁶ Bay Area Air Quality Management District. May 2011. *California Environmental Quality Act Air Quality Guidelines*.

3. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
4. Expose sensitive receptors to substantial pollutant concentrations; or
5. Create objectionable odors affecting a substantial number of people.

The CEQA Guidelines state that, where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the above determinations. BAAQMD updated their thresholds on June 2, 2010 and the BAAQMD Guidelines in May 2011, which have been used for this air quality analysis, as detailed under each item below. (The BAAQMD Guidelines were revised in May 2012 to remove reference to the new thresholds as discussed below, but as these thresholds are utilized in this analysis, the May 2011 BAAQMD Guidelines are utilized and referenced in this document.)

The BAAQMD CEQA Guidelines were the subject of a court case ultimately decided by the California Supreme Court (*CBIA vs BAAQMD*, Case No. S213478, filed December 17, 2015). The decision is expected to lead to revision or removal of thresholds that are based on the effect of the environment on a project (as opposed to the effect of a project on the environment). BAAQMD has yet to revise/reissue updated thresholds following this decision. Therefore, this analysis is based upon the BAAQMD 2010 Thresholds, with the removal of items addressing the effect of the environment on the Project, where noted. While it is possible to instead analyze the Project under BAAQMD's previous 1999 Thresholds, the newer thresholds are more conservative and based upon current regulations, scientific understanding, and methodologies and therefore considered the most appropriate for a conservative CEQA analysis.

CONFLICT WITH AIR QUALITY PLAN

BAAQMD recommends analyzing a project's consistency with current air quality plan control measures. The impact would be significant if the Project would conflict with or obstruct implementation of the regional air quality plan, in this case, the 2010 Clean Air Plan.

Many of the Clean Air Plan's control measures are targeted to area-wide improvements, large stationary source reductions, or large employers and these are not applicable to the proposed Project. However, the Project would meet current standards of energy efficiency (Energy and Climate Measure 1) and does not conflict with applicable control measures aimed at improving access/connectivity for bicycles and pedestrians (Transportation Control Measures D-1 and D-2) though, being a small residential project located at the edge of the City, does not substantially contribute to connectivity either.

Therefore, there would be *no impact* in relation to inconsistency with Clean Air Plan control measures.

AIR QUALITY STANDARDS

Construction-Period Criteria Pollutants

Impact Air-1: Construction Period Dust, Emissions and Odors. Construction of the Project would result in temporary emissions of dust, diesel exhaust and odors that may result in both nuisance and health impacts. Without appropriate measures to control these emissions, these impacts would be considered *significant*.

Construction of the Project would involve demolition, excavation and site preparation, and building erection. Although these construction activities would be temporary, they would have the potential to cause both nuisance and health-related air quality impacts. PM_{10} is the pollutant of greatest concern associated with dust. If uncontrolled, PM_{10} levels downwind of actively disturbed areas could possibly exceed State standards. In addition, dust fall on adjacent properties could be a nuisance. If uncontrolled, dust generated by grading and construction activities represents a significant impact associated with Project development. Construction activities would also be a source of exhaust emissions from construction vehicles, which contribute to regional emission levels.

The Project is below the BAAQMD's construction emissions screening size of 114 single-family dwelling units and therefore not anticipated to result in emissions of criteria pollutants over threshold levels.⁷ However, because construction emissions were required to analyze the impact on sensitive users below, the results have been included here as well.

Construction emissions for the Project were computed using the CalEEMod model. Construction was assumed to occur over a 3.74-year period (February 2014 through November 2017). The specifics of the construction period are presented in Chapter 3: Project Description and in the CalEEMod results in Appendix B. Emissions from construction are shown in **Table 6.4**.

Table 6.4: Average Daily Regional Air Pollutant Emissions, Construction
(Unmitigated Pounds per Day)

Description	ROG	NO _x	PM ₁₀ *	PM _{2.5} *
Average Daily Project Construction Emissions	8.07	34.08	1.94	1.94
2010 BAAQMD Thresholds	54.00	54.00	82.00	54.00

* Applies to exhaust emissions only

Construction-period emissions levels are below BAAQMD thresholds presented in Table 6.4. However, BAAQMD recommends implementation of construction mitigation measures to reduce construction-related emissions for all projects, regardless of the significance level of construction-period impacts. These basic measures are included in Mitigation Measure Air-1 below and would further reduce construction-period criteria pollutant impacts.

Demolition and earth-moving activities can also result in fugitive dust, which contributes to particulate matter levels. Construction-period dust emissions would be greatest during these activities during the first year of the construction period and reach maximum daily emissions of 9.94 $PM_{2.5}$ and 18.34 PM_{10} pounds per day if not mitigated. (See CalEEMod output in Appendix B for details.) BAAQMD does not have a threshold of significance for fugitive dust impacts, but instead regards fugitive dust impacts as mitigated if appropriate management practices are implemented, as included in mitigation measure Air-1.

⁷ Bay Area Air Quality Management District, *California Environmental Quality Act Air Quality Guidelines*, May 2011, Table 3-1.

Mitigation Measure**Air-1:**

Basic Construction Management Practices. The Project shall demonstrate proposed compliance with all applicable regulations and operating procedures prior to issuance of demolition, building or grading permits, including implementation of the following BAAQMD “Basic Construction Mitigation Measures”.

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer’s specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District’s phone number shall also be visible to ensure compliance with applicable regulations.

The BAAQMD significance thresholds for construction dust impacts are based on the appropriateness of construction dust controls. With implementation of the Basic Construction Mitigation Measures listed in Mitigation Measure Air-1, impacts related to construction period emissions would be considered *less than significant* with mitigation. Because construction-period emissions do not exceed applicable significance thresholds, additional construction mitigation measures would not be required to mitigate impacts.

Air Pollutants from Operational Activities**Impact Air-2:**

Operational Emissions. The Project would result in increased emissions from on-site operations and emissions from vehicles traveling to the site. However, the Project is below applicable threshold levels and the impact would be considered *less than significant*.

Emissions from operation of the Project could cumulatively contribute to air pollutant levels in the region. These air pollutants include ROG and NO_x that affect ozone levels (and to some degree – particulate levels), PM₁₀ and PM_{2.5}.

The Project is well below BAAQMD's operational criteria pollutant screening size of 325 single-family dwelling units and therefore not anticipated to result in emissions of criteria pollutants over threshold levels during operations.⁸ The screening levels were set by BAAQMD to conservatively determine the smallest project of a certain type that could exceed applicable significance thresholds. Because the Project size is below this screening level, it can be concluded that daily and annual criteria pollutant emissions resulting from operation of the proposed Project are below BAAQMD thresholds. Therefore, operation of the Project would have a *less-than-significant* impact on regional air quality.

Carbon Monoxide

BAAQMD presents the screening level that localized carbon monoxide concentrations should be studied at affected intersections where traffic is increased to more than 44,000 vehicles per hour (or 24,000 vehicles per hour where mixing is substantially limited, such as in a tunnel). This screening level represents the volume of traffic at which a significant impact related to carbon monoxide would be possible. Based on traffic volumes in the vicinity, it is not anticipated the Project would affect intersections of that volume (see Chapter 16 for additional details) and therefore, the impact related to carbon monoxide is *less than significant*.

EXPOSURE OF SENSITIVE RECEPTORS TO SUBSTANTIAL POLLUTION CONCENTRATIONS

For the purpose of assessing impacts of a proposed Project on exposure of sensitive receptors to risks and hazards, the threshold of significance is exceeded when the Project-specific cancer risk exceeds 10 in one million, the non-cancer risk exceeds a Hazard Index of 1.0 (or cumulative risk of 100 in one million or a Hazard Index of 10.0 respectively is exceeded), and/or the annual average PM_{2.5} concentration would exceed 0.3 µg/m³ (or 0.8 µg/m³ cumulatively). Examples of sensitive receptors are places where people live, play or convalesce and include schools, hospitals, residential areas and recreation facilities.

Construction Period Exposure

Impact Air-3: Construction Period Exposure of Sensitive Receptors. Construction activities would expose nearby sensitive receptors to toxic air contaminants during the construction period, but the maximum exposure risk would be below the thresholds of significance under BAAQMD criteria for cancer, chronic hazard, and PM_{2.5} exposure. This would be a *less than significant* impact.

Due to the proximity of residential units, which are considered sensitive receptors when it comes to health risks, a Construction Health Risk Assessment was performed (included in Appendix B), which used the EPA dispersion model SCREEN3 to determine the potential health risks related to diesel exhaust from construction equipment utilizing PM emissions calculated by CalEEMod as described for construction-period emissions above.

For the maximum exposed individual, including conservative age sensitivity factor of 6.74 to account for potential exposure of the youngest possible individual during the 3.74 year construction period, the inhalation cancer risk would be 8.76 in 1 million (compared to a threshold of 10 in 1 million), the

⁸ Bay Area Air Quality Management District, *California Environmental Quality Act Air Quality Guidelines*, May 2011, Table 3-1.

maximum chronic hazard index would be 0.021 (compared to a threshold of 1.000) and the annual average PM_{2.5} concentration would be 0.107 µg/m³ (compared to the threshold of 0.300 µg/m³). This is conservatively based on unmitigated emissions, not taking into account approximately 5% reductions in exhaust emissions that would result from implementation of basic construction measures included in Mitigation Measure Air-1, above, or mitigating effects of topography.

Additionally, the Project vicinity is largely built-out or anticipated to remain in an agricultural or natural state. There are no additional projects to take into account for cumulative localized construction-period impacts.

Exposure risks for the maximally exposed individual are below threshold levels; therefore, the impact related to construction-period exposure would be *less than significant*.

Operational Period Exposure

Following construction, none of the proposed uses would be considered a significant stationary source of air toxins.⁹ There would be **no impact** on adjacent sensitive receptors related to the operational period health risks with the Project as a source of air toxins.

Although CEQA does not require an agency to consider the impact of existing conditions on future project users per recent case law¹⁰, the following discussion is included for informational purposes.

New residential units are proposed at the Project site, which would be considered new sensitive receptors. The residential portion of the Project site is located over 2,800 feet west of the closest highway, State Route 29. According to BAAQMD's Stationary Source Screening Analysis Tool, there are no stationary sources of air toxins within 1,000 feet of the Project site.¹¹ Therefore, the future residents of the Project would not be subject to substantial health risks at this location.

ODORS

Typical sources of objectionable odors include chemical plants, sewage treatment plants, large composting facilities, rendering plants, and other large industrial facilities that emit odorous compounds.¹² Land uses near the Project are primarily residential (sensitive receptors) and agricultural. The proposed residential uses are not considered a potential for nuisances caused by odors or dust generation. Development of the Project would not include any activities that are typical sources of objectionable odors. There would be **no impact** on adjacent sensitive receptors related to objectionable odors caused by the Project.

⁹ Bay Area Air Quality Management District. May 2011. *California Environmental Quality Act Air Quality Guidelines*, p. 4-2.

¹⁰ California Building Industry Assn. v. Bay Area Air Quality Management Dist., (2015) 218 Cal.App.4th 1171, Case No. S213478. ("CBIA v BAAQMD")

¹¹ Bay Area Air Quality Management District. Alameda May 2011. Stationary Source Screening Analysis Tool, available at: <http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx>.

¹² Bay Area Air Quality Management District. May 2011. *California Environmental Quality Act Air Quality Guidelines*, Table 3-3.

Although CEQA does not require an agency to consider the impact of existing conditions on future project users per recent case law¹³, the following discussion is included for informational purposes.

The Project includes an agricultural setback from existing adjacent agricultural uses at least 80 feet wide in which no homes are proposed. This is consistent with City requirements for such agricultural buffers (Section 17.52.040 of the Municipal Code). Active agricultural land borders the Project site to the south and west. Adjacent agricultural activities could result in periodical nuisances for Project residents, including dust and odors, resulting in conflicts between the existing agricultural and new residential uses. Although it is not anticipated that Project residents would experience significant objectionable odors, as discussed in Chapter 5, deeds recorded for each residential parcel in the Project site will include notification consistent with Napa County's Right-to-Farm Ordinance including an indication that neither the County nor the City will take action against property owners of agricultural land who engage in agricultural practices that are consistent with accepted customs and standards and thereby reduce potential conflicts between the existing agricultural and new residential uses related to odors.

CUMULATIVE IMPACTS

Additional analysis to determine cumulative air quality impacts of the Project is not necessary. In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels at which a Project's individual emissions would be cumulatively considerable. Because the Project emissions during construction and operation would not exceed these thresholds, they would not have a cumulatively considerable effect. There would be no additional significant cumulative air quality impacts.

¹³ *CBIA v BAAQMD*, December 17, 2015.

BIOLOGICAL RESOURCES

INTRODUCTION

This chapter provides information on biological resources on the Project site. A discussion of federal, state, and local laws, policies, and regulations that influence the protection of such biological resources is presented.

This chapter is based on the following reports prepared for the applicant, as peer reviewed by Zander Associates for use in this CEQA document.

Biological Resource Analysis Peer Review, Napa Oaks Project conducted by Zander Associates for this analysis and dated August 22, 2013. (Included in Appendix C)

Biological Assessment, Napa Oaks Project prepared by Huffman-Broadway Group (HBG), for the applicant dated July 2011. (Included in Appendix C)

Updated Biological Assessment, Napa Oaks Project prepared by HBG for the applicant, dated February 2015. (Included in Appendix C)

Arborist Report Update, Earthquake Mitigation Alternative Impacts Review, prepared by HortScience for the applicant, dated February 3, 2015. (Included in Appendix C)

Investigation of the Presence of Wetlands and Other Waters of the United States and Jurisdictional Determination for the Napa Oaks Project prepared by HBG for the applicant in February 2012. (Included in Appendix C)

Letter to Jeffrey Thayer of Davidon Homes from HBG confirming the feasibility of creating additional wetlands onsite to compensate for losses anticipated by the proposed development. Attached to that letter was the preliminary jurisdictional determination issued by the U.S. Army Corps of Engineers (Corps) for the property (April 24, 2012, File No. 2012-00116N). (Included in Appendix C)

ENVIRONMENTAL SETTING

The Project site is bounded on the east by residential uses along Casswall Street, on the north by Old Sonoma Road and large residential parcels, and on the west and south by agricultural land planted in vineyard. Most of the property is oak woodland and grassland, but the northwestern portion of the property is developed with a house and several ranch structures including a corral and a couple of out-buildings and an additional home site is located on the portion of the property that abuts Casswall Street. The site is currently used for cattle grazing.

Elevations within the Napa Oaks property range from about 180 feet msl at the northeast corner to approximately 309 feet along the ridgeline at the southwest corner of the site. Slopes within the property range from flat topography at the tops of hills and along ridgelines and within lower valleys, to fairly steep slopes over much of the area.

VEGETATION

Vegetation within the Project site consists of primarily non-native annual grassland and oak woodland with scattered wetlands. The site is within the Browns Valley Watershed, which drains to the Napa River and then to the San Francisco Bay. No perennial, seasonal or ephemeral streams are present on the Project site; the nearest named stream is Raynes Creek located about 0.25 mile from the southwest portion of the site.

A summary of habitat located on the site is provided in **Table 7.1** with a description of the habitat types following. Habitat types are mapped onto the Project site in **Figure 7.1**.

Table 7.1: Summary of Habitat Impacts

Habitat Type	Total Area on Project Site (acres)	Impacted Area (acres)
Annual Grassland	49.63	28.69
Coast Live Oak Woodland	27.29	9.36
Freshwater Marsh	1.25	0.43
Urban	2.77	2.57
Total	80.94	41.05

Annual Grassland

Annual grassland is the predominant habitat type on site, comprising 49.63 acres, or approximately 61% of the land area. The annual grassland found on the Napa Oaks property is comprised largely of non-native grasses and forage species such as soft chess (*Bromus hordeaceus*), subterranean clover (*Trifolium subterraneum*), rose clover (*T. hirtum*), ripgut brome (*B. diandrus*), wild oats (*Avena fatua*) and filaree (*Erodium botrys*). This community is grazed by cattle and the effects of this use are evident in the community structure and composition. Level and gently sloping areas of the grassland are more accessible to livestock and are more heavily used. Later in the spring, patches of unpalatable exotics such as yellow bartsia (*Parentucellia viscosa*) and purple star thistle (*Centaurea calcytrapa*) are present.

Despite this history of grazing, some portions of the annual grassland have assemblages of native species such as native perennial needlegrass (*Nasella pulchra*) and wildflowers including sun-cups (*Camissonia ovata*), purple owl's clover (*Castilleja exserta* ssp. *exserta*), orange-flowered Menzies' fiddleneck (*Amsinckia mesziesii* var. *intermedia*), California poppy (*Eschscholzia californica*) and blue-eyed grass (*Sisyrinchium bellum*).

Coast Live Oak Woodland

The Coast live oak woodland is found on 27.29 acres, or 34% of the land area. Coastal live oak (*Quercus agrifolia*) is the woodland dominant of the valley and foothill hardwood woodland present on the property. Other tree species found as isolated individuals in the woodland at the site include California buckeye (*Aesculus californicus*) and Pacific madrone (*Arbutus menziesii*). Additional tree species such as valley oak (*Q. lobata*) and black oak (*Q. kelloggii*) are present, particularly along the eastern edge of the property. The understory of the onsite woodland is highly disturbed, consisting



Figure 7.1: On-Site Habitat Types

Source: HBG, updated in 2015

mostly of non-native grassland species with few shrubs and saplings of young oaks. Where present, the herbaceous understory contains species such as poison oak (*Toxicodendron diversilobum*) and the noxious and invasive Italian thistle (*Carduus pycnocephalus*) and milk thistle (*Silybum marianum*). In disturbed areas, a dense canopy of young oak trees provides protected sites for chaparral shrubs such as coyote brush (*Baccharis pilularis*), toyon (*Heteromeles arbutifolia*), and horticultural escapes such as plum (*Prunus cerasifera*) and viburnum (*Viburnum tinus*). Open dry areas in the oak woodlands are covered with dogtail (*Cynosurus echinatus*).

A tree survey conducted on the site by HortScience (see Appendix C) found 1,375 trees of 33 species (8 native species) present on the property. Native species constituted 94% of the trees and of these, 50% were young trees with diameters of less than 12 inches. The tree survey found Coast live oak as by far the most common tree on the property (86% of the trees); these trees were considered healthy with only 6% found to be in poor condition. Certain native species with at least one trunk of 12 inches or greater in diameter are regulated as Protected Native trees by ordinance of the City of Napa. By this definition, 622 trees (45% of the total number of trees) are considered Protected Native trees, including 102 with trunk diameters of 30 inches or greater. Detailed information regarding all trees on the property is included in the Tree Report (HortScience 2011, see Appendix C), including information on species, size, condition, suitability for preservation and whether the tree is considered Native Protected by ordinance of the City of Napa.

The California Oak Woodlands Conservation Program recognizes oak woodlands as a vital statewide resource providing benefits including wildlife habitat, monetary and ecological value, and an ability to reduce soil erosion, enhance water quality and moderate temperatures.

Fresh Emergent Marsh

Several small wetland areas (total of 1.25 acre) within the grassland support seasonally saturated soils and growth of fresh emergent marsh vegetation such as species of rush (*Juncus* sp.), pennyroyal (*Mentha pulegium*), and curly dock (*Rumex crispus*), among others. The vegetation in the wetland areas has also been affected by the grazing by cattle. The wetlands in the southwestern portion of the property drain in the direction of Raynes Creek which is located south of the property. The extent of the wetland areas were determined in a wetland delineation verified by the San Francisco District of the Corps of Engineers on April 24, 2012 (see Appendix C).

Urban

On the Project site, this includes areas developed as single family homes with related ancillary structures and do not serve as significant biological habitat.

WILDLIFE

The disturbed annual grassland, valley foothill hardwood and wetland habitats onsite support a variety of wildlife species. The complex of habitats includes the presence of standing water, on a seasonal basis, which can accommodate wildlife adapted to aquatic areas, and trees and shrubs which provide nesting and roosting sites for birds, in addition to foraging areas for species of mammals, reptiles, amphibians and birds.

A number of wildlife species were observed on the site during the winter season field review conducted by Gary Deghi of HGB on January 10, 2011. All species that were observed are common to abundant in the region and would be expected in the combination of disturbed grassland and woodland habitats present at the site. Raptors observed in the project area during this winter survey included turkey

vulture, red-tailed hawk, Cooper's hawk and American kestrel. A sharp-shinned hawk was observed by Mark Jennings of Rana Resources on February 1, 2011. Additional birds documented within on-site grasslands during the winter survey by HGB included killdeer, mourning dove, black phoebe, Say's phoebe, American crow, Western bluebird, yellow-rumped warbler, lark sparrow, savannah sparrow, Western meadowlark, Brewer's blackbird, American goldfinch and lesser goldfinch. Birds observed primarily in oak woodlands included wild turkey (a flock of over 40 in the northeastern portion of the site), California quail, Northern flicker, acorn woodpecker, Nuttall's woodpecker, downy woodpecker, hairy woodpecker, Western scrub-jay, Stellar's jay, common raven, American robin, European starling, Northern mockingbird, oak titmouse, bushtit, white-breasted nuthatch, ruby-crowned kinglet, Hutton's vireo, orange-crowned warbler, California towhee, spotted towhee, white-crowned sparrow, golden-crowned sparrow, dark-eyed junco and house finch. A white-throated swift observed flying high over the ridge was unseasonal but not totally unexpected. The winter of 2010-2011 saw an incursion of evening grosbeaks into many residential areas in the Coast Range, including some within the City of Napa; so three seen flying over the ridge during the site survey were also not completely unexpected.

Mammals documented at the site included western gray squirrel, California ground squirrel (presence of dens), Botta's pocket gopher (burrows) and coyote (scats). Despite attempts at searching under boards and rocks, no reptiles or amphibians were observed during the January surveys.

While some of the bird species observed during the winter reconnaissance of the property by HGB would be expected only during the winter months (e.g., Say's phoebe, ruby-crowned kinglet, yellow-rumped warbler, golden crowned sparrow), most of the bird species observed are resident species that could be expected to nest in suitable grassland and oak woodland habitats at the site. Resident bird species expected in the winter that were observed at the site during a spring survey conducted on May 9, 2011 included red-tailed hawk, red-shouldered hawk, turkey vulture, killdeer, wild turkey (heard calling from adjacent property to the south), Anna's hummingbird, mourning dove, band-tailed pigeon, California quail, Northern flicker, acorn woodpecker, Nuttall's woodpecker, black phoebe, American crow, common raven, Western scrub-jay, Stellar's jay, American robin, European starling, Northern mockingbird, oak titmouse, bushtit, white-breasted nuthatch, Western bluebird, Hutton's vireo, California towhee, spotted towhee, song sparrow, dark-eyed junco, Brewer's blackbird, red-winged blackbird, lesser goldfinch and house finch. Additional neo-tropical migrants, some of which may nest at the site, that were observed during the spring survey included tree swallow, barn swallow, violet-green swallow, western kingbird, ash-throated flycatcher and Bullock's oriole. A red-tailed hawk nest was observed in a tree near the pond on the adjacent property to the south. The nest site is approximately 500 feet south of the Napa Oaks property boundary.

Mammals observed during the spring surveys of the site included California ground squirrel, western gray squirrel and black-tailed jackrabbit. Additional mammals that would be expected to occur at the site include deer mouse, Virginia opossum, raccoon, striped skunk, bobcat and mule deer. Western fence lizards were the only reptile observed during the May field review, and the only amphibian observed was an arboreal salamander found under a rotting log. Other expected amphibians and reptiles would include Pacific tree frog, California toad, Northern alligator lizard, gopher snake, and western terrestrial garter snake.

SPECIAL STATUS SPECIES

For this assessment, special status species are defined as: those plants and animals listed, proposed for listing, or candidates for listing as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS) under the Federal Endangered Species Act (ESA); those listed or proposed for listing as rare, threatened, or endangered by the California Department of Fish and Wildlife (CDFW) under the California Endangered Species Act (CESA); plants occurring on Lists 1B or 2 of the California Native

Plant Society (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2011); animals designated as “Species of Special Concern” by the CDFW; birds protected under the Migratory Bird Treaty Act.

Plants

The CNDDDB was queried for occurrences of special status plants in the vicinity of the Project site, generating a list of 30 different species. All but 9 of the species can be eliminated from consideration because they are restricted to habitats or soil types not found on the Project site.

The remaining 9 species were further evaluated based on systematic protocol surveys scheduled to coincide with the flowering periods of these species. These plants, along with their flowering periods include: Franciscan onion (March to June), Napa false indigo (May to July), Clara Hunt’s milk-vetch (April to May), big-scale balsamroot (March to June), seaside tarplant (May to October), Cobb Mountain lupine (April to May), Napa bluecurls (June to October), showy Indian clover (April to June), and oval-leaved viburnum (May to June). No special status plant species were observed at the property during floristic surveys.

Cattle grazing over a long period of time has altered habitats and made them less likely to support rare species. The impact of grazing and shading of cattle under the oak canopy has left an understory largely dominated by the noxious and invasive Italian thistle or milk thistle. Wooded areas with dense canopy cover on shaded north slopes are largely unvegetated but with soil churned by cattle. Also, earthwork and loss of natural soils have also affected the habitat suitability for special status plants and left a soil surface of broken rocky substrates. The property does not represent high quality habitat for special status plants.

Animals

The CNDDDB has recorded occurrences of several special status animal species within a 10 mile radius of the property (See Appendix C). Some of these species could use the property as occasional migrants or dispersants. For example, the American peregrine falcon (*Falco peregrinus anatum*), which is state-listed as endangered, the Merlin (*Falco columbarius*), prairie falcon (*Falco mexicanus*), golden eagle (*Aquila chrysaetos*), northern harrier (*Circus cyaneus*), and sharp-shinned hawk (*Accipiter striatus*).

The special status animal species evaluated for this Project include those noted in the CNDDDB as occurring within 10 miles of the site, the federally listed species from a nine-quad area highlighted by the USFWS, and those that are known to occur in the general vicinity based on the knowledge of HBG biologists. Key species are either known to occur in the vicinity of the Project or with a potential to occur at the site, or that require specific study to determine presence/absence, are discussed below.

Steelhead Trout

Central California populations of steelhead trout (*Oncorhynchus mykiss*) were federally listed as threatened in August 1997. Steelhead have been divided into ESUs, all of which were listed as threatened under the Federal Endangered Species Act in August 1997.

Steelhead in the Central Coast ESU occur from the Russian River south to Soquel Creek and to, but not including, the Pajaro River, and including San Francisco and San Pablo Bays. Steelhead require well-oxygenated streams with riffles and loose, silt-free gravel substrate for spawning.

Steelhead are known to occur in the Napa River and some tributaries; the sightings documented in the CNDDDB nearest to the project site are from Highway 121 crossing of Huichica Creek, about four miles southwest of Napa. Steelhead would not be expected to occur within the Project site due to the lack of perennial streams traversing the site. Steelhead in the Napa River or its tributaries could only be affected by downstream changes in water quality. Standard water quality controls as described in Chapter 12: Hydrology and Water Quality will prevent impacts to aquatic resources and populations of fish.

California Tiger Salamander

Distinct population segments of the California tiger salamander (*Ambystoma californiense*) in Sonoma and Santa Barbara Counties were listed as federally endangered on July 22, 2002. On August 4, 2004 the California tiger salamander was listed as a threatened species throughout its range, at which time the Sonoma and Santa Barbara County populations were also downgraded to threatened status. On August 19, 2005, a U.S. District Court reinstated the Service's listing of the Sonoma and Santa Barbara populations, and these populations are currently federally listed as endangered. This species is also a California species of special concern.

California tiger salamander (CTS) occurs in central California from the central Sacramento Valley to the central San Joaquin Valley and surrounding foothills of both the Coast Range and the Sierra Nevada. The species also has been recorded in the San Francisco Bay area, the Monterey Bay area, and valleys and foothills in San Luis Obispo and Santa Barbara Counties. The actual occurrence of the species within this range is restricted to locations where breeding ponds are surrounded by suitable upland habitat.

Adult CTS inhabit grassland, savanna, or deciduous oak woodland habitats that contain natural ponds, vernal pools, intermittent streams, or stock ponds. They usually are not found unless there is this combination of ponded water for breeding and surrounding upland, with a predominant ground cover of grazed or ungrazed grassland. They spend the majority of their time below ground, in rodent burrows, or other natural crevices. The major threat to the CTS is the loss of breeding pools and ponds and the conversion of upland habitat for agriculture and urban development.

California tiger salamanders in Santa Barbara County have been recorded to disperse 1.3 miles from breeding ponds. Breeding habitat is considered suitable if water is present at a minimum of 12 inches for a minimum period of 4 months. Terrestrial habitat is considered suitable if small mammals are present and the site has not been disturbed from previous activities, such as road construction or other ground disturbing activities, such as grading or excavation.

According to the CNDDDB, no documented sightings of CTS are known within 10 miles of the Project site. The closest known historic populations are located approximately 18 miles to the southeast of the site in the vicinity of Fairfield (near Travis Air Force Base) in Solano County, and 19 miles to the northwest at the southern edge of the Santa Rosa Plain (near Cotati and Rohnert Park) in Sonoma County.

Wetlands found at the proposed site do not have inundation characteristics that would enable breeding by CTS. However, stock ponds that could provide breeding habitat for the species are located to the south and west of the Project site at a distance that is within the migration distance for CTS, and ground squirrel burrows found in several locations at the site provide suitable refugial habitats. Because of the above factors, a Habitat Assessment for CTS was performed.

Results of the Habitat Assessment showed that the site is outside of the known native range for CTS, it is not within any of the USFWS critical habitat areas designated for the species, and it lacks suitable breeding habitat for CTS. Although the numerous irrigation ponds within the vineyards adjacent to the site are potentially suitable for CTS breeding, CTS would not be found there due to the presence of introduced western mosquitofish (*Gambusia affinis*), which was observed in the pond closest to the property, and introduced bullfrogs (*Rana catesbeiana*) that are known to be abundant in aquatic habitats within the Napa area. These negative factors, coupled with the lack of CNDDDB records for CTS within any part of Napa County suggest that CTS do not inhabit the area. Between the Project site and the closest known populations are extensive areas of natural waterways (including rivers), mountain ranges, urbanization, freeways, and agricultural areas that would prevent movement of CTS to the project area.

California Red-legged Frog

The California red-legged frog (CRLF, *Rana draytonii*) is a federally listed threatened species and California species of special concern. The historical range of the California red-legged frog extended from the vicinity of Point Reyes National Seashore in Marin County southward to northwestern Baja California, Mexico and inland to approximately Redding in Shasta County. The frog has sustained a 70 percent reduction in its geographic range. The Project area is not part of the critical habitat designated under the Endangered Species Act for the CRLF.

CRLF have been observed in a number of aquatic and terrestrial habitats, including marshes, streams, lakes, reservoirs, ponds and other permanent, or near permanent, sources of water. Although they occur in ephemeral streams or ponds, CRLF are expected to thrive in permanent deep-water pools with dense stands of overhanging willows (*Salix* spp.) and emergent vegetation. However, they have been observed in a variety of aquatic environments, including stock ponds and artificial pools with little to no vegetation. CRLF usually are observed near water, but can move long distances over land between water sources during the rainy season.

The nearest location to the Project site where CRLF is known to occur is approximately 8 miles to the south-southeast of the site in the hills in the vicinity of Napa Junction, Napa County. Local natural history museums keep historic records of locally identified species and in addition to occurrences in recent history; there are two historic 1912 museum records for two miles southwest of the City. Wetlands found at the proposed site do not have inundation characteristics that would enable breeding by CRLF. However, stock ponds that could provide breeding habitat for the species are located to the south and west of the Project site at a distance that is within the migration distance for CRLF. Uplands and wetlands immediately adjacent to an offsite stock pond along the southern border of the property and ground squirrel burrows at more distant locations at the site could provide suitable refugial habitat. Because of the above factors, a Habitat Assessment for CRLF was performed.

Results of the Habitat Assessment showed that although the site lies within the native range for this species, it is currently not within any of the USFWS critical habitat areas designated for CRLF, and it lacks any suitable breeding habitat for CRLF. Although there are a number of adjacent vineyard irrigation ponds in the vicinity of the site, none of these water bodies appear to harbor CRLF due to the presence of dense populations of introduced bullfrogs and introduced predatory fishes. The high summer and fall air temperatures of the vicinity make the local aquatic habitats optimal for bullfrog reproduction and growth, which has presumably resulted in the localized extinction of CRLF in the vicinity of Napa. Between the Project site and the closest known population 8 miles away are extensive areas of natural waterways (including the Napa River), urbanization, freeways, and agricultural areas that, along with the climatic factors, would prevent movement of CRLF to the Project site.

Western Pond Turtle

The western pond turtle (*Actinemys marmorata*) is both a federal and state species of special concern. It occupies ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. The western pond turtle is associated with permanent or nearly permanent water in a wide variety of habitat types. Individuals normally are associated with permanent ponds, lakes, streams, irrigation ditches or permanent pools along intermittent streams. They rely on suitable upland areas of scrub and woodlands for estival refugia. The species currently is known to occur broadly throughout the state.

The nearest location for western pond turtle noted in the CNDDDB is at a duck pond at the south end of the City of Napa about 2 miles southeast of the Project site. Suitable habitat for breeding by western pond turtle does not occur at the Project site due to the lack of aquatic areas of sufficient inundation to support the species. However, during a habitat assessment on February 1, 2011, basking or swimming adult western pond turtles were observed (with binoculars) in every irrigation pond adjacent to the Project site within a distance of about a quarter of a mile. Although the Project site is totally unsuitable for western pond turtle nesting and estivation due to the rocky nature of the soil, the very close proximity of one of these irrigation ponds to the southern boundary of the site makes it likely that western pond turtle could move across a small part of the Project site's southern boundary.

Western Burrowing Owl

Western Burrowing Owl (*Athene cunicularia*) is a Bureau of Land Management sensitive species, USFWS bird of conservation concern, and a California species of special concern. Burrowing owls are small terrestrial owls commonly found in open grassland topography ranging from western Canada to portions of South America. Burrowing Owl habitat can be found in annual and perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. In California, burrowing owls most commonly inhabit ground squirrel burrows, but they also may use manmade structures, such as concrete culverts; concrete, asphalt, or wood debris piles; or openings beneath concrete or asphalt pavement. Burrowing Owls exhibit high site fidelity, reusing burrows year after year. Burrowing Owls may use a site for breeding, wintering, foraging, and/or migration stopovers during migration.

Occupancy of suitable burrowing owl habitat can be verified at a site by an observation of at least one burrowing owl, or, alternatively, its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance.

CDFW states that the following should be considered impacts to the species: (1) disturbance within 50 meters (approximately 160 feet) which may result in harassment of owls at occupied burrows; (2) destruction of natural and artificial burrows (culverts, concrete slabs and debris piles that provide shelter to burrowing owls); and (3) destruction and/or degradation of foraging habitat adjacent (within 100 meters) of an occupied burrow(s). Mitigation measures, if necessary, are intended to "avoid and minimize impacts to burrowing owls at a project site and preserve habitat that will support viable owl populations." The guidelines stipulate that "mitigation actions should be carried out from September 1 to January 31 which is prior to the nesting season."

The nearest documented occurrence of burrowing owl in the CNDDDB is on Skaggs Island, over 8 miles from the Project site. The presence of California ground squirrel burrows at the Project site and grasslands suitable as foraging habitat for the species makes the Project site suitable to support nesting or wintering individuals of this species.

No burrowing owls or signs indicating presences of burrowing owls (e.g., molted feathers, cast pellets, prey remains, eggshell fragments.) were observed at the site during surveys.

California Horned Lark

The California horned lark (*Eremophila alpestris actia*) is a California species of special concern. California horned lark is a common to abundant resident in open, level or rolling short-grass prairies, plains, and meadows. Grasslands and open habitat with low, sparse vegetation and surface irregularities, such as rocks, litter, and clods of soil, which provide cover, are preferred habitat for the California Horned Lark. Suitable foraging and nesting habitat for this species occurs in the grasslands on the Project site. Individuals of this species were not observed during surveys of the Project site.

Loggerhead Shrike

Loggerhead shrike (*Lanius ludovicianus*) is a state species of special concern. Loggerhead shrikes are resident and winter visitors in lowlands and foothills throughout California, and are rare along the coast in winter north to Mendocino County. Preferred habitat includes open areas such as desert, grasslands, and savannah. Loggerhead shrikes nest in thickly foliated trees or tall shrubs, and forage in open habitats which contain trees, fence posts, utility poles, and other perches. Loggerhead shrikes are usually solitary birds. They feed on insects, reptiles, and small mammals, which they frequently impale on thorns and barbed wire after capturing. Suitable foraging habitat for loggerhead shrike occurs in the grassland habitats of the Project site, and suitable habitat for nesting is present in woodlands. Individuals of this species were not observed during surveys conducted at the Project site.

Special-Status Bats

Seven species of bats that are California species of special concern, or are recognized as having conservation priority by the Western Bat Working Group, the Bureau of Land Management, or the U.S. Forest Service have potential to occur within the project boundaries. These include pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), Western red bat (*Lasiurus blossevillii*), long-eared myotis (*Myotis evotis*), fringed myotis (*Myotis thysanodes*), Yuma myotis (*Myotis yumanensis*), and Western mastiff bat (*Eumops peroti*). These seven species have potential to occur in Napa County (Pierson et al. 2006, Western Bat Working Group Website 2007).

The Project site provides potential foraging habitat for all seven bat species. Roosting habitat, a more critical resource for California bat species, includes bridges, large trees, and buildings. The residential structures and outbuildings in the Project area may provide summer or winter (hibernacula) roosting sites. Six of the seven bat species sometimes roost in buildings. Construction in or demolition of barns or stables may result in destruction of maternity roosts, hibernacula, day roosts, and/or night roosts of bats.

During field surveys, no obvious signs of bat usage (staining, guano) were observed but bats may still have been present. A roost site supporting three species of bat was present at a site along Shreveland Lane in Napa as recently as 2004. This historic site contained thousands of Brazilian free-tailed bats and Yuma myotis and approximately 150 pallid bat females (a California Species of Special Concern) and their young. The bats were using a barn that was removed to accommodate development of a housing project in 2004, and all bats roosting there were extirpated. This rural residential site was vegetated by grazed non-native grassland with oaks, bay laurel, and some non-native trees which provided excellent foraging habitat for the bats. After development the site contained residential structures and non-native plantings. The site was known to researchers for many years and studied prior to development.

The historic bat roost on Sheveland Lane was located less than one mile from the Project site. Although the barn providing the roosting habitat for the bats was destroyed, the bats would have survived and

have undoubtedly taken up residence in abandoned buildings in the vicinity. An unoccupied house and several ranch buildings in the northern portion of the Project site nearest to Old Sonoma Road could serve as suitable bat roosts and very likely could support some of the bats extirpated from the historic roost site on Sheveland Lane. The habitat conditions at the Project site are similar to those at the above referenced site; surrounding oak woodlands and grasslands provide suitable foraging habitats for bats. It is possible that there could be roosting bats, including species of special concern (pallid bats), and Yuma myotis, Brazilian free-tailed bats, or even other bat species, in structures located at the northern end of the site. These structures will be demolished prior to development of the site for residential uses. Bat surveys would be necessary to determine if bats are present in these structures prior to their demolition.

REGULATORY SETTING

FEDERAL

Federal Endangered Species Act

The federal Endangered Species Act (ESA) protects plant and wildlife species that are listed as threatened or endangered or proposed for such listing. As a fundamental element of this protection, Section 9 of the ESA prohibits killing, harming, or otherwise “taking” listed animal species. Taking includes such destruction or significant alteration of habitat that actually kills or injures listed animals. Sections 7 and 10 of the Act authorize the U.S. Fish and Wildlife Service (or, in some instances the National Marine Fisheries) to allow limited take of listed species incidental to otherwise lawful activities (e.g., development of land) provided that the species is not jeopardized and the impacts of the take are mitigated. The ESA does not prohibit the taking of listed plants on private land, but does provide for penalties if such plants are destroyed or removed in violation of state law. With respect to species proposed for listing, the ESA calls on federal agencies to confer with the USFWS if their actions may affect any such species.

For projects involving a federal action that may affect listed species, the federal authorizing agency is required to enter into a consultation process with the USFWS under Section 7 of the ESA. Under Section 7, the federal agency conducting, funding, or permitting an action (the lead federal agency) must consult with USFWS, as appropriate, to ensure that the proposed action will not jeopardize endangered or threatened species or destroy or adversely modify designated critical habitat. For projects without federal involvement on non-federal lands, a mechanism for incidental take of listed species along with assurances of long-term habitat protection is provided through Section 10 of the ESA. Section 10 (a)(1)(B) permits for take of listed species can be issued by the USFWS, typically through the applicant's preparation and implementation of a Habitat Conservation Plan (HCP).

Federal Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA; 16 U.S.C., §703, Supp. I, 1989) prohibits killing, possessing, or trading of migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. The trustee agency that addresses issues related to the MBTA is the USFWS. Migratory birds protected under this law include all native birds and certain game birds (e.g., turkeys and pheasants; *Federal Register* 70(2):372-377). This act encompasses whole birds, parts of birds, and bird nests and eggs. The MBTA protects active nests from destruction and all nests of species protected by the MBTA, whether active or not, cannot be possessed. An active nest under the MBTA, as described by the Department of the Interior in its 16 April 2003 Migratory Bird Permit Memorandum, is one having eggs or young. Nest starts, prior to egg laying, are not protected from destruction.

Nearly all local native bird species are protected by the MBTA.

Clean Water Act

In 1972, the Clean Water Act was amended to provide that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with a National Pollution Discharge Elimination System (NPDES) permit.

The 1987 amendments established a framework for regulating municipal, industrial, and construction-related storm water discharges under the NPDES Program. On November 16, 1990, the U.S. Environmental Protection Agency (USEPA) published final regulations that establish storm water permit application requirements for specified categories of industries. The regulations provide that discharges of storm water from construction projects that encompass one or more acres of soil disturbance are effectively prohibited unless the discharge is in compliance with an NPDES Permit. The California State Water Resource Control Board has developed a general construction storm water permit to implement this requirement.

Definitions of Wetlands and Other Waters of the U.S.

The Department of the Army, acting through the U.S. Army Corps of Engineers (Corps), has the authority to permit the discharge of dredge or fill material in waters of the U.S. under Section 404 of the Clean Water Act, and permit work and placement of structures in navigable waters of the U.S. under Section 10 of the Rivers and Harbors Act of 1899 (RHA). As described in the Corps/EPA Clean Water Act regulations (33 CFR § 328.3(a)), the term "waters of the United States" is defined as follows:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce (excluding commerce associated with migratory birds), 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:
 - i. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
 - ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
 - iii. Which are used or could be used for industrial purpose 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 above paragraphs (1-4);
6. The territorial seas; and
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in above paragraphs (1-6).

The Corps defines wetlands as: “sites that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” [(33 CFR § 328.3(b)]. Implicit in the definition is the need for a site to meet certain water, soil, and vegetation criteria to qualify as a jurisdictional wetland. These criteria and the methods used to determine whether they are met are described in the Corps’ 1987 wetland delineation manual.

STATE

California Endangered Species Act

The California Endangered Species Act (CESA, Fish and Game Code of California, Chapter 1.5, Sections 2050-2116) prohibits the take of any plant or animal listed or proposed for listing as rare (plants only), threatened, or endangered. In accordance with the CESA, the CDFW has jurisdiction over state-listed species. The CDFW regulates activities that may result in “take” of individuals listed under the Act (i.e., “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill”). Habitat degradation or modification is not expressly included in the definition of “take” under the Fish and Game Code. The CDFW, however, has interpreted “take” to include the “killing of a member of a species which is the proximate result of habitat modification.”

California Fish and Game Code

The California Fish and Game Code includes regulations governing the use of, or impacts to, many of the state’s fish, wildlife, and sensitive habitats.

Certain sections of the Fish and Game Code describe regulations pertaining to certain wildlife species. For example, Fish and Game Code §§3503, 2513, and 3800 (and other sections and subsections) protect native birds, including their nests and eggs, from all forms of take. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered “take” by the CDFW. Raptors (*i.e.*, eagles, falcons, hawks, and owls) and their nests are specifically protected in California under Fish and Game Code §3503.5. Section 3503.5 states that it is “unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.” Non-game mammals are protected by Fish and Game Code §4150, and other sections of the Code protect other taxa.

Public Resources Code Section 21083.4 for Oak Woodlands Conservation

There are about 10 million acres of oak woodlands found in 54 of California’s 58 counties, 80 percent of which are located on privately owned property. In response to the continuing loss of oak woodlands, Chapter 588, Statutes of 2001, enacted the Oak Woodlands Conservation Act. The Act specifically recognizes the importance of oak woodlands and how oak trees enhance the natural and scenic beauty of this State. Further, the Act acknowledges the important role oak woodlands play in the economic, social, environmental and ecological matters of this State. The Oak Woodlands Conservation Program offers landowners, conservation organizations, cities and counties, an opportunity to obtain funding for projects designed to conserve and restore California’s oak woodlands. While the Program is statewide in nature, it provides opportunities to address oak woodland issues on a regional priority basis. The Public Resources Code Section does not apply to a Project reviewed by the City of Napa as a CEQA Lead Agency.

21083.4. (a) For purposes of this section, "oak" means a native tree species in the genus *Quercus*, not designated as Group A or Group B commercial species pursuant to regulations adopted by the State Board of Forestry and Fire Protection pursuant to Section 4526, and that is 5 inches or more in diameter at breast height.

(b) As part of the determination made pursuant to Section 21080.1, a county shall determine whether a project within its jurisdiction may result in a conversion of oak woodlands that will have a significant effect on the environment. If a county determines that there may be a significant effect to oak woodlands, the county shall require one or more of the following oak woodlands mitigation alternatives to mitigate the significant effect of the conversion of oak woodlands:

(1) Conserve oak woodlands, through the use of conservation easements.

(2) (A) Plant an appropriate number of trees, including maintaining plantings and replacing dead or diseased trees.

(B) The requirement to maintain trees pursuant to this paragraph terminates seven years after the trees are planted.

(C) Mitigation pursuant to this paragraph shall not fulfill more than one-half of the mitigation requirement for the project.

(D) The requirements imposed pursuant to this paragraph also may be used to restore former oak woodlands.

(3) Contribute funds to the Oak Woodlands Conservation Fund, as established under subdivision (a) of Section 1363 of the Fish and Game Code, for the purpose of purchasing oak woodlands conservation easements, as specified under paragraph (1) of subdivision (d) of that section and the guidelines and criteria of the Wildlife Conservation Board. A project applicant that contributes funds under this paragraph shall not receive a grant from the Oak Woodlands Conservation Fund as part of the mitigation for the project.

(4) Other mitigation measures developed by the county.

(c) Notwithstanding subdivision (d) of Section 1363 of the Fish and Game Code, a county may use a grant awarded pursuant to the Oak Woodlands Conservation Act (Article 3.5 (commencing with Section 1360) of Chapter 4 of Division 2 of the Fish and Game Code) to prepare an oak conservation element for a general plan, an oak protection ordinance, or an oak woodlands management plan, or amendments thereto, that meets the requirements of this section.

(d) The following are exempt from this section:

(1) Projects undertaken pursuant to an approved Natural Community Conservation Plan or approved subarea plan within an approved Natural Community Conservation Plan that includes oaks as a covered species or that conserves oak habitat through natural community conservation preserve designation and implementation and mitigation measures that are consistent with this section.

(2) Affordable housing projects for lower income households, as defined pursuant to Section 50079.5 of the Health and Safety Code, that are located within an urbanized area, or within a sphere of influence as defined pursuant to Section 56076 of the Government Code.

(3) Conversion of oak woodlands on agricultural land that includes land that is used to produce or process plant and animal products for commercial purposes.

(4) Projects undertaken pursuant to Section 21080.5 of the Public Resources Code.

(e) (1) A lead agency that adopts, and a project that incorporates, one or more of the measures specified in this section to mitigate the significant effects to oaks and oak woodlands shall be deemed to be in compliance with this division only as it applies to effects on oaks and oak woodlands.

(2) The Legislature does not intend this section to modify requirements of this division, other than with regard to effects on oaks and oak woodlands.

(f) This section does not preclude the application of Section 21081 to a project.

(g) This section, and the regulations adopted pursuant to this section, shall not be construed as a limitation on the power of a public agency to comply with this division or any other provision of law.

LOCAL

City of Napa Municipal Code

The intent of Chapter 12.45 of the City of Napa Municipal Code is to promote a healthy urban forest that contributes to clean air, soil conservation, energy conservation, scenic beauty, enhanced property values and a quality of life through the protection of significant and native trees. A “significant tree” means any tree or grove of trees located within the city nominated by the Commission with the consent of the property owner upon whose land the tree is located and designated by the City Council. Significance criteria include (but are not limited to) historic significance, unique or rare horticultural specimens, significance for habitat protection, or native to Napa Valley. Chapter 12.45 establishes safeguards for the protection of significant and native trees, requires permits for activities affecting significant and native trees, and establishes replacement programs for the removal of significant and native trees. Tree replacement guidelines include the following:

- For each six inches or fraction thereof of the significant or protected tree’s diameter, two trees of the same species as the significant or protected tree (or any other species with approval) and a minimum 15-gallon container or larger size as determined by the Commission shall be planted on the project site.
- For each protected tree removed or damaged, three replacement trees of the same species as the protected tree removed and a minimum 15-gallon container or larger size shall be planted on the project site.
- If the project site is inadequate in size to accommodate the replacement significant trees, with the recommendation of the Director, the trees shall be planted on public property. The Director may accept an in-lieu fee, per 15-gallon replacement tree with the moneys to be used for tree-related educational projects and/or planting programs. In lieu fees shall be set by City Council resolution and adjusted on an annual basis as necessary and include the cost of planting.

IMPACTS AND MITIGATION MEASURES

CRITERIA OF IMPACT SIGNIFICANCE

The California Environmental Quality Act (CEQA) and the CEQA Guidelines provide guidance in evaluating project impacts and determining which impacts will be significant. CEQA defines “signifi-

cant effect on the environment” as “a substantial adverse change in the physical conditions which exist in the area affected by the proposed Project.” Under CEQA Guidelines section 15065(a)(1) and Appendix G, a project’s effects on biotic resources may be significant when the project would:

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 California Department of Fish and Wildlife or U.S. Fish and Wildlife Service
2. have a substantial adverse effect on any riparian habitat or other sensitive natural community (e.g., oak woodland) identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service
3. have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act
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. conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance
6. conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan

WETLANDS AND WATERS OF THE U.S.

Impact Bio-1a: Wetlands Fill. Direct (fill) impacts to 0.43 acre of waters of the U.S. would result from implementation of the proposed site plan. This is a potentially significant impact.

Impact Bio-1b: Construction-Period Wetlands Disturbance. Preserved wetlands within the proposed open space preserve could be subject to indirect impacts during construction if not protected.

Impact Bio-1c: Indirect Wetlands Disturbance. Without long term management, preserved sensitive habitats, including mitigation wetlands, could experience indirect impacts from disturbances associated with residential projects such as from residents, vehicles, and domestic pets, introduction of invasive species, or other factors.

Wetlands and waters of the U.S. are regulated by state and federal agencies and would be considered sensitive natural communities as defined by CEQA. Impacts to waters of the U.S. would be potentially significant if appropriate mitigation was not implemented for all regulated wetlands as required by state and federal regulations.

The ecological constraints to development at the site include approximately 1.25 acres of wetlands and waters of the U.S. potentially subject to Corps jurisdiction pursuant to Section 404 of the Federal Clean Water Act as shown in **Figure 7.1**. As the wetlands are scattered throughout the Project area, complete avoidance of seasonal wetlands would not be feasible with the level of development proposed. Impacts to wetlands and waters of the U.S. potentially subject to Corps jurisdiction are shown in **Figure 7.2**. The development plan for the site would permanently impact 0.43 acre of palustrine emergent wetlands

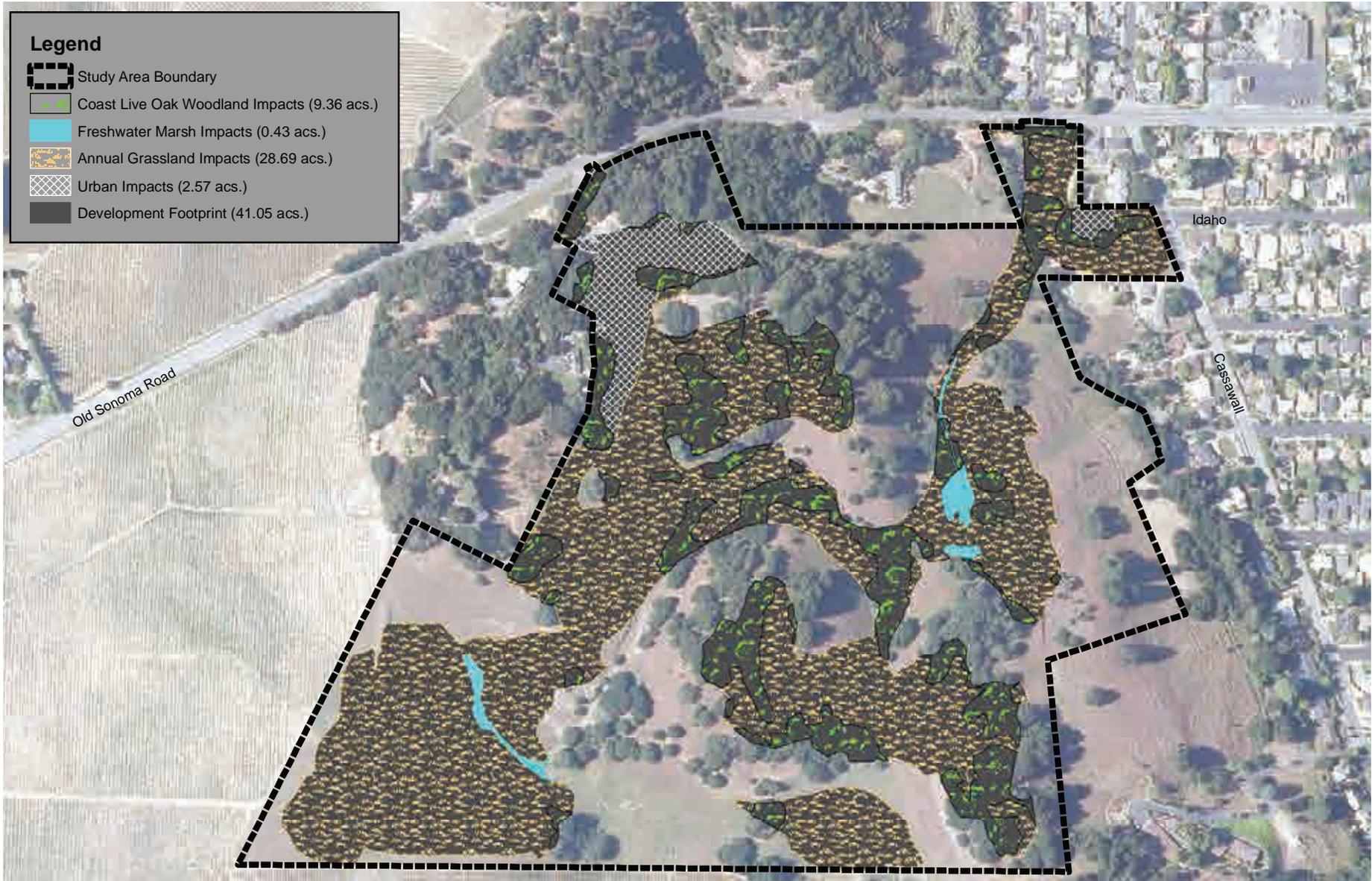


Figure 7.2: Impacted Vegetation Communities

Source: HBG, updated in 2015

located on the site that are under the jurisdiction of the Corps under Clean Water Act Section 404. Installation of a stormwater pipeline within 0.006 acre of jurisdictional wetlands would be considered a temporary impact; the pipeline would be installed in a trench that would be backfilled to original grade allowing wetlands to reform in that area.

Approximately 34% of the wetlands on the property would be impacted by the proposed Project, with the remaining 67% (0.82 acre) of the wetlands not subject to impacts and preserved within an open space area of approximately 46 acres managed by the Homeowner's Association.

For Project approval, the developer is required to submit applications for a Nationwide permit from the Corps of Engineers, and Section 401 water quality certification from the San Francisco Bay Regional Water Quality Control Board (RWQCB), required for the Corps permit to be valid.

Corps jurisdictional areas must be replaced at a minimum 1:1 ratio through wetland creation (preferably on-site) to ensure that no net loss of acreage or functions and values to these areas occurs. The required ratio of replacement acreage to impacted acreage will be decided by regulatory agencies on a site specific basis based on the functions and values present on the Project site, but through coordination with Corps, a mitigation ratio of 2:1 is assumed for this site. Mitigation wetlands at this 2:1 ratio, totaling approximately 0.86 acre, would be created within the onsite open space preserve. A detailed mitigation plan would need to be prepared that includes monitoring and reporting requirements, responsibilities, performance success criteria, reporting procedures, and contingency requirements. Based on HBGs assessment of the site, there is sufficient area within the open space preserve area to establish 0.86 acre near the southern boundary of the site.

During construction of the Project, use of development setbacks, construction fencing and other barriers may be necessary to prevent unintended impacts to preserved sensitive habitats within the open space area. In the long term, these preserved sensitive habitats could experience indirect impacts from disturbances associated with residential projects such as from residents, vehicles and pets, or from introductions of invasive vegetation. Over the long term, fencing or signage may be required to restrict access to preserved sensitive areas, and means to lessen intrusion of pets (e.g., enforcement of leash laws) may be necessary. Vegetation management to control invasive vegetation may necessary as well. Long term management of the open space area by the Homeowner's Association will need to occur pursuant to a management plan with identified goals and a monitoring plan with management inspections and maintenance actions.

Mitigation Measures

- Bio-1a:** **Wetland Replacement.** The Corps and RWQCB require mitigation for the impacts on 0.43 acre of seasonal wetlands. The applicant shall develop a wetland mitigation plan to mitigate impacts on jurisdictional areas as part of the Corps and RWQCB permit process. Pursuant to this plan, the applicant shall establish 0.86 acre of wetlands onsite within the open space preserve area.
- Bio-1b:** **Construction-Period Barriers to Wetlands.** During construction and prior to any clearing, grading, or construction activities, temporary barriers shall be placed around all wetlands that are to be avoided by the development plan. These barricades shall create at least a 20-foot buffer area around these areas. No clearing, operation of heavy equipment, or storage of construction materials shall be permitted within this area.
- Bio-1c:** **Wetlands Management and Monitoring Plan.** Prior to construction, the applicant shall prepare a management plan for approval by the Corps and RWQCB for the onsite open space preserve with habitat goals and objectives and a monitoring plan that provides for management inspections and maintenance

actions. The monitoring plan must include monitoring and reporting requirements, responsibilities, performance success criteria, reporting procedures and contingency requirements. A long-term protection plan for the open space should be included in the management plan through use of a deed restriction and management of the preserve area into perpetuity by the Homeowner's Association. The management plan should include measures such as fencing or signage to restrict access to preserved sensitive areas, and means to prevent intrusion of pets (e.g., enforcement of leash laws). Vegetation management practices shall also be included in the management plan (see Mitigation Measure Bio-3a).

Approximately 0.82 acre of wetlands would be preserved within an onsite open space preserve along with the addition of 0.86 acre to be created in this area per Mitigation Measure Bio-1a, consistent with accepted mitigation practices and regulations. With protections during the construction-period and following occupancy, as detailed in Mitigation Measures Bio-1b and Bio-1c, the Project's impact on wetlands would be reduced to *less than significant*.

OAK WOODLANDS

Impact Bio-2: Loss of Oak Woodland Habitat. The project would require construction within 9.36 acres of valley foothill hardwood (Coast live oak woodland) habitat, the direct removal of a large number of mature trees, and could result in indirect project impacts on trees not directly affected, unless appropriate precautions are taken. This is a *potentially significant* impact.

Project construction would result in the loss of approximately 9.36 acres (34% of the valley foothill hardwood or Coast live oak woodland) habitat on the site, as shown on **Figure 7.2**. 17.89 acres of oak woodland would be protected within an open space preserve on the Project site, to be managed by the Homeowner's Association.

Construction of the Project would require the removal of approximately 571 trees, including 173 Native Protected trees. A total of 320 trees would be impacted by lot grading, 156 by road grading, 58 by slope and swale grading, 26 by construction of the detention pond, 8 by construction of new entry onto Old Sonoma Road, and 3 by installation of retaining walls. Implementation of the proposed Project would preserve 804 trees, including 449 Native Protected trees.

Oaks woodlands provide significant wildlife habitat value. Oak woodlands are protected by the CDFW, State of California regulations including Public Resources Code Section 21083.4, and policies of the City of Napa (Chapter 12.45 of the Municipal Code). Public Resources Code Section 21083.4 directs counties to mitigate significant effects of oak woodland conversion, but would not apply to a Project reviewed by the City of Napa as a CEQA Lead Agency, as opposed to an unincorporated county area. However, the impact evaluation and development of mitigation measures recommended herein are addressed in consideration of the Public Resource Code as if the Project were proposed in an unincorporated area. No additional local policies or ordinances protecting biological resources, including trees, would be affected by implementation of the Project.

Indirect Project impacts on oak trees not directly affected could occur unless appropriate precautions are taken. The impacts could result from increased soil compaction in the root zone of the trees, summer watering within the root zone, and excessive pruning to allow development of structures and open up views. Death of oak trees could result from oak root fungus (*Armillaria mellea*) resulting from operation of landscape irrigation systems in developed areas up slope from the native oak trees. Movement of heavy construction vehicles and equipment could cause impacts such as broken branches,

compaction of soils within root zones, etc. that could result in a weakening and eventual death of the tree. The response of individual trees will depend on the amount of excavation and grading, the care with which demolition is undertaken and the construction methods. A tree protection plan will be developed to mitigate these indirect impacts, and will include recommendations prepared by the arborist as part of the tree survey. All landscape plans will be reviewed by the arborist as well.

Mitigation Measures

Bio-2a: **Oak Woodland Preserves.** The applicant shall establish both on- and off-site oak woodland preserves to permanently conserve oak woodlands consistent with accepted mitigation practices and regulations (a ratio of 3:1 for protected trees) totaling at least 28.08 acres . The conserved acres shall include oak woodlands that could be preserved within the on-site open space preserve and individual tree protection subject to deed restriction and managed by the HOA, and off-site oak woodlands within a nearby conservation easement created by the developer. The applicant shall prepare and implement an Oak Woodland Mitigation Implementation Plan that will specify the on-site and off-site preservation/conservation areas and mechanism of conservation/preservation to permanently implement this measure.

Bio-2b: **Tree Replacement Plan.** The applicant shall prepare and implement an Oak Woodland Mitigation Implementation Plan that will specify a tree replacement plan, a construction-period tree protection plan.

As part of the Oak Woodland Mitigation Implementation Plan the applicant shall prepare and implement a Tree Replacement Plan that includes a description of:

- (i) how the replacement of trees in the Oak Woodland Mitigation Implementation Plan satisfies the requirements of City of Napa Municipal Code, Chapter 12.45;
- (ii) the specific location of the tree planting, (including a map and planting plan);
- (iii) schedules and methodologies for maintaining and monitoring the success of the Plan; and
- (iv) performance standards.

The applicant must follow Tree Preservation Guidelines recommended by a qualified arborist to maintain long-term tree health, including design recommendations, preconstruction treatments and recommendations, and recommendations for tree protection during construction. Included in the guidelines is the establishment of Tree Protection Zones around each preserved tree. Tree Protection Zones shall be marked with fencing and within these zones no grading, excavation (including for underground services such as utilities or sub-drains), or storage of materials or dumping of materials can occur without consultations with the project arborist.

The City of Napa shall review final project grading and construction plans to minimize encroachment within the drip line of any trees not eliminated as part of site grading. This review should include assurances that the design of roads, utilities, slope stabilization work, subdrains, and other types of infrastructure avoid the area within the dripline of native trees where feasible; and that all grading is

designed to drain water away from the base of trees so as not to create areas of ponding within the dripline.

The applicant proposes to meet the requirement for preservation of at least 28.08 acres of oak woodland through an Oak Woodland Mitigation Implementation Plan that accomplishes: (a) the preservation of at least 9.36 acres of the approximately 17.89 acres of remaining existing oak trees and oak woodland on-site, (b) the preservation of up to 22.77 acres of oak woodland off-site within a nearby approximate 29-acre area of conservation easement created by the developer adjacent to the Project site (Mitigation Measure Bio-2a), and (c) the replacement of trees lost to development through the required Oak Woodland Mitigation Implementation Plan and Tree Replacement Plan (Mitigation Measure Bio-2b). These measures represent a conservation/tree replacement in excess of 3 acres of oak woodlands for every 1 acre lost. While the Project would result in the loss of 9.36 acres of oak woodland, the identified mitigation is consistent with accepted mitigation practices and regulations to reduce impacts, and the Project's impact on oak woodlands would be reduced to *less than significant*.

LANDSCAPING/INVASIVE SPECIES

Impact Bio-3: Introduction of Invasive Plants. Project landscaping is expected to introduce exotic, non-native vegetation, some of which could degrade the quality of wildlife habitats. This is a *potentially significant* impact.

Invasive, exotic weeds compete with native vegetation and can degrade the quality of wildlife habitats. Project landscaping and construction activity has the potential to introduce invasive, exotic, non-native vegetation, some of which may not now exist in the area. Also, highways and various construction projects provide a pathway for dispersal of invasive plants. Invasive plant species include those designated as noxious weeds by the U.S. Department of Agriculture, problem species listed by the California Department of Food and Agriculture, and other invasive plants designated by the California Invasive Plant Council. Where appropriate, vegetation removed as a result of Project activities should be replaced with native species which are of value to local wildlife. Native plants generally are more valuable as wildlife food sources and require less irrigation, fertilizers, and pesticides than exotic species.

Mitigation Measures

Bio-3a: Prohibit Use of Invasive Plants. The CC&Rs for residences shall prohibit the use of invasive plant species. This shall be enforced by the HOA, which should encourage landscaping in both commons areas as well as on private lots that is designed to enhance the wildlife value and aesthetic quality of undeveloped portions of the Project site.

Bio-3b: Construction Controls to Prevent Spread of Invasive Plants. Construction activities shall be commenced under the direction of a qualified biologist, who will identify invasive species and direct construction controls as appropriate. Weed management practices may be warranted, including identification and removal of infestations of noxious weeds prior to construction, use of construction equipment and materials such as fill and erosion control devices that are known to be weed-free, and removal of invasive species from areas within the Project boundary set aside for conservation purposes as part of Project mitigation. Where appropriate, as determined by the qualified biologist, vegetation removed as a result of Project construction activities should be replaced with native species which are of value to local wildlife, and native vegetation should be retained.

With prohibition of invasive plants in landscaping and construction controls to prevent the spread of invasive species as outlined in Mitigation Measures Bio-3a and Bio-3b respectively, the Project's impact related to degrading the quality of wildlife habitats through spread of invasive species would be reduced to *less than significant*.

NESTING AND WINTERING BIRDS

Impact Bio-4: Disturbance of Nesting or Wintering Birds. The removal of trees and shrubs during the February 1 to August 1 breeding season could result in mortality of nesting avian species if they are present. This could include but is not limited to species of special concern, which could also be disturbed when they are wintering at the site, outside of breeding season. This is a *potentially significant* impact.

Nesting bird species protected by the federal MBTA that could be impacted during project construction. The removal of trees and shrubs during the February 1 to August 1 breeding season could result in mortality of nesting avian species if they are present.

Many species of raptors (birds of prey) are sensitive to human incursion and construction activities, and it is necessary to ensure that nesting raptor species are not present in the vicinity of construction sites. During the spring survey of the Project site, a red-tailed hawk nest was observed on adjacent property over 500 feet away from the property boundary for the Project site. If this nest were active during construction of the Project, the nest would be sufficient distance from construction operations that disruptions to nesting birds would not occur. The presence of both red-tailed hawks and red-shouldered hawks on the Project site in May of 2011, indicates that these species may nest somewhere on the property as well.

In addition to the MBTA, the State of California designates several raptor species with a potential to occur on the site as species of special concern based on the presence of nesting habitat. These species include burrowing owl (species of federal and state concern), white-tailed kite and Cooper's hawk. Preconstruction surveys for tree-nesting species (e.g., white-tailed kite, Cooper's hawk) will be necessary if tree removal occurs during the February 1 to August 1 nesting season.

Four raptor species that could occur are designated as state species of special concern based on presence of wintering habitat (ferruginous hawk, golden eagle, sharp-shinned hawk, and merlin). One of these species (sharp-shinned hawk) was identified at the site during winter surveys conducted in 2011. These species are wide-ranging species often wintering over a broad area, and incidental use of the site by any these species in winter is certainly possible. The site, however, contains no unique habitat features that would highlight the importance of the site as a wintering location for any of these species.

Two other avian species of special concern are possible on the site: California horned lark (state species of special concern) and loggerhead shrike (a species of both federal and state special concern). As potentially suitable nesting habitat is present for either species, preconstruction surveys should be conducted of the development area to determine if nesting is occurring.

Mitigation Measures

Bio-4a: Active Nest Buffer Zones During Breeding Season. If construction is to be conducted during the breeding season (February 1 to August 1), a qualified biologist shall conduct a pre-construction breeding bird survey in areas of suitable habitat within 30 days prior to the onset of construction activity. If bird nests are found, appropriate buffer zones shall be established around all active nests to

protect nesting adults and their young from construction disturbance. Size of buffer zones shall be determined in consultation with wildlife agency staff based on site conditions and species involved.

Pre-construction surveys shall include surveys for nesting by raptors generally expected to nest in the region including tree nesting species such as red-tailed, red-shouldered, Cooper's and Sharp-shinned hawk, white-tailed kite, great horned owl and American kestrel, and ground nesting species such as burrowing owl, short-eared owl and Northern harrier. If nesting raptors are found during pre-construction surveys, construction activity in the vicinity of the nest should be delayed until after young have fledged (usually by August), or buffer zones around nest sites of at least 200 feet should be established when construction equipment is present.

Bio-4b: **Preconstruction Survey for Burrowing Owl.** Independent of the time of year, preconstruction surveys for burrowing owls shall be conducted within 30 days of initiation of construction activity. If any burrowing owls are detected during the preconstruction surveys, all appropriate mitigation recommended by the Burrowing Owl Consortium and CDFW will be adopted.

With pre-construction surveys for nesting birds and burrowing owls and compliance with identified recommendations, as outlined in Mitigation Measure Bio-4a and Bio-4b, the Project's impact related to disturbance of nesting or wintering birds or burrowing owls would be reduced to *less than significant*.

DOWNSTREAM RIPARIAN AREAS

Impact Bio-5: **Construction-Period Sediment.** Placement of fill and other ground disturbing activities could prompt erosion and allow elevated levels of sediment to wash into downstream riparian areas. This is a *potentially significant* impact.

Grading, placement of fill material and other ground-disturbing activities could promote erosion and allow elevated levels of sediment to wash into downstream creeks, where potential impacts to fish and wildlife species would be possible. In the absence of water quality controls, indirect impacts to animal populations in wetlands and other aquatic habitats could result from the proposed project due to elevated contaminants in stormwater runoff. However, the requirement for the implementation of a Stormwater Pollution Prevention Plan (SWPPP), with identification of proper construction techniques and Best Management Practices (BMPs) will minimize adverse effects associated with these activities. Furthermore, standard techniques to control contaminants in stormwater such as oil and grease traps will be employed to mitigate water quality concerns. These are discussed in more detail in Chapter 12: Hydrology and Water Quality.

Mitigation Measure

Bio-5: **Limit Unstabilized Soil and Comply with Stormwater Pollution Prevention Plan.** During construction, vegetation should only be cleared from the permitted construction footprint. Areas cleared of vegetation, pavement, or other substrates should be stabilized as quickly as possible to prevent erosion and runoff. Best Management Practices and all requirements as detailed in the Stormwater Pollution Prevention Plan (see Mitigation Measure Geo-5) shall be implemented to control erosion and migration of sediments offsite.

With limitations on cleared areas and unstabilized soils and implementation of a Stormwater Pollution Prevention Plan (Mitigation Measure Bio-5), the potential for construction-period sediment to impact downstream riparian areas would be reduced to *less than significant*.

SPECIAL STATUS SPECIES

The biological assessment (see Appendix C) conducted for the project included a list of special status species likely to inhabit or use the Project area per the USFWS. The biological assessment concluded that most of these species would be unlikely to inhabit or use the site due to the lack of suitable habitat, or because the site is outside the range of the species. The western pond turtle and special status bats were determined to inhabit or use the Project site and have the potential to be affected by construction of the Project; impacts on these species are discussed below. Other than the western pond turtle and special status bats, implementation of the Project would not affect special status species.

Western Pond Turtles

Impact Bio-6: Construction-Period Danger to Western Pond Turtles. Construction operations could impact western pond turtles, which have been observed in the adjacent irrigation pond and that could possibly move across the southern portion of the Project site. This is a *potentially significant* impact.

The Project site is unsuitable for western pond turtle nesting and estivation, but the species was observed in irrigation ponds in the Project vicinity, including an irrigation pond along the southern boundary of the site. It is possible that a western pond turtle could move across a small part of the property and be impacted during construction operations (e.g., could be crushed by construction vehicles).

Mitigation Measure

Bio-6: Construction-Period Western Pond Turtle Setback and Fencing. The following controls shall be implemented during the construction-period to reduce the potential for occurrence of western pond turtles at active construction sites:

A setback of at least 200 feet between the southern grading limits of the Project and the high water edge of the irrigation pond shall be established.

Silt fencing shall be installed and maintained at the southern edge of the development area during all construction operations to prevent western pond turtle from potentially entering the construction area. The fence shall be examined by a qualified biologist on a regular basis during the construction period to make sure it is functioning properly.

With a construction-period setback and fencing to avoid any potential negative effects to western pond turtle, as identified in Mitigation Measure Bio-6, the potential for construction-period sediment to impact downstream riparian areas would be reduced to *less than significant*.

Special-Status Bats

Impact Bio-7: Disturbance of Bats. Construction in or demolition of buildings could result in destruction of maternity roosts, hibernacula, day roosts, and/or night roosts of bat species, including pallid bat. This is a *potentially significant* impact.

Seven species of bats that are California species of special concern, or are recognized as having conservation priority by the Western Bat Working Group, the Bureau of Land Management, or the U.S. Forest Service, have potential to occur within the Project boundaries, including the pallid bat, which is a designated species of special concern and for which roost sites have occurred in the Project vicinity. The Project area provides potential foraging and roosting habitat for these species. The residential structures and outbuildings in the Project area may provide summer or winter (hibernacula) roosting sites. Construction in or demolition of barns or stables may result in destruction of maternity roosts, hibernacula, day roosts, and/or night roosts of bat species, including the pallid bat.

Mitigation Measure

Bio-7: Preconstruction Bat Surveys. Generalized preconstruction bat surveys shall be conducted prior to building demolition. The surveys should be conducted no earlier than 45 days and no later than 20 days prior to any activity within 200 feet of the structures. If it is determined that threatened, endangered, or sensitive bat species are present within structures, an appropriate bat exclusion specialist licensed by the State of California shall be consulted. If breeding special status bat species are present, exclusion may only be conducted before May 1 or after August 31 to avoid separating mothers from pups. Exclusion devices can include one-way netting, plastic sheeting, or tubes, and must remain in place for at least 5 to 7 days prior to activity. After that, if demolition is not to occur immediately, exclusion points must be sealed. Ultrasonic devices, chemical repellents, and smoke may not be used for exclusion.

With preconstruction surveys and exclusion as appropriate, as detailed in Mitigation Measure Bio-7, the potential for structure removal to impact special-status bat species would be reduced to *less than significant*.

CONFLICT WITH HABITAT CONSERVATION PLAN OR NATURAL COMMUNITY CONSERVATION PLAN

The Project site is not subject to any habitat conservation or natural community conservation plans and thus would not conflict with any approved local, regional, or state habitat conservation plan. There would be *no impact*.

OTHER BIOLOGICAL IMPACTS

Impact Bio-8: Other Biological Impacts. Loss of vegetation associated with the habitats on site would disrupt and displace existing wildlife. Some bird roosting, nesting, and foraging areas would be eliminated. The Project site potentially serves as a wildlife movement corridor, but wildlife movement through the area would not be disrupted as routes through adjacent properties would remain available. Reptiles, amphibians, and small mammals that utilize these areas would be displaced to remaining undisturbed areas. However, remaining open space areas near the Project area should be capable of accommodating these species and the impact to all species except those otherwise covered by other impacts identified in this analysis is *less than significant*.

The Project is consistent with applicable plans and regulations and not located near other natural areas expected to undergo development or otherwise serving as an important wildlife movement corridor or habitat. There would be no additional significant project-specific or cumulative biological resources impacts.

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CULTURAL RESOURCES

INTRODUCTION

This chapter describes existing cultural resources at the Project site and describes whether implementation of the Project would cause a substantial adverse change in the significance of a historic or archaeological resource (as defined in Section 106 of the National Historic Preservation Act and Section 15064.5 of the California Environmental Quality Act [CEQA] Guidelines), directly or indirectly destroy a unique paleontological resource or site or unique geologic feature, or result in the disturbance of any human remains, including those interred outside of formal cemeteries.

This chapter utilizes information from the following reports:

Record search results for the proposed development project, 3095 Old Sonoma Road; APN 043-040-008, -10, -13, -030-003; Napa County, CA, dated December 13, 2012, prepared upon request for this analysis by Brian Much with the Northwest Information Center (included as Appendix D).

Investigation of historic resources in Napa Oaks project area per agreement of January 22, 1998, dated March 10, 1998, prepared for a previous project proposal on the same site by Donald S. Napoli, Historic Preservation Planning (included as Appendix D).

State Historic Resource Inventory forms *Primary Record* and *Building Structure and Object Record* completed for the “Stable at 3095 Old Sonoma Road,” evaluated by Donald S. Napoli on 11/24/99 for a previous project proposal (included as Appendix D).

REGULATORY SETTING

CALIFORNIA ENVIRONMENTAL QUALITY ACT

CEQA requires that public or private projects financed or approved by public agencies must assess the effects of a project on historical resources. CEQA also applies to effects on archaeological sites, which may be included among “historical resources” as defined by Guidelines Section 15064.5, subdivision (a), or may be subject to the provisions of Public Resources Code Section 21083.2, which governs review of “unique archaeological resources.” Historical resources may generally include buildings, sites, structures, objects, or districts, each of which may have historical, architectural, archaeological, cultural, or scientific significance. Under CEQA, “historical resources” include the following:

- (1) A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (Public Resources Code, Section 5024.1, Title 14 CCR, Section 4850 et seq.).
- (2) A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code.
- (3) Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Public Resources Code, Section 5024.1, Title 14 CCR, Section 4852).

Section 15064.5 of CEQA also assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. These procedures are detailed under Public Resources Code (PRC) Section 5097.98.

Impacts to "unique archaeological resources" and "unique paleontological resources" are also considered under CEQA, as described under PRC Section 21083.2. 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 one of the following criteria:

- (a) The archaeological artifact, object, or site contains information needed to answer important scientific questions, and there is a demonstrable public interest in that information;
- (b) The archaeological artifact, object, or site has a special and particular quality, such as being the oldest of its type or the best available example of its type; or
- (c) The archaeological artifact, object, or site is directly associated with a scientifically recognized important prehistoric or historic event or person.

CALIFORNIA REGISTER OF HISTORIC RESOURCES

In considering impact significance under CEQA, the significance of the resource itself must first be determined. At the state level, consideration of significance as an "important archaeological resource" is measured by cultural resource provisions considered under CEQA Sections 15064.5 and 15126.4, and the draft criteria regarding resource eligibility for listing on the California Register of Historic Resources (CRHR). Generally under CEQA, a historical resource is considered significant if it meets the criteria for listing on the CRHR. These criteria are set forth in CEQA Section 15064.5, and defined as any historical resource that:

- (1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage (Criterion 1);
- (2) Is associated with lives of persons important in our past (Criterion 2);

- (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 (Criterion 3); or
- (4) Has yielded, or may be likely to yield, information important in prehistory or history (Criterion 4).

To meet one or more of the criteria listed above, a cultural resource must possess integrity to qualify for listing in the CRHR. Integrity is generally evaluated with reference to qualities including location, design, materials, workmanship, setting, feeling, and association. A potentially eligible site must retain the integrity of the values that would make it significant. Typically, integrity is indicated by evidence of the preservation of the contextual association of artifacts, ecofacts, and features within the archaeological matrix (Criterion 4) or the retention of the features that maintain contextual association with historical developments or personages that render them significant (Criteria 1, 2, or 3). Evidence of the preservation of this context is typically determined by stratigraphic analysis and analysis of diagnostic artifacts and other temporal data (e.g., obsidian hydration, radiocarbon assay) to ascertain depositional integrity or by the level of preservation of historic and architectural features that associate a property with significant events, personages, or styles.

Integrity refers both to the authenticity of a property's historic identity, as shown by the survival of physical characteristics that existed during its historic period and to the ability of the property to convey its significance. This is often not an all-or-nothing scenario (determinations can be subjective); however, the final judgment must be based on the relationship between a property's features and its significance.

The criteria for listing historical resources in the California Register are consistent with those developed by the National Park Service for listing historical resources in the National Register, but have been modified for state use in order to include a range of historical resources which better reflect the history of California (Public Resources Code, Section 5024.1, Title 14 CCR, Section 4852).

The Public Resources Code Section 5024.1 and Title 14 CCR Section 4852 provide special considerations for determining eligibility for listing in the California Register, including:

- (1) Historical resources achieving significance within the past fifty (50) years. In order to understand the historic importance of a resource, sufficient time must have passed to obtain a scholarly perspective on the events or individuals associated with the resource. A resource less than fifty (50) years old may be considered for listing in the California Register if it can be demonstrated that sufficient time has passed to understand its historical importance.

The fact that a resource is not listed in, or determined to be eligible for listing in the California Register of Historical Resources, not included in a local register of historical resources (pursuant to Section 5020.1(k) of the Public Resources Code), or identified in an historical resources survey (meeting the criteria in Section 5024.1(g) of the Public Resources Code) does not preclude a lead agency from determining that the resource may be an historical resource as defined in Public Resources Code sections 5020.1(j) or 5024.1.

Archaeological resources that do not meet the criteria for "historical resources" defined above, may meet the definition of "unique archaeological resources" as defined in Section 21083.2 of the Public Resources Code. If an archaeological resource is neither a unique archaeological nor a historical resource, the effects of the project on those resources will not be considered a significant effect on the environment. It is sufficient that the resource and the effects on it be noted in the EIR, but the resource need not be considered further in the CEQA process. CEQA requires that if a project results in an effect

that may cause a substantial adverse change in the significance of an historical resource, or would cause significant effects on a unique archaeological resource, then alternative plans or mitigation measures must be considered. Therefore, prior to assessing effects or developing mitigation measures, the significance of historical resources must first be determined. The steps that are normally taken in a historical resources investigation for CEQA compliance are as follows:

- (1) Identify potential historical resources;
- (2) Evaluate the eligibility of historical resources;
- (3) Evaluate the effects of the project on eligible historical resources.

ENVIRONMENTAL SETTING

SAN FRANCISCO BAY AREA PREHISTORY, INCLUDING LIVERMORE VALLEY AND VICINITY

The first settlers came to Napa County around 8000 B.C.E. The Patwin were a southern branch of the Wintu (or Wintun) that occupied most of the land around Suisun, Vacaville, and Putah Creek, later followed by the Wappo, who lived throughout the Sonoma and Napa Valleys with villages usually located along creeks. It has been estimated that prior to the incursion of white settlers there may have been nearly 1,000 Wappo in the Napa Valley and more than 12,000 Wintu state-wide. By 1843 there were fewer than 3,000 Wappo and Patwin in Napa County, and by the 1970s there were only about 50 Wappo left in California.¹

The second wave of settlers came in 1823. Looking for a place to build a new mission, Don Francisco Castro and the founder of Mission San Francisco Solano in Sonoma, Padre José Altamura, led an expedition party through the area under an armed escort. Nicolas Higuera, a Mexican citizen and soldier in San Francisco from 1819-1823 was granted Rancho Entré Napa (encompassing what is now downtown and south Napa) and Rancho Rincón de los Carneros – part of the present-day Carneros district in southwestern Napa County. In 1846, as war loomed between Mexico and the United States, General Vallejo and many Californios (Mexican settlers born in or who emigrated to Alta California) recognized the inevitability of US rule and sided with the Americanos and after a short revolt, California was annexed to the United States. Nathan Coombs received 80 acres from the Rancho Entré Napa land grant in 1847. A year later in 1848 he founded Napa.²

River trade soon helped Napa City become a center of valley commerce. The city's population swelled from 159 in 1850 to nearly 3,500 in its first 30 years. Consumer goods from San Francisco were unloaded from river barges at the wharf located at the foot of Third Street. Agricultural products, timber from the valley's hills, and fine tanned leather were loaded for transport downriver. River trade also turned the city into a "jumping off point" for miners seeking their fortunes in the silver and quicksilver mines to the north.³

¹ Napa County Historical Society, History of Napa County and the City of Napa, webpage located at http://wordpress.napahistory.org/wordpress/?page_id=1107, accessed on 7/16/2013.

² Ibid.

³ City of Napa, *Envision Napa 2020, City of Napa General Plan*, adopted Dec. 1, 1998 with amendments to May 2010, pp 2-3.

By the turn of the century, the once rough and ready wharf city was becoming “civilized” through the efforts of families who had become wealthy from tanning, mining, agriculture, and lumber operations. Napa boasted several fine hotels and a beautiful opera house in its bustling downtown. Vineyards and orchards had been planted during the mid-nineteenth century and the area was well known for its fine wines and brandies.⁴

Some of the original wineries are still in operation and have been joined by over 200 more. Today, as the producer of a highly prized consumer product, Napa Valley’s agricultural industry is more than simply a source of local employment. The wine industry has virtually become a local *raison d’etre*; reminders of wine production and its most important spinoff industry, tourism, extend south to the city of Napa.⁵

History of the Project Site

Two residential dwellings are located on the site, a single-story house at 211 Casswall Street constructed in 1949 and a long suburban ranch house at 3095 Old Sonoma Road constructed in the 1970’s with an associated barn/stable and garage nearby.

IMPACTS AND MITIGATION MEASURES

The following section describes potentially significant Project impacts to cultural resources. Mitigation recommendations are made to avoid, minimize, or mitigate such impacts where feasible.

CRITERIA OF IMPACT SIGNIFICANCE

Under the CEQA Guidelines, Appendix G – Environmental Checklist Form, a significant impact will occur if the proposed Project would:

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

DISTURBANCE OF HISTORICAL RESOURCES

Impact Culture-1: Removal of a Historic Age Building. Construction activities include demolition of a stable that is of historic age. However, historic assessment concluded that this structure would not be eligible for listing as a historic resource and the impact would be *less than significant*.

⁴ Ibid.

⁵ Ibid.

Two residences will be demolished, as summarized from the 1998 investigation of potential historic resources (included in Appendix D):

A house at 211 Casswall Street that, while the assessor's records indicate was constructed in 1949, appears to have undergone a remodel in the 1990s that removed any historical or architectural significance that may have been present.

A ranch house at 3095 Old Sonoma Road that appears to have been constructed in the late 1970s and is therefore not of historic age.

The stable near this latter residence appeared older and was thus further assessed using appropriate State Historic Resource Inventory forms in 1999 (included in Appendix D). This further assessment found that the stable appears to have been constructed around 1955 as a replacement for an earlier structure at the same location. While the structure is largely unaltered, the type of construction is not unusual and there are many examples from the nineteenth and early twentieth century remaining in the area. The building is not associated with any historically significant persons or events. While the structure is of historic age, it is not eligible under state criteria as a historic resource, is not associated with historically significant persons, and is not representative of a significant type of construction. Therefore, the stable's removal would not be considered a significant impact.

UNDISCOVERED ARCHAEOLOGICAL RESOURCES, GEOLOGIC/PALEONTOLOGICAL FEATURES AND HUMAN REMAINS

A discussion of the potentially significant impacts of the Project is provided below.

Impact Culture-2: Disturbance of Unidentified Archaeological Resources, Paleontological Resources or Human Remains. During earth-moving activities at the Project site, it is possible that unidentified archaeological resources, paleontological resources, or human remains could be uncovered and disturbed. This is a *potentially significant* impact.

The Northwest Information Center Records Search (included in Appendix D), which is based upon area records and site characteristics, identified a low potential for historic-period archaeological resources and a moderate possibility for Native American archaeological resources. This report concluded that, based on the fact that a 1992 field survey found no evidence to suggest the presence of underground resources, no further study was recommended but that construction contractors should be prepared to halt work if any unanticipated resources are uncovered during earth moving.

There site includes no features that would be considered a unique geologic feature or suggest likelihood of discovery of paleontological resources.

Mitigation Measures

Culture-2a: Halt Construction Activity, Evaluate Find and Implement Mitigation. In the event that previously unidentified paleontological, archaeological or historical resources are uncovered during site preparation, excavation or other construction activity, all such activity within 25 feet of the discovery shall cease until the resources have been evaluated by a qualified professional, and specific measures can be implemented to protect these resources in accordance with sections 21083.2 and 21084.1 of the California Public Resources Code.

Culture-2b: Halt Construction Activity, Evaluate Remains and Take Appropriate Action in Coordination with Native American Heritage Commission. In the event that human remains are uncovered during site preparation, excavation or other construction activity, all such activity within 25 feet of the discovery shall cease until the remains have been evaluated by the County Coroner, and appropriate action taken in coordination with the Native American Heritage Commission, in accordance with section 7050.5 of the California Health and Safety Code or, if the remains are Native American, section 5097.98 of the California Public Resources Code.

Implementation of mitigation measures Culture-2a and Culture-2b will reduce the impacts associated with possible disturbance of unidentified archaeological resources, paleontological resources or unidentified human remains at the Project site to a level of *less than significant*.

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GEOLOGY AND SOILS

INTRODUCTION

This chapter summarizes geologic and geotechnical aspects of the site as they relate to the Project. This chapter was prepared by ENGEO, Inc. and utilizes information from peer review of the following reports prepared for this Project or analysis as well as review of the referenced publications:

ENGEO, Inc., Geotechnical Peer Review, BSA Supplemental Trench Explorations, April 7, 2015 (included in Appendix E).

Berlogar-Stevens Associates, Earthquake Mitigation Alternative Review, Napa Oaks Old Sonoma Road, Napa, California, January 21, 2015 (included in Appendix E).

Berlogar-Stevens Associates, Fault Investigation Report Napa Oaks Old Sonoma Road, Napa, California, December 19, 2014 (included in Appendix E).

Berlogar Stevens and Associates (BSA), Geotechnical Investigation Napa Oaks Old Sonoma and Casswall Street, Napa California, dated March 14, 2011 (included in Appendix E).

Phoenix Geotechnical, Addendum to Geotechnical Report, August 18, 1998.

Phoenix Geotechnical (PG), Preliminary Geotechnical Feasibility Study, Napa Oaks Subdivision, March 28, 1994.

ENGEO, Inc. Geotechnical Exploration for Napa Oaks. Report to Dividend Development Corporation, July 7, 1987.

Clahan, K.B., Wagner, D.L., Saucedo, G.J., Randolph-Loer, C.E., and Sowers, J.M., 2004, Geologic map of the Napa 7.5-minute quadrangle, Napa County, California: A digital database: California Geological Survey, Preliminary Geologic Maps, scale 1:24,000

Dwyer, M. J.; Noguchi, N.; O'Rourke, J. E., 1976, Reconnaissance photointerpretation map of landslides in 24 selected 7 1/2-minute quadrangles in Lake, Napa, Solano, and Sonoma counties, California USGS Open-File Report: 76-74

Fox, K.F., Sims, J.D., Bartow, J.A., and Helley, E.J., 1973, Preliminary geologic map of eastern Sonoma County and western Napa County, California: U.S. Geological Survey, Miscellaneous Field Studies Map MF-483, scale 1:62,500.

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

Phoenix Geotechnical (PG), Preliminary Geotechnical Feasibility Study, Napa Oaks Subdivision, March 28, 1994.

Phoenix Geotechnical, Addendum to Geotechnical Report, August 18, 1998.

2007 Working Group on California Earthquake Probabilities, 2008, The Uniform California Earthquake Rupture Forecast, Version 2 (UCERF 2): U.S. Geological Survey Open-File Report 2007-1437 and California Geological Survey Special Report 203 [<http://pubs.usgs.gov/of/2007/1437/>].

KNOWN CONCERNS

In the scoping meeting, neighbors expressed concern regarding unstable soils in the area, slope stability, and whether development is prohibited because of sensitive environmental conditions including an earthquake fault. These concerns have been addressed in this analysis.

ENVIRONMENTAL SETTING

REGIONAL GEOLOGY AND SEISMICITY

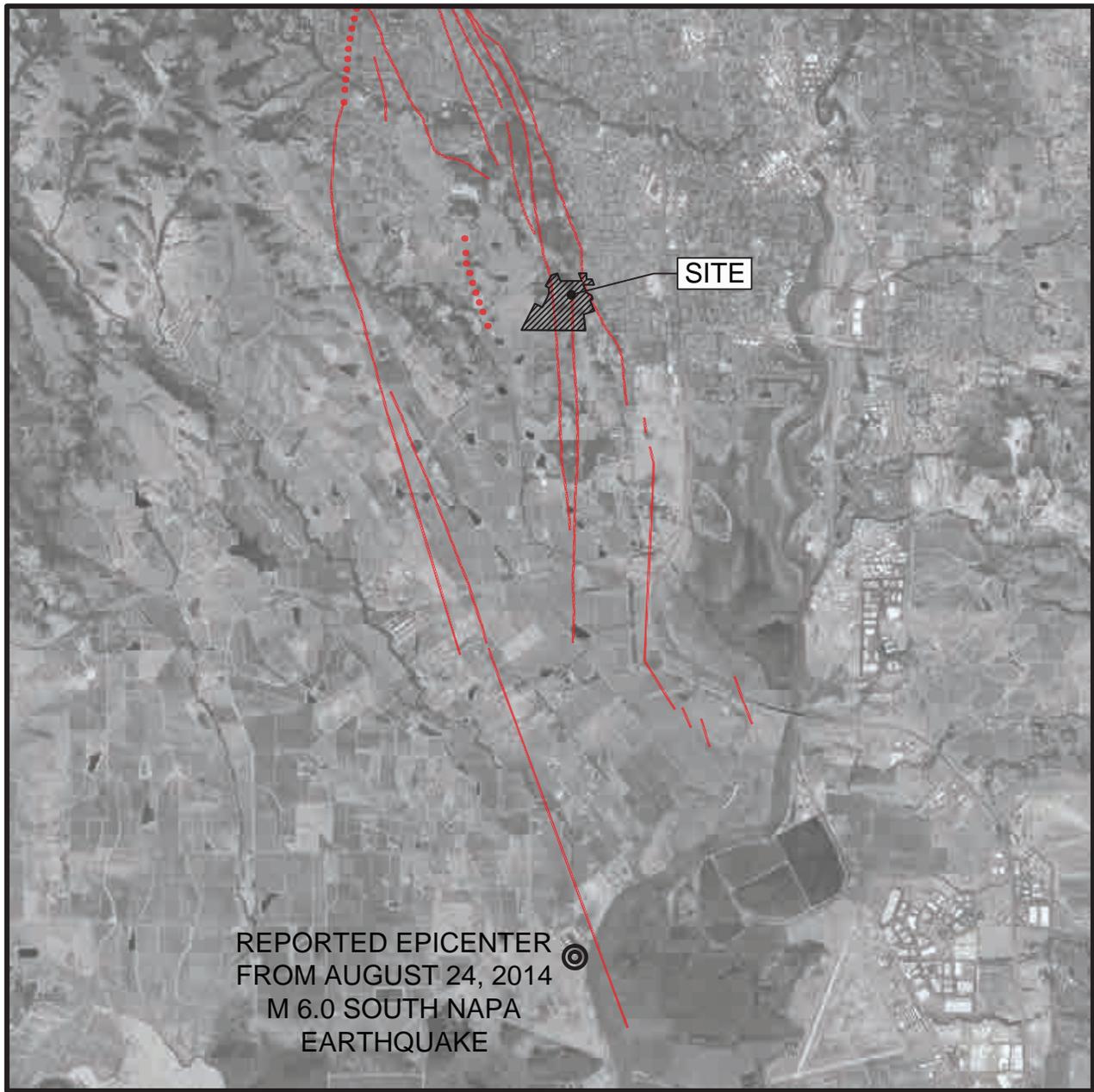
The site is located within the California Coast Ranges geomorphic province. This province is an approximately 600-mile long, northwest-trending series of rugged mountains and intervening valleys, whose width extends from the Pacific Ocean eastward to the Great Valley (Sacramento and San Joaquin Valleys). Tectonic forces, including folding and faulting, have created the geologic structure of this region, which has been ongoing for several tens of millions of years. The present physiographic appearance of the province has been formed largely over the last few million years by the forces of tectonic uplift (mountain building) and erosion.

The oldest and most wide-spread geologic unit in the Coast Ranges is the complexly deformed, mildly to moderately metamorphosed marine sedimentary and volcanic rocks of the Jurassic to Early Tertiary (about 50 to 150 million years in age) Franciscan Assemblage. The Franciscan rocks are locally overlain by younger bedrock units of marine, continental, or volcanic origin. In the general area of the Napa Oaks Project, these younger units consist of the Sonoma Volcanics series and the Domengine Sandstone overlying the Franciscan rocks.

Faults and Seismicity

The site is within the Coast Range Province, which is considered seismically active, and several northwest-trending active fault zones exist within several miles of the property, including the zoned portion of the West Napa fault at 4.4 miles, the Green Valley fault at 7.2 miles, the Hayward fault at 18.9 miles and the San Andreas (northern) fault at 30.4 miles from the Project site.

The West Napa Fault zone passes through the site (Helley and Herd, 1977, Jennings, and Bryant, 2010). The southern portion of the West Napa Fault Zone, located about 4 miles southwest of the site, is classified as a Holocene-active feature by the California Geological Survey (CGS). The State has defined an Alquist-Priolo Earthquake Fault Zone for the southern portion of the fault. The northern portion of the fault zone, including the on-site section, is considered to be of Late Quaternary age (younger than 700,000 years), with the exception of a short Holocene-age segment about a mile north of the site (Jennings and Bryant, 2010, USGS Quaternary Fault and Fold Database). The fault traces in the vicinity of the Project site are shown on **Figure 9.1**.



———— QUATERNARY FAULT TRACES IN THE DATABASE FOR FAULT NO. 36A

Figure 9.1:
Vicinity Fault Traces

Source: Berlogar Stevens & Associates, dated 12-2-14, from Quaternary Fault Map, Fault Number 36A, West Napa Fault

The site is not within a designated Alquist-Priolo Earthquake Fault Zone, though fault traces exist on the site, as discussed in more detail under the Site Geology and Soils header below.

There are numerous ways to measure and discuss the magnitude and intensity of seismic activity. The most easily understood is the Modified Mercalli scale, which assigns intensity values of I to X to represent the perceived strength of shaking. Based upon the modeled intensity of shaking that could occur on the site from a maximum credible earthquake on any of the nearby faults, ground shaking at the site could reach the following levels on the Modified Mercalli (with descriptions following):

VII. Very Strong: Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.

VIII. Severe: Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.

Expected ground shaking of this intensity during maximum predicted earthquake events is not uncommon throughout the seismically active Bay Area. New structures are engineered based on calculated possible intensity of shaking in geotechnical reports.

SOUTH NAPA EARTHQUAKE

On August 24, 2014, a magnitude (M) 6.0 earthquake occurred with the epicenter located about 6 miles southwest of the City of Napa, California. Strong ground motions from the earthquake caused damage to several older buildings in the downtown area, deformed roadways and pipelines, and damaged homes.

The earthquake event is considered to have occurred on a fault splay within the West Napa fault zone with surface rupture reported on 2 main fault strands along the west side of Napa. The report for the event prepared by the Earthquake Engineering Research Institute (EERI) shows a “Western Strand” located about 1¼ miles west of the Napa Oaks site and an “Eastern Strand” which crosses through the Napa Oaks site. Earthquake epicenters for the main event and associated aftershocks were located on the western strand defined in the EERI report. There were no epicenters plotted on the eastern strand. The eastern strand is the fault that passes through the Napa Oaks Project. The approximate location of the epicenter from the August 24, 2014 M6.0 South Napa Earthquake is shown on Figure 9.1. The earthquake produced surface rupture for a distance of about approximately 12 to 15 km along a zone of discontinuous faults that extends for a distance of about eight miles from Cuttings Wharf along the west edge of Napa Valley through the Browns Valley area, to beyond the northern boundary of Alston Park in the city of Napa. Surface rupture occurred through the central portion of the Napa Oaks Project, generally east of the fault trace previously identified and trenched by previous trenching studies at the site (PG, 1994, 1998) and outside the setback zone previously incorporated into the land plan.

SEISMIC HAZARDS

As described above, the site is in a region of high seismic activity and is expected to be subjected to major shaking during the design life of the Project. Seismic hazards commonly evaluated for similar projects in the site vicinity include surface fault rupture, strong-ground shaking, soil liquefaction, and lateral spreading.

Surface Fault Rupture

Surface fault rupture is the displacement at the ground surface that occurs during an earthquake along the surface trace of a fault. Surface fault rupture can consist of both vertical and lateral ground displacement of up to several feet in magnitude. Surface fault rupture hazards are regulated by the State as described in the Alquist-Priolo Earthquake Fault Zoning Act. As describe above the Napa Earthquake produced surface rupture through the site.

Following the South Napa Earthquake, the applicant's consultant, BSA documented a zone of relatively continuous ground cracks on the site, extending from the barn area at the north end of the site to the southern property line. The surveyed locations of the surface cracks are shown on the BSA Fault Setback Map (BSA, 2014).

Strong Ground Shaking

The strongest ground motions produced by the South Napa earthquake were limited to a radius of approximately 25-50 km of the epicenter. The USGS ShakeMap (version 15) indicates a maximum shaking intensity of IX on the Modified Mercalli Intensity (MMI) Scale. The greatest felt shaking was severe (MMI VIII) in the immediate epicentral area. The Napa Oaks site will experience additional episodes of strong ground shaking due to future large earthquakes. The intensity of ground motion will depend on the characteristics of the generating fault, distance to the fault, direction of ground motion, earthquake duration and site specific geologic conditions. Seismic design methods are specified by the California Building Code.

Liquefaction

Soil liquefaction is a condition in which saturated, granular soils undergo a substantial loss of strength and deformation due to pore pressure increase resulting from cyclic stress application induced by earthquakes. In the process, the soil acquires mobility sufficient to permit both horizontal and vertical movements if the soil mass is not confined. Soils most susceptible to liquefaction are saturated, loose, clean, uniformly graded, and fine-grained sand deposits. If liquefaction occurs, foundations resting on or within the liquefiable layer may undergo settlements, called densification. This will result in reduction of foundation stiffness and capacity.

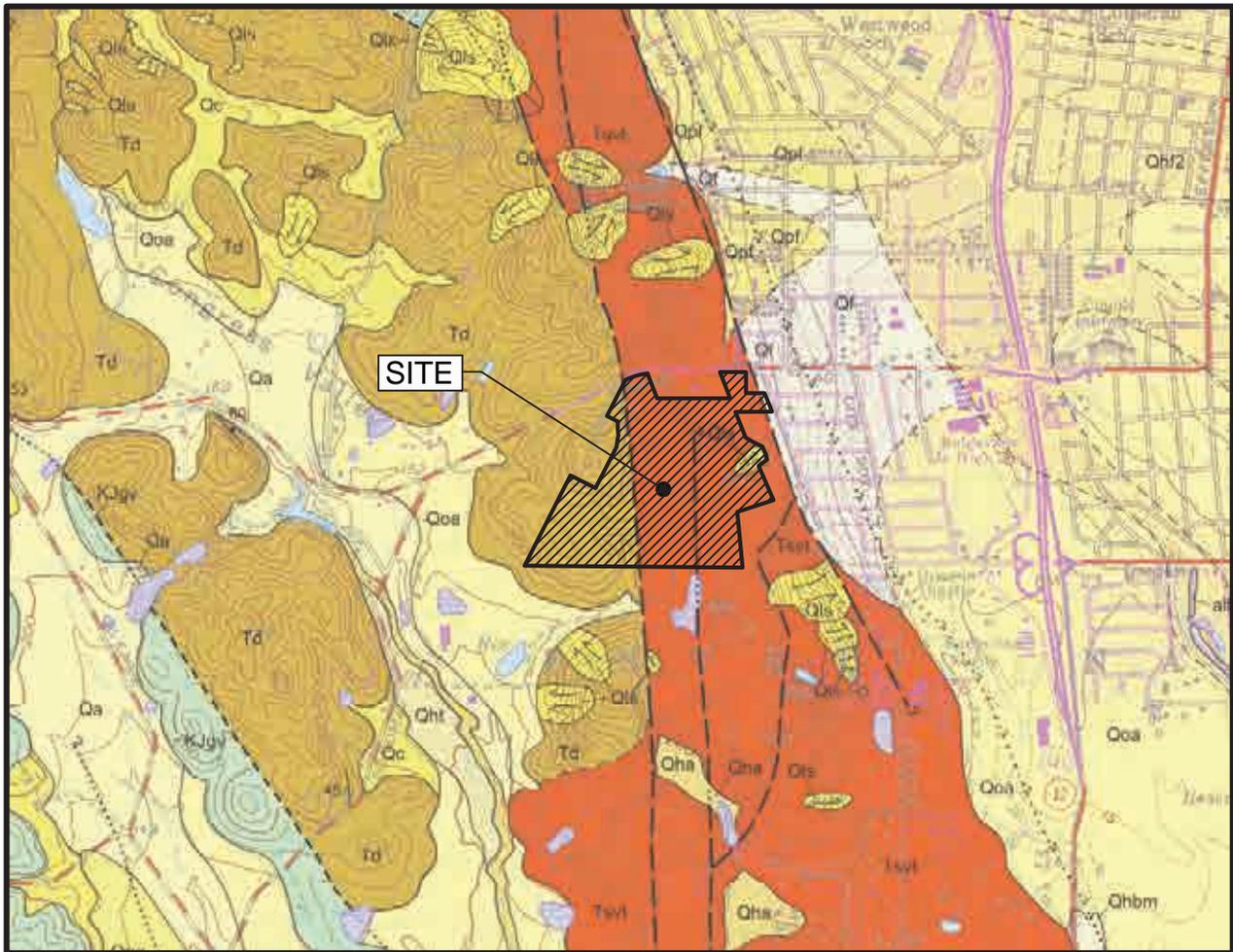
Lateral Spreading

Lateral spreading is a consequence of liquefaction, which results in the horizontal movement of soil on top of liquefied granular or sandy soils or weak clayey soils induced by strong seismic shaking. Lateral spreading can cause severe cracking and differential displacement of the ground surface. Areas most susceptible to lateral spreading are un-engineered man-made fill and loose cohesionless alluvial deposits along streams and channels.

SITE GEOLOGY AND SOILS

Bedrock Formations

The geology of the site vicinity has been mapped by Clahan, et al. (2004) as depicted on **Figure 9.2**. In addition, detailed geologic mapping of the surficial deposits was performed by Berlogar & Stevens Associates (2011, 2013). The geologic mapping of Berlogar Stevens Associates (2013) is presented on **Figure 9.3**.



Key

CONTACT BETWEEN MAP UNITS - SOLID WHERE ACCURATELY LOCATED, DASHED WHERE APPROXIMATELY LOCATED, DOTTED WHERE CONCEALED, QUERIED WHERE UNCERTAIN

FAULT - SOLID WHERE ACCURATELY LOCATED, DASHED WHERE APPROXIMATELY LOCATED, DOTTED WHERE CONCEALED, QUERIED WHERE UNCERTAIN

Qf ALLUVIAL FAN DEPOSITS
SAND, GRAVEL, SILT AND CLAY MAPPED ON GENTLY SLOPING, FAN-SHAPED, RELATIVELY UNDISSECTED ALLUVIAL SURFACES

Qa ALLUVIUM UNDIVIDED
FLAT, RELATIVELY UNDISSECTED FAN, TERRACE, AND BASIN DEPOSITS

Qpf ALLUVIAL FAN DEPOSITS
COMPOSED OF POORLY TO MODERATELY SORTED SAND, SILT, CLAY AND GRAVEL

Qoa ALLUVIUM
COMPOSED OF CONSOLIDATED SAND, SILT, CLAY AND GRAVEL. TOPOGRAPHY IS MODERATELY ROLLING WITH LITTLE OR NO ORIGINAL ALLUVIAL SURFACES PRESERVED, DEEPLY DISSECTED

Qls LANDSLIDE DEPOSITS
INCLUDES DEBRIS FLOWS AND BLOCK SLIDES

Tsvt LIGHT COLORED TUFF, LITHIC RICH PLACES. LOCALLY INCLUDES TUFFACEOUS, DIATOMACEOUS LACUSTRINE SEDIMENTS

Td DOMENGINE SANDSTONE
BROWN QUARTZO-FELSPATHIC SANDSTONE WITH MINOR THIN CLAYSTONE INTERBEDS

**Figure 9.2:
Area Geology**

Source: Berlogar Stevens & Associates, dated 12-10-14

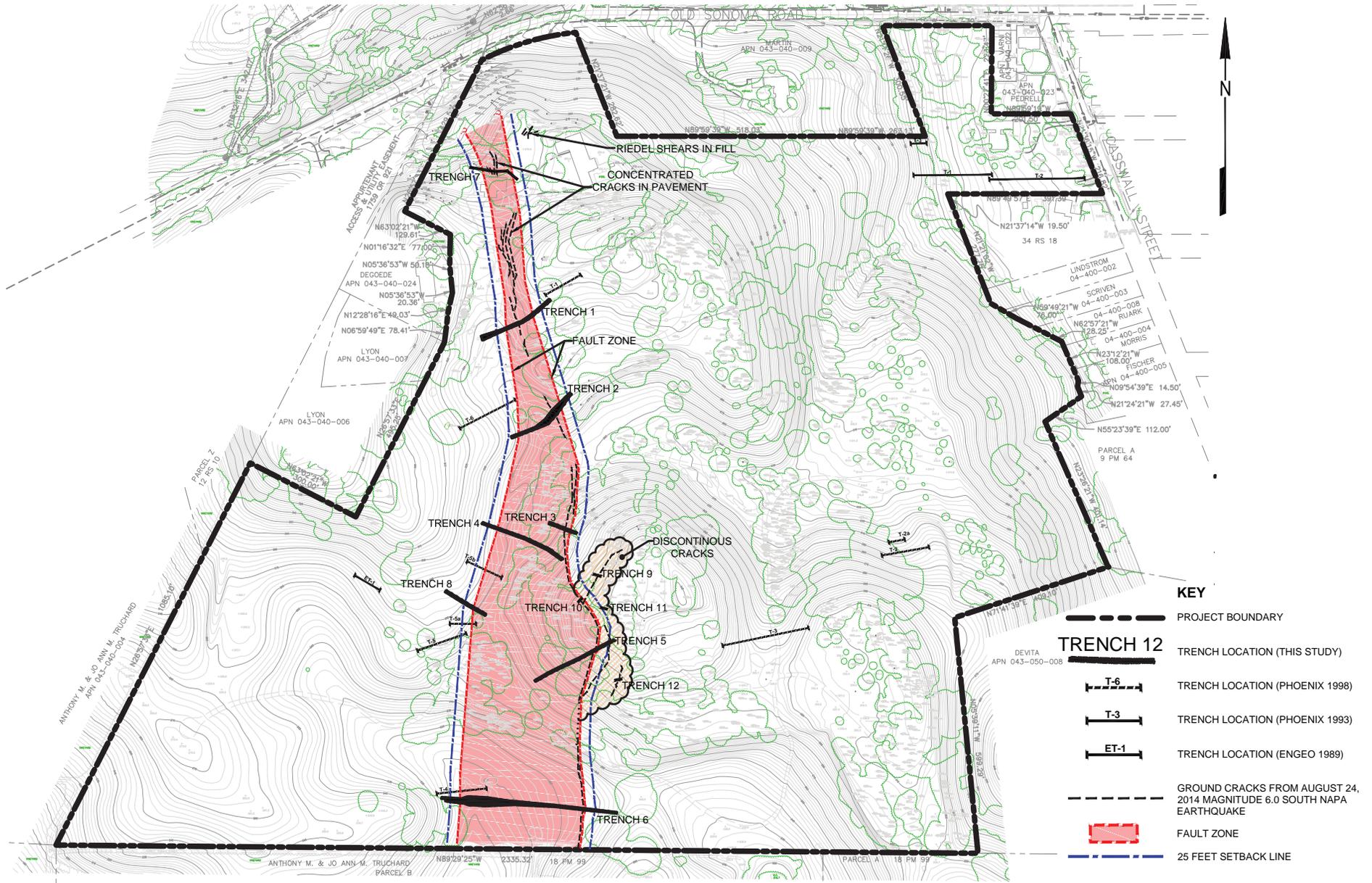


Figure 7.3: Fault Setback Map

Source: Berlogor Stevens & Associates, dated 12-9-15

The bedrock formations at the site include the Sonoma Volcanic series and the Domengiene Sandstone. Rocks of the Sonoma Volcanics series consist of ashfalls, lava flows, and agglomerates, which are complexly interlayered and variable in their physical and engineering properties.

The Domengiene Sandstone has been mapped as underlying the southwestern-most part of the Project site. The Domengiene formation is described as predominantly sandstone with subordinate amounts of mudstone or shale, and where observed the sandstone is massive, fine grained, hard to very hard, slightly to highly fractured, and light buff in color.

Subsurface exploration, including core drilling and seismic refraction surveys was conducted by Phoenix Geotechnical (1998) to evaluate the excavatability of the Sonoma Volcanics in proposed cut areas. Overall, the seismic refraction and borehole samples indicate that blasting should not be required in order to excavate rock to the proposed cut depths. They concluded that the bedrock is likely rippable with conventional grading equipment and would not produce excessive amounts of oversize fragments.

Fault Traces

PG (1994, 1998) undertook fault trenching investigations to evaluate the potential for surface fault rupture within the Project. Phoenix Geotechnical excavated nine trenches across three previously mapped fault traces (depicted on Figure 9.2) within the Project and across two lineations identified on aerial photographs as possibly being of fault origin. As a result of the trenching, setback zones (a zone to be avoided by proposed residential structures) were established on two of the traces. Other traces and lineations were either found to be nonexistent or to be older than Holocene in age (and therefore not active). The locations of the trenches and fault setbacks are depicted on Figure 9.3.

Following the South Napa Earthquake, BSA conducted a supplemental fault investigation at the site that consisted of site reconnaissance, mapping of surface cracks and the excavation and logging of 12 exploratory trenches totaling about 1,709 lineal feet. BSA enlisted assistance from representatives of the United States Geological Survey USGS and the California Geological Survey (CGS) in their interpretation of the conditions exposed in the trenches. They also retained Dr. Glenn Borchardt of Soil Tectonics, a recognized expert in dating of soil deposits.

In addition to the observed ground cracks, the BSA trench explorations found evidence of previous Holocene and possible Pleistocene activity on faults crossing through the Napa Oaks site. The faults generally form the east and west boundaries of the fault zone shown on the BSA (2014) Fault Setback Map. BSA concluded that, due to the low slip rate faults in the area (estimated to be on the order of about 1mm per year according to the USGS), erosion of the site has occurred at a much faster rate than the rate of tectonic slip. As a result the geomorphic expression of the fault through the site is weakly developed. They concluded that the Holocene-active portions of the fault are concentrated along the eastern margin of a broader zone of Pleistocene faulting as shown on their Plate 4. The western margins of the zone roughly correspond to the fault traces previously identified by PG. Based on trench exposures, BSA found that Holocene activity along the fault showed strong evidence for repeatability in close proximity to the surface rupture observed after the earthquake. Based on these observations, they concluded that future movement of the fault could be expected to occur along the eastern margin of the fault zone. BSA combined the Holocene and Pleistocene fault zones into one large zone as shown on their Plate 4.

BSA concluded that, based on the results of their trenching and previous fault investigations at the site, all faults mapped through the site by the CGS and USGS have been evaluated and that the existing Holocene fault traces with the potential to generate surface fault rupture have been identified within the areas of proposed improvements on the site.

Soil Conservation Service Soils Map

The Soil Conservation Service (SCS) has identified four different soil types at the Project site. Most of the site is overlain with soils of the Forward-Kidd complex. The typical engineering classifications for the SCS soil types mapped at the site are presented in **Table 9.1**.

Table 9.1: SCS Soil Types at Project Site

SCS SOIL TYPES	ENGINEERING CLASSIFICATIONS
Forward-Kidd complex	CL, CL-ML, SC SM-SC
Forward gravelly loam	CL-ML, SC, SM-SC
Perkins gravelly loam and gravelly clay loam	GM-GC, SM-SC SC, CL
Bressa-Dibble complex	CL, CL-ML, CH, CL

Surficial Soils Colluvium and Alluvium

In subsurface geotechnical explorations, the surficial soils were typically found to consist of medium stiff to hard sandy clay and medium dense silty to clayey gravel generally consistent with the SCS soil types listed above in **Table 9.1**. Most of the surficial soils covering the site are estimated to be less than a few feet thick. Areas where soils are estimated to exceed 5 feet in thickness are shown as colluvium (Qc) or alluvium (Qal-Qf) on the geology map, **Figure 9.3**.

Undocumented Fills

According to BSA, portions of the site are underlain by undocumented fills up to about 30 feet thick, as shown on **Figure 9.3**. The fills were placed without engineering observation and are therefore likely to have been placed on unprepared natural surface soils without keys or benches, controlled compaction, or subdrainage. BSA recommended that the portions of the undocumented fills that could affect development be removed during Project construction. At some locations, portions of the undocumented fills will remain to preserve existing trees. The limits of proposed fill removals are shown on **Figure 9.3**.

Expansive Soils

Expansive clay soils shrink and swell as a result of seasonal fluctuation in moisture content. This can cause heaving and cracking of slabs-on-grade, pavements, and structures founded on shallow foundations. Based on the ENGEO Phoenix Geotechnical and BSA explorations, most of the soils at the site have a low to moderate plasticity and shrink/swell potential.

Liquefaction

Liquefaction is a phenomenon in which saturated cohesionless soils are subject to a temporary loss of shear strength because of pore pressure buildup under the cyclic shear stresses associated with earthquakes. Lateral spreading is a failure within a nearly horizontal soil zone, commonly associated with liquefaction, which causes the overlying soil mass to move towards a free face or down a gentle slope. According to BSA (2011) report, the Project site is underlain by bedrock or native soils that are shallow, cohesive and of stiff consistency and therefore are not susceptible to liquefaction or lateral spreading.

Landslides, Soil Slips, and Rock Falls

The PG and BSA investigations identified several soil slips within the Project. The most recent site-specific geologic map depicting landslides was prepared by Berlogar & Stevens as shown on **Figure 9.3**. A soil slip is a shallow landslide similar to a debris flow that has occurred in the soil mantle overlying the surface of the bedrock. Soil slips are typically triggered by heavy rainfall. They typically occur in soil filled ravines and may travel a considerable distance down slope in steep terrain. The deposits identified as “Qf” and designated “A” through “D” on Figure 9.3 are debris fans formed by the accumulation of soil slips from the slopes above. Other soil slips within the Project boundary are designated “E” through “H” on Figure 9.3.

Along the east side of the site, BSA (2013) identified six soil slips, similar to previous mapping by PG. According to BSA, these soil slips are typically two to less than five feet thick. The soil slip areas along the east side of the site are on a sloping area outside the boundaries of the proposed lots and outside the boundary of proposed grading. BSA (2013) states that development on the nearest lots is proposed well upslope of these soil slips, and that the proposed grading and drainage improvements will divert surface runoff away from them. They therefore conclude that the existing soil slips along the east side will not be adversely impacted by the development (BSA, 2013). They also conclude that the soil slips are not likely to affect the upslope development (BSA, 2011). BSA recommends that other soil slips mapped within the Project envelope be removed and replaced with engineered fill during Project grading.

REGULATORY SETTING

ALQUIST-PRIOLO EARTHQUAKE FAULT ZONING ACT

The California Legislature passed the Alquist-Priolo Earthquake Fault Zoning Act in 1972 to mitigate the hazard of surface faulting to structures for human occupancy.¹ The Act’s main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Act addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards. Local agencies must regulate most development in fault zones established by the State Geologist. Before a project can be permitted in a designated Alquist-Priolo Earthquake Fault Zone, the city or county with jurisdiction must require a geologic investigation to demonstrate that proposed buildings would not be constructed across active or potentially active faults.

CALIFORNIA SEISMIC HAZARDS MAPPING ACT

The California Seismic Hazards Mapping Act of 1990 (California Public Resources Code Sections 2690-2699.6) addresses seismic hazards other than surface rupture, such as liquefaction and seismically induced landslides. The Seismic Hazards Mapping Act specifies that the lead agency for a project may withhold development permits until geologic or soils investigations are conducted for specific sites and mitigation measures are incorporated into plans to reduce hazards associated with seismicity and unstable soils. A seismic hazard map has not been published for the Napa Area.

CALIFORNIA BUILDING CODE

Title 24 of the California Code of Regulations, also known as the California Building Standards Code, sets minimum requirements for building design and construction.

¹ California Division of Mines and Geology, 1997 revision, *Fault-Rupture Hazard Zones in California*, DMG Special Publication 42.

In the context of earthquake hazards, the California Building Standards Code's design standards have a primary objective of assuring public safety and a secondary goal of minimizing property damage and maintaining function during and following seismic events.²

NPDES PERMIT REQUIREMENTS

The 1972 amendments to the Federal Water Pollution Control Act (known as the Clean Water Act or CWA) provide the statutory basis for the National Pollutant Elimination System (NPDES) permit program and the basic structure for regulating the discharge of pollutants from point sources to waters of the United States. In 1987, amendments to the CWA added section 402(p), which established a framework for regulating non-point source storm water discharges under the NPDES. Under the program, the Project applicant will be required to comply with two NPDES permit requirements.

The Project applicant will be required to comply with the NPDES General Construction Permit Requirements, including a site-specific plan called the Stormwater Pollution Prevention Plan (SWPPP) for construction activities and Provision C.3 of the NPDES permit that requires the flow of stormwater and stormwater pollutants to be controlled. This relates to geology because sediment from construction dirt and erosion is considered a stormwater pollutant.

IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

According to the currently-adopted CEQA Guidelines, exposure of people or structures to major geological hazards is considered a significant adverse impact. Per the California Supreme Court *CBI v. BAAQMD* decision (Case No. S213478, filed December 17, 2015), the scope of CEQA analyses should be limited to the effect of the environment on a project (as opposed to the effect of a project on the environment). Therefore, thresholds related to geological and seismic risks are limited to whether or not the project will exacerbate existing seismic risks. "Induced seismicity" is the term for earthquakes caused by human activity, and while not all mechanisms have been scientifically proven, all suspected forms of induced seismicity involve substantial increase or loss of mass in an area, such as through the creation of artificial lakes through dam construction, large-scale removal of coal from mining, large-scale extraction of oil deposits or groundwater reserves, or large-scale liquid injection for waste disposal or hydraulic fracturing. Other than by avoiding induced seismicity, there is currently no known mechanism for changing the risks of surface fault rupture during an earthquake.

The potential geologic, geotechnical, and seismic effects of the proposed Project can be considered from two points of view: (1) construction impacts; and, (2) geologic hazards to people or structures. The basic criterion applied to the analysis of construction impacts is whether construction of the Project will create unstable geologic conditions that would last beyond the short-term construction period. The analysis of geological hazards is based on the degree to which the site geology could produce hazards to people or structures from earthquakes, ground shaking, ground movement, fault rupture, or other geologic hazards, features or events.

According to the current CEQA Guidelines, the project would have a significant environmental impact if it were to result in:

² Bonneville, David New Building Code Provisions and Their Implications for Design and Construction in California (abstract), 2007, obtained from http://www.consrv.ca.gov/cgs/smip/docs/seminar/SMIP07/Pages/Paper12_Bonneville.aspx

1. The exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving 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;
2. The exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving strong seismic ground shaking or seismic-related ground failure, including liquefaction;
3. The exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving landslides;
4. Development located on a geologic unit or soil that is unstable (or that would become unstable as a result of the Project) and which could potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse;
5. Development located on expansive soil, creating substantial risks to life and property;
6. The loss of topsoil or development in an area of erodible soils; or
7. Development in areas where soils are incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

EARTHQUAKE FAULT

Although CEQA does not require an agency to consider the impact of existing conditions on future project users per recent case law³, the following discussion is included for informational purposes.

The site experienced surface fault rupture during the 2014 South Napa Earthquake. In addition to the observed ground cracks, site specific fault studies have identified a zone of active and potentially active faults on the Project site. In addition to the ground cracks observed along the fault zone, BSA identified discontinuous distributed ground cracks slightly east of main fault zone. Surface fault rupture is the result of tectonic forces in the Earth's crust and the potential for or intensity of a surface fault rupture would not be affected (neither exacerbated nor reduced) by the Project.

BSA has recommended a geologic setback zones for habitable structures as shown on Figure 9.3. Roadways depicted on the plan cross possible active fault traces. The potential impact to roads is not significant as roadway disruption would likely be minor and roadway repairs could be done quickly.

BSA has additionally recommended fault setbacks around observed ground cracks as shown on Figure 9.3. In addition, they have recommended strengthened foundations for lots in close proximity to ground cracks.

The following are included as conditions of approval for the Project to address the potential for the Project to be affected by surface fault rupture:

- The Project layout shall adhere to the geologic setback zones recommended by BSA (2014) as shown in Figure 9.3.
- The Project shall adhere to BSA's recommendations for strengthened foundations for lots potentially affected by distributed ground cracks (lots 16, 17 and 18).

³ *CBIA v. BAAQMD*, December 17, 2015.

GROUND SHAKING AND SEISMIC-RELATED GROUND FAILURE

Although CEQA does not require an agency to consider the impact of existing conditions on future project users per recent case law⁴, the following discussion is included for informational purposes.

The Project is located in a seismically active region and likely to be subject to strong seismic shaking during the life of the improvements. An earthquake of moderate to high magnitude generated within the San Francisco Bay Region could cause considerable ground shaking at the site. The Project would not constitute regionally-significant changes in mass that could potentially result in induced seismicity (see Standards of Significance discussion above) or otherwise exacerbate existing seismic risks.

The potential for liquefaction on the Project site as a result of strong seismic shaking is considered to be low.

The following is included as a condition of approval for the Project to address the potential for the Project to be affected by strong seismic ground shaking:

- Compliance with the design-level Geotechnical Investigation report prepared by BSA and with Structural Design Plans as prepared by a Licensed Professional Engineer. Proper slope and foundation engineering and construction shall be performed in accordance with the recommendations of BSA and a Licensed Professional Engineer. The structural engineering design, with supporting design-level Geotechnical Investigation, shall incorporate seismic parameters compliant with the California Building Code.

Geotechnical investigations and recommendations have already been prepared by licensed professional engineers as listed in the introduction to this chapter. Following Project approvals and prior to obtaining building permits, it is standard practice to update geotechnical and structural design plans with more detailed design-level specifications that will ensure construction consistent with safety codes given the characteristics of the site.

LANDSLIDES AND UNSTABLE SOILS

Impact Geo-1: Landslides and Unstable Soils. The topography and soils at the Project site represents a concern for landslides and unstable soils if not properly mitigated. The impact related to unstable soils and landslides would be *potentially significant*.

Several small landslides (soil slips) were identified on the Project site in the BSA report. Landslides can be a significant hazard; however, they can generally be mitigated by proper grading and design of drainage. Additionally, compressible undocumented fills previously utilized at the site could result in differential settlements if left unmitigated.

Mitigation Measure

Geo-1: Compliance with the design-level Geotechnical Investigation report prepared by BSA and with Structural Design Plans as prepared by a Licensed Professional Engineer. Proper slope and foundation engineering and construction shall be performed in accordance with the recommendations of BSA and a Licensed Professional Engineer. The structural engineering design, with supporting

⁴ *CBIA v. BAAQMD*, December 17, 2015.

design-level Geotechnical Investigation, shall incorporate seismic parameters compliant with the California Building Code.

The BSA report provides recommendations for slope stabilization, removal and replacement of compressible and unstable soils and for compaction of fills. According to BSA, the four existing small landslides along the east site boundary would not be impacted by the Project development. BSA (2013) states that all slopes steeper than 3H:1V should be observed and mapped during grading. If areas with the potential for rockfall or soil sloughing are observed, BSA will provide appropriate supplemental recommendations for mitigation. This will be included with design-level geotechnical recommendations.

Compliance with the design-level Geotechnical Investigation and Structural Design Plans, as required by mitigation measure **Geo-1** will reduce the potential impact of unstable soils and landslides to a *less than significant* level.

EXPANSIVE SOILS

Although CEQA does not require an agency to consider the impact of existing conditions on future project users per recent case law⁵, the following discussion is included for informational purposes.

Site soils are identified as low to moderately expansive. The BSA (2011) report provides recommendations for grading and foundation design anticipating possible expansive soils. According to calculations in the report, implementation of the recommendations will result in differential foundation movements of less than one inch, which is within design parameters for modern structures. The Project will be required to comply with the design-level Geotechnical Investigation and Structural Design Plans, which will reduce the risk associated with expansive soils.

EROSION OR LOSS OF TOPSOIL

Impact Geo-2: Construction-Period Soil Erosion. Grading and construction activities will expose soil to the elements, which would be subject to erosion during storm events. This is a *potentially significant* impact.

The sloped nature of the site, extent of grading activities, and fact that the relatively nutrient-poor bedrock could make re-establishment of stabilizing vegetation difficult all contribute to a high potential for erosion or loss of topsoil during construction activities if not properly mitigated.

Mitigation Measure

Geo-2: Construction-Period Stormwater Pollution Prevention Plan (SWPPP). The Project applicant shall prepare and implement a SWPPP for the proposed construction period. The SWPPP and Notice of Intent (NOI) must be submitted to the State Water Resources Control Board to receive a Construction General Permit. The plan shall address National Pollutant Discharge Elimination System (NPDES) requirements, include applicable monitoring, sampling and reporting, and be designed to protect water quality during construction. The Project SWPPP shall include “Best Management Practices” (BMPs) as required by the State and the Regional Water Quality Control Board for preventing stormwater pollution through soil stabilization, sediment control, wind erosion control, soil tracking

⁵ *CBIA v. BAAQMD*, December 17, 2015.

control, non-storm water management, and waste management and materials pollution control.

The SWPPP shall take into account the following considerations recommended by the preliminary geotechnical report:

- Ponding of stormwater, other than within engineered detention basins, should not be permitted at the site, particularly during work stoppage for rainy weather. Before the grading is halted by rain, positive slopes should be provided to carry surface runoff to storm drainage structures in a controlled manner to prevent erosion damage.
- The tops of fill or cut slopes should be graded in such a way as to prevent water from flowing freely down the slopes. Due to the nature of the site soil and bedrock, graded slopes may experience severe erosion when grading is halted by heavy rain. Therefore, before work is stopped, a positive gradient away from the tops of slopes should be provided to carry the surface runoff away from the slopes to areas where erosion can be controlled. It is vital that no completed slope be left standing through a winter season without erosion control measures having been provided.
- Because the existing bedrock is relatively nutrient-poor, it may be difficult for vegetation to become properly established, resulting in a potential for slope erosion. Revegetation of graded slopes can be aided by retaining the organic-rich strippings and spreading these materials in a thin layer (approximately 6 inches thick) on the graded slopes prior to the winter rains and following rough grading. When utilizing this method, it is sometimes possible to minimize hydroseeding.

Implementation of a construction-period stormwater pollution prevention plan, as required by mitigation measure **Geo-2** will reduce the impact of substantial soil erosion and loss of topsoil to *less than significant* level through the implementation of the SWPPP to stabilize soil and control sediment, wind erosion and soil tracking and performing applicable monitoring, sampling and reporting.

CAPABILITY OF SOILS TO SUPPORT SEPTIC TANKS

The Project site would be connected to the local sewer system and the Project does not propose to build any septic tanks or alternate waste disposal systems. Therefore, there is *no impact* related to soils incapable of supporting septic systems.

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GREENHOUSE GAS EMISSIONS

INTRODUCTION

This chapter utilizes information from the following reports prepared for this Project or analysis:

Emissions Model and Construction Health Risk Assessment Results compiled by Lamphier-Gregory for this analysis in July 2013 (included in Appendix B).

SETTING

There is a general scientific consensus that global climate change is occurring, caused in whole or in part, by increased emissions of greenhouse gases (GHGs) that keep the Earth's surface warm by trapping heat in the Earth's atmosphere¹, in much the same way as glass traps heat in a greenhouse. While many studies show evidence of warming over the last century and predict future global warming, the precise causes of such warming and its potential effects are far less certain.² In its "natural" condition, the greenhouse effect is responsible for maintaining a habitable climate on Earth, but human activity has caused increased concentrations of these gases in the atmosphere, thereby contributing to an increase in global temperatures.

The U.S. EPA has recently concluded that scientists know *with virtual certainty* that:

"Human activities are changing the composition of Earth's atmosphere. Increasing levels of greenhouse gases like CO₂ in the atmosphere since pre-industrial times are well documented and understood.

- The atmospheric buildup of CO₂ and other greenhouse gases is largely the result of human activities such as the burning of fossil fuels.
- A warming trend of approximately 0.7 to 1.5°F occurred during the 20th century. Warming occurred in both the northern and southern hemispheres, and over the oceans.

¹ U.S. Environmental Protection Agency (U.S. EPA), Global Warming – Climate: Uncertainties (web page), January 2000, <http://yosemite.epa.gov/oar/globalwarming.nsf/content/ClimateUncertainties.html#likely>, accessed July 24, 2007.

² "Global climate change" is a broad term used to describe any worldwide, long-term change in the earth's climate.

"Global warming" is more specific and refers to a general increase in temperatures across the earth, although it can cause other climatic changes, such as a shift in the frequency and intensity of weather events and even cooler temperatures in certain areas, even though the world, on average, is warmer.

- The major greenhouse gases emitted by human activities remain in the atmosphere for periods ranging from decades to centuries. It is, therefore, virtually certain that atmospheric concentrations of greenhouse gases will continue to rise over the next few decades. Increasing greenhouse gas concentrations tend to warm the planet.”³ At the same time, there is much uncertainty concerning the magnitude and rate of the warming. Specifically, the U.S. EPA notes that “important scientific questions remain about how much warming will occur; how fast it will occur; and how the warming will affect the rest of the climate system, including precipitation patterns and storms. Answering these questions will require advances in scientific knowledge in a number of areas:
 - Improving understanding of natural climatic variations, changes in the sun’s energy, land-use changes, the warming or cooling effects of pollutant aerosols, and the impacts of changing humidity and cloud cover.
 - Determining the relative contribution to climate change of human activities and natural causes.
 - Projecting future greenhouse emissions and how the climate system will respond within a narrow range.
 - Improving understanding of the potential for rapid or abrupt climate change.”⁴

GREENHOUSE GASES

Carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), ozone, and water vapor (H₂O) are the principal GHGs, and when concentrations of these gases exceed the natural concentrations in the atmosphere, the greenhouse effect may be enhanced. Without these GHGs, Earth’s temperature would be too cold for life to exist. CO₂, CH₄, and N₂O occur naturally, as well as through human activity. Of these gases, CO₂ and CH₄ are emitted in the greatest quantities from human activities. Emissions of CO₂ are largely byproducts of fossil fuel combustion, whereas CH₄ results from off gassing associated with agricultural practices and landfills. Human-made GHGs—with much greater heat-absorption potential than CO₂—include fluorinated gases, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFC), and sulfur hexafluoride (SF₆), which are byproducts of certain industrial processes.⁵

The Global Warming Potential (GWP) concept is used to compare the ability of each GHG to trap heat in the atmosphere relative to CO₂, which, after water vapor, is the most abundant GHG. CO₂ has a GWP of 1, expressed as CO₂ equivalent (CO₂e). Other GHGs, such as methane and nitrous oxide are commonly found in the atmosphere at much lower concentrations, but with higher warming potentials, having CO₂e ratings of 21 and 310, respectively. Trace gases such as chlorofluorocarbons and hydrochlorofluorocarbons, which are halocarbons that contain chlorine, have much greater warming potential. Fortunately these gases are found at much lower concentrations and many are being phased out as a result of global efforts to reduce destruction of stratospheric ozone. In the United States in 2008, CO₂ emissions account for about 85 percent of the GHG emissions, followed by methane at about 8 percent and nitrous oxide at just under 5 percent.⁶

³ U.S. EPA, 2000, op. cit.

⁴ U.S. EPA, 2000, op. cit.

⁵ CalEPA, 2006b. *Final 2006 Climate Action Team Report to the Governor and Legislature*. Sacramento, CA. April 3.

⁶ *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2008*. U.S. EPA. April 15, 2010, Table 2-1: Recent Trends in U.S. Greenhouse Gas Emissions and Sinks.

POTENTIAL EFFECTS OF HUMAN ACTIVITY ON GHG EMISSIONS

As mentioned above, the primary GHG generated by human activity is CO₂. Fossil fuel combustion, especially for the generation of electricity and powering of motor vehicles, has led to substantial increases in CO₂ emissions (and thus substantial increases in atmospheric concentrations). In 1994, atmospheric CO₂ concentrations were found to have increased by nearly 30 percent above pre-industrial (c.1860) concentrations.

Global Emissions. Worldwide emissions of GHGs in 2004 were 30 billion tons of CO₂e per year⁷ (including both ongoing emissions from industrial and agricultural sources, but excluding emissions from land-use changes).

U.S. Emissions. In 2004, the United States emitted about 8 billion tons of CO₂e or about 25 tons/year/person. Of the four major sectors nationwide—residential, commercial, industrial and transportation—transportation accounts for the highest fraction of GHG emissions (approximately 35 to 40 percent); these emissions are entirely generated from direct fossil fuel combustion.⁸

State of California Emissions. In 2004, California emitted approximately 550 million tons of CO₂e, or about 6 percent of the U.S. emissions. This large number is due primarily to the sheer size of California compared to other states. By contrast, California has one of the fourth lowest per capita GHG emission rates in the country, due to the success of its energy-efficiency and renewable energy programs and commitments that have lowered the State's GHG emissions rate of growth by more than half of what it would have been otherwise.⁹ Another factor that has reduced California's fuel use and GHG emissions is its mild climate compared to that of many other states.

The California EPA Climate Action Team stated in its March, 2006, report that the composition of gross climate change pollutant emissions in California in 2002 (expressed in terms of CO₂ equivalence) were as follows:

- Carbon dioxide (CO₂) accounted for 83.3 percent;
- Methane (CH₄) accounted for 6.4 percent;
- Nitrous oxide (N₂O) accounted for 6.8 percent; and
- Fluorinated gases (HFCs, PFC, and SF₆) accounted for 3.5 percent.¹⁰

The California Energy Commission found that transportation is the source of approximately 41 percent of the State's GHG emissions, followed by electricity generation (both in-state and out-of-state) at 23 percent, and industrial sources at 20 percent. Agriculture and forestry is the source of approximately 8.3 percent, as is the source categorized as "other," which includes residential and commercial activities.¹¹

⁷ United Nations Framework Convention on Climate Change (UNFCCC), *Sum of Annex I and Non-Annex I Countries Without Counting Land-Use, Land-Use Change and Forestry (LULUCF). Predefined Queries: GHG total without LULUCF (Annex I Parties)*. Bonn, Germany, http://unfccc.int/ghg_emissions_data/predefined_queries/items/3814.php, accessed May 2, 2007.

⁸ U.S. EPA, 2000, op. cit.

⁹ California Energy Commission (CEC), *Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004 - Final Staff Report*, publication # CEC-600-2006-013-SF, Sacramento, CA, December 22, 2006; and January 23, 2007 update to that report.

¹⁰ CalEPA, 2006b, op. cit.

¹¹ California Energy Commission (CEC), 2007, op. cit.

Bay Area Emissions. BAAQMD most recently updated the GHG emission inventory in 2010 using a base year of 2007.¹² In the Bay Area, fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of the Bay Area's GHG emissions, accounting for 36.41% of the Bay Area's 95.8 million tons of GHG emissions in 2007. Industrial and commercial sources were the second largest contributors of GHG emissions with about 36.40% of total emissions. Domestic sources (e.g., home water heaters, furnaces) account for about 7% of the Bay Area's GHG emissions, and energy production accounted for 15.9% percent. Off-road equipment and agriculture make up the remainder with approximately 3% and 1.2% of the total Bay Area 2007 GHG emissions, respectively.

Napa Emissions. City of Napa's jurisdictional emissions were calculated for 2005 emissions levels at 455,062 MT CO₂e, which is 38% of the total countywide emissions. Per capita emissions in the City of Napa, at 5.94 MTCO₂e per person, compares favorably to the county-wide average of 8.95. Countywide, emissions from transportation equated to 53% of the total emissions and residential buildings account for 16% of the total.^{13, 14}

POTENTIAL EFFECTS OF GLOBAL CLIMATE CHANGE

Global Effects

Globally, climate change has the potential to impact numerous environmental resources through potential, though uncertain, impacts related to future air temperatures and precipitation patterns. Scientific modeling predicts that continued GHG at or above current rates would induce more extreme climate changes during the 21st century than were observed during the 20th century. A warming of about 0.2°C (0.36°F) per decade is projected, and there are identifiable signs that global warming is taking place, including substantial ice loss in the Arctic.¹⁵

The projected effects of global warming on weather and climate are likely to vary regionally, but are expected to include the following direct effects, according to the IPCC.¹⁶

- Snow cover is projected to contract, with permafrost areas sustaining thawing.
- Sea ice is projected to shrink in both the Arctic and Antarctic.
- Hot extremes, heat waves, and heavy precipitation events are likely to increase in frequency.
- Future tropical cyclones (typhoons and hurricanes) will likely become more intense.
- Non-tropical storm tracks are projected to move poleward, with consequent changes in wind, precipitation, and temperature patterns. Increases in the amount of precipitation are very likely in high-latitudes, while decreases are likely in most subtropical regions.
- Warming is expected to be greatest over land and at most high northern latitudes, and least over the Southern Ocean and parts of the North Atlantic Ocean.

¹² BAAQMD, 2010. *Source Inventory of Bay Area Greenhouse Gas Emissions*. February.

¹³ City of Napa, Sustainability Plan 2012, adopted July 24, 2012, p. E-1, available at <http://www.cityofnapa.org/images/economicdevelopment/documents/CleanGreenNapa/final%20city%20of%20napa%20sust%20plan%2007%2013%2012.pdf>

¹⁴ Napa County Transportation and Planning Agency (NCTPA), 2010, Napa Countywide Community Climate Action Framework, pp. 7 - 9.

¹⁵ International Panel on Climate Change (IPCC) *Special Report on Emissions Scenarios, 2000*, www.grida.no/climate/ipcc/emission/002.htm, accessed July 24, 2007.

¹⁶ Ibid.

Potential secondary effects from global warming include global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity.

Effects on the State of California

According to CARB, some of the potential impacts in California of global warming may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years.¹⁷ Several recent studies have attempted to explore the possible negative consequences that climate change, left unchecked, could have in California. These reports acknowledge that climate scientists' understanding of the complex global climate system, and the interplay of the various internal and external factors that affect climate change, remains too limited to yield scientifically valid conclusions on such a localized scale. Substantial work has been done at the international and national level to evaluate climatic impacts, but far less information is available on regional and local impacts. In addition, projecting regional impacts of climate change and variability relies on large-scale scenarios of changing climate parameters, using information that is typically at too general a scale to make accurate regional assessments.¹⁸

Below is a summary of some of the potential effects reported in an array of studies that could be experienced in California as a result of global warming and climate change:

- Air Quality – Higher temperatures, conducive to air pollution formation, could worsen air quality in California. Climate change may increase the concentration of ground-level ozone, but the magnitude of the effect, and therefore its indirect effects, are uncertain. For other pollutants, the effects of climate change and/or weather are less well studied, and even less well understood.¹⁹ If higher temperatures are accompanied by drier conditions, the potential for large wildfires could increase, which, in turn, would further worsen air quality. However, if higher temperatures are accompanied by wetter, rather than drier conditions, the rains would tend to temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thus ameliorating the pollution associated with wildfires. Additionally, severe heat accompanied by drier conditions and poor air quality could increase the number of heat related deaths, illnesses, and asthma attacks throughout the State.²⁰
- Water Supply – Uncertainty remains with respect to the overall impact of global climate change on future water supplies in California. For example, models that predict drier conditions (i.e., parallel climate model [PCM]) suggest decreased reservoir inflows and storage and decreased river flows, relative to current conditions. By comparison, models that predict wetter conditions (i.e., HadCM2) project increased reservoir inflows and storage, and increased river flows.²¹
- Hydrology – As discussed above, climate change could potentially affect the amount of snowfall, rainfall and snow pack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide and high runoff events); sea level rise and coastal flooding;

¹⁷ California Air Resources Board (CARB), 2006c. *Public Workshop to Discuss Establishing the 1990 Emissions Level and the California 2020 Limit and Developing Regulations to Require Reporting of Greenhouse Gas Emissions*, Sacramento, CA. December 1.

¹⁸ Kiparsky, M. and P.H. Gleick, 2003. *Climate Change and California Water Resources: A Survey and Summary of the Literature*. Oakland, CA: Pacific Institute for Studies in Development. July.

¹⁹ U.S. EPA, 2007, op. cit.

²⁰ California Climate Change Center (CCCC), *Our Changing Climate: Assessing the Risks to California*, CEC-500-2006-077, July 2006.

²¹ Brekke, L.D., et al, 2004. "Climate Change Impacts Uncertainty for Water Resources in the San Joaquin River Basin, California." *Journal of the American Water Resources Association*. 40(2): 149–164. Malden, MA, Blackwell Synergy for AWRA.

coastal erosion; and the potential for salt water intrusion. Sea level rise can be a product of global warming through two main processes: expansion of seawater as the oceans warm, and melting of ice over land. A rise in sea levels could result in coastal flooding and erosion and could also jeopardize California's water supply. In particular, saltwater intrusion would threaten the quality and reliability of the state's major fresh water supply that is pumped from the southern portion of the Sacramento/San Joaquin River Delta. Increased storm intensity and frequency could affect the ability of flood-control facilities (including levees) to handle storm events.

- Agriculture – California has a \$30 billion agricultural industry that produces half the country's fruits and vegetables. The California Climate Change Center (CCCC) notes that higher CO₂ levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, water demand could increase; crop-yield could be threatened by a less reliable water supply; and greater ozone pollution could render plants more susceptible to pest and disease outbreaks. In addition, temperature increases could change the time of year that certain crops, such as wine grapes, bloom or ripen, and thus affect their quality.²²
- Ecosystems and Wildlife – Increases in global temperatures and the potential resulting changes in weather patterns could have ecological effects on a global and local scale. In 2004, the Pew Center on Global Climate Change released a report examining the possible impacts of climate change on ecosystems and wildlife.²³ The report outlines four major ways in which it is thought that climate change could affect plants and animals: (1) timing of ecological events; (2) geographic range; (3) species' composition within communities; and (4) ecosystem processes such as carbon cycling and storage.

REGULATORY SETTING

INTERNATIONAL AND FEDERAL

Kyoto Protocol.

The United States participates in the United Nations Framework Convention on Climate Change (UNFCCC) (signed on March 21, 1994). The Kyoto Protocol is a treaty made under the UNFCCC and was the first international agreement to regulate GHG emissions. It has been estimated that if the commitments outlined in the Kyoto Protocol are met, global GHG emissions could be reduced by an estimated 5 percent from 1990 levels during the first commitment period of 2008–2012. It should be noted that although the United States is a signatory to the Kyoto Protocol, Congress has not ratified the Protocol and the United States is not bound by the Protocol's commitments.

Climate Change Technology Program

The United States has opted for a voluntary and incentive-based approach toward emissions reductions in lieu of the Kyoto Protocol's mandatory framework. The Climate Change Technology Program (CCTP) is a multi-agency research and development coordination effort (which is led by the Secretaries of Energy and Commerce) that is charged with carrying out the President's National Climate Change Technology Initiative.²⁴

²² California Climate Change Center (CCCC), 2006, op. cit.

²³ Parmesan, C. and H. Galbraith, *Observed Impacts of Global Climate Change in the U.S.*, Arlington, VA: Pew Center on Global Climate Change, November 2004.

²⁴ Climate Change Technology Program (CCTP), About the U.S. Climate Change Technology Program (web

U.S. Environmental Protection Agency (U.S. EPA)

To date, the U.S. EPA has not regulated GHGs under the Clean Air Act (discussed above) based on its assertion in *Massachusetts et al. v. EPA et al.*²⁵ that the “Clean Air Act does not authorize it to issue mandatory regulations to address global climate change and that it would be unwise to regulate GHG emissions because a causal link between GHGs and the increase in global surface air temperatures has not been unequivocally established.” However, in the same case (*Massachusetts v. EPA*), the U.S. Supreme Court held that the U.S. EPA can, and should, consider regulating motor-vehicle GHG emissions.

STATE OF CALIFORNIA

AB 32 and the Air Resource Board’s Climate Change Scoping Plan

In 2006, the governor of California signed AB 32, the Global Warming Solutions Act, into legislation. The Act requires that California cap its GHG emissions at 1990 levels by 2020.

On December 11, 2008, CARB adopted its *Climate Change Scoping Plan* (Scoping Plan), which functions as a roadmap of CARB’s plans to achieve GHG reductions in California required by AB 32 through subsequently enacted regulations. The Scoping Plan contains the main strategies California will implement to reduce GHG emissions by 174 million metric tons (MMT), or approximately 30 percent, from the state’s projected 2020 emissions level of 596 MMT of CO₂e under a business-as-usual scenario. The Scoping Plan also breaks down the amount of GHG emissions reductions CARB recommends for each emissions sector of the state’s GHG inventory. While CARB has identified a GHG reduction target of 15 percent for local governments themselves, it has not yet determined what amount of GHG emissions reductions it recommends from local government land use decisions. However, the Scoping Plan does state 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. CARB further acknowledges that decisions on how land is used will have large effects on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emission sectors.²⁶

California Green Building Standards Code

The Green Building Standards Code (CALGreen), requiring all new buildings in the state to be more energy efficient and environmentally responsible, took effect on January 1, 2011. These comprehensive regulations are targeted to achieve major reductions in greenhouse gas emissions, energy consumption and water use to create a greener California.

CALGreen will require that every new building constructed in California:

- Reduce water consumption by 20 percent,
- Divert 50 percent of construction waste from landfills

page), Washington, D.C., last updated April 2006, <http://www.climatechange.gov/about/index.htm>, accessed July 24, 2007.

²⁵ U.S. Supreme Court, *Massachusetts et al. v. EPA et al.* (No. 05-1120, 415F 3d 50), April 2, 2007.

²⁶ California Air Resources Board. April 22, 2010. *AB 32 Scoping Plan Implementation Update*. Accessed at <http://www.arb.ca.gov/board/books/2010/042110/10-4-1pres.pdf>.

- Install low pollutant-emitting materials
- Requires separate water meters for nonresidential buildings' indoor and outdoor water use
- Requires moisture-sensing irrigation systems for larger landscape projects
- Requires mandatory inspections of energy systems (e.g., heat furnace, air conditioner and mechanical equipment) for nonresidential buildings over 10,000 square feet to ensure that all are working at their maximum capacity and according to their design efficiencies.

REGIONAL AND LOCAL

Bay Area Air Quality Management District

The Project site falls within the San Francisco Bay Area Air Basin and therefore under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). BAAQMD provides a document titled *California Environmental Quality Act Air Quality Guidelines* ("Guidelines"), which provides guidance for consideration by lead agencies, consultants, and other parties evaluating air quality impacts in the San Francisco Bay Area Air Basin conducted pursuant to CEQA. The document includes guidance on evaluating and mitigating greenhouse gas emissions impacts.

BAAQMD updated these Guidelines in coordination with adoption of new thresholds of significance on June 2, 2010.²⁷ The most recent version of the Guidelines is dated May 2012.²⁸ The updated CEQA Guidelines revised significance thresholds, assessment methodologies, and mitigation strategies for criteria pollutants, air toxics, odors, and greenhouse gas emissions.

City of Napa High Performance Building Ordinance and Sustainability Plan

Napa City Council adopted a High Performance Building Ordinance (HPBO) in multiple phases beginning in 2008, including integration of sustainable building practices into all new construction projects in December 2010. The HPBO goes beyond CALGreen, and with respect to energy, requires projects to achieve at least 15 percent greater efficiency than the minimum state mandated Title 24 standard.

On July 24, 2012, the Napa City Council adopted the City's first Sustainability Plan, including strategies to reduce GHG emissions from both City government operations as well as community-wide. The Sustainability Plan 2012 is not a qualified GHG Reduction Strategy according to BAAQMD requirements, but it includes 95 initiatives to begin GHG reduction and can form the basis for development of such a plan.

²⁷ Bay Area Air Quality Management District. June 2, 2010. News Release http://www.baaqmd.gov/~media/Files/Communications%20and%20Outreach/Publications/News%20Releases/2010/ceqa_100602.ashx.

²⁸ Bay Area Air Quality Management District. May 2012. *California Environmental Quality Act Air Quality Guidelines*.

IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Appendix G of the CEQA Guidelines (Environmental Checklist) contains a list of air quality effects that may be considered significant. Implementation of the Project would have a significant effect on the environment if it were to:

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

The CEQA Guidelines state that, where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the above determinations. BAAQMD updated their thresholds on June 2, 2010 and the BAAQMD Guidelines most recently in May 2011, which have been used for this greenhouse gas emissions analysis, as detailed under each item below.

The BAAQMD CEQA Guidelines were the subject of a court case ultimately decided by the California Supreme Court (*CBIA vs BAAQMD*, Case No. S213478, filed December 17, 2015). The decision is expected to lead to revision or removal of thresholds based on the effect of the environment on a project (as opposed to the effect of a project on the environment). BAAQMD has yet to revise/reissue updated thresholds following this decision. In any event, thresholds related to GHG emissions would not fall under those requiring revision under this decision. Therefore, this analysis is based upon the BAAQMD 2010 Thresholds. While it is possible to instead analyze the Project under BAAQMD's previous 1999 Thresholds, BAAQMD did not include GHG emissions thresholds in its 1999 Thresholds. No federal or state thresholds exist for GHG emissions yet the California Office of Planning and Research, in the updated CEQA Guidelines and a technical advisory²⁹, requires quantification of GHG emissions and a determination of significance. In the absence of other recommended thresholds, BAAQMD's 2010 GHG emissions thresholds are utilized in this analysis and the best available thresholds to provide a conservative analysis of potential impacts from GHG emissions. These thresholds are based upon current regulations, scientific understanding and methodologies and conform to the goals of AB 32 and are therefore considered the most appropriate thresholds for a conservative CEQA analysis.

GREENHOUSE GAS EMISSIONS

BAAQMD has determined that GHG emissions and global climate change represent cumulative impacts. No single project could generate enough GHG emissions to noticeably change the global average temperature, but the combination of GHG emissions from past, present, and future projects contribute substantially to the phenomenon of global climate change and its associated environmental impacts. In developing thresholds of significance for GHG emissions, BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a

²⁹ OPR, Technical Advisory; CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act (CEQA) Review, June 19, 2008, available at: <http://opr.ca.gov/docs/june08-ceqa.pdf>.

project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse GHG emissions impacts.³⁰

BAAQMD provides two alternative quantitative thresholds, a brightline threshold of 1,100 MT of CO₂e per year to assess smaller projects or an efficiency-based threshold of 4.6 MT CO₂e per Service Population per year for larger, denser projects. In this case, the Project is small enough that the brightline threshold will be applied for this analysis.

BAAQMD presents an operational GHG screening size of 56 single-family dwelling units.³¹ The screening levels were set by BAAQMD to conservatively determine the smallest project of a certain type that could exceed applicable significance thresholds. While the Project, at 53 dwelling units, is below this screening level, it is close to it. Therefore, GHG emissions were conservatively modeled for the Project.

Impact GHG-1: Increased GHG Emissions. Construction and operation of the proposed Project would be additional sources of GHG emissions, primarily through consumption of fuel for transportation and energy usage on an ongoing basis. However, GHG emission levels are below those considered to be a significant contribution by the air district. This is a *less than significant* impact.

The Project's construction-period and operational GHG emissions were calculated using CalEEMod, as described in Chapter 6, with output included in Appendix B. No mitigation was applied to the model, resulting in a conservative analysis.

BAAQMD does not have an adopted threshold of significance for construction-related GHG emissions, though recommends quantification for proposed land use development projects and a determination regarding significance in relation to meeting AB 32 goals.³² While not specifically recommended by BAAQMD, it is customary in other jurisdictions to divide the construction emissions by the average building lifetime of 40 years and add this to the operational emissions to compare against operational thresholds. This method has been used for this analysis.

Temporary construction-related exhaust would be an additional source of GHG emissions that could contribute to regional greenhouse gas emissions. Sources of construction-related GHGs only include exhaust. Construction-period CO₂e would total 2,133.60 metric tons over the entire construction period. Divided over the lifetime of the buildings as described above, this would contribute 53.34 MT CO₂e per year to operational assumptions, as reflected in the quantification below.

As discussed above, as a relatively small residential Project, the Project would have a significant environmental impact if it would exceed BAAQMD's brightline GHG emissions threshold of 1,100 MT CO₂e per year.

³⁰ Bay Area Air Quality Management District. May 2011. *California Environmental Quality Act Air Quality Guidelines*, p. 2-1.

³¹ Bay Area Air Quality Management District, *California Environmental Quality Act Air Quality Guidelines*, May 2011, Table 3-1.

³² *Ibid*, p. 8-7.

TABLE 10.1: ANNUAL OPERATIONAL GHG EMISSIONS

Emissions Source	Proposed Project CO ₂ e (metric tons/year)
Area	51.63
Energy	215.32
Mobile	503.26
Waste	29.42
Water	10.97
Initial Tree Removal	22.78
Annualized Construction	53.34
Total:	886.12

Source: Lamphier-Gregory results from CalEEMod version 2011.1.1, included in full in Appendix B.

Operation of the Project as proposed would result in the generation of GHG emissions of approximately 886 MTCO₂e per year. This is below the BAAQMD threshold of 1,100 MTCO₂e per year and would therefore be a *less than significant* impact.

It should also be noted that the reported numbers above are conservatively high and do not include any mitigating circumstances or regulations, such as the required mitigation to plant new trees and landscaping on the site (See Mitigation Measure Bio-2b), increased energy efficiency required under Napa's High Performance Building Ordinance, and the City's ongoing waste reduction efforts under its Waste Reduction Policy (Resolution R2012 100 adopted on July 24, 2012).

CONSISTENCY WITH GHG REDUCTION PLANS

As discussed in the setting above, the City has not yet adopted a qualified GHG Reduction Strategy, so consistency with such a plan cannot be analyzed. A Sustainability Plan has been adopted, which outlines some early actions to affect government operations and community-wide emissions, as discussed below.

The Sustainability Plan does not identify any actions that are the responsibility of developers or new developments, but instead focuses on government operations and community outreach/education. As such, the actions identified do not specifically apply to the Project though the Project would also not interfere with implementation of the identified actions. The Project would comply with applicable related regulations including the High Performance Building Ordinance.

Emissions associated with the development of the proposed Project were analyzed per the BAAQMD May 2011 CEQA Air Quality Guidelines. BAAQMD's thresholds and methodologies take into account implementation of state-wide regulations and plans, such as the AB 32 Scoping Plan and adopted state regulations such as Pavley and the low carbon fuel standard. Therefore, there would be *no impact* in relation to consistency with GHG reduction plans. (See Chapter 6: Air Quality for a related analysis of the Project's consistency with the Clean Air Plan and Ozone Strategy.)

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HAZARDOUS MATERIALS

INTRODUCTION

A hazardous material is a substance or combination of substances which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may pose a substantial present or potential hazard to human health and safety, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

The site was assessed for the potential presence of hazardous materials as part of a previous environmental analysis of the Project site in 1999. The ownership, use, and on-site conditions have not changed since that time, so previous no new site assessment was necessary for this analysis. A 1997 Environmental Site Assessment prepared by ACC Environmental Consultants is included in Appendix F.

Follow-up soil sampling and analysis was conducted by McLaren/Hart for the previous 1999 Draft EIR for a different project on this site. The soil sampling results are included as Appendix F.

ENVIRONMENTAL SETTING

SITE USE HISTORY

The Project site is hillside with heavily wooded areas. Cattle graze on the site and there are two residences located on the site (a third residence was removed in the last decade). The site has historically been used for cattle grazing.

Based on review of historic aerial photographs, there was extensive grading on the site between 1956 and 1966. The fill material used was undocumented.

There were no indications of use/release of hazardous materials on the site during the previous assessments and conditions remain currently unchanged. Previous assessment noted the presence of undocumented fill material. Soil samples of fill material on the site found the potential for motor oil and chromium potentially above action levels. Motor oil was detected in a composite sample (composed of 4 shallow soil samples from the northeast corner of the site) at a concentration of 49 parts per million (ppm), below the default cleanup level of 100 ppm. However, because the sample was a composite, it is possible levels at any one location could exceed the 100 ppm level. Based on these results and the characteristics/history of the site, McLaren/Hart, the specialists who conducted the soil sampling analysis, considered the likelihood of widespread motor oil contamination to be low.

The composited sample contained chromium at 57 ppm, which is above the level (50 ppm) that would require further analyses to determine if it was at hazardous levels. Based on these results and the characteristics/history of the site, McLaren/Hart, the specialists who conducted the soil sampling

analysis, considered the potential for chromium to be found at or above hazardous levels upon further testing to be possible but unlikely.

Pesticides DDE and DDT were detected in the composite soil sample at concentrations of 0.0081 and 0.0076 ppm, respectively. These concentrations are well below goals for soils in residential areas of 1.3 ppm.

Hazardous Materials in the Vicinity

According to the Geotracker results, hazardous materials sites in the area consisted mostly of leaking underground storage tanks, though most of the cases have since been closed and there are no active sites within 0.5 mile of the Project. However, known past and current contamination between 0.25 mile and 1 mile of the Project site do not represent a concern of contamination of the Project site because of the distance and substantial down-gradient location.

REGULATORY SETTING

FEDERAL AND STATE LEVEL

United States Environmental Protection Agency

The chief environmental regulator at the federal level is the United States Environmental Protection Agency (EPA), Region IX for Northern California. In California the department of Toxic Substances Control is chiefly responsible for regulating the safe, handling, use, and disposal of toxic materials in the state of California, while the State Water Resources Control Board regulates discharge of potentially hazardous materials into waterways and aquifers. Programs intended to protect workers from exposure to hazardous materials and from accidental upset are covered under the Occupational Health and Safety Administration (OSHA) at the federal level and at the state level through the California Department of Occupational Safety and Health (CAL/OSHA), as well as through the California Department of Health Services (DHS).

Resource Conservation and Recovery Act

The RCRA is the United States primary law governing the handling and disposal of solid hazardous waste. The RCRA is actually an amendment, made in 1976, to the solid waste disposal act of 1965, but the amendments were so comprehensive that it is generally referred to as a new act. The RCRA defines solid and hazardous waste, authorizes the Environmental Protection Agency (EPA) to set standards for facilities that generate or manage hazardous waste, and establishes a permit program for hazardous waste treatment, storage, and disposal facilities. The RCRA was last re-authorized by the Hazardous and Solid Waste Amendments of 1984. The authorization for appropriations under the Act expired September 30, 1988, but funding for the EPA's programs in this area has continued; the Act's other authorities do not expire.¹

¹ McCarthy, J and Tiemann, M, Congressional Research Service Report RL30032 – Solid Waste Disposal Act/Resource Conservation and Recovery Act, National Council for Science and the Environment, obtained from <http://www.cnie.org/NLE/CRSreports/BriefingBooks/Laws/h.cfm>

Department of Transportation

Transportation of hazardous materials on the highways is regulated through the Federal Department of Transportation (DOT) and the California Department of Transportation (Caltrans). This includes a system of placards, labels, and shipping papers required to identify the hazards of shipping each class of hazardous materials. Existing federal and state laws address risks associated with the transport of hazardous materials. These laws include regulations outlined in the Hazardous Materials Transportation Act administered by the DOT. Caltrans is mandated to implement the regulations established by the DOT, which is published as the Federal Code of Regulations, Title 49, commonly referred to as 49 CFR. The California Highway Patrol (CHP) enforces these regulations. Regulations of hazardous materials and wastes include the manufacture of packaging and transport containers; packing and repacking; labeling; marking or placarding; handling; spill reporting; routing of transports; training of transport personnel; and registration of highly hazardous material transport.

State Water Resource Control Board

The State Water Resource Control Board (SWRCB) was created by the state legislature in 1967, with the joint authority of water allocation and water quality protection. The SWRCB runs Geo Tracker, a database of environmentally regulated facilities in California. Within the State of California there are nine regional water quality control boards. The mission of the regional boards is to develop and enforce water quality objectives and implementation plans that will best protect the state's waters, recognizing local differences in climate, topography, geology and hydrology. The City of Napa is under the purview of the San Francisco Bay Area Regional Water Quality Control Board.

Napa County Department of Environmental Management

The Napa County Department of Environmental Management is the Certified Unified Program Agency (CUPA) that coordinates and enforces numerous local, state, and federal hazardous materials management and environmental protection programs in Napa County. The CUPA administers the following programs:

- Hazardous Materials Business Plan Program
- Hazardous Waste Generator Program
- Underground Storage Tank Program
- California Accidental Release Program
- Tiered Permitting Program
- Aboveground Storage Tank Program

City of Napa General Plan

The following applicable discussion of hazards is excerpted from the Napa General Plan (Chapter 8):

Fire Hazards

Napa is characterized by a narrow valley floor surrounded and intermingled with steep, hilly terrain that contains areas that are very susceptible to wildland fires. This in turn exposes areas of development within the city to an increased risk of fire. The most vulnerable structures are the homes in or adjacent to wildland urban interface areas.

The major wildland fire hazard risks for residential development are in the city's hilly areas characterized by steep slopes, poor fire apparatus access, inadequate water pressure, and highly flammable vegetation. Recognizing that these areas differ from the typical urban fire to be served by

city fire departments, there has been a move statewide to include built-in fire protection measures for development in and adjacent to these wildland urban interface areas.

The cornerstone of wildland fire protection is the provision of defensible space around residential development in hazardous areas to protect residents and enable firefighting equipment and personnel to safely operate.

The City's basic firefighting regulations are the California Fire Code (CFC), as adopted under Chapter 15.04 of the City's Municipal Code. The CFC regulations are required for protection of life and property from wildland fires in wildland urban interface areas in the city. They address:

- Access roads (including number, length, design, grades, turnaround areas) to establish and maintain emergency vehicle access;
- Fire protection systems (hydrants, supply mains, fire sprinkler systems) to ensure available emergency water reserves;
- Roadway signage and building street address identification to ensure easy identification for quick response;
- Ignition resistant building materials and methods.
- Defensible space/clear areas to reduce combustible vegetation.

The Urban Interface Area Standard also requires the preparation of a fire hazard reduction plan for all new developments in wildland fire hazard areas.

Policies

HS-5.1 The City shall require that development in wildland urban interface areas provides adequate access roads, onsite fire protection systems, signage, ignition resistant building materials, and defensible space.

HS-5.2 The City shall continue to implement the California Fire Code as the City's basic regulations for fire prevention and suppression.

HS-5.3 The City shall implement the requirements of Chapter 7A (Materials and Construction Methods for Exterior Wildfire Exposure) if the California Building Code in or adjacent to Wildland/Urban Interface areas.

The Project site is identified as Wildland Urban Interface Area "5. Old Sonoma" (Figure 8-8 in the General Plan) with fire hazard identified across the site.

Hazardous Materials

California's economic well-being and quality of life depend in many ways on the production and use of manufactured goods. However, manufacturing and processing goods often require large volumes of chemicals and generate hazardous waste. Hazardous wastes range from family substances such as solvents and waste oil to sophisticated compounds such as polychlorinated biphenyls and dioxins. More than 10 million tons of hazardous waste are generated in California each year.

The City of Napa Fire is part of the Napa Interagency Hazard Incident Team. The purpose of the team is to mitigate the release of hazardous materials beyond that of Fire Department First Responders. The Fire Department is responsible for enforcing the City's Hazardous Materials Storage requirements, conducting inspections of facilities containing toxic and/or hazardous materials and educating local businesses on proper storage and handling of hazardous materials. The response team responds to

uncontrolled releases, identifies the category of chemicals involved, contains the spill if possible, oversees cleanup activities and makes sure that the site is safe to be occupied again.

The City adopted a Source Reduction and Recycling Element (SRRE) in 1991 pursuant to the requirements of the California Integrated Waste Management Act. The SRRE includes a separate Household Hazardous Waste Element (HHWE) which establishes short- and medium-term goals to reduce the amount of household hazardous wastes stored within the home for future disposal.

Napa County adopted a Countywide Integrated Solid Waste Management Plan Summary Plan (July, 1997) that incorporates the City's 1994 SRRE and HHWE. Also, the county was approved as the CUPA for all of the County's jurisdictions in January, 1997. In 2009 the California Integrated Waste Management Board approved the Solid Waste Local Task Force's second 5 year Review Report, which is essentially a review of the County's Integrated Waste Management Plan and a statement that the plan is still an appropriate planning tool to achieve waste diversion goals.

Currently, the County Department of Environmental Management (DEM) coordinates with the County

Agricultural Commissioner Office (ACO) to implement the following hazardous materials programs:

- Hazardous Waste Generator Program (HWG).
- Above Ground Tank Spill Prevention Control and Countermeasure Program (SPCC).
- Hazardous Materials Business Plans (HMBP).
- Risk Management and Prevention Plan (RMPP).
- Underground Storage Tank Program (UST).

Household hazardous wastes (HHW) include flammables, pesticides, corrosives, oxidizers, and miscellaneous items such as car batteries. The City's goal is to divert from landfills and/or properly dispose of 100 percent of HHW

In 2009, a permanent Household Hazardous Waste Collection Facility is available through the Napa-Vallejo Waste Management Authority in South Napa County adjacent to the Devlin Road Transfer Station. This facility is open to the general public and small quantity business generators 2 days a week (every Friday and Saturday from 9 a.m. to 4 p.m.) and has largely replaced periodic collection events.

Since October 2005, a curbside used motor oil and oil filter program is available to City single family residents through the City's solid waste collection service provider.

Similar programs are available in other south County areas. In addition to the curbside recycling programs, more than a dozen used motor oil collection drop-off and recycling locations are available to the general public in the City and County.

Free and unlimited collection and recycling of electronic waste ("e-waste") is available every day at the City's Materials Diversion Facility on Levitin Way in south Napa County. In addition, the City and County work with Napa Valley College and our contracted service providers to offer an annual 2-day event each June to collect and recycle "anything with a cord."

Finally, an aggressive public education campaign is ongoing by the City and County to educate the public on ways to 1) reduce overall HHW generation and 2) identify proper local disposal/recycling options for HHW through garbage bill inserts, recycling guides in phone books and online, phone contact numbers, and ongoing in person at special events.

Policies

HS-7.1 The City shall continue to monitor, modify if necessary, and implement goals of the Household Hazardous Wastes Element.

HS-7.2 The City shall support the Countywide Integrated Solid Waste Management Plan.

HS-7.3 The City shall support the County's role as the Certified Unified Program Agency for all County jurisdictions.

HS-7.4 The City shall seek to further develop and support policies such as green chemistry and Extended Producer Responsibility (EPR) that will reduce the overall generation of hazardous wastes and/or provide more sustainable funding and collection opportunities for the local residents and businesses.

IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The following thresholds for measuring a project's environmental impacts are based upon CEQA Guidelines thresholds:

1. Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?
2. Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?
3. Would the project produce hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?
4. Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?
5. Would the project be located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport? Would the Project result in a safety hazard for people residing or working in the Project area?
6. For a project within the vicinity of a private airstrip, would the Project result in a safety hazard for people residing or working in the Project area?
7. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?
8. Would the project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

ROUTINE TRANSPORT, USE, DISPOSAL, AND ACCIDENTAL RELEASE OF HAZARDOUS MATERIALS

Impact Haz-1: **Routine transportation, use disposal, or accidental release of hazardous materials.** Construction activities routinely utilize fuels and oils in construction equipment that may be considered hazardous and residential

operations do not generally utilize substantial amounts of hazardous materials. Compliance with applicable regulations would ensure that the impact is *less than significant*.

The proposed Project entails site grading, street paving and construction of residences. It is likely that equipment used at the site during construction activities could utilize substances considered by regulatory bodies as hazardous, such as diesel fuel and gasoline. However, all construction activities would be required to conform to Title 49 of the Code of Federal Regulations, USDOT, State of California, and local laws, ordinances and procedures.

Residential uses do not generally utilize substantial amounts of hazardous materials. The proposed residential development would not be considered a use that generates hazardous emissions or handles significant amounts of hazardous materials. If hazardous materials are stored and/or used on site, the users would be required to conform to applicable regulations. Project operations are not anticipated to create a significant hazard to the public or environment through the routine transport, use, disposal, or accidental release of hazardous materials.

With conformance to applicable regulations regarding routine use and transport and accidental release of hazardous materials, the impact of the Project would be *less than significant*.

HAZARDOUS MATERIALS EMISSIONS OR HANDLING NEAR SCHOOL

As the crow flies, the closest schools to the Project site are Snow Elementary, at approximately 0.4 mile to the southeast, and Harvest/River Middle schools at approximately 0.35 mile to the east.

The proposed residential development would not be considered a use that generates hazardous emissions or handles hazardous materials and construction-period hazardous materials usage would be limited and follow applicable regulations (see above). There would be *no impact* related to hazardous materials near a school.

The potential for hazards related to air emissions are discussed separately in Chapter 6.

HAZARDOUS MATERIALS ON THE SITE

The Environmental Site Assessment referenced previously found no documentation of soil or groundwater impairments associated with the use of the property. A review of regulatory databases maintained by county, state, and federal agencies found no documentation of hazardous materials violations, discharge, or sites on the property. The Project site is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. A review of regulatory agency records and available databases did not identify contaminated facilities within the appropriate ASTM search distances that would be expected to impact the property.

Soil sampling on the site (included as Appendix F) was performed using composite sampling for a screening assessment. This screening assessment found the possibility of significant contamination of the undocumented fill at the northeastern corner of the property with motor oil and chromium, requiring further testing.

Impact Haz-2: **Risk Exposure/Hazardous Materials.** Screening-level (composite) soil samples and analysis identified the possibility of motor oil and/or chromium at concentrations that could be above action threshold levels. While hazardous

levels are considered unlikely, this is a *potentially significant* impact without additional analysis.

Mitigation Measure

Haz-2: **Additional Soil Analysis.** Prior to the final map, the applicant shall conduct additional analyses of the suspect fill material located at the northeastern property corner. If motor oil is present in concentrations in excess of 100 ppm and/or chromium is present above hazardous levels, the contaminated material shall be appropriately removed and disposed of or appropriate on-site remediation be completed per recommendations of a certified expert.

Implementation of mitigation measure Haz-2 will reduce the impacts associated with possible contamination in the fill at the northeastern corner of the Project site to a level of *less than significant* by requiring further testing of the soil and removal or remediation as appropriate.

SAFETY HAZARDS DUE TO NEARBY AIRPORT OR AIRSTRIP

The Project site is located more than three miles northwest from the closest airport or airstrip, the Napa County Airport, and is therefore outside its influence area. No formal review by the ALUC for safety concerns would be required and there is no impact related to airport hazards.

CONFLICT WITH EMERGENCY RESPONSE PLAN OR EMERGENCY EVACUATION PLAN

The Project proposes no substantive changes to the surrounding circulation and would not cause substantial traffic delays, which could otherwise slow emergency response. Therefore, the Project would have *no impact* relating to an adopted emergency response plan. See additional detail in Chapter 16: Transportation and Circulation related to on-site emergency access.

EXPOSURE OF PEOPLE OR STRUCTURES TO WILDLAND FIRES

Impact Haz-3: **Construction at a Wildland-Urban Interface.** Because of the vegetated state and location at the wildland urban interface, the Project site is considered a potential risk for wildland fire hazard. Requirements are in place to reduce fire risks in these areas and compliance with them would ensure that the impact is *less than significant*.

The City's basic firefighting regulations are the adopted California Fire Code (CFC). The CFC regulations are required for protection of life and property from wildland fires in wildland urban interface areas in the City. The Urban Interface Area Standard also requires the preparation of a fire hazard reduction plan for all new developments in wildland fire hazard areas. The Project site is identified in the Napa General Plan as a Wildlife Urban Interface Fire Hazard Area.

Consistent with these requirements, the Project would be required to submit a hazard reduction plan. Additionally, the Project is required to submit a Fire Plan due to the limited emergency access provisions, as discussed in more detail in Chapter 16: Transportation and Circulation. These plans are subject to approval by the Fire Marshal of the City's Fire Department. It is anticipated that fire suppression measures will include fire sprinklers in each new residence, the use of fire retardant materials, and requirements to maintain clear areas/defensible space around homes. Building materials, systems and/or assemblies used in the exterior design and construction of new buildings within the Project area will be required to comply with the applicable sections of Chapter 7A of the California Building Code and Chapter 49 of the California Fire Code as determined by the Fire Marshal of the City's Fire Department.

The Project is required to meet Wildland Urban Interface Code requirements and implement a Fire Plan subject to approval by the City's Fire Department (Fire Marshal) as part of Project approvals to reduce the risk of wildland fires. These requirements are in place to assure development in areas such as the Project site would not create a substantial wildland fire risk to future residents or adjacent areas. Therefore, the impact related to wildland fires is *less than significant* with conformance with applicable regulations.

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HYDROLOGY

INTRODUCTION

This chapter was prepared by ENGE0, Inc. and utilizes information from peer review of the following reports prepared for this Project or analysis:

Napa Oaks Hydrology and Hydraulics Calculations prepared by DK Associates for the applicant and dated March 2011, updated April 2015 (included in Appendix G).

KNOWN CONCERNS

The study specifically addresses sources of concern identified in the Scoping Meeting and/or responses to the NOP, including issues regarding changes in runoff toward the neighborhood to the east (believed to be too much water currently) and the agricultural use to the south (which uses runoff from the site) and concerns about the stability of the proposed detention basin near residences.

ENVIRONMENTAL SETTING

The Project site is located in the City of Napa. The regional climate is characterized by hot, dry summers and moist, mild to cool winters. Over 80 percent of the total annual precipitation occurs during the months of November through March with an average annual precipitation of over 24 inches. Average daily temperatures range from highs in July and August in the low-80s (degrees Fahrenheit) and lows in December and January in the mid-50s.¹

The Project site is located in the Napa River watershed, and is more specifically located approximately 1.3 miles to the west of the river itself. The Napa River eventually drains to the San Francisco Bay approximately 5 miles to the south of the Project. The site is generally hilly with downslopes that radiate from the hilltops within the approximate center of the site. Site elevations range from approximately 607 feet at the top of the southeastern hill to approximately 539 feet at the southwestern corner of the property.

Subsurface soils at the site generally consist of relatively thin deposits of residual and/or alluvial soils underlain by Briones of Ciebro Sandstone. Within the elevated hill areas, approximately 1 to 3 feet of

¹ Western Regional Climate Center, Period of Record Monthly Climate Summary for Weather Station: Napa, California (046065), through 12/31/1965, available at: <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca6065>.

moist, medium stiff to hard, dark brown sandy silt overlying Briones of Ciebro Sandstone was observed in the borings. In the more flat areas, approximately 8 to 13 feet of alluvial soils overlying very intensely weathered to weathered Briones of Ciebro Sandstone was observed in the borings. Site soils are classified as hydrologic group type 'C' soils which have rapid runoff characteristics during rainfall events.

Free groundwater was not encountered in 50 test pits with depths from 1 to 27 feet, though water seepage occurred between 6 to 25 feet below existing grade at the several seasonally moist portions of the site. Fluctuations in groundwater level should be expected to occur over time due to precipitation, changes in drainage patterns, and/or irrigation.²

REGULATORY SETTING

The proposed Project must be constructed in accordance with several regulatory programs, laws, and regulations that aim to protect water resources and minimize flood risks. In some cases, Federal laws are administered and enforced by state and local government. In other cases, state and local regulations in California are stricter than those imposed by Federal law. This section summarizes relevant regulatory programs, laws, and regulations with respect to hydrology and water quality and how they relate to the proposed Project.

FEDERAL LAWS AND REGULATIONS

Clean Water Act

The Clean Water Act (CWA) was enacted by Congress in 1972 and amended several times since inception. It is the primary federal law regulating water quality in the United States, and forms the basis for several state and local laws throughout the country. Its objective is to reduce or eliminate water pollution in the nation's rivers, streams, lakes, and coastal waters. The CWA prescribed the basic federal laws for regulating discharges of pollutants as well as set minimum water quality standards for all waters of the United States. Several mechanisms are employed to control domestic, industrial, and agricultural pollution under the CWA. At the Federal level, the U.S. Environmental Protection Agency (EPA) administers the CWA. At the state and regional level, the CWA is administered and enforced by the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCB). The State of California has developed a number of water quality laws, rules, and regulations, in part to assist in the implementation of the CWA and related federally mandated water quality requirements. In many cases, the Federal requirements set minimum standards and policies and the laws, rules, and regulations adopted by the State and Regional Boards exceed them.

Section 402

Section 402 of the CWA regulates point-source discharges to surface waters through the NPDES program. In California, the SWRCB oversees the NPDES program, which is administered by the RWQCBs. The NPDES program provides for both general permits (those that cover a number of similar or related activities) and individual permits. The NPDES program covers municipalities, industrial activities, and construction activities. The NPDES program includes an industrial stormwater permitting component that covers ten categories of industrial activity that require authorization under

² Geotechnical Investigation: Napa Oaks, Napa, California, Berloger Stevens and Associates, March 14, 2011.

an NPDES industrial stormwater permit for stormwater discharges. Construction activities, also administered by the SWRCB, are discussed below. Section 402(p) of the federal CWA, as amended by the Water Quality Act of 1987, requires NPDES permits for stormwater discharges from municipal separate storm sewer systems (MS4s), stormwater discharges associated with industrial activity (including construction activities), and designated stormwater discharges, which are considered significant contributors of pollutants to waters of the United States. On November 16, 1990, U.S. EPA published regulations (40 CFR Part 122), which prescribe permit application requirements for MS4s pursuant to CWA 402(p). On May 17, 1996, U.S. EPA published an Interpretive Policy Memorandum on Reapplication Requirements for Municipal Separate Storm Sewer Systems, which provided guidance on permit application requirements for regulated MS4s. MS4 permits include requirements for post-construction control of stormwater runoff in what is known as Provision C.3. The goal of Provision C.3 is for the Permittees to use their planning authorities to include appropriate source control, site design, and stormwater treatment measures in new development and redevelopment projects to address both soluble and insoluble stormwater runoff pollutant discharges and prevent increases in runoff flows from new development and redevelopment projects. This goal is to be accomplished primarily through the implementation of low impact development techniques.

Federal Emergency Management Agency (FEMA)

FEMA is the Federal agency responsible for administration of the National Flood Insurance Program (NFIP). They oversee the hydrologic and hydraulic analysis that determines the magnitude of the flood risk in communities throughout the United States. Those analyses, performed under FEMA guidelines by private engineering firms and Federal, State and local agencies, are based on standard engineering practices and yield the flood risk information shown on the NFIP maps.

The City of Napa participates in the NFIP and has adopted floodplain management regulations that are aimed at reducing future flood losses and that meet the minimum standard of the NFIP.

FEMA recognizes that NFIP maps require changes from time to time as a result of anticipated development, floodplain and watershed changes, flood control or mitigation efforts, or updated assessments of flood risk. The City of Napa is the designated local NFIP Administrator and enforces NFIP regulations.

STATE LAWS AND REGULATIONS

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act established the SWRCB and the RWQCB as the principal state agencies having primary responsibility for coordinating and controlling water quality in California. The Porter-Cologne Act established the responsibility of the RWQCB for adopting, implementing, and enforcing water quality control plans (Basin Plans), which set forth the water quality standards of the state (i.e. beneficial uses of surface waters and groundwater) and the objectives or criteria necessary to protect those beneficial uses. The NPDES permits must be consistent with the Basin Plans.

NPDES Permit Requirements

The CWA has nationally regulated the discharge of pollutants to the waters of the U.S. from any point source since 1972. In 1987, amendments to the CWA added section 402(p), which established a framework for regulating non-point source (NPS) storm water discharges under NPDES. Under the program, the Project applicant will be required to comply with two NPDES permit requirements.

The NPDES General Construction Permit Requirements apply to clearing, grading, and disturbances to the ground such as excavation. The Project applicant is required to submit a Notice of Intent (NOI) with the SWRCB Division of Water Quality. The NOI includes general information on the types of construction activities that will occur on the site. The applicant will also be required to submit a site-specific plan called the Stormwater Pollution Prevention Plan (SWPPP) for construction activities. The SWPPP will include a description of Best Management Practices (BMPs) to minimize the discharge of pollutants from the site during construction as well as appropriate monitoring, sampling and reporting.³ It is the responsibility of the property owner to obtain coverage under the permit prior to site construction.

The City of Napa's Phase II NPDES General Permit requires the flow of stormwater and stormwater pollutants to be controlled from new development sites. This is implemented through local regulations, discussed below.

Sea Level Rise and Executive Order S-13-08

In November 2008, Governor Arnold Schwarzenegger issued Executive Order S-13-08. The order indicates that future potential sea level rise associated with climate change may have a substantial effect on coastal development, and provided for the formation of an independent panel to complete a California Sea Level Rise Assessment Report by December 1, 2010. This panel, the California Adaptation Advisory Panel to the State of California, published the required report in November 2010 titled *Preparing for the Effects of Climate Change – A Strategy for California*.⁴ This study notes that the State has requested an assessment of defensible sea level rise projections for the West Coast from the National Research Council, but that this study has not yet been completed.

In the interim, BCDC has proposed Bay Plan amendment language, which includes guidance for addressing future sea level rise scenarios associated with planning and permitting development in potentially susceptible areas in the San Francisco Bay Area. These scenarios are:

- sea level rise of 16 inches by 2050; and
- sea level rise of 55 inches by 2100.

These values represent the upper end of the range of sea level rise estimates and are consistent with preliminary state recommendations for 100-year sea level rise. These values are meant to ensure that projects take these potentially high estimates into account when planning infrastructure and development projects, prior to the release of official sea level rise projections.

California State Water Resources Control Board (SWRCB) Water Rights

The California State Water Resources Control Board is currently the lead agency with regard to water rights and water diversion issues in the State of California. Article 10 Section 2 of the California Constitution is recognized as the fundamental expression of the water policy of this State. The State Constitution requires that the beneficial use of water be maximized, that water be conserved, and that water be diverted and used under the rule of reasonableness. Proposed diversion or impoundment of

³ California EPA, State Water Resources Board, Construction General Permit Fact Sheet, September 2009, as modified. http://www.swrcb.ca.gov/water_issues/programs/stormwater/constpermits.shtml

⁴ California Adaptation Advisory Panel to the State of California, prepared by Pacific Council, *Preparing for the Effects of Climate Change – A Strategy for California*, November 2010.

agricultural surface runoff over 10-acre feet per water year can be regulated by the SWRCB water rights division under the rules of reasonableness set forth by the State Constitution.

APPLICABLE LOCAL REGULATIONS

Napa Countywide Stormwater Pollution Prevention Program (NCSPPP)

The Napa Countywide Stormwater Pollution Prevention Program (NCSPPP) is a joint effort of the County of Napa, cities of American Canyon, Napa, St. Helena and Calistoga, and the Town of Yountville to coordinate and implement local programs throughout the county to minimize and prevent urban runoff pollution. Under the Phase II NPDES General Permit, each of the NCSPPP partners are required to develop, implement, and enforce a program to ensure that new development and redevelopment projects incorporate site design, source control, and/or treatment control BMPs to protect water quality and control the volume and rate of stormwater runoff.

San Francisco Bay Water Quality Control Plan (Basin Plan)

The San Francisco Bay RWQCB is responsible for the development, adoption, and implementation of the Water Quality Control Plan for the San Francisco Bay region. The Basin Plan is the master policy document that contains descriptions of the legal, technical, and programmatic bases of water quality regulation in the San Francisco Bay Region.

The Basin Plan defines beneficial uses for surface waters and groundwater in its corresponding jurisdiction. The beneficial uses of groundwater in the Napa-Sonoma Valley Groundwater Basin include municipal and domestic supply, industrial process supply, industrial supply, and agricultural supply.⁵

City of Napa Municipal Code

The Municipal Code contains drainage design guidelines. Under the Municipal Code, no development shall occur without full compliance with the terms set forth in the Municipal Code and other applicable regulations. Additionally, developers must submit a copy of the SWPPP Notice of Intent to the City for approval before issuance of grading permits.

16.36.040 Drainage.

A. Stormwater runoff from the subdivision shall be collected and conveyed by an approved storm drainage system. The storm drainage system shall be designed by a registered civil engineer for ultimate development of the watershed and shall provide for the protection of abutting and off-site properties that may be adversely affected by any increase in runoff attributed to the development; off-site storm drain improvements may be required to satisfy this requirement. In addition, retention ponds, drainage swales and/or check dams may be required to reduce off-site peak storm flow generated by projects.

B. Improvements shall be designed to meet the city of Napa Standard Specifications and Standard Plans. Drainage improvements for runoff shall be engineered to minimize erosion through the use of rocked culvert inlets and outfalls, energy reducers, the correct location of culverts, etc. Design features

⁵ California Regional Water Quality Control Board, San Francisco Bay Region, San Francisco Bay Basin (region 2) Water Quality Control Plan (Basin Plan), as amended through December 31, 2010, Table 2-2.

shall include reseeded exposed slopes as well as minimizing the use of artificial slopes. Improvements shall be constructed in accordance with the approved plans and specifications. (O4060; O2006 10)

IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The following thresholds for measuring hydrology impacts are based upon CEQA Guidelines thresholds:

1. Would the project violate any water quality standards or waste discharge requirements?
2. Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?
3. Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?
4. Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or off-site?
5. Would the project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?
6. Would the project otherwise substantially degrade water quality?
7. Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?
8. Would the project place within a 100-year flood hazard area structures, which would impede or redirect flood flows?
9. Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of climate-induced sea level rise or the failure of a levee or dam?
10. Would the project cause inundation by seiche, tsunami, or mudflow?

VIOLATE WATER QUALITY STANDARDS OR WASTE DISCHARGE REQUIREMENTS OR OTHERWISE SUBSTANTIALLY DEGRADE WATER QUALITY

Non-point source pollutants (NPS) are washed by rainwater from roofs, landscape areas, and streets and parking areas into the drainage network. NPS can include sediment, nutrients, bacteria and viruses, oil and grease, organics, pesticides, and gross pollutants (floatables). An increase in NPS pollutants could have adverse effects on wildlife, vegetation, and human health. NPS pollutants could also infiltrate into groundwater and degrade the quality of potential groundwater sources in violation of CWA Section 404 NPDES permit requirements and the RWQCB Basin Plan requirements. As a residential project, the project would not operate with significant amount of hazardous materials or other potential contaminants that could have the potential to degrade water quality. Implementation of the proposed Project would not otherwise substantially degrade water quality.

Impact Hydro-1: Construction-Period Erosion and Siltation. Construction of the proposed Project would involve grading activities that would disturb soils at the site. Such

disturbance would present a threat of soil erosion by subjecting unprotected bare soil areas to runoff during construction, which could result in siltation to receiving waters. In addition, during construction other temporary potential pollutants, such as paint, asphalt, or other compounds could become mobilized by wind or rain events. If erosion, siltation or other construction related pollutants of concern entered downstream watercourses during construction operations, the Project would potentially violate water quality standards or otherwise substantially degrade groundwater quality. This is a *potentially significant* impact.

Mitigation Measure Geo-2, which requires implementation of a construction-period stormwater pollution prevention plan including Best Management Practices for preventing construction-period stormwater pollution through soil stabilization, sediment control, wind erosion control, soil tracking control, non-storm water management, and waste management and materials pollution control, would also mitigate Impact Hydro-1.

Impact Hydro-2: Post-Construction-Period Water Quality. Construction of the Project could result in increased discharge of pollutants in downstream receiving waters by affecting storm runoff quality after completion. Urban pollutants such as oil, grease, nitrogen and phosphorous are typical constituents that occur in residential urban development. Rainfall runoff could mobilize these constituents and transport them into downstream receiving waters after the Project is completed. This is a *potentially significant* impact.

Mitigation Measure

Hydro-2: Post-Construction Stormwater Control Plan. The Project applicant shall implement a Stormwater Control Plan (SCP; based on the BASMAA Phase II Post-Construction Manual adopted November, 2014 by City Council) approved by the City of Napa prior to issuance of a Final Grading Permit. The SCP shall demonstrate that post-construction stormwater discharges will be treated to the Maximum Extent Practicable with Low Impact Development BMPs prior to release into downstream receiving waters in accordance with applicable Phase II MS4 Post Construction Stormwater Quality standards. The Final SCP shall be prepared in accordance with the City of Napa BASMAA Phase II Post-Construction Manual.

Therefore, applicable CWA and RWQCB regulations for stormwater treatment would be met through implementation of a stormwater pollution prevention plan during construction and a post-construction SCP as outlined in mitigation measures **Geo-2** and **Hydro-1**. The resulting impacts both during construction and post-construction related to water quality would be considered *less than significant*.

GROUNDWATER SUPPLIES AND GROUNDWATER RECHARGE

As noted in the Setting above, the soils at the site create relatively impervious hydrologic surface conditions, which facilitate minimal infiltration through the soil and into the groundwater. Precipitation falling on the site drains quickly in the form of surface flows.

The Project site does not represent a major groundwater recharge source and the Project would not substantially change the flow of stormwater from the site. There is *no impact* related to groundwater supplies or recharge.

ALTER THE EXISTING DRAINAGE PATTERN RESULTING IN EROSION OR SILTATION OR FLOODING ON- OR OFF-SITE

Impact Hydro-3: Altered Streambed and Runoff. The Project will modify the collection of rainfall runoff across the site by the creation impervious surfaces, streets, and a storm drain collections system, including a series of detention ponds which would detain stormwater before slowly releasing it into downstream receiving waters during rainfall events through a metering standpipe. Since the Project would alter the existing drainage pattern and flow of stormwater in the area of the proposed Project, such changes could result in increased erosion, siltation, on- or off- site flooding, or significant reductions in rainfall runoff to existing watercourses. This is a *potentially significant* impact.

The Project involves development of a currently undeveloped site with recontouring of existing landforms and the introduction of impervious roadways, rooftops and other impervious surfaces. The introduction of impervious surfaces to the site will increase both the volume of rainfall runoff and the rate of rainfall runoff during storm events as compared to the existing condition, prior to detention.

The Project intends to mitigate increases of stormwater flow at points of discharge by inclusion of two proposed detention basins. Since the introduction of impervious surfaces and drainage systems as a result of the Project would increase the volume of runoff and timing of runoff during rainfall events, flow rates would be reduced to pre-development levels for the 10-, 25-, and 100-year recurrence interval storm events by the installation of the basins. The detention basins would impound stormwater during storm events and slowly meter discharges through standpipe structures with several small openings and subdrain systems installed below a porous media at the bottom of the ponds. Erosion protection would be provided at the discharge point at the south of the Project to mitigate the concentration of flow originating from the detention basin structure. The basins would also cleanse smaller storm flows in accordance with City of Napa Phase II NPDES Post-construction requirements.

The basin slopes would be designed in accordance with the Project geotechnical engineer's recommendations so that they are able to withstand a design seismic event and would not breach or otherwise geotechnically fail during a 100-year recurrence interval storm event.

According to hydrologic calculations performed for the Project by DK Associates, stormwater that currently sheet flows off the site toward Casswall Street to the east within the development area would instead be captured by the onsite stormwater collection system, detained in a stormwater pond and ultimately released into an existing storm drain system from a new outfall pipe. Undeveloped portions of the Project site would continue to sheet flow as they do today. Based on the new storm drainage system shown on the Tentative Map for the Project, rainfall runoff sheet flow would be slightly reduced to downslope portions of the site near Casswall Street after the Project is implemented.

Portions of the site which currently drain towards Raynes Creek to the south would also be collected in a storm drainage system and detained in a detention basin prior to release into an existing swale at the southerly property line where it would continue to drain into agricultural property to the south.

As part of the stormwater information to be included with design-level application submittals, the Project applicant is required to submit hydraulic computations to establish that peak flow rates from the site would not be increased if the Project were implemented. According to Project calculations provided by DK Associates, the Project would incorporate the proposed detention basis at Project

outfalls to capture stormwater and slowly release it at a discharge rate equivalent to the pre-Project condition in order to mitigate the potential for off-site flooding as a result of the Project.

However, given on-site soil conditions, the Project should also account for losses due to infiltration at the southern proposed detention basin location in order to provide assurance that significant reductions of run-off to downstream watercourses would not occur as a result of the Project which could exceed State Water Resources Control Board thresholds of reasonableness.

Mitigation Measure

Hydro-3: **Final Drainage Report.** The Project applicant shall implement a Final Drainage Plan approved by the City of Napa prior to issuance of a Final Grading Permit. The Final Drainage Report shall demonstrate that post-Project discharges shall be reduced to pre-Project conditions at Project storm drain outfalls. The Final Drainage report shall also document that the volume of rainfall runoff from the Project shall not significantly reduce rainfall runoff to downstream watercourses. The Final Drainage Report shall also ensure that significant impoundment of rainfall runoff would not occur and shall include appropriate mitigation measures such as lining of the proposed southerly detention pond with an impermeable liner if geotechnical conditions exist where significant retention and infiltration of on-site rainfall runoff may occur.

With adherence to a final drainage plan showing no significant change in the post-Project flow rate or volume of runoff from the site as outlined in Mitigation Measure Hydro-3, the impacts related to altered drainage patterns would be *less than significant*.

EXCEED CAPACITY OF STORMWATER DRAINAGE SYSTEM

As described above in Impact Hydro-3, development of the Project will result in changes in the route of stormwater flow on site; however the net runoff from the site is expected to be similar prior to and following development at points of discharge. As part of the stormwater information to be included with application submittals with the Building Permit Application, the Project applicant is required to submit hydraulic computations to demonstrate that peak flow rates discharging from the proposed Project comply with City of Napa Municipal Code provisions and that existing storm drainage infrastructure downstream of the Project contain adequate capacity to accept Project discharges. Preliminary calculations show that the currently proposed on-site system is adequate for this purpose. *No impact* associated with increases in peak runoff is anticipated and no additional mitigation is necessary.

FLOOD ZONE HAZARDS

The developed portion of the Project site would be outside the 100-year flood zone (and outside the coastal flood zone, as the site is not located near the coast). Accordingly, there would be *no impact* related to flood zone hazards.

FLOODING AS A RESULT OF THE FAILURE OF A LEVEE OR DAM OR INUNDATION BY SEICHE, TSUNAMI, MUDFLOW, OR CLIMATE-CHANGE INDUCED SEA LEVEL RISE

According to maps published by the Association of Bay Area Governments (ABAG), the Project is not located downstream of a dam, nor are there any levees near the Project site.⁶

The City of Napa, including the Project site, is not susceptible to inundation by coastal hazards, such as tsunamis, extreme high tides, or sea level rise, due to the elevation of the area and the distance from the margin of the San Francisco Bay and Pacific Ocean. The Project site is not located in an area with a history of mudflows nor close enough to an enclosed large body of water to be susceptible to a seiche.

Therefore, there would be *no impact* resulting from a dam or levee failure or inundation by seiche, tsunami, mudflow or sea level rise.

⁶ ABAG, Dam Failure Inundation Map, available at <http://quake.abag.ca.gov/>.

LAND USE AND PLANNING

INTRODUCTION

This chapter describes existing land uses, adopted General Plan land use classifications, and zoning designations of the Project site and evaluates the Project's consistency with applicable policies as they relate to environmental effects.

SETTING

Applicable land use planning goals, policies and regulations are presented in this section for informational purposes. These are not intended to be a complete list or determination of consistency as it relates to Project approvals. Discussion of the relation of these items to environmental effects is included in the Impacts and Mitigation Measures section of this chapter.

CITY OF NAPA GENERAL PLAN

The City of Napa's General Plan, Envision Napa 2020, formalized a long-term vision for the physical evolution of Napa and outlines policies, standards, and programs to guide day-today decisions concerning Napa's development through the year 2020. This section includes excerpts from relevant sections of the General Plan.

The Project site is located within though at the edge of the City's Rural Urban Limit (RUL) and within the City limits.

The majority of the property (78 acres) is designated "RA - Resource Area" by the Napa General Plan. This designation is applied to sensitive lands inside the RUL that require special standards due to viewshed, resource, habitat, geotechnical or other considerations that further the conservation and resource protection goals of the General Plan. In this designation, limited, very-low density residential use (up to 1 home per existing parcel, of which there are 3 with this designation) is permitted, with discretionary review of the site development details. Other low intensity uses, such as rural residential (to a maximum of 1 dwelling unit per 20 acres) or agriculture, may be considered at the discretion of the City on a case by case basis, with all proposed uses assessed to determine if they will impact or change the underlying character or feature that is intended for preservation by the RA designation.

The remaining 2.6-acre northeastern corner of the site is designated for "SFR – Single Family Residential" use, at allowable densities of 0 to 3 residential units per acre.

Because the proposed Project would not be allowed under the current General Plan land use designations, the Project includes an amendment to the Project site's General Plan and zoning

designations. The Project proposes to change the General Plan designation so the entire Project site would be designated as “SFR – Single-Family Residential” at allowable densities of 0 to 3 units per acre.

RA – Resource Area

The RA designation is applied to sensitive lands inside the RUL that require special standards due to viewshed, resource, habitat, geotechnical or other considerations that further the conservation and resource protection goals of the General Plan. Limited, very low-density residential use (up to 1 home per existing parcel) is permitted, with discretionary review of the site development details. Other low intensity uses, such as rural residential (to a maximum of 1 dwelling unit per 20 acres) or agriculture, may be considered at the discretion of the City on a case by case basis. All uses will be assessed to determine if they will impact or change the underlying character or feature that is intended for preservation by the RA designation.

The Project site is designated as RA pod number 123, with a noted development potential of 1 dwelling unit/existing parcel or 1 dwelling unit /20 acres by use permit. The Findings of Fact and Statement of Overriding Considerations for the City’s General Plan EIR explain the designation was given to this site because of constraints on development due to slopes, significant stands of vegetation, habitat, seismic risks, water supply problems and limited access as well as being a viewshed for the City and partially within the Carneros wine growing region.

This determination was based in part on preliminary CEQA assessment of a larger project (85 units) proposed at the Project site in the late 90s. All environmental topics have been assessed for the current project in this EIR.

SFR – Single-Family Residential

The SFR designation applies to areas intended to develop or redevelop into a single family detached unit pattern. SFR areas have similar building types and styles generally conforming to the Neighborhood Typology analysis for Type A (Post War Tract Subdivisions) and Type B (Estate Residential).

This designation provides for detached single family homes, second units, planned unit and cluster developments, mobile homes, manufactured housing, and compatible uses such as day care and residential care facilities. Non-residential uses may also be allowed in appropriate locations at the discretion of the City, including bed-and-breakfast inns and public and quasi-public uses of an administrative, educational, recreational, religious, cultural, communications, or public service nature.

Residential densities range generally from 0 to 7 units per acre, as defined for each pod, although in a few instances net densities can be higher.

General Plan Policies

The following General Plan goals, objectives and policies may be applicable to the Project, followed by brief statements describing consistency (note that consistency discussion does not follow each single item, but is provided for the grouped items that the statement follows where appropriate):

Policy LU-1.8 The City shall strive to preserve its urban forest by maintaining its street tree program and encouraging the preservation of trees on private property.

Policy NR-1.7 During development review, the City shall endeavor to identify and protect significant species and groves or clusters of trees on project sites.

Program NC-1.C The City shall develop guidelines and regulations to encourage new development to protect and enhance on-site habitat and incorporate it into the project. The City will allow the creation of off-site habitat on public or private land as an alternative if it is demonstrated to be infeasible to incorporate significant habitat protection into plans.

Policy LU-10.2 The City shall continue to apply special development standards to proposed development within or adjacent to the following areas:

- Riparian corridors and wetlands (including the Napa River);
- Hillsides;
- Critical wildlife habitat; and
- Agricultural land outside the RUL

The Project site includes hillsides and some wetlands (1.246 acres existing, 0.85 acre of which would be preserved along with establishment of an additional 0.78 acre in on-site preserve areas). The potential impacts related to biological resources and aesthetics are assessed in Chapters 7 and 4, respectively. The proposed Project would result in loss of approximately 12.52 acres of woodland habitat on the Project site. 14.79 acres of woodland would be protected on site and at least 22.77 acres will be preserved off-site through a conservation agreement on private property. Preservation of woodlands at a ratio of 3 acres to every 1 acre lost, as proposed, is consistent with accepted mitigation practices and regulations. This is discussed in more detail in Chapter 7: Biological Resources.

Policy LU-3.2 To minimize urban/rural conflicts (e.g., pesticides, odors, noise, vandalism, feral pets), the City shall ensure a buffer is provided (agricultural setback) between residential uses on the periphery of the RUL and productive agricultural land outside the RUL.

The Project site is within the RUL. A buffer of at least 80 feet from residential homes is included at boundaries shared with agricultural land outside the RUL.

Policy LU-3.3 The City shall endeavor to maintain an even rate of development within the RUL over the plan period.

As discussed in more detail in Chapter 15: Population, Public Services, and Recreation, the Project would represent approximately 1.2% of the housing stock growth that would be anticipated each year (assuming historic growth levels of 1.3%), which equates to an increase over the existing number of housing units in the City of Napa of less than one half of one percent (0.48%). The Project is relatively small and would not substantially contribute to City-wide growth rates.

Policy LU-4.1 The City shall require new residential development to conform to the density range shown in [the General Plan], and to be consistent with the general neighborhood typology of the surrounding area. The City may require clustering in environmentally sensitive areas when special measures are adopted to ensure the sensitive portions of each property remain undeveloped in the future. [This policy has been modified to remove reference to items not excerpted in this document.]

The proposed Project does not conform to the density allowed under the existing designation, though would conform to the proposed designation, which is required for Project approvals. The Project is clustered to preserve sensitive portions of the site.

Policy LU-10.1 The City shall promote an urban form that integrates the urban environment with the city's natural features.

While this policy is not specific as to the type of integration intended, the Project includes both urban and natural features integrated onto the site.

Policy LU-10.3 The City shall encourage the maintenance of wildlife corridors and discourage the fragmentation of large natural plant communities when environmentally sensitive sites are developed.

Policy NR-1.1 The City shall identify existing wildlife habitat corridors and seek to protect them from being severed or significantly obstructed.

The Project site is adjacent to actively managed agricultural land to the south and west, residences to the east and Old Sonoma Road to the north. Per the analysis included in Chapters 7: Biological Resources, the Project site is not substantially utilized as a wildlife corridor.

Policy LU-10.4 The City may require planned unit and cluster forms of developments in environmentally sensitive areas.

Policy NR-1.6 The City shall require as a condition of approval that development provide protection for significant on-site natural habitat whenever possible.

The Project is clustered such that approximately half the site would be preserved in an undeveloped state, including wetlands and oak woodlands. The significance of on-site habitat is discussed in detail in Chapter 7: Biological Resources, and off-site mitigation proposed where appropriate.

Policy LU-11.3 The City shall continue to promote development patterns that provide for resource conservation.

The Project proposes to preserve nearly half the site acreage in an undeveloped state, which includes sensitive biological resources such as wetlands and oak woodlands, and hillsides that contribute to the viewshed from other locations in Napa. These items are addressed in more detail in Chapters 7 and 4 respectively.

Policy H1.1 Efficient Use of Land. The City shall promote creative and efficient use of vacant and built on land within its RUL to help maintain the City's preeminent agricultural environment and open space.

The Project site is within the RUL and therefore the Project could be considered favorably against measure of creative and efficient use. However, it is also currently largely undeveloped land utilized for cattle ranching, so in some respects would be considered an agricultural environment and open space.

Policy H3.11 Safe and Pleasant Circulation Opportunities and Maintenance. The City will strengthen ways to assure pleasant walking and bicycling opportunities and connections, smooth streets and ease of access. The following means, in addition to others, will be considered in achieving the City's intent:

a. Residential development plans and Specific Plans shall emphasize walking and bicycling and transit opportunities.

With incorporation of mitigation identified in this document, the Project will provide walking and bicycling opportunities to residents. Two local bus lines, Vine routes 2 and 3, have stops within a quarter mile of the Project site.

Program H3.B Use of Planned Development Zoning. The City shall continue to use Planned Development regulations to promote design flexibility for residential developments, particularly for those located in unique settings.

The Project proposes approval under the Planned Development zone, which would allow for the clustering of residences and preservation of undeveloped areas as proposed.

Policy HS-5.1 The City shall require that development in wildland urban interface areas provides adequate access roads, onsite fire protection systems, signage, ignition resistant building materials, and defensible space.

The Project site is located in a wildland urban interface area and therefore potentially subject to wildland fires. Because the secondary access point does not meet City standards, the Fire Department has required a Fire Plan to be instituted to ensure adequate protection against wildland fires. (See Chapter 16: Transportation and Circulation for additional detail.)

CITY OF NAPA MUNICIPAL CODE

The existing zoning of “AR” Agricultural Resource (Municipal Code Chapter 17.16) and “RS-10” Single Family Residential, Minimum Lot Size 10,000 square feet (Municipal Code Chapter 17.08), are consistent with the General Plan land use designations described above.

Additionally, the Project area is in the Hillside Overlay district (Municipal Code Chapter 17.40).

To allow for the clustering of residences and related preservation of natural areas, the applicant is also proposing a Planned Developed Overlay district (Municipal Code Chapter 17.42).

The relevant excerpts from the Municipal Code are included below:

17.16.010.D.6 Agricultural Resource District (AR)

The AR district is applied to lands within the RUL designated “Resource Area” or “Greenbelt” by the Napa General Plan. These are sensitive lands within the RUL that require special standards due to viewshed, resource, habitat, geotechnical or other considerations that further the resource protection goals of the General Plan. Primary purposes are:

- a. To protect sensitive lands within the RUL that are not appropriate for urban development due to viewshed, resource, habitat, geotechnical or other considerations and are intended to remain unchanged or in very low intensity agricultural, private open space or residential use;
- b. To retain large, agriculturally viable parcels and conserve the region’s economically important agricultural resources;
- c. To meet Government Code requirements for open space zoning (in combination with the parks and open space district).

17.16.050 Special findings required for AR district projects

In addition to the standard findings required for use or design review permits, when considering a project in the AR District (designated Resource Area by the General Plan), the Planning Commission must find:

- A. The project protects the natural features and visual attributes of the site and surroundings, including, but not limited to, riparian corridors, wetlands, hillsides and outcroppings, critical wildlife habitat, and agricultural lands outside the RUL.
- B. New construction, including structures, roads, grading and landscaping is designed to integrate with existing natural features of the site and surroundings with minimal impact to the underlying features intended for protection by the AR zoning designation.
- C. Hazards posed by seismic conditions, landslides, erosion and runoff have been considered in the location and design of the project, and appropriate mitigations have been imposed to reduce significant impacts.

17.08.010.F Single-Family Residential (RS)

The specific purposes of the residential zoning districts include the following:

- A. To provide a wide variety of housing opportunities in terms of housing types, sizes and densities.
- B. To provide new development which respects and complements the existing neighborhood character.
- C. To encourage new residential development compatible with environmental site constraints.
- D. To provide opportunities for day care facilities, residential care facilities, religious institutions and limited other uses considered to be compatible and desirable land uses within residential neighborhoods.
- E. To provide onsite recreational amenities for residents.

The additional purposes of the RS district are:

This RS district implements the single-family residential category of the General Plan and applies to areas intended to develop into a single-family detached unit pattern. RS areas typically include custom home subdivisions on hillsides or constrained sites, and post war tract subdivisions, which usually have uniform platting patterns, setbacks and building types. This district provides opportunities for low density detached single-family homes, accessory second units, clustered and planned developments, mobile homes, manufactured housing and compatible uses such as day care and smaller residential care facilities. Bed-and-breakfast inns, and public and quasi-public uses may also be allowed in appropriate locations at the discretion of the city.

17.40.010 Hillside Overlay District (:HS)

The specific purposes of the :HS overlay district are to:

- A. Ensure the preservation of the city’s hills, ridges and ridgelines visible to area residents and persons traveling through the county on major arterials by promoting a harmonious visual and functional relationship between the natural hillside environment and the man-made environment;
- B. Protect the health, safety and welfare of the community by establishing regulations for development of ridgelines and hillside areas within the city;
- C. Implement goals, policies and programs of the General Plan concerning hillside and ridgeline development, development hazards and open space lands;
- D. Preserve predominant views from and of hillside areas;
- E. Retain the natural appearance that hillside areas impart to the city and its environs;
- F. Preserve and retain significant natural features (i.e., vegetation, terrain, rock formations, etc.) of hillside sites in essentially their natural state;
- G. Minimize and control the scarring and cutting of hillsides and ridgelines and minimize water runoff and soil erosion problems incurred due to grading and development activities. (O2003 12)

17.40.030 Development and density regulations

Development regulations are in addition to the regulations of the underlying principal zoning district with which they are combined. In the event of a conflict with the regulations of the underlying principal district, the :HS provisions shall supersede.

The following regulations shall apply:

- A. **Minimum Development.** Any existing residential lot shall be allowed one dwelling unit, including any accessory buildings or structures permitted by the underlying zoning district.
- B. **Design Review, Residential Lots.** On a residentially zoned lot, a design review permit is required for:
 - 1. Construction of one principal dwelling unit, and any accessory building or structure requiring a building permit;
 - 2. Additions to dwellings, accessory buildings or structures, unless exempt.
- C. **Use Permit, Residential Lots.** On residentially zoned lots, a hillside use permit is required to authorize an increased density on the lot or the parcel; after approval of such use permit, a parcel map, tentative subdivision or similar application for a development that has potential for more than one principal dwelling may then be considered.
- D. **Design Review, Nonresidential Lots.** On nonresidential zoned lots, a design review permit is required for any new construction buildings and structures.
- E. **Hillside Review Criteria.** Review of a hillside use or design review permit shall determine the proposed development’s consistency with the purpose of this title, the :HS district development standards and the hillside development guidelines adopted separately by resolution.
- F. **Factors for Evaluating Increased Density.** An increased density on a lot or parcel (excluding accessory uses) may be authorized only if a development is determined to be consistent with the

purpose of this title and the hillside development guidelines after evaluation of the following factors:

1. The visibility of the new buildings or structures to the valley floor along Highway 29, Silverado Trail, Browns Valley Road, Buhman Avenue, Foster Road, Redwood Road, Coombsville Road, Partrick Road, Old Sonoma Road, Trancas Street, First Street and Soscol Avenue;
2. The visibility of the buildings or structures to the adjacent neighborhood;
3. The amount of cut and/or fill required for access roads and parking areas; short-term and long-term appearance of such changes and any related engineering improvements; together with any proposed mitigation measures;
4. The amount of cut and/or fill required to establish the new buildings or structures;
5. Height, width and bulk of each building or structure, if known;
6. Construction materials and colors of each new building or structure, if known;
7. Existing trees and vegetation to be removed from the property;
8. Degree of screening of the new development with existing trees and vegetation;
9. Degree of screening of new development with new plant materials, length of time to see these established at mature size;
10. Any open space easements, special building setbacks, building envelopes or other covenants proposed to be established to preserve the existing character of the property.

G. Hillside Density Limits. Any density increase shall not exceed the maximum allowable density established by the following standards:

1. Any portion of the lot or parcel having a slope of less than 15% shall be assigned the General Plan density;
2. Any portion of the lot having a slope of 15% to 30% shall be assigned a density of one lot or one dwelling unit per acre;
3. Any portion of the lot or parcel having a slope greater than 30% shall be assigned no density.

H. Finding. To grant a use permit or design review permit, the decision-making body must find (in addition to standard permit findings) that the proposed hillside development project is consistent with the purpose of this title, the :HS district standards and hillside development guidelines adopted separately by resolution.

17.42.010 Planned Development Overlay District (:PD)

The specific purposes of the :PD overlay district are to:

- A. Encourage high quality, innovative and creative development design, and possibilities for varied or mixed uses consistent with the General Plan, by allowing flexibility in underlying zoning standards.

B. Provide a mechanism for preservation of open space, natural or historic features while continuing to permit efficient use of land.

17.42.050 Findings required for :PD development approval

The Planning Commission in recommending approval of the :PD overlay, and the City Council, in approving a :PD associated with an individual development approval, must make the following findings:

- A. The development is superior overall to a similar project designed to meet the standards of this title and of the underlying district in which it is located; and
- B. Any variations from the standards of this title and the district in which the development is located are justified by the high quality design of the proposed development when taken together as a whole; and
- C. Each phase (if any) of the development, as well as the development as a whole, can exist as an independent unit capable of creating an environment of sustained desirability and stability; and
- D. The proposed development is planned in coordination and compatible with the existing and planned uses in the surrounding area; and
- E. The proposed structure(s) and/or use(s) are consistent with the General Plan and any applicable specific plan or other adopted plan; and
- F. Any conditions stipulated as necessary in the public interest have been imposed; and
- G. The proposed structure(s) and/or use(s) will not be detrimental to the public health, safety and welfare of the community.

IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The following thresholds for measuring environmental impacts are based on CEQA Guidelines thresholds:

1. Would the project physically divide an established community?
2. Would the project conflict with any applicable land use plan, policy or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect?
3. Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?

Conflicts with applicable plans, policies or regulations do not inherently result in a significant effect on the environment within the context of CEQA. As stated in Section 15358(b) of the CEQA Guidelines, “[e]ffects analyzed under CEQA must be related to a physical change.”

Further, Appendix G of the Guidelines (Environmental Checklist Form) makes explicit the focus on *environmental* policies and plans, asking if the Project would “conflict with any applicable land use plan, policy, or regulation . . . adopted for the purpose of avoiding or mitigating an environmental

effect” (emphasis added). Even a response in the affirmative, however, does not necessarily indicate the Project would have a significant effect, unless a physical change would occur as noted in the above paragraph.

DIVISION OF AN ESTABLISHED COMMUNITY

The Project site is located within, though at the edge of, Napa’s RUL and is not located between nor used for passage between existing communities. Development at the Project site would not divide an established community. (*No impact.*)

CONFLICTS WITH LAND USE PLAN AND ZONING

Impact Plan-1: Change in Land Use Designation and Zoning. The proposed Project is not consistent with the current land use designation or zoning. However, approval of the Project will include rezoning and a General Plan amendment to bring the land use and zoning into consistency. Approval of the rezone would remove the conflict with the land use plan for the site. The impact would therefore be *less than significant*.

The Project site is currently designated “RA – Resource Area” and “SFR – Single Family Residential” by the Napa General Plan. It is zoned as “AR” Agricultural Resource (Municipal Code Chapter 17.16) and “RS-10” Single-Family Residential, Minimum Lot Size 10,000 square feet (Municipal Code Chapter 17.08). As part of the project approval process, the City would rezone the site as part of a Planned Development Overlay district to allow for the clustering of residences and related preservation of natural areas.

The Project proposes amending the General Plan designation and changing the zoning for the site, per processes in place to allow for the implementation of such changes. Assuming Project approval, the Project would be consistent with the General Plan designation and zoning for the site.

Therefore, the impact related to conflict with the land use plan as it relates to environmental effects would be *less than significant* through the self-mitigation project which includes a General Plan amendment and rezoning consistent with the development proposed.

CONFLICT WITH CONSERVATION PLAN

The Project site is not within an applicable conservation plan. Project consistency with relevant conservation strategies are addressed in Chapter 7: Biological Resources. There would be *no impact* related to conflict with a conservation plan.

INTRODUCTION

This report presents the environmental noise and vibration assessment for the Napa Oaks II Project. The following Setting section presents background information on community noise and vibration, applicable regulatory standards, and a description of the existing site conditions. The Impacts and Mitigation Measures section presents the assessment of noise and vibration impacts and the measures necessary to reduce the impacts.

SETTING

BACKGROUND INFORMATION ON NOISE

Noise Defined

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its *pitch* or its loudness. *Pitch* is the height or depth of a tone or sound, depending on the relative rapidity (frequency) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales which are used to describe noise in a particular location. A *decibel (dB)* is a unit of measurement which indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10 decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in **Table 14.1**.

There are several methods of characterizing sound. The most common in California is the *A-weighted sound level or dBA*. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in **Table 14.2**. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized.

Table 14.1: Definitions of Acoustical Terms in this Report

Term	Definitions
Decibel, dB	A unit describing, the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or 20 micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period.
L_{max} , L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
L_{01} , L_{10} , L_{50} , L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day/Night Noise Level, L_{dn} or DNL	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm and 7:00 am.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 pm to 10:00 pm and after addition of 10 decibels to sound levels measured in the night between 10:00 pm and 7:00 am.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Table 14.2: Typical Noise Levels in the Environment

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110 dBA	Rock band
Jet fly-over at 1,000 feet		
	100 dBA	
Gas lawn mower at 3 feet		
	90 dBA	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80 dBA	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	70 dBA	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	60 dBA	
		Large business office
Quiet urban daytime	50 dBA	Dishwasher in next room
Quiet urban nighttime	40 dBA	Theater, large conference room
Quiet suburban nighttime		
	30 dBA	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20 dBA	
		Broadcast/recording studio
	10 dBA	
	0 dBA	

Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound/noise descriptor is called L_{eq} . The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

Since the sensitivity to noise increases during the evening and at night—because excessive noise interferes with the ability to sleep—24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The *Community Noise Equivalent Level, CNEL*, is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (7:00 p.m. – 10:00 p.m.) and a 10 dB addition to nocturnal (10:00 p.m. – 7:00 a.m.) noise levels. The *Day/Night Average Sound Level, L_{dn}* , is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this three-hour period are grouped into the daytime period.

Hearing Loss

While physical damage to the ear from an intense noise impulse is rare, a degradation of auditory acuity can occur even within a community noise environment. Hearing loss occurs mainly due to chronic exposure to excessive noise, but may be due to a single event such as an explosion. Natural hearing loss associated with aging may also be accelerated from chronic exposure to loud noise.

The Occupational Safety and Health Administration (OSHA) has a noise exposure standard which is set at the noise threshold where hearing loss may occur from long-term exposures. The maximum allowable level is 90 dBA averaged over eight hours. If the noise is above 90 dBA, the allowable exposure time is correspondingly shorter.

Sleep and Speech Interference

The thresholds for speech interference indoors are about 45 dBA if the noise is steady and above 55 dBA if the noise is fluctuating. Outdoors the thresholds are about 15 dBA higher. Steady noise of sufficient intensity (above 35 dBA) and fluctuating noise levels above about 45 dBA have been shown to affect sleep. Interior residential standards for multi-family dwellings are set by the State of California at 45 dBA L_{dn} . This standard is also commonly applied to single family dwellings. Typically, the highest steady traffic noise level during the daytime is about equal to the L_{dn} and nighttime levels are 10 dBA lower. The standard is designed for sleep and speech protection and most jurisdictions apply the same criterion for all residential uses. Typical structural attenuation is 12-17 dBA with open windows. With closed windows in good condition, the noise attenuation factor is around 20 dBA for an older structure and 25 dBA for a newer dwelling. Sleep and speech interference is therefore possible when exterior noise levels are about 57-62 dBA L_{dn} with open windows and 65-70 dBA L_{dn} if the windows are closed. Levels of 55-60 dBA are common along collector streets and secondary arterials, while 65-70 dBA is a typical value for a primary/major arterial. Levels of 75-80 dBA are normal noise levels at the first row of development outside a freeway right-of-way. In order to achieve an acceptable interior noise environment, bedrooms facing secondary roadways need to be able to have their windows closed; those facing major roadways and freeways typically need special glass windows.

Annoyance

Attitude surveys are used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas. In these surveys, it was determined that the causes for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The L_{dn} as a measure of noise has been found to provide a valid correlation of noise level and the percentage of people annoyed. People have been asked to judge the annoyance caused by aircraft noise and ground transportation noise. There continues to be disagreement about the relative annoyance of these different sources. When measuring the percentage of the population highly annoyed, the threshold for ground vehicle noise is about 55 dBA L_{dn} . At an L_{dn} of about 60 dBA, approximately 2 percent of the population is highly annoyed. When the L_{dn} increases to 70 dBA, the percentage of the population highly annoyed increases to about 12 percent of the population. There is, therefore, an increase of about 1 percent per dBA between an L_{dn} of 60-70 dBA. Between an L_{dn} of 70-80 dBA, each decibel increase increases by about 2 percent the percentage of the population highly annoyed. People appear to respond more adversely to aircraft noise. When the L_{dn} is 60 dBA, approximately 10 percent of the population is believed to be highly annoyed. Each decibel increase to 70 dBA adds about 2 percentage points to the number of people highly annoyed. Above 70 dBA, each decibel increase results in about a 3 percent increase in the percentage of the population highly annoyed.

FUNDAMENTALS OF GROUND BORNE VIBRATION

Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One is the Peak Particle Velocity (PPV) and another is the Root Mean Square (RMS) velocity. The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. The RMS velocity is defined as the average of the squared amplitude of the signal. The PPV and RMS vibration velocity amplitudes are used to evaluate human response to vibration. In this section, a PPV descriptor with units of mm/sec or in/sec is used to evaluate construction generated vibration for building damage and human complaints. **Table 14.3** displays the reactions of people and the effects on buildings that continuous vibration levels produce. The annoyance levels shown in **Table 14.3** should be interpreted with care since vibration may be found to be annoying at much lower levels than those shown, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying.

Table 14.3: Reaction of People and Damage to Buildings at Various Continuous Vibration Levels

Velocity Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.02	Barely perceptible	Vibration unlikely to cause damage of any type to any structure
0.08	Distinctly perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
0.1	Strongly perceptible	Virtually no risk of damage to normal buildings
0.3	Strongly perceptible to severe	Threshold at which there is a risk of damage to older residential dwellings such as plastered walls or ceilings

0.5	Severe - Vibrations considered unpleasant	Threshold at which there is a risk of damage to newer residential structures
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Source: Transportation- and Construction-Induced Vibration Guidance Manual, California Department of Transportation, June 2004.

Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage. In high noise environments, which are more prevalent where groundborne vibration approaches perceptible levels, this rattling phenomenon may also be produced by loud airborne environmental noise causing induced vibration in exterior doors and windows.

Construction activities can cause vibration that varies in intensity depending on several factors. The use of pile driving and vibratory compaction equipment typically generates the highest construction related ground-borne vibration levels. Because of the impulsive nature of such activities, the use of the peak PPV has been routinely used to measure and assess ground-borne vibration and almost exclusively to assess the potential of vibration to induce structural damage and the degree of annoyance for humans.

The two primary concerns with construction-induced vibration, the potential to damage a structure and the potential to interfere with the enjoyment of life are evaluated against different vibration limits. Studies have shown that the threshold of perception for average persons is in the range of 0.008 to 0.012 in/sec PPV. Human perception to vibration varies with the individual and is a function of physical setting and the type of vibration. Persons exposed to elevated ambient vibration levels such as people in an urban environment may tolerate a higher vibration level.

Structural damage can be classified as cosmetic only, such as minor cracking of building elements, or may threaten the integrity of the building. Safe vibration limits that can be applied to assess the potential for damaging a structure vary by researcher and there is no general consensus as to what amount of vibration may pose a threat for structural damage to the building. Construction-induced vibration that can be detrimental to the building is very rare and has only been observed in instances where the structure is at a high state of disrepair and the construction activity occurs immediately adjacent to the structure.

REGULATORY BACKGROUND

City of Napa General Plan

The City of Napa’s Health and Safety Element of the General Plan sets forth Goal HS-9, “...to protect Napa’s residents, workers, and visitors from the deleterious effects of noise.” The following policies are applicable to the proposed Project.

Policy HS-9.1: The City shall require new development to meet the exterior noise level standards set out in Table 8-1 (not shown). For residential areas, these exterior noise guidelines apply to backyards; exceptions may be allowed for front yards where overriding design concerns are identified. For single family and low density residential uses, exterior noise levels up to 60 dBA L_{dn} are considered “normally acceptable”, from 55 to 70 dBA L_{dn} are considered “conditionally acceptable”, from 70 to 75 dBA L_{dn} are considered “normally unacceptable”, and 75 and above dBA L_{dn} are considered “clearly unacceptable”.

- Policy HS-9.2:* The City shall use CEQA and the development review process to ensure that new development does not exceed City standards.
- Policy HS-9.6:* The City shall use the development and building permit review processes to site new construction in ways that reduce noise levels.
- Policy HS-9.7:* The City shall encourage the clustering, where appropriate, of residential development in order to provide open space that can be used to distance residences from noise sources.
- Policy HS-9.9:* When feasible and appropriate, the City shall limit construction activities to that portion of the day when the number of persons occupying a potential noise impact area is lowest.
- Policy HS-9.11:* The City shall regulate construction in a manner that allows for efficient construction mobilization and activities, while also protecting noise sensitive land uses.
- Policy HS-9.13:* The City shall require new residential projects to provide for an interior CNEL of 45 dB or less due to exterior noise sources. To accomplish this, the City shall review all residential and other noise sensitive land uses within the 60 dB contours defined in the Table 8-2 and Figure 8-11 (not shown) to ensure that adequate noise attenuation has been incorporated into the design of the project, or that other measures are implemented to protect future sensitive receptors.
- Policy HS-9.14:* The City shall encourage new development to identify alternatives to the use of sound walls to attenuate noise impacts. Appropriate techniques include site planning such as incorporating setbacks, revisions to the architectural layout such as changing building orientation to provide noise attenuation for portions of outdoor yards, and construction modifications. In the event that sound walls are the only practicable alternative, such walls should be designed to be as visually pleasing as possible, incorporating landscaping, variations in color and patterns, and/or changes in texture or building materials.

City of Napa Noise Ordinance

Section 8.08.025 of the Napa Municipal Code regulates noise from construction activity. The applicable portion of this section states that any person engaged in construction activity ... shall limit said construction activity as follows:

- A. Construction activities throughout the entire duration of the project shall be limited to the hours of 7:00 a.m. to 7:00 p.m., Monday through Friday. There will be no start-up of machines nor equipment prior to 8:00 a.m., Monday through Friday; no delivery of materials nor equipment prior to 7:30 a.m. nor past 5:00 p.m., Monday through Friday; no cleaning of machines nor equipment past 6:00 p.m., Monday through Friday; no servicing of equipment past 6:45 p.m., Monday through Friday; and construction on weekends or legal holidays shall be limited to the hours of 8:00 a.m. to 4:00 p.m., unless a permit shall first have been secured from the City Manager, or designee, pursuant to Section 8.08.050 of this code.
- B. All muffler systems on construction equipment shall be properly maintained.
- C. All construction equipment shall not be placed adjacent to developed areas unless said equipment is provided with acoustical shielding.
- D. All construction and grading equipment shall be shut down when not actively in use.

F. As a separate, distinct, and cumulative remedy established for a violation of this section, the Police and/or the Code Enforcement Officer may issue a stop work order for violation of this section. Such order shall become effective immediately upon posting of the notice. After service of the stop work order, no person shall perform any act with respect to the subject property in violation of any of the terms of the stop work order, except such actions the city determines are reasonably necessary to render the subject property safe and/or secure until the violation has been corrected.

Section 17.52.310 of the Napa Zoning Ordinance further states the following:

“Proposed residential projects ... within 60 dB CNEL contours of highways, arterials and some collectors listed in the General Plan Table 8-2 (not shown) shall prepare a noise analysis as part of the project’s CEQA review to identify how 60 dB CNEL noise standards will be met and incorporate needed noise attenuation measures.”

Supplemental Sleep Disturbance Criteria

The City’s noise criteria are typically sufficient to achieve an acceptable interior noise environment with common environmental noise sources. However, when dealing with loud nighttime noise sources, such as wind machines, achieving a CNEL of 45 dBA within homes may still result in maximum noise levels within interiors great enough to result in significant sleep disturbance. Studies have been undertaken to determine the effect of maximum noise levels on sleep disturbance. The conclusions of these studies typically give a probability of sleep disturbance related to the maximum noise level of the event at the sleep location and the duration of the event. A review of sleep disturbance study data shows that limiting maximum noise levels of long lasting events (15-minute duration) to 40 dBA within sleeping rooms will limit the probability of waking residents during loud long term nighttime events to a level approaching zero percent per occurrence¹. Therefore, additional interior sound level criteria limiting maximum noise levels from wind machines within residential living spaces at the Project to 40 dBA have been adopted in this analysis and report.

EXISTING NOISE ENVIRONMENT

The Project site has varied topography and is located west of the South Napa-Vallejo Highway (SR 121/SR 29) and south of Old Sonoma Road and is bordered by Old Sonoma Road to the north, residences to the east and Truchard Vineyards to the west.

Traffic Noise

The primary noise source at the northern portion of the site is vehicular traffic on Old Sonoma Highway. A noise survey was completed to quantify noise levels at the Project site and its vicinity. Noise levels were monitored over a 5-day period from Thursday, January 17 through Tuesday, January 22, 2013 at three long-term measurement locations (LT-1, LT-2, and LT-3) and on Tuesday, January 22, 2013 at three additional attended short-term locations (ST-1, ST-2, and ST-3). Measurement locations are shown on **Figure 14.1**. The primary noise sources at these locations were distant vehicular traffic from Old Sonoma Highway and other nearby roadways, with intermittent maximum noise levels from aircraft reaching 55 to 65 dBA. The results of the long-term noise measurements are shown in full in **Appendix H** and summarized in **Table 14.4**. The results of the short-term noise measurements are summarized in **Table 14.5**.

¹ Kryter Karl D., The effects of Noise on Man, Second Edition, Academic Press, Inc. London, 1985, p.444-446

Using the cumulative plus project traffic volumes supplied by Fehr and Peers for the Project, traffic noise modeling was conducted in the Federal Highway Administration's (FHWA) Traffic Noise Model (TNM), version 2.5, to calculate the exposure of the site to traffic noise from Old Sonoma Road. Based on a combination of preliminary noise modeling in TNM and in-house traffic noise increase modeling and a review of the noise measurement results, future traffic noise levels are anticipated to be about 66 dBA CNEL at a distance of 50 feet from the center of Old Sonoma Road under Cumulative with Project conditions, an increase of about 2 dB above existing conditions.

Table 14.4: Summary of Long-Term Noise Measurement Results

Location (Date/Time)	Primary Noise Source	CNEL
LT-1: Southwest corner of Project site, (January 17-22, 2013)	Distant Traffic/ Aircraft	46-48 dBA
LT-2: ~220 feet from center of Old Sonoma Road, (January 17-22, 2013)	Traffic on Old Sonoma Road	52-55 dBA
LT-3: ~40 feet from center of Casswall Street, (January 17-22, 2013)	Traffic on Old Sonoma Road	54-56 dBA

Table 14.5: Summary of Short-Term Noise Measurement Results

Location (Date/Time)	Primary Noise Source	Noise Level, Leq / L50
ST-1: Northeastern corner of site, 55 yds from Old Sonoma Road, (1/22/13, 12:50 pm)	Traffic on Old Sonoma Road	53/46 dBA
ST-2: Southeastern corner of site, (1/22/13, 1:10 pm)	Distant Traffic/ Aircraft	46/36 dBA
ST-3: Western side of site, (1/22/13, 1:20 pm)	Distant Traffic/ Aircraft	54/35 dBA

Truchard Vineyards Noise

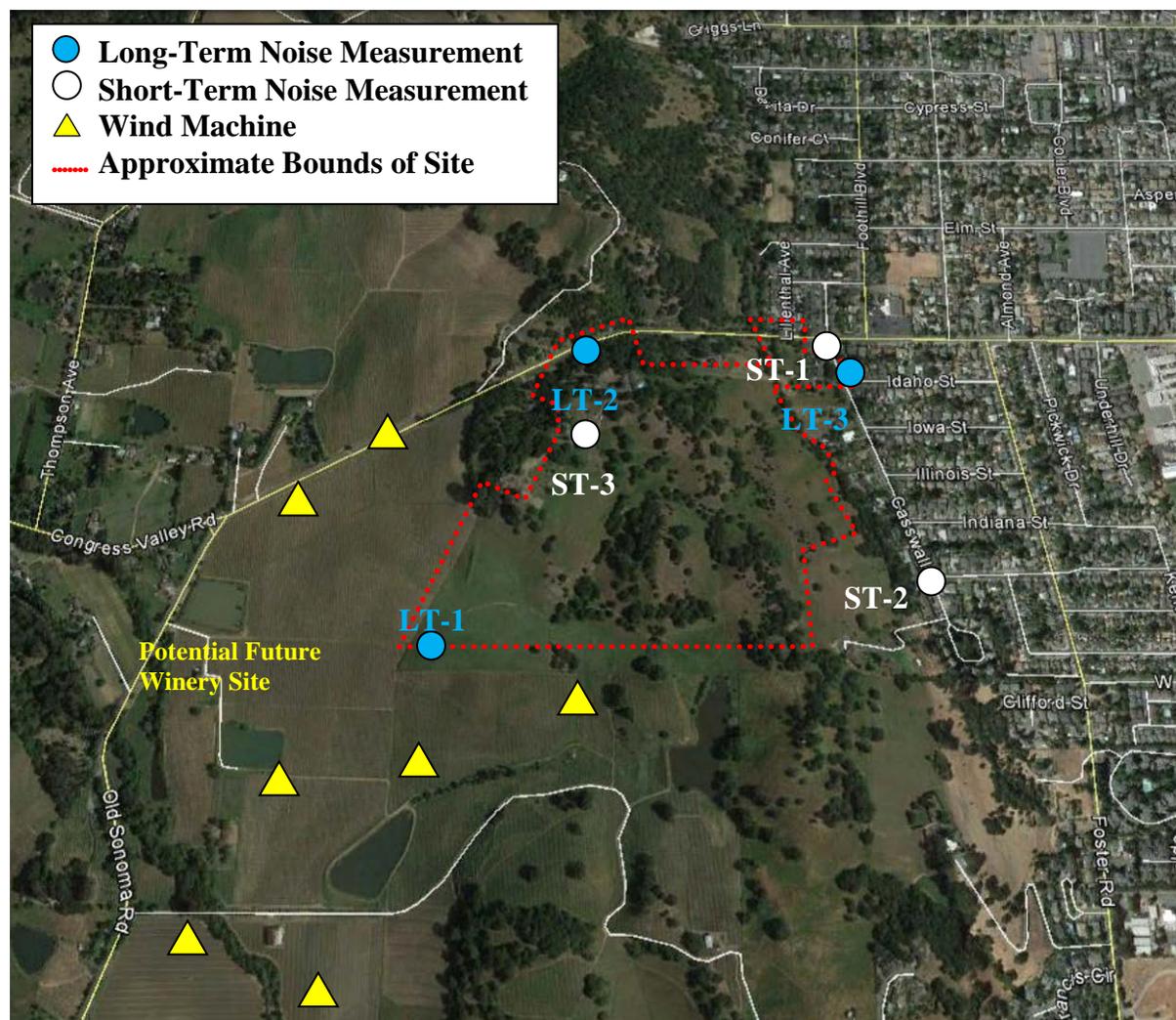
Operations at Truchard Vineyards include two noise-generating activities that are anticipated to be clearly audible at the Project site: 1) wind machines that are used to prevent the freezing of grapes and 2) various tractors that are used for spraying, dusting, furrowing, and harvesting. A noise monitoring survey was conducted on July 10, 2013 to quantify noise levels generated by these vineyard activities.

Table 14.6 summarizes representative noise levels measured during this survey.

Table 14.6: Vineyard Equipment Noise Levels

Noise Source	Noise Level	Distance
Orchard Rite Wind Machine, Propane Fired V10 Engine	70-79 dBA, depending on fan direction	200 ft
John Deere 5510 N Tractor and Sprayer	80 dBA	100 ft
Caterpillar D4 Tractor	74 dBA	100 ft
Landini Trek Tractor 65 F with Pak-Flail Mower	71 dBA	100 ft

Figure 14.1: Noise Measurement Locations



Wind machine noise levels are highest when the fan is facing towards or away from the receptor with lower noise levels occurring as the fan turns perpendicular to the receptor. The wind machine noise source sounds similar perceptively to a helicopter. Locations of the seven fans located in the vicinity of the Project are indicated in **Figure 14.1**. Wind machines start as early as midnight and operate for up to 8 hours for as many as 30 days per year between the end of February and middle of May. However, they typically operate for far fewer days per year and operated only 1 day over the 2013 early spring season². There are now seven fans located in the vicinity of the Project, the closest of which is about 350 feet from the southern property line of the site and about 500 feet from the nearest proposed home (Lot 27). Wind machine noise would typically drop off at a rate of about 6 dB per doubling of distance. At distances of 350 and 500 feet from the fan, maximum noise levels are calculated to be 74 and 71 dB, respectively, when the fan is facing the receptor. Assuming 8 hours of overnight operation from midnight to 8:00 am, this would equate to CNELs of 76 and 73, respectively, taking into account the oscillation of the noise source.

The John Deere tractors equipped for spraying and dusting are used as early as 2:00am for up to eight hours on 12 to 18 days per year between the months of March and July. The Caterpillar and Landini Trek tractors would be used primarily during daylight hours. At the nearest home (Lot 30), located about 175 feet from the southern property line of the site, maximum noise levels would be about 75 dBA from the John Deere tractor, about 69 dBA from the Caterpillar tractor, and about 66 dBA from the Landini Trek tractor when the tractors are near the property line. Assuming that the average distance between the tractors and the nearest homes is approximately 700 feet on the days that the tractors are used, the CNEL during operation of the tractors would be about 66 dBA for the John Deere, 53 dBA for the Caterpillar, and 50 dBA for the Landini at the nearest homes (Lots 27 through 35).

IMPACTS AND MITIGATION MEASURES

This section assesses the significance of noise impacts and presents measures to mitigate noise impacts that would result from the development of the Project. The order of impacts generally follows the CEQA checklist questions.

THRESHOLDS OF SIGNIFICANCE

Appendix G of the CEQA Guidelines (Environmental Checklist) contains a list of noise effects that may be considered significant. Implementation of the Project would have a significant effect on the environment if it were to:

- 1) Expose people to or generate noise levels in excess of established in the local general plan, noise ordinance, or applicable standards of other agencies.
- 2) Expose people to or generate excessive ground-borne vibration or ground-borne noise levels.
- 3) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- 4) Result in a substantial temporary or periodic increase in the ambient noise levels in the project vicinity above levels existing without the project.

² Communication with Tony Truchard in July 2013.

- 5) Where projects within an area covered by an airport land use plan or within two miles of a public airport or public use airport when such an airport land use plan has not been adopted, or within the vicinity of a private airstrip, expose people residing or working in the project area to excessive aircraft noise levels.
- 6) For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

NOISE AND LAND USE COMPATIBILITY

A residential development, such as the proposed Project, is not generally considered a noise-generating use such that noise generated by the Project would result in land use compatibility impacts at other uses. The Project's potential to increase noise levels at adjacent uses is further discussed under the following sub-header, "Permanent Ambient Noise Increases". The Project would have *no impact* related to land use compatibility.

Although CEQA does not require an agency to consider the impact of existing conditions on future project users per recent case law³, the following discussion of land use compatibility for future residents of the site is included for informational purposes.

The typical future daily noise levels at all of the Project's proposed homes would be below 60 dBA CNEL and therefore within the "normally acceptable" limits of the City's land use compatibility guidelines. However, adjacent agricultural operations would expose proposed Project homes to tractor noise and occasional nighttime wind machine noise, resulting in interior noise levels that would be in excess of the Napa General Plan interior noise level standards of 45 dBA CNEL and those expected to be protective of sleep (40 dBA maximum instantaneous noise in bedrooms) at some homes, as discussed in more detail below.

Traffic and Aircraft Noise

The primary noise source at the northern portion of the site is vehicular traffic on Old Sonoma Highway, though aircraft are intermittently heard at the Project site contributing to ambient noise levels. Based on a combination of preliminary noise modeling in the Federal Highway Administration's (FHWA) Traffic Noise Model (TNM) and review of the noise measurement results, future traffic noise levels are anticipated to be about 65 dBA CNEL at a distance of 50 feet from the center of Old Sonoma Road under Cumulative with Project conditions. The nearest proposed homes to Old Sonoma Road (Lots 51 and 52) are approximately 275 to 300 feet from Old Sonoma Road. At this distance, not taking shielding from terrain or structures into account, the future CNEL would be 53 to 54 dBA, including both traffic and aircraft noise sources. Other Project homes would be further from Old Sonoma Road, many of them well shielded acoustically from Old Sonoma Road and other nearby roadways by intervening terrain, and would therefore experience even lower traffic noise levels. Noise levels from aircraft would be similar throughout the site. Noise levels of less than 60 dBA CNEL are considered "normally acceptable" for residential development. The noise environment at the Project site is compatible with the proposed residential subdivision. Therefore the impact related to compatibility with noise standards is less than significant.

Note that certain activities on the adjacent vineyard could result in increased noise levels on occasion at the Project site. Because of the occasional nature of these noises, they were not considered in the

³ *CBIA v BAAQMD*, December 17, 2015.

ambient average, but could still have impacts while they are occurring. Therefore, these occasional noise sources are addressed separately below.

Wind Machine Noise

Noise from wind machines at Truchard Vineyards would expose the Project site to intermittent maximum noise levels of up to 74 dBA. Assuming 8 hours of overnight operation from midnight to 8:00 am, taking into account the oscillation of the noise source, respective CNELs of 76 and 73 dBA are calculated to occur at distances of 350 feet (the distance to the nearest boundary of the Project site) and 500 feet (the distance to the closest proposed home) from the fan. These noise levels would be in the “conditionally acceptable” to “clearly unacceptable” range according to the City’s land use compatibility guidelines. Other proposed homes that are farther away would be in the “conditionally acceptable” range. Some proposed homes that are further and acoustically shielded from the wind machines may be in the “normally acceptable” range. The noise would occur at night/early morning, when future residents are less likely to be outside, and would be intermittent, occurring only on nights cold enough for frost events, which is historically up to 30 nights per year.

Standard building construction would typically provide about 15 dB of noise reduction from exterior noise sources with windows open and 20 to 25 dB of noise reduction with windows closed. Without taking acoustical shielding into account, all residences on the Project site would be exposed to interior noise levels greater than 45 dBA CNEL with windows open and maximum interior noise levels of greater than 40 dBA. Note that, because wind machines are used only when the weather is cold enough to cause frost events, the likelihood of bedroom windows being open is low. The closest home (Lot 27) is estimated to reach an interior CNEL of about 58 dBA with windows open and 53 dBA with windows closed. These levels would be in excess of Napa General Plan Policy HS-9.13, which requires new residential projects to provide for an interior noise level of 45 dBA CNEL, and those expected to be protective of sleep (40 dBA maximum instantaneous noise). However, note that this is based on a screening-level noise assessment and a detailed acoustical analysis taking into account topography could result in lower calculated noise levels.

Additionally, typical background noise levels at night without operation of the wind machines or tractors can get down to 20 dBA range. Noise levels in even the 40 dBA range would be perceived as being 4 times louder than typical ambient noise levels. While 40 dBA would be within threshold levels, this increased noise level would be noticeable and potentially a source of annoyance to some occupants.

Tractors

Noise from the operations of the tractors would be clearly audible at homes along the western and southern property lines of the Project for approximately 25 days per year. Based on measured tractor volumes and noise modeling for this analysis, at the nearest homes, maximum noise levels would reach about 75 dBA from the John Deere tractor, about 69 dBA from the Caterpillar tractor, and about 66 dBA from the Landini Trek tractor when the tractors are near the property line. Assuming 8 hours of operation of each tractor, the closest homes would be exposed to a CNEL of up to 66 dBA for up to 18 days per year of use of the John Deere tractors, and up to 53 and 50 dBA CNEL for up to 7 days per year of use of the Caterpillar and Landini tractors, respectively. The higher CNEL exposure from the John Deere tractor use is mainly due to the operation of these tractors during early morning hours (starting at 2:00 am). Average daytime noise levels at these homes (7:00 am to 7:00 pm) would be 57 dBA for the John Deere tractor, 55 dBA for the Caterpillar tractor, and 52 dBA for the Landini tractor. Based on monitoring of ambient noise levels at the site, background noise levels at homes when

tractors and wind machines are not operating would be in the range of 45 to 55 dBA CNEL, with ambient daytime levels typically in the range of 35 to 60 dBA L_{eq} .

Since backyards would not typically be used late night/early morning, the average daytime noise level, which would exclude nighttime wind machine and tractor noise, is used to assess outdoor noise. The average daytime noise level in the closest backyards would be expected to be less than 60 dBA, even on days when tractors are in operation. This ambient average noise level would be considered “normally acceptable” for outdoor use areas.

For interior noise levels, both daytime and nighttime noise levels must be addressed with respect to the City of Napa General Plan Policies as well as those expected to be protective of sleep (40 dBA maximum instantaneous noise at night). As described above, standard building construction would typically provide about 15 dB of noise reduction from exterior noise sources with windows open and 20 to 25 dB of noise reduction with windows closed. Therefore, the nearest homes are estimated to reach interior noise levels of up to 51 dBA during use of the John Deere tractors, and up to 38 and 35 dBA CNEL during use of the Caterpillar and Landini tractors, respectively, with windows open. Noise levels would typically be 5 to 10 dBA quieter inside homes with windows closed, with the nearest homes being exposed to noise levels of 41 to 46 dBA inside during operation of the John Deere tractors. Inside the nearest homes with windows open, maximum noise levels would reach about 60 dBA from the John Deere tractor, about 54 dBA from the Caterpillar tractor, and about 51 dBA from the Landini Trek tractor when the tractors are near the property line. With windows closed, maximum noise levels would reach 50 to 55 dBA from the John Deere tractor, 44 to 49 dBA from the Caterpillar tractor, and 41 to 46 dBA from the Landini Trek tractor. These noise levels would be clearly audible inside these homes, could cause occasional short-term annoyance, and would be in excess of the City of Napa’s interior noise standard of 45 dBA CNEL and those expected to be protective of sleep (40 dBA maximum instantaneous noise at night).

Deeds recorded for each residential parcel in the Project site will include notification consistent with Napa County’s Right-to-Farm Ordinance (Napa County Municipal Code section 2.94.030) that the residence is located in proximity to ongoing, active agricultural activities, and list the types of annoyances that could occur, including but not limited to noise. The notification will also state that neither the County nor the City will take action against property owners of agricultural land who engage in agricultural practices that are consistent with accepted customs and standards.

Additionally, the following condition of approvals for the Project would further ensure new residences would be constructed such that indoor noise levels would remain within acceptable levels even with use of agricultural machinery at adjacent sites:

- **Design Level Acoustical Analysis and Construction Methods.** A design level acoustical analysis of each proposed residence shall be conducted by a noise specialist once the final site and building plans are available. For residences that are found to exceed the City of Napa’s interior noise standards or those considered protective of sleep during wind machine or tractor operations, sound rated window and wall construction shall be provided that would:
 - a) Reduce interior noise levels to achieve 45 dBA CNEL or less, and
 - b) Reduce maximum instantaneous noise levels to be 40 dBA or less within bedrooms, so as to minimize sleep interference.
- **Mechanical Ventilation.** To allow occupants the option of keeping windows closed to control noise, mechanical ventilation capable of providing a habitable interior environment with windows closed shall be provided to all residences as recommended by a mechanical engineer.

GROUNDBORNE NOISE AND VIBRATION

Impact Noise-1: Ground-borne Noise and Vibration. There are no sources of ground-borne noise or vibration that would result from development of the Project area. This is a *less than significant* impact.

A significant impact would be identified if the Project would expose persons to excessive vibration levels. Ground-borne vibration levels from construction activities exceeding 0.30 in/sec PPV (peak particle velocity) would result in a significant impact as such levels would have the potential to result in damage to older residential buildings (Caltrans Guidance Manual).

Ground-borne noise and vibration can result from railroad trains, railed transit systems, and heavy construction practices utilizing pile drivers or hoe-rams. The operation of the Project would not include any significant sources of ground vibration. No such activities or systems are planned within or near the Project area. Construction truck traffic traveling at low speed (25 mph or less) would access the site along Old Sonoma Road. Existing residential structures are within about 25 feet of Old Sonoma Road to the east. Ground-borne vibration from a loaded truck at low speed would be less than 0.08 in./sec. PPV at a distance of 25 feet (Transit Noise and Vibration Impact Assessment, United States Department of Transportation, Office of Planning and Environment, Federal Transit Administration, May 2006). Vibration levels may be intermittently perceptible, but would be well below a level of 0.30 inch/sec PPV that could cause damage to normal structures.

PERMANENT AMBIENT NOISE INCREASES

Impact Noise-2: Permanent Noise Level Increases. Project-generated traffic would cause noise levels to increase by less than 3 dBA CNEL along roadways adjoining existing residences in the area. This is a *less than significant* impact.

A significant impact would be identified if traffic generated by the Project would substantially increase noise levels at sensitive receivers in the vicinity. Following standard practice, a substantial increase would occur if existing plus project noise levels would be 3 dBA CNEL or greater above existing conditions.

The development of the Project would cause an increase in vehicular traffic on the street network. Increased vehicular traffic on the streets is the only source of operational noise that would substantially affect the noise environment in the vicinity of the Project. An increase is considered to be substantial if the noise exposure level increases by 3 dBA CNEL at a sensitive receiver. The noise exposure levels along Laurel Street, Old Sonoma Road, West Imola Avenue, Foothill Boulevard, Foster Road, and Freeway Drive were evaluated to determine whether or not the increased vehicular traffic would cause a substantial increase in the noise environment. Eight intersections were analyzed in the vicinity of the Project. Traffic noise along a street is logarithmically proportional to the volume of traffic. Using traffic data developed for this study, noise levels along the roads in and around the Project area were calculated to increase above existing levels by less than 1 dBA as a result of Project generated traffic. Increases on other area roadways would be anticipated to be similar to or below this level. Increases in vehicular traffic would not cause a significant noise impact to existing residents in the area.

TEMPORARY NOISE INCREASES

Impact Noise-3: Construction Period Noise Impact. The construction activities necessary to develop the Project would elevate noise levels in the areas near active construction sites but would comply with applicable Napa regulations and would not cause a substantial temporary or periodic increase in ambient noise levels. This is a *less than significant* impact.

The City of Napa does not define a noise limit for construction. Following the widely-used municipal standard, a significant noise impact would be identified if daily average construction noise levels exceeded 60 dBA L_{50} and 75 dBA L_{max} for construction that would involve substantial noise generating activities (such as grading, excavation, use of impact equipment or building framing) continuing for more than 12 months.

Construction activities generate noise. Typical construction noise levels resulting from the various construction phases are shown in **Table 14.7**. Noise levels associated with individual pieces of equipment are shown in **Table 14.8**. Site development including site preparation, grading, and paving is anticipated first over a period of about 9 months with homes built to custom specifications as lots are sold over a few years. Construction of the homes is anticipated to occur over a period of about 3.3 years, with one home being built about every 3 weeks on average. However, because it is based on the market, it is possible that building construction could stretch on for a longer period. Pile driving is not proposed as part of the Project.

Existing residences are located as close as 50 feet from areas that would be graded for roadways and 100 feet or more from the closest proposed home sites. In many locations substantial acoustical shielding is provided by intervening topography. Ambient noise levels at these nearest homes range from about 50 to 55 dBA during daytime hours. Typical hourly average construction noise levels range from about 75 to 85 L_{50} at a distance of about 50 feet from the construction activity, not taking into account shielding provided by topography. Maximum intermittent noise levels at a distance of 50 feet from construction equipment are calculated to reach 80 to 90 dBA. Construction noise levels at a distance of 100 feet would be about 6 dB lower. Although construction would occur over a period of more than 3 years and noise levels are anticipated to exceed the thresholds for periods of time in specific locations, construction would be intermittent over this period as individual homes were built. Noise levels are not projected to exceed the significance thresholds for a period of greater than 12 months at any individual sensitive receptor location.

Pursuant to Section 8.08.025 of the Napa Municipal Code, the Project is required to implement the following measures to control noise during construction:

- (a) Construction activities throughout the entire duration of the project shall be limited to the hours of 7:00 a.m. to 7:00 p.m., Monday through Friday. There will be no start-up of machines nor equipment prior to 8:00 a.m., Monday through Friday; no delivery of materials nor equipment prior to 7:30 a.m. nor past 5:00 p.m., Monday through Friday; no cleaning of machines nor equipment past 6:00 p.m., Monday through Friday; no servicing of equipment past 6:45 p.m., Monday through Friday; and construction on weekends or legal holidays shall be limited to the hours of 8:00 a.m. to 4:00 p.m., unless a permit shall first have been secured from the City Manager, or designee, pursuant to Section 8.08.050 of this code.
- (b) All muffler systems on construction equipment shall be properly maintained.
- (c) All construction equipment shall not be placed adjacent to developed areas unless said equipment is provided with acoustical shielding.

(d) All construction and grading equipment shall be shut down when not actively in use.

With compliance with City of Napa requirements to control noise during construction, this is a less-than-significant impact.

TABLE 14.7 TYPICAL RANGES OF ENERGY EQUIVALENT NOISE LEVELS AT 50 FEET, L_{EQ} IN DBA, AT CONSTRUCTION SITES

	Domestic Housing		Office Building, Hotel, Hospital, School, Public Works		Industrial Parking Garage, Religious Amusement & Recreations, Store, Service Station		Public Works Roads & Highways, Sewers, and Trenches	
	I	II	I	II	I	II	I	II
	Ground Clearing	83	83	84	84	84	83	84
Excavation	88	75	89	79	89	71	88	78
Foundations	81	81	78	78	77	77	88	88
Erection	81	65	87	75	84	72	79	78
Finishing	88	72	89	75	89	74	84	84
I - All pertinent equipment present at site. II - Minimum required equipment present at site.								

Source: U.S.E.P.A., Legal Compilation on Noise, Vol. 1, p. 2-104, 1973.

TABLE 14.8 CONSTRUCTION EQUIPMENT 50-FOOT NOISE EMISSION LIMITS

Equipment Category	L _{max} Level (dBA) ^{1,2}	Impact/Continuous
Arc Welder	73	Continuous
Auger Drill Rig	85	Continuous
Backhoe	80	Continuous
Bar Bender	80	Continuous
Boring Jack Power Unit	80	Continuous
Chain Saw	85	Continuous
Compressor ³	70	Continuous
Compressor (other)	80	Continuous
Concrete Mixer	85	Continuous
Concrete Pump	82	Continuous
Concrete Saw	90	Continuous
Concrete Vibrator	80	Continuous
Crane	85	Continuous
Dozer	85	Continuous
Excavator	85	Continuous
Front End Loader	80	Continuous
Generator	82	Continuous
Generator (25 KVA or less)	70	Continuous
Gradall	85	Continuous
Grader	85	Continuous
Grinder Saw	85	Continuous
Horizontal Boring Hydro Jack	80	Continuous
Hydra Break Ram	90	Impact
Impact Pile Driver	105	Impact
Insitu Soil Sampling Rig	84	Continuous
Jackhammer	85	Impact
Mounted Impact Hammer (hoe ram)	90	Impact
Paver	85	Continuous
Pneumatic Tools	85	Continuous
Pmps	77	Continuous
Rock Drill	85	Continuous
Scraper	85	Continuous
Slurry Trenching Machine	82	Continuous
Soil Mix Drill Rig	80	Continuous
Street Sweeper	80	Continuous
Tractor	84	Continuous
Truck (dump, delivery)	84	Continuous
Vacuum Excavator Truck (vac-truck)	85	Continuous
Vibratory Compactor	80	Continuous
Vibratory Pile Driver	95	Continuous
All other equipment with engines larger than 5 HP	85	Continuous

¹ Measured at 50 feet from the construction equipment, with a "slow" (1 sec.) time constant.

² Noise limits apply to total noise emitted from equipment and associated components operating at full power while engaged in its intended operation.

³ Portable Air Compressor rated at 75 cfm or greater and that operates at greater than 50 psi.

CUMULATIVE NOISE IMPACT

Impact Noise-4: Cumulative Noise Level Increases. The Project would not make a cumulatively considerable contribution to increased traffic noise in the area. This is a *less than significant* impact.

The development of the Project will contribute vehicular traffic to the cumulative increase in traffic projected on the street network. An increase in noise is considered to be cumulatively considerable if the cumulative noise exposure level increases by 3 dBA CNEL at a sensitive receiver and the Project is responsible for at least 1 dBA CNEL of the increase. The noise exposure levels along Laurel Street, Old Sonoma Road, West Imola Avenue, Foothill Boulevard, Foster Road, and Freeway Drive were evaluated to determine whether or not the increased vehicular traffic would cause a substantial cumulative increase in the noise environment. Eight intersections were analyzed in the vicinity of the Project. Noise levels along the SR29 southbound on-ramp are calculated to increase by 3 dBA CNEL as a result of cumulative traffic increases with or without the Project. The Project's contribution would be less than ½ dBA CNEL, not a cumulatively considerable contribution. Increases in vehicular traffic attributable to the Project would not cause a significant cumulative noise impact upon existing residents in the area.

The noise assessment above already takes into account cumulative traffic levels. Neighboring Truchard Vineyards has also noted plans for future construction of a new winery on the vineyard property, as shown in Figure 14.1 that would have a 60,000 case permit and would hold some events and parties. The access road for the proposed winery would not be any closer to the Project site than the current access roads for Truchard Vineyards. A winery in this location would need to obtain required permits from the County of Napa and complete any necessary environmental review prior to approvals/construction. Noise generated by the potential winery's additional traffic and event noise could potentially cause annoyance to occupants on the Project site, which is covered under Project-specific impacts above. Napa County's standard conditions of approval require evergreen shielding and enclosure of mechanical equipment and prohibit amplified music.

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POPULATION, PUBLIC SERVICES, AND RECREATION

INTRODUCTION

This chapter of the Draft EIR contains discussion regarding three CEQA topic areas related to the increase in residents at the site: Population/Housing, Public Services, and Recreation. It describes the change in residents at the Project site and analyzes the potential for impacts on population and housing, public services, and recreation resulting from implementation of the proposed Project.

POPULATION/HOUSING

SETTING

The State of California, Department of Finance (DOF), has estimated the population of Napa County at 140,362 on January 1, 2015 and the City of Napa population at 78,971. The number of persons per household in the City of Napa was estimated as 2.74 in a total of 30,374 housing units.¹ Note that this rate is higher than that projected in the City's General Plan (2.54)², so is considered a conservative number for analysis.

The Association of Bay Area Governments (ABAG), in collaboration with the Metropolitan Transportation Commissions (MTC) projected that between 2010 and 2040, City of Napa housing units would increase by 11% from 30,150 to 33,410 and jobs would grow in the City of Napa from 33,950 in 2010 to 44,520 in 2040 (a 31% increase). Regionally over the same period, housing units are expected to increase from 2.786 million to 3.446 million (23.6% increase) and jobs from 3.385 million to 4.505 million (33.1% increase).³ This study projected a constant regional employed resident per job ratio of

¹ State of California, Department of Finance, E-5 Population and Housing Estimates for Cities, Counties and the State, January 1, 2011- 2015. Sacramento, California, May 2015.

² City of Napa, Envision Napa 2010: City of Napa General Plan, adopted 12/1/98 as amended to 5/10, p. 1-25.

³ ABAG and MTC, Plan Bay Area: Jobs-Housing Connection Strategy, revised May 16, 2012, Appendix A: Growth Forecast by Jurisdiction.

0.966 between 2010 and 2040, reflecting the anticipation that job and local labor force will increase together with some in-commuting from out of the region continuing.⁴

The City of Napa General Plan reports a historic annual average housing stock growth rate of 1.3% between 1980 and 1990. Compounded over the years from 2010 to 2040, this would equate to an increase of over 47%, so is much greater than that currently projected. The Napa General Plan includes a policy (policy LU-3) to maintain an even rate of housing development but does not specify exact amounts or rates.⁵

PROPOSED PROJECT

The proposed Project would result in construction of 53 single-family residential units (and 51 net new residential units) that will be constructed and occupied over an approximately 3-year period. At an estimated 2.74 persons per unit⁶, the 53 units would result in 145 new residents.

POPULATION/HOUSING IMPACT ANALYSIS

Standards of Significance

Under the CEQA Guidelines, Appendix G – Environmental Checklist Form, development of the Project site as proposed would have a significant environmental impact if it were to result in:

1. The inducement of substantial population growth in an area either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure); or
2. The displacement of substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or
3. The displacement of substantial numbers of people, necessitating the construction of replacement housing elsewhere.

Substantial Population Growth

Impact Pop-1: Population Growth. The Project would result in an increase of 145 residents at the Project site. However, this increase is relatively small compared to regional growth and would be consistent with local and regional projections. The impact related to population growth would be considered a *less than significant* impact.

Development of the Project as proposed would result in construction on 53 single-family residential units (or 51 net new residential units), equating to approximately 145 residents at the Project site.

The Project would increase the number of housing units in the City of Napa by less than one quarter of one percent (0.17%) over that reported for the beginning of 2015. This represents approximately 12.9

⁴ ABAG and MTC, Plan Bay Area: Jobs-Housing Connection Strategy, revised May 16, 2012, Appendix B: Jobs-Housing Connection Growth Methodology.

⁵ City of Napa, Envision Napa 2010: City of Napa General Plan, adopted 12/1/98 as amended to 5/10, p. 1-12.

⁶ State of California, Department of Finance, E-5 Population and Housing Estimates for Cities, Counties and the State, 2001-2010, with 2000 Benchmark. Sacramento, California, May 2010.

percent of the historic annual growth reported in the General Plan but would actually occur over approximately three years, so would represent approximately 4.3% of the growth that would be anticipated each year assuming historic growth levels.

While the Project is a residential development that would not include new employment opportunities, the Project's relatively low contribution to population growth would not be expected to substantially change the relatively balanced and steady regional job/housing ratio.

While this development was not anticipated at this site under the General Plan and zoning code, it is consistent with the growth levels projected in the General Plan and by ABAG. Therefore, the Project would be considered to have a *less than significant* impact on population growth from both a project-specific and cumulative perspective.

Displacement of Existing Housing Units and/or People

Two housing units existing on the site would be removed with the Project, both of which are currently vacant. The Project would result in a net gain of 51 housing units. There would be *no impact* related to displacement of existing housing units or people.

PUBLIC SERVICES AND RECREATION

SETTING

The proposed Project is within the jurisdiction of the City of Napa and would be served by City of Napa public services, including the following.

Fire Protection and Emergency Medical Services

The Napa Fire Department serves the community from four fire stations covering 18 square miles within the City limits of Napa. Each station provides an Advanced Life Support (Paramedic) Engine company staffed with a minimum of three personnel. In addition, Fire Station One provides an Aerial Ladder Truck Company (also ALS/Paramedic) and cross-staffs a Heavy Rescue Unit for special operations and technical rescues.⁷

The department staffing consists of 56 suppression, six fire prevention and three full time administration personnel. Present annual call volume is about 7,000 responses per year of which 70% are medical in nature. Approximately 5% are fire related and another 5% hazardous material related with the remaining 20% in various "other categories."⁸

The closest station to the Project site is Fire Station 1, located approximately 2 miles from the Project site at 930 Seminary Street. Station 4 is approximately 2.5 miles from the Project site to the east at 251 Gasser Drive.

⁷ Napa Fire Department web page, available at http://www.cityofnapa.org/index.php?option=com_content&view=article&id=40&Itemid=65

⁸ Ibid

The City-wide average response time is 4.54 minutes (last reported for the period between 1/1/2013 to 12/31/2013). The City's response goal is to have the first apparatus on the scene within 7 minutes, 90% of the time. The latest reported year, 2013, was nearing, though short of that goal at 87.4%.⁹

Police Protection Services

The Napa Police Department (NPD) provides crime prevention and law enforcement within city limits.

NPD has authorization for 74 full-time equivalent (FTE) sworn officers.¹⁰ While the ratio of sworn officers per 1,000 residents is not reported, using the January 1, 2013 population from Department of Finance presented in the Population section above, this can be calculated at a ratio of about 1 officer per 1,000 residents. The City of Napa does not have a target ratio, but this ratio is consistent with the ratio for other cities in the Bay Area which largely range from 1.0 to 1.5 officers per 1,000 residents.

School Services

Senate Bill 50 (SB 50), which is funded by Proposition 1A, limits the power of Cities and Counties to require fiscal mitigation on home developers as a condition of approving new development and provides for a standardized developer fee. The State Allocation Board (SAB) approves increases in developer fee rates per Government Code Section 65995 (b) in response to inflation.

The Napa Valley Unified School District consists of 32 Schools located on 28 sites serving over 18,000 students in grades K-12.¹¹

According to School District assignments based on addresses, students at the Project site would be assigned to Napa High School (approximately 3 miles from Project site), Harvest Middle School (approximately 0.5 miles away) and Snow Elementary School (approximately 1 mile from the Project main driveway), though assignments could change based on future enrollment.¹²

The School District reports expected student generation rates for single family detached residences at 0.518 K-12 students per home. Based on state loading standards, the District exceeds its capacity at the kindergarten and elementary grade levels and will continue to do so through the 2023-24 school year.¹³

Parks and Recreation

Since the passage of the 1975 Quimby Act (California Government Code §66477), Cities and Counties have been authorized to pass ordinances requiring that developers set aside land, donate conservation easements or pay fees for park improvements. The City of Napa has adopted the Parks and Recreation Element as Chapter 5 of their Envision Napa 2020 General Plan, and the Park and Recreation Facilities Master Plan as an implementation step providing guidance to achieve the vision as laid out in the General Plan.

⁹ Napa Fire Department 2013 Annual Report, available at http://www.cityofnapa.org/images/fire/documents/firedept_2013_annrep.pdf

¹⁰ Napa Police Department web page, available at <http://www.napapolice.com/>

¹¹ Napa Valley Unified School District, Program and Facilities Master Plan 2012/2013.

¹² Napa Valley Unified School District, School Search, available at: <https://nvusd-abi.nvusd.k12.ca.us/abi/schoolsearch.asp>, accessed May 2015.

¹³ Napa Valley Unified School District, prepared by Jack Schreder & Associates, Developer Fee Justification Study for Napa Valley Unified School District, 3/12/2014.

The City of Napa has 800 acres of parks and open space at 57 locations that offer a variety of recreation experiences, skateboarding, golfing, walking and biking and playing sports at park types ranging from mini and neighborhood parks to large-scale community parks that draw people from throughout the community. Napa also provides spaces and programming for indoor recreation at City-owned and School District facilities. The City has identified an increased local park access goal of a park within ½ mile travel distance of each residence and identified the need for additional parks to meet that goal.¹⁴

The recreational amenities break down as follows, listed at acreage per 1,000 residents: Overall 10 acres, Community Parks 3.03 acres, Neighborhood Parks 1.01 acres, Mini Parks 0.03 acre, Civic Spaces 0.04 acre, Natural Areas and Open Space 4.23 acres, and Special Use Areas 2.31 acres. While smaller in acreage, Neighborhood Parks have the most locations at 23 and are intended to be within walking and bicycling distance of most users. The overall ratio of developed park areas (excluding natural areas and open space) is 6.42 acres per 1,000 residents. This compares favorably to other local jurisdictions, which have ratios ranging from 4.14 to 5.79.¹⁵ This is also well above the ratio specified in Napa's Municipal Code of 2.5 acres per 1,000 residents (section 16.32.040.C), consistent with the state's Quimby Act.

The Project's main driveway is ½ mile from Playground Fantastico Park, a park located at Harvest Middle School but available to community users throughout the day with multiple playground areas, and picnic and restroom facilities. The 2.3-acre Laurel Hills Neighborhood Park is 0.7 mile from the Project site and provides west Napa residents with a variety of recreational opportunities, including basketball, ball fields, a children's play area and picnic areas. The Project site is 1.5 miles from the entrance to Westwood Hills Regional Park, which is a 106.8-acre natural area with 7 miles of trails and picnic facilities.¹⁶ The Project site is within the 2-mile service area of the 9.5-acre Fuller Community Park.¹⁷

PUBLIC SERVICES AND RECREATION IMPACT ANALYSIS

Standards of Significance

Under the CEQA Guidelines, Appendix G – Environmental Checklist Form, development of the Project site as proposed would have a significant environmental impact if it were to result in:

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

¹⁴ City of Napa, Park and Facilities Master Plan, Adopted February 16, 2010.

¹⁵ Ibid

¹⁶ City of Napa, Park and Facilities Master Plan, Appendix A – Inventory and Park Profiles, Adopted February 16, 2010.

¹⁷ City of Napa, Envision Napa 2010: City of Napa General Plan, adopted 12/1/98 as amended to 5/10, Figure 5-2.

2. Increased use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated

All Public Services and Recreation

Impact Services-1: Increased Public Service Demand. The Project would increase the number of residents at the site. However, the Project could be adequately served with existing facilities and staff and the impact related to public services would be considered *less than significant*.

Additional discussion is provided below.

Fire and Police Protection

The Project would result in new residential development and population, which would increase demand for fire and emergency medical protection services and police services. The police and fire departments are funded through the City's General Fund. The Project is within service range of existing fire stations (Stations 1 and 4) and with an increase of only 145 residents, the Project would not warrant a dedicated police officer (at a ratio of 1 officer per 1,000 residents) and is not anticipated to substantially change services ratios or the ability to provide adequate services with existing facilities.

Note that because of sub-standard secondary access, the Project would be required to prepare a Fire Plan, as detailed in the traffic chapter. A Fire Plan allows for safe ingress and egress in the event of a fire despite secondary access that does not meet standards.

Project-specific and cumulative contributions to increased demand for fire and police services are addressed through annual taxes. The Project would have a *less than significant* impact on the City's police and fire protection services.

Schools

The proposed Project would generate approximately 27 total students from the Project site (using School District student yield rates of 0.518 student for each single-family detached home in the Napa area¹⁸), thereby increasing demand for school facilities in the school district. The School District, which serves over 18,000 students, reports overall available capacity in the system at all school levels, though some schools are at or near capacity, requiring adjustment of attendance boundaries and/or returning supplemental rooms to classroom usage.¹⁹

The student generation from this particular Project is relatively small and would not in itself require dedicated new school facilities. Overall, funds would be needed for equipment and staffing, and ultimately construction of expansions to existing school facilities and/or new schools to meet future cumulative demands. School funding typically has a number of sources, such as property tax, State General Funds, special taxes and developer fees. As discussed in the setting above, the assessment of developer fees is regulated through the State Government Code. The School District would be responsible for environmental assessment of any new schools proposed to meet future cumulative needs. Because the proposed Project would pay school mitigation fees consistent with State law, and

¹⁸ Napa Valley Unified School District, prepared by Jack Schreder & Associates, Developer Fee Justification Study for Napa Valley Unified School District, 3/12/2014, Table 1.

¹⁹ Napa Valley Unified School District, Program and Facilities Master Plan 2012/2013, Tables 33, 35, and 37.

the school district would be required to perform environmental review of any additional facilities prior to construction, potential impacts due to increased school enrollment would be *less than significant*.

Parks and Recreation

With a projected 145 new residents, the Project would not substantially change Napa's existing ratio of 6.42 acres of developed park land per 1,000 residents and would therefore remain well above the minimum amount specified in the municipal code of 2.5 acres per resident. No deficiencies were identified in this ratio of parkland though a goal of providing park access within 0.5 mile of residents was identified. One park is located within that distance to the Project site entrance, though residents on the site would have to travel somewhat further depending on their location within the site. The Project is within the target 2-mile distance to a community park (Fuller).

The municipal code requires 0.007175 acre of parkland for each new single-family detached home (0.366 acre for the Project) either through on-site dedication or payment of an in-lieu fee toward off-site improvements (municipal code section 16.32.040). The City does not support new mini parks,²⁰ so it is not considered desirable that the small required acreage of 0.366 acre be developed on site. The Project does not include any parkland, and though it does include publicly accessible open space including walking trails, this would be privately owned and maintained by the HOA and not count toward parkland requirements or City open space acreage totals.

The Project will pay appropriate in-lieu park fees according to the City's adopted fee schedule in place at the time of development. While the distance of on-site residences to parks is marginally over target distances, it is not anticipated a park would be located closer to this site at the city limits. While it doesn't count as parkland, the Project does include abundant on-site open space and walking trails. With the open space provisions as well as required payment of park facilities fees as discussed above, the impact of the Project related to physical deterioration of existing parks would be *less than significant*.

Other Facilities

As with the public services listed above, while the Project could result in a marginal increase in use of other facilities in Napa, such as libraries, due to increase of residents on the Project site. Napa residents are served by the Napa County Library, located at 580 Coombs Street, approximately 2 miles east of the Project.²¹ The Project represents a 0.17% increase in the population of Napa and would not be expected to substantially contribute to a need for new facilities or inability to meet performance measures. The net effect on other facilities would be considered *less than significant*.

²⁰ City of Napa, Envision Napa 2010: City of Napa General Plan, adopted 12/1/98 as amended to 5/10, policies PR-1.12 and PR-1.13, p. 5-7.

²¹ City of Napa website, Library Services page, located at http://www.cityofnapa.org/index.php?Itemid=82&id=58&option=com_content&task=view

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TRANSPORTATION AND CIRCULATION

INTRODUCTION

This chapter and the related analysis were prepared by Fehr & Peers. This chapter discusses the results of a transportation impact analysis conducted to evaluate the transportation-related impacts of the proposed Project on vehicle, bicycle, pedestrian, and transit movements.

KNOWN CONCERNS

The study specifically addresses sources of concern identified in the Scoping Meeting and/or responses to the NOP, including issues regarding safe access and egress from the proposed Project driveway, adequate emergency vehicle access to the site, cut-through traffic on Casswall Street, and rates of daily automobile traffic on Foster Road north of West Imola Avenue.

ENVIRONMENTAL SETTING

This section describes the proposed Project study area, including the surrounding roadway network and pedestrian, bicycle and transit facilities in the site vicinity.

STUDY AREA

The proposed Project site is located on the interior side of the western border of the City of Napa, approximately two miles southwest of downtown Napa. The Project driveway is located on Old Sonoma Road opposite Lilienthal Avenue in the City of Napa.

Vicinity intersections were selected for study, based on the following guidelines from the City of Napa:¹

- A. All site access drives, adjacent roadways, and intersections around the site, plus the major or signalized intersections in each direction from the site leading up to the nearest regional corridor(s), possibly including transitional locations outside the City of Napa boundaries; and
- B. Carry the analysis to locations where site-generated traffic would represent five (5) percent or more of the roadway's peak hour approach capacity.

Eight critical intersections were identified in consultation with Napa County and City of Napa Public Works staff as those most likely to be affected by the proposed Project. The eight study intersections are listed below, and **Figure 16.1** illustrates their locations.

¹ *Policy Guidelines: Traffic Impact Analysis for Private Development Review*, City of Napa Traffic Advisory Committee, March 2008.



Figure 16.1:
Traffic Study Intersections

Source: Fehr & Peers, March 2013

- 1 – Laurel Street / Foothill Boulevard (side-street STOP control)
- 2 – Laurel Street / Freeway Drive / Kilburn Avenue (signalized)
- 3 – Old Sonoma Road / Foothill Boulevard (side-street STOP control)
- 4 – Old Sonoma Road / Foster Road (side-street STOP control)
- 5 – Old Sonoma Road / Connection to Freeway Drive (side-street STOP control)
- 6 – Old Sonoma Road / Freeway Drive (side-street STOP control)
- 7 – West Imola Avenue / Foster Road (all-way STOP control)
- 8 – West Imola Avenue / State Route 29 southbound ramps (signalized)

These intersections have been evaluated under the following four scenarios:

- *Existing Conditions* – provides an evaluation of current operations based on existing traffic volumes during the weekday AM and PM peak periods;
- *Existing Plus Project Conditions* – adds estimated traffic generated by the Project to existing volumes;
- *Cumulative No Project Conditions* – incorporates planned population and employment growth and planned transportation system improvements for the year 2035, based on output from the Napa/Solano County Travel Demand Forecasting (TDF) Model; and
- *Cumulative Plus Project Conditions* – analyzes forecasts developed by adding Project-related traffic to the Cumulative No Project volumes.

Additional intersection locations should be included where site-generated traffic would represent five percent or more of the roadway’s peak-hour approach capacity. **Table 16.1** shows the analysis that was conducted to determine whether the study of additional intersections would be warranted. The analysis assesses the Project’s contribution to weekday peak-hour approach capacity at the two selected signalized intersections near the Project site. As shown in the table, the Project is contributing less than five percent of peak hour approach capacity to each selected study location; therefore, no additional intersection analysis is required per City criteria.

Table 16.1: Study Location Determination Using City’s Approach Capacity Criteria

Intersection	Existing Volumes	Volume/ Capacity Ratio	Approach Capacity ¹	Project Trips	Project Trips as a % of Approach Capacity
AM Peak Hour					
2. Laurel Street / Freeway Drive / Kilburn Avenue	1,148	1.42	808	7	0.9%
8. West Imola Avenue / SR 29 southbound ramps	2,507	0.95	2,639	16	0.6%
PM Peak Hour					
2. Laurel Street / Freeway Drive / Kilburn Avenue	1426	2.2	648	9	1.4%
8. West Imola Avenue / SR 29 southbound ramps	2,521	0.81	3,112	22	0.7%
Notes: 1. Approach capacity determined dividing existing volumes by intersection peak hour Volume-to-Capacity ratio. Source: Fehr & Peers 2013.					

It is reasonable to assume that Project trips would be further dispersed as they travel away from the Project site; therefore the City's criteria would not be met at more outlying locations. Furthermore, intersections that operate at unacceptable levels would need to receive an increase of 50 vehicles associated with the Project to be considered significantly impacted. As explained later in this section, the proposed Project would not contribute more than 50 vehicles to any of the study intersections.

ROADWAY NETWORK

The local roadway system near the Project site is described below. The Transportation Element of the City's General Plan (specifically, Table 3-2) classifies roadways within the City as Freeways, State Highways, Arterials, Collectors, and Local Streets. These classifications generally refer to the character of the designated roadways in areas within the City. The following street classifications are located within the Project vicinity:

Arterials – Roadways that collect and distribute traffic from freeways/highways to collector streets, and vice versa. They provide access to individual homes and businesses.

- *West Imola Avenue* is the southernmost cross-town road in the City of Napa. Between State Route (SR) 29 and Soscol Avenue, the roadway is also known as SR 121. Along this stretch, West Imola Avenue has four lanes of traffic with Class II bicycle facilities and a discontinuous sidewalk on one side of the roadway. West of SR 29, along the 4-block stretch closest to the Project site, West Imola Avenue becomes a neighborhood street with two lanes and sidewalks on both sides. The posted speed limit is 35 mph. East of Soscol Avenue, West Imola Avenue turns into the neighborhood street Imola Avenue for a little over one mile until the road ends at Fourth Avenue.
- *Old Sonoma Road* is an east-west roadway that runs along the Project site's northern border. It extends from Jefferson Street to beyond the edge of the City to the west (towards Sonoma). It consists of two lanes along its entire length. The posted speed limit is 35 mph adjacent to the Project site. Sidewalks are provided on at least one side of this roadway from Jefferson Street to Casswall Street. Class II bicycle facilities are also provided for four short blocks west of the SR 29 overpass to Foster Road.

Collectors – Roadways that serve as connectors between local and arterial streets and provides direct access to parcels.

- *Laurel Street* is an east-west roadway located south of Downtown and extending west from the Napa River to Browns-Valley Road. It has two lanes of traffic and a sidewalk on both sides. Laurel Street is discontinuous as it does not connect across SR 29. Laurel Street is located around four blocks north of the Project site. Its posted speed limit near the Project site is 25 mph.
- *Foster Road* is a two-lane roadway that runs north-south, paralleling SR 29 south of Old Sonoma Road to Golden Gate Drive. There are sidewalks on both sides of the roadway from Old Sonoma Road to West Imola Avenue, a sidewalk on one side between West Imola Avenue and Canterbury Drive, and limited pedestrian facilities south of Canterbury Drive to the end of the roadway. Foster Road is located one block east of the Project site, with a posted speed limit of 30 mph.

PEDESTRIAN AND BICYCLE FACILITIES

Pedestrian facilities consist of sidewalks, crosswalks, and pedestrian signals.

The following bicycle facilities are described in the Circulation Element of the 2011 Napa County General Plan:

- Class I Bike Paths are facilities specifically designated for the exclusive use of bicycles and pedestrians. They are separate from streets, although they may cross roadways.
- *Class II Bike Lanes* are striped lanes on a street or highway, designated for use by bicycles. Vehicle parking and vehicle pedestrian cross-flows are permitted at designated locations.
- *Class III Bike Routes* are usually designated by signs and sharrows to indicate the acceptable use of bicycles within the vehicular travel lane of a roadway. A sharrow (“shared roadway marking”) is a painted figure in the street indicating where cyclists should ride in the roadway to avoid the threat of being hit by a car door.

Pedestrian and bicycle facilities adjacent to the proposed Project are limited. The two streets directly adjacent to the Project site, Old Sonoma Road (west of Foothill Boulevard) and Casswall Street, lack any pedestrian facilities. However, small residential cross streets that intersect Casswall Street near the Project site—Idaho Street, Iowa Street, Illinois Street, Indiana Street, and Utah Street—do include landscape-buffered sidewalks.

The existing bicycle network in the vicinity of the Project site is presented in **Figure 16.2** Freeway Drive, the local access road parallel to SR 29, has Class II bike lanes. North of the Project study area, a short segment of Class I bike path connects the south end of Coffield Avenue to First Street/Browns Valley Road, which has Class II bike lanes. West Imola Avenue has Class II bike lanes between SR 29 and Soscol Avenue. The 2012 Napa Countywide Bike Plan identifies future Class II bike lanes along Old Sonoma Road and Class III bike routes along Foothill Boulevard and Foster Road.

TRANSIT NETWORK

Transit service in the City and County of Napa is provided by VINE, a fixed-route bus that provides service to the cities of Calistoga, St. Helena, Napa and American Canyon, the town of Yountville, and other parts of unincorporated Napa County, as well as to Sonoma, Solano and Contra Costa Counties. VINE fixed-route and paratransit operators in this region are under the jurisdiction of the Napa County Transportation and Planning Agency (NCTPA). VINE local service operates on weekdays from as early as 6:30 AM to as late as 7:05 PM, operates on Saturdays from 6:55 AM to 6:20 PM, and does not operate on Sundays. Sunday operation is provided on VINE regional routes 10 and 11 with service from Calistoga to Napa and Napa to Vallejo, respectively. The Project site and its vicinity are served by two local routes: Route 2 and Route 3.

VINE Route 2 provides local service in a counterclockwise loop that runs through the Soscol Gateway Transit Center and along 1st Street, Kilburn Avenue, Laurel Street, Foothill Boulevard, Old Sonoma Road, and Franklin Street. Route 2 connects the Project site to Downtown and central Napa. The Route 2 stop nearest the Project site is on Foothill Boulevard just north of Old Sonoma Road. Weekday service starts at 6:45 AM and ends at 6:49 PM with 30-minute headways. Saturday service starts at 6:55 AM and ends at 5:58 PM with 45-minute headways.

VINE Route 3 provides local service in a counterclockwise loop that runs through the Soscol Gateway Transit Center and the South Napa Marketplace via Downtown, Jefferson Street, Old Sonoma Road, Foster Road, West Imola Avenue and Coombs Street. Route 3 connects the Project site to Downtown and south Napa. The Route 3 stop nearest the Project site is on Old Sonoma Road at Foster Road. Weekday service starts at 6:30 AM and ends at 6:34 PM with 30-minute headways. Saturday service starts at 6:55 AM and ends at 5:56 PM with 45-minute headways.

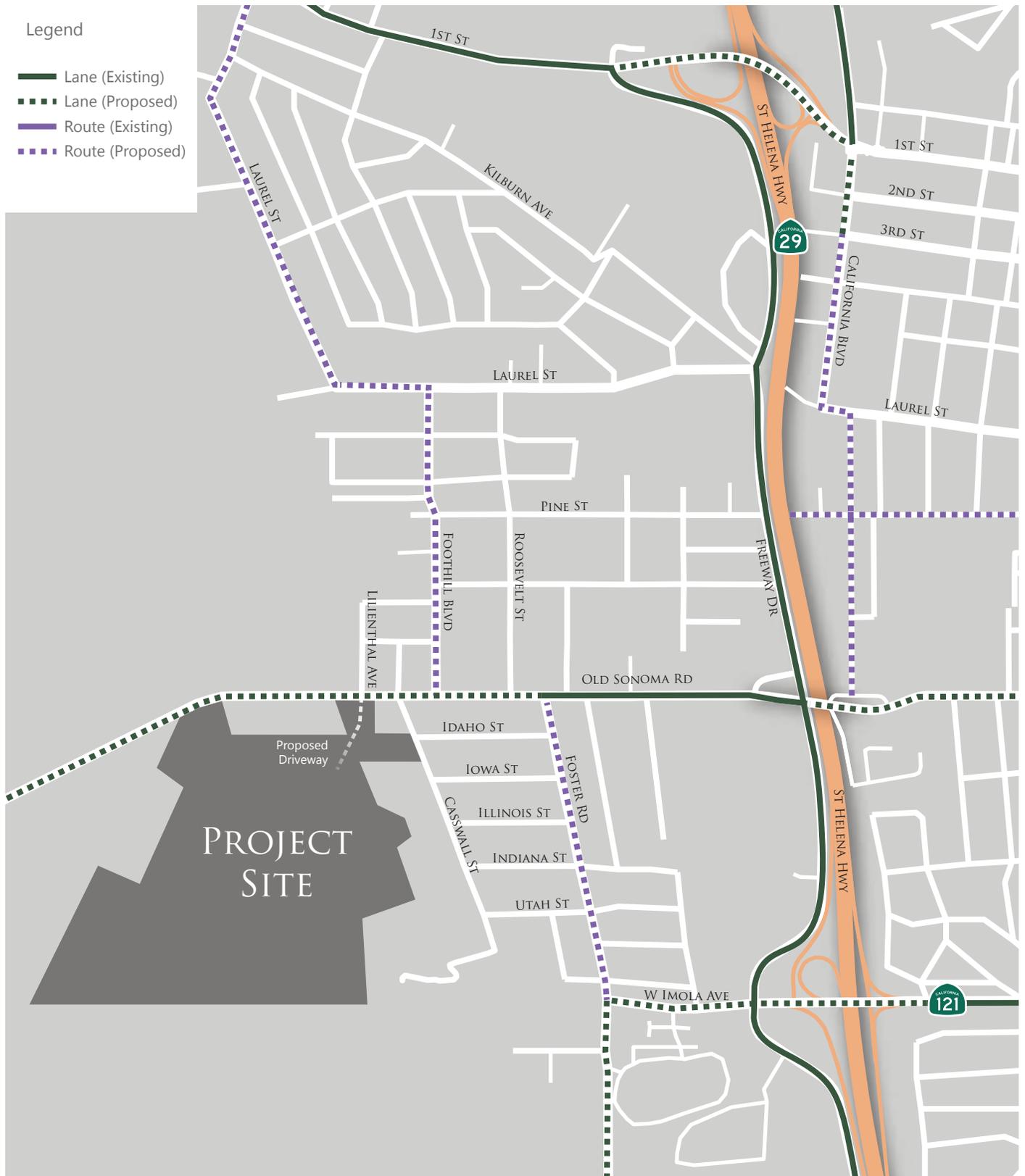


Figure 16.2:
Existing Bicycle Facilities

Source: Fehr & Peers, March 2013

Eleven other routes are accessible through connections made at the Soscol Gateway Transit Center in Downtown Napa.

VINE GO Paratransit Service is the region's paratransit provider, which operates Monday through Sunday. This is an on-call service providing curb-to-curb service for older adults and the disabled.

EXISTING TRAFFIC CONDITIONS

Intersection turning-movement counts were conducted for the eight study intersections.

Counts were collected in February 2013, mid-week (Wednesday or Thursday) during the morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak periods. The analysis focuses on the hour within each 2-hour period that has the highest traffic volumes. Typically in this area, the peak weekday hours fall between 7:30 to 8:30 AM and 4:30 to 5:30 PM **Appendix I** contains the traffic count data sheets.

The City of Napa's 2008 *Policy Guidelines: Traffic Impact Analysis for Private Development Review* (hereafter, *Policy Guidelines*) indicates that because Napa is a tourist community traffic volumes fluctuate substantially based on the season and day of the week. All traffic data used in transportation impact analyses are required to reflect the conditions of a Thursday in the month of August. The City of Napa provides count adjustment factors, shown in **Table 16.2**, to be used to convert observed counts to this benchmark scenario. Since the intersection turning movement counts for the proposed Project were conducted in February on a

Wednesday or Thursday, the counts were adjusted in the intersection analysis based on the required factors. **Figure 16.3** displays the lane configurations, traffic controls, and adjusted existing AM and PM peak-hour traffic volumes.

INTERSECTION OPERATIONS

LEVEL OF SERVICE

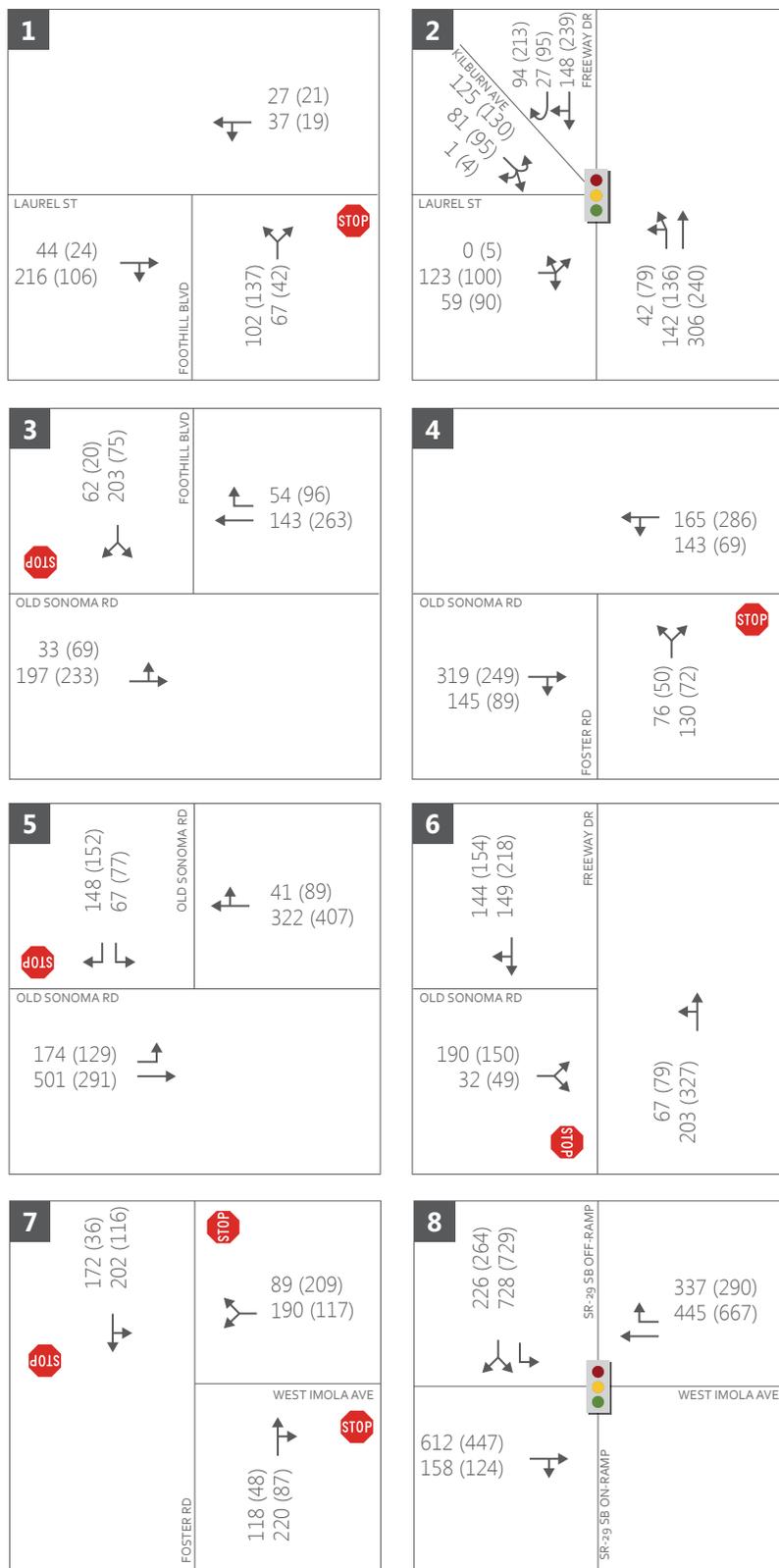
Transportation engineers and planners commonly use a grading system called "level of service" (LOS) to measure and describe the operational status of intersections on a local roadway network. LOS is a semi-quantitative description of an intersection's operation, ranging from LOS A (indicating free-flow traffic conditions with little or no delay) to LOS F (representing oversaturated conditions with traffic flows exceeding design capacity, resulting in long queues and delays).

Table 16.2: Monthly and Daily Factors for Converting Counts to Average August Thursday Traffic

Day of Week Multiplier ^a	
Monday	1.043
Tuesday	1.020
Wednesday	1.010
Thursday	1.000
Friday	0.940
Month of Year Multiplier ^a	
January	1.179
February	1.161
March	1.133
April	1.083
May	1.064
June	1.009
July	1.015
August	1.000
September	1.037
October	1.078
November	1.067
December	1.158

^a A multiplier is a conversion factor which when multiplied by traffic volumes collected on a given day and month returns traffic on a Thursday in August (the annual peak). For example, a traffic count conducted on a Monday in January would be multiplied by 1.043 and then multiplied by 1.179 to get its Thursday in August equivalent.

Source: Napa Transportation Management Plan (TMP) Traffic Model, *Traffic Study Guidelines*, City of Napa, 2005.



- Legend
- Study Intersection
 - Signalized Intersection
 - Stop Sign

Figure 16.3:
Existing Lane Configurations and Volumes

Source: Fehr & Peers, March 2013

Signalized intersection traffic conditions and resulting LOS derive from the *Highway Capacity Manual 2000* (Chapter 16) method. This operations analysis uses various intersection characteristics (such as traffic volumes, lane geometry, and signal phasing) to estimate the average control delay per vehicle. Control delay is the portion of the total delay attributed to signal operations and includes initial deceleration, queue move-up time, stopped delay, and acceleration delay. Using this method, transportation engineers and planners base the LOS for a signalized intersection on the control delay per vehicle measured in seconds.

Unsignalized intersection evaluations employ the *Highway Capacity Manual 2000* (Chapter 17) method. Unsignalized intersections are all-way stop-controlled (AWS) or side-street stop-controlled (SSS) intersections. The average control delay per vehicle (measured in seconds) for each stop-controlled movement defines the operations for these intersections. Control delay incorporates delay associated with deceleration, acceleration, stopping, and moving up in the queue. For SSS intersections, the delay reported in this study represents the worst-case minor approach. For AWS intersections, the average control delay represents the entire intersection.

Table 16.3 shows the relationship between delay and LOS for signalized and unsignalized intersections.

Table 16.3: Intersection Level of Service Criteria

Level of Service	Driver's Perception and Traffic Operation Description	Signalized Intersection Control Delay per Vehicle (Seconds)	Unsignalized Intersection Control Delay per Vehicle (Seconds)
A	LOS A is characterized by light congestion. Motorists are generally able to maintain desired speeds on two- and four-lane roads and make lane changes on four-lane roads. Motorists are still able to pass through traffic.	≤ 10	≤ 10
B	LOS B is characterized by light congestion. Motorists are generally able to maintain desired speeds on two- and four-lane roads and make lane changes on four-lane roads. Motorists are still able to pass through traffic.	>10 and ≤ 20.0	>10 and ≤ 15
C	LOS C represents moderate traffic congestion. Average vehicle speeds continue to be near the motorist's desired speed for two- and four-lane roads. Lane-change maneuvers on four-lane roads increase to maintain desired speed. Turning traffic and slow vehicles begin to have an adverse impact on traffic flows. Occasionally, motorists do not clear the intersection on the first green phase.	>20 and ≤ 35	>15 and ≤ 25
D	LOS D is characterized by congestion with average vehicle speeds decreasing below the motorist's desired level for two- and four-lane roads. Lane-change maneuvers on four-lane roads are difficult to make and adversely affect traffic flow like turning traffic and slow vehicles. Multiple cars must wait through more than one green phase at a traffic signal. Stop-controlled approach motorists experience queuing due to a reduction in available gaps.	>35 and ≤ 55	>25 and ≤ 35
E	LOS E is the lowest grade possible without stop-and-go operations. Driving speeds are substantially reduced, brief periods of stop-and-go conditions can occur on two- and four-lane roads, and lane changes are minimal. At signalized intersections, long vehicle queues can form, waiting to be served by the signal's green phase. Insufficient gaps on the major streets cause extensive queuing on the stop-controlled approaches.	>55 and ≤ 80	>35 and ≤ 50
F	LOS F represents stop-and-go conditions for two- and four-lane roads. Traffic flow is constrained and lane changes are minimal. Drivers at signalized intersections may wait several green phases prior to being served. Motorists on stop-controlled approaches experience insufficient gaps of suitable size to cross safely through a major traffic stream.	>80	>50

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

The Synchro analysis platform was used to analyze the study intersections. Synchro is a traffic simulation software based on procedures outlined in the Transportation Research Board's *Highway Capacity Manual 2000*. The Synchro model for this analysis was coded with the peak hour volumes, posted speed limits, vehicle mix, and signal timings. Traffic signal-related information such as phasing and initial timings (minimum green, maximum green, gap, etc.) for the signalized intersections was obtained from the City of Napa, from the California Department of Transportation (Caltrans), and during field visits to the site. Additional details such as turn pocket lengths and intersection spacing were coded based on field measurements.

INTERSECTION ANALYSIS

Intersection LOS was calculated at each study intersection for the weekday AM and PM peak hours (see **Appendix I** for detailed LOS calculations). **Table 16.4** presents the LOS and corresponding delay at each study intersection.

Table 16.4: Existing Conditions Peak Hour Intersection Level of Service

Intersection	Traffic Control ¹	AM Peak Hour			PM Peak Hour		
		Delay (sec)	Total Delay (veh-hr) ²	LOS ³	Delay (sec)	Total Delay (veh-hr) ²	LOS ³
1. Laurel Street / Foothill Boulevard	SSS	14 (NB)	-	B	11 (NB)	-	B
2. Laurel Street / Freeway Drive / Kilburn Avenue	Signal	29	-	C	36	-	D
3. Old Sonoma Road / Foothill Boulevard	SSS	23 (SB)	-	C	16 (SB)	-	C
4. Old Sonoma Road / Foster Road	SSS	28 (NB)	-	D	27 (NB)	-	D
5. Old Sonoma Road / Connection to Freeway Drive	SSS	42 (SB)	2.48	E	24 (SB)	-	C
6. Old Sonoma Road / Freeway Drive	SSS	38 (EB)	2.32	E	34 (EB)	-	D
7. West Imola Avenue / Foster Road	AWS	36	-	E	10	-	B
8. West Imola Avenue / SR 29 southbound ramps	Signal	30	-	C	18	-	B

Notes:
1. Signal = signalized intersection; SSS = side-street stop; AWS = all-way stop.
2. Total Delay is shown for unsignalized intersections operating at LOS E or LOS F under Existing conditions.
3. Signalized intersection LOS based on average control delay per vehicle and AWS intersection LOS based on total intersection delay, according to the *Highway Capacity Manual 2000* (Transportation Research Board 2000). SSS intersection LOS presented for worst approach.
Source: Fehr & Peers 2013.

All signalized study intersections currently operate at or better than an acceptable LOS D, per City of Napa Standards. The threshold of acceptability for signalized intersections is midrange LOS D (i.e., delay of 45 seconds)².

All unsignalized intersections currently operate at or better than an acceptable LOS E, per City of Napa Standards. The threshold of acceptability for unsignalized intersections is midrange LOS E (i.e., delay of 42.5 seconds).

² Midrange LOS E is permitted in three localized areas within Napa: parts of Downtown Napa, parts of Jefferson Street, and parts of Silverado Trail. No study intersections fall within any of these three areas.

REGULATORY SETTING

FEDERAL

No federal regulations pertaining to transportation and circulation would apply to the proposed Project.

STATE

The following state regulations pertaining to transportation would apply to the proposed Project.

Caltrans

Caltrans is responsible for the maintenance and operation of state routes and highways. Within the Project study area is the Caltrans facility State Route 29. Caltrans maintains a volume monitoring program and reviews local agencies' planning documents to assist in its forecasting of future volumes and congestion points. Caltrans' *Guide for the Preparation of Traffic Impact Studies* (Caltrans 2002) is intended to provide a consistent basis for evaluating traffic impacts to State facilities. According to this document, Caltrans strives to maintain service levels on State facilities at the transition between LOS C and LOS D. In cases where this LOS is not feasible, the lead agency should consult with Caltrans to establish an appropriate LOS threshold. If an existing state highway facility is operating at less than the appropriate target LOS, the existing measure of effectiveness should be maintained.

LOCAL

The following local/regional regulations pertaining to transportation would apply to the Proposed Project.

City of Napa General Plan

The City's General Plan includes the following three major transportation objectives (City of Napa, updated March 2011):

- Develop a transportation infrastructure that provides for an acceptable traffic flow and provides access to all destinations;
- Create a citywide transportation system that allows users to choose from a variety of safe transportation options, including an adequate system of streets, transit, pedestrian, and bicycle facilities; and
- Minimize the negative effects of additional automobile traffic and other transportation.

The following General Plan policies are applicable to the proposed Project (City of Napa 2010, updated March 2011):

- Policy T-2.2 The City shall ensure that all new development and redevelopment will meet adopted service levels for transportation facilities unless findings are made that achieving other specific public goals found in this General Plan outweigh this requirement.
- Policy T-2.3 The City shall focus on signalized intersections when evaluating street system LOS.
- Policy T-2.4 When reviewing projects, the City shall monitor stop controlled intersections using LOS and the Highway Capacity Manual criterion as a guideline, applying Caltrans signal warrant evaluation as indicated, and requiring mitigation as necessary.

Policy T-11.1 Consistent with federal, state, and regional directives for “routine accommodation and complete streets,” condition discretionary projects to provide needed bicycle improvements on Class I, II or III routes designated in this plan, assuming a nexus is established. Improvements include easements or land dedication and route construction, maintenance or enhancement, including support facilities. Construction may be deferred until a connection to an existing route can be made at the discretion of the jurisdiction. (this is also City of Napa Bike Plan Policy 6.1)

Policy T-16.1 The City shall require sidewalks along at least one side of all new local streets, and both sides of new and reconstructed arterial and collector streets.

Policy T-16.2 The City shall require appropriate pedestrian access in all new developments.

City of Napa Policy Guidelines: Traffic Impact Analysis for Private Development Review

The City Traffic Advisory Committee adopted *Policy Guidelines* in December 2002, and City staff updated the document in March 2008. This document expands upon the City’s General Plan and provides general guidelines for assessing the potential traffic impacts of new developments proposed within the City of Napa. LOS criteria state:

- The City shall ensure that traffic LOS will not exceed midrange LOS ‘D’ at all signalized intersections on arterial and collector streets with the exception of parts of Downtown Napa, parts of Jefferson Street, and parts of Silverado Trail (none of which fall within the study area).
- For unsignalized intersections, the minimum acceptable LOS recommended by the Draft Policy Document is midrange LOS ‘E’.
- For unsignalized intersections, a low-volume movement may have delays that yield LOS ‘E’ or ‘F’ but may still be considered as having “acceptable operation” by considering both total delay and LOS (defined in terms of average control delay). An intersection traffic movement at a stop-controlled approach can be deemed to have acceptable operation under the following conditions:
 - Total delay less than 4.0 vehicle-hours for single lane movement with low volume
 - Total delay less than 5.0 vehicle-hours for multilane movement with low volume

City of Napa Municipal Code

The City Municipal Code is a guiding document that identifies parking requirements for various types of land uses. Under Title 17 (Zoning), Chapter 17.54 (Parking), Section 17.54.040 (Parking Requirements), it identifies the amount of on-site parking that shall be provided. For this Project, the rates for single-family residential detached were used.

Table 16.5: Municipal Code Parking Requirements

Use Classification	On-Site Parking Required
Single-family residential, detached	2 parking spaces per unit, at least 1 in a garage plus 1 space for each bedroom in excess of 2 plus guest parking as described below
Guest parking for the above uses	a. Single-family: 1 space per unit, typically on-street or in a commonly available location designed for public use.
Source: City of Napa Municipal Code, Chapter 17.54.040.	

City of Napa's Policy Resolution 27

The City of Napa's *Policy Resolution No. 27* states the following standard mitigation measures for transportation impacts (City of Napa *Policy Resolution No. 27*, December 2002):

1. All required public frontage and street improvements shall be designed and built in accordance with City of Napa ordinances and the PWD [Public Works Department] Standard Specifications. Unless waived by the Public Works Director, street improvements shall include curbs, gutters, sidewalk, planting, streetlights, street trees, etc.; any additional right-of-way necessary to accommodate these improvements shall be dedicated to the City.
2. During non-working hours, open trenches shall be provided with appropriate signage, flashers, and barricades approved by the Street Superintendent to warn oncoming motorists, bicyclists, and pedestrians of potential safety hazards.
3. All road surfaces shall be restored to pre-project conditions after completion of any project-related pipeline installation activities.
4. Any pedestrian access through and/or adjacent to the project site shall remain unobstructed during project construction or an alternate route established as approved by the Police Chief and Public Works Director.
5. In order to mitigate the cumulative impact of the traffic generated by the subject project on the City's arterial and collective street system, the Developer shall pay a Street Improvement Fee in accordance with Napa Municipal Code Chapter 15.84 and implementing resolutions to pay for the traffic improvements identified therein. Such fee shall be payable at the rate in effect at the time of payment. The findings set forth in the ordinance and implementing resolutions are incorporated herein. The City further finds that the calculation of the fees in accordance with the trip generation capacity of development demonstrates there is a reasonable relationship between the amount of the fees imposed and the cost of the street improvements attributable to this project.

City of Napa Department of Public Works Standard Specifications: Street Standards

In the City of Napa Department of Public Works *Standard Specifications: Street Standards* (updated July 2008), the City seeks to specify the design requirements for new streets within the City of Napa. Fire Department access criteria state:

- Residential developments having more than 50 dwelling units shall be provided with at least two points for fire apparatus access.
- When two points of access are required, they shall be located a distance apart equal to not less than one half of the length of the maximum overall diagonal dimension of the property or area to be served, measured in a straight line between the two access points.
- Emergency vehicle only access routes are not permitted as a means to satisfy the second point of access requirement without additional measures approved by the Fire Marshal.
- A maximum longitudinal grade of 15% shall be provided.

Napa County General Plan Circulation Element

In the *Napa County General Plan Circulation Element* (2008), the County seeks to provide a roadway system that maintains current roadway capacities in most locations and is both safe and efficient in terms of providing local access. The County also seeks to discourage increases in commuter traffic passing through the county on all roadways except I-80 by designing county roadways to meet local rather than regional needs and by supporting improvements to alternative facilities outside the county (e.g., State Route 37). No specific roadway improvements outlined in the Plan lie within our study area.

Metropolitan Transportation Commission's Plan Bay Area

The Metropolitan Transportation Commission (MTC) serves as the transportation planning, coordinating, and financing agency for the nine-county San Francisco Bay Area. In July 2013, the MTC adopted *Plan Bay Area*, the long-range integrated transportation and land-use/housing strategy through 2040 for the San Francisco Bay Area. Plan Bay Area's transportation element specifies how some \$292 billion in anticipated federal, state and local transportation funds will be spent in the nine-county Bay Area through 2040. Plan Bay Area projects within the proposed Project study area include constructing roundabouts between California Boulevard and Freeway Drive on First Street.

IMPACTS AND MITIGATION MEASURES

This section describes the general methodology for conducting a traffic impact analysis and the City of Napa's specific significance criteria for impacts. Based on the City's standards, the report lays out proposed Project impacts on the surrounding transportation network and suggests mitigation measures.

TRAFFIC IMPACT ANALYSIS METHODOLOGY

This section includes a description of the proposed Project's trip generation, distribution, and assignment characteristics. These characteristics allow for an evaluation of Project impacts on the surrounding transportation network.

The Project setting was developed by reviewing available information on transportation and circulation in the proposed Project vicinity. The Project study area includes intersections located in the City of Napa and within the Caltrans District 4 jurisdiction.

Trip Generation

The amount of traffic projected to enter and exit the site is referred to as the Project's trip generation. The following describes how the trip generation was calculated and the assumptions for projecting how the trips are distributed throughout the study area.

Trip generation rates published by the Institute of Transportation Engineers (ITE) *Trip Generation* (8th Edition, 2008) were used to calculate the trip generation for the proposed Project. **Table 16.6** shows the estimated trip generation for the proposed Project, which would generate roughly 507 daily trips, 41 AM peak hour trips, and 54 PM peak hour trips.

Table 16.6: Project Trip Generation

Land Use Category	Size (DU)	Trips						
		Daily Total	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Single family residential (ITE Category 210) – analyzed	54	517	11	31	42	35	20	55
Single family residential (ITE Category 210) – Project proposal	53	507	11	30	41	35	19	54
Notes: Based on trip generation rates from ITE <i>Trip Generation</i> (8 th Edition, 2008). DU = Dwelling Units. Source: Fehr & Peers, 2013.								

Note that the trip generation forecast for described in **Table 16.6** (and the subsequent technical analysis included in the remainder of this report) is based on a slightly larger project than what is currently proposed (54 units rather than 53 units). Therefore, the analysis herein is somewhat conservative, although the difference is approximately one AM peak hour automobile trip and one PM peak hour automobile trip, which would not result in meaningful changes to the results of this analysis.

Trip Distribution

The likely geographic distribution of origins and destinations for Project-generated traffic was based on traffic studies completed for the proposed Project, travel patterns in the area, and engineering judgment and was approved by the City of Napa Public Works Department. The proposed Project's estimated geographic trip distribution is presented in **Figure 16.4**.

Trip Assignment

Based on the general geographic distribution of Project-generated traffic, the specific routes that traffic would use to travel between origin/destination points and the Project site were estimated. These routes were approved by the City of Napa Public Works Department. The analysis assumes that approximately 10% of Project-generated traffic would enter and exit the site to/from the west on Old Sonoma Road and the remaining 90% would enter and exit the site to/from the east on Old Sonoma Road. Of these 90%, 40% would use Old Sonoma Road to the east of Foster Road, 40% would travel south on Foster Road, and the remaining 10% would travel north on Foothill Boulevard. The Project-generated traffic increases to individual intersection turning-movement volumes during the weekday peak hours was then determined. **Figure 16.5** presents trips generated by the proposed Project at the study intersections.

Significance Criteria

The following significance criteria are based on guidelines presented in the City of Napa General Plan, City of Napa Traffic Impact Analysis Guidelines, and 2011 California Environmental Quality Act (CEQA) Guidelines.

For the purposes of this EIR, impacts on transportation and circulation are considered significant if the proposed Project would meet the criteria³ below. The same criteria applies to the cumulative scenario, whereby for signalized and unsignalized intersections, the cumulative no project scenario is compared against the cumulative with project scenario to determine the cumulative impacts caused by the project.

Signalized Intersections

- For a signalized intersection operating at midrange LOS D or better under existing conditions, if the addition of project trips degrades the intersection operation to LOS E or LOS F;
- For a signalized intersection operating at midrange LOS D to midrange LOS E under existing conditions, if the addition of project trips degrades the intersection operation to LOS F; or
- For a signalized intersection operating at LOS F under existing conditions, if more than 50 peak-hour project trips are added to the intersection. Due to typical daily fluctuations in traffic volumes, this is considered by the City of Napa to be the volume change perceptible to drivers at intersections operating at an unacceptable level.

³ City of Napa Traffic Advisory Committee (2008). *Policy Guidelines: Traffic Impact Analysis For Private Development Review* (dated March 24, 2008), page 25



Figure 16.4:
Project Trip Distribution

Source: Fehr & Peers, March 2013

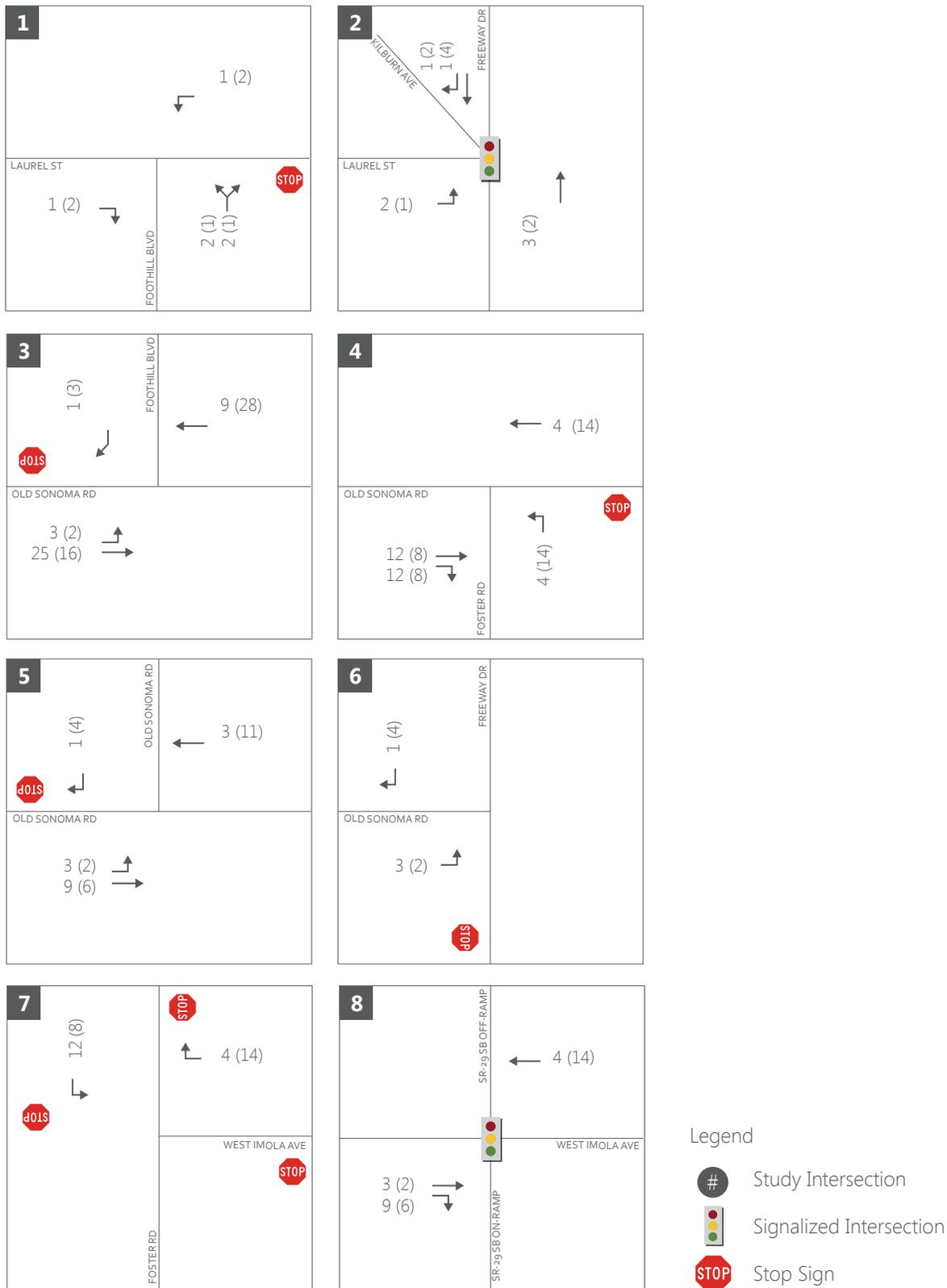


Figure 16.5:
Project Intersection Volumes

Source: Fehr & Peers, March 2013

Unsignalized Intersections

All-Way Stop

- For an all-way stop intersection operating at midrange LOS E or better under existing conditions, if the addition of project trips degrades the intersection operations to LOS F; or
- For an all-way stop intersection operating at LOS F under existing conditions, if more than 50 peak-hour project trips are added to the intersection.

Side Street Stop

- For a side street stop controlled intersection where the minor stop-controlled approach of a side-street stop intersection is operating at LOS D or better, if the addition of project trips degrades intersection operation to LOS E or LOS F and increases the total control delay to more than 4.0 vehicle-hours (for a single lane approach) or more than 5.0 vehicle hours (for a multi-lane approach);
- For a side street stop controlled intersection where the minor stop-controlled approach of a side-street stop intersection is operating at LOS E or LOS F, but has acceptable operation in terms of total control delay, if the addition of project trips increases the total control delay to more than 4.0 vehicle-hours (for a single lane approach) or more than 5.0 vehicle hours (for a multi-lane approach); or
- For a side street stop controlled intersection where the minor stop-controlled approach of a side-street stop intersection is operating at LOS E or F and does not have acceptable operation in terms of total control delay, if more than 50 peak-hour project trips are added to the minor approach.

Roadway Segments

- If traffic volumes on collector streets would exceed the identified capacity of 12,000 vehicles per the City's General Plan.

Bicycles and Pedestrians

- If the project would create potential conflicts for bicyclists or pedestrians, or would adversely affect nearby bicycle or pedestrian facilities;
- If the project would exacerbate a currently unsafe bicycle or pedestrian condition in the project area;
- If the project would conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bicycle racks);
- If the project would be inconsistent with goals to have facilities that encourage greater use of bicycles for recreation, commuting, and shopping; or
- If the project would be inconsistent with goals to develop and maintain a safe, integrated bicycle route network for residents and visitors, connecting key destinations to neighborhoods, connecting neighborhoods to each other, and providing adequate bicycle access to the project site.

Transit

- If the project would cause a transit demand above that which local transit operators or agencies can provide, or would have other adverse impacts on transit operations; or

- If the project would be inconsistent with goals to develop and maintain an efficient and convenient transit system providing alternatives to the use of the personal automobile to residents, workers, and visitors to alleviate congestion and enhance mobility.

Site Access, Circulation, and Parking

- If the project on-site circulation system would be inadequate for the volumes and types of traffic expected; or
- If vehicular access points would not be designed to appropriate design standards.

Parking impacts are no longer evaluated under CEQA; however, secondary impacts due to excessive circulating and unsafe conditions may occur where parking supply is insufficient for expected demand. An evaluation of the proposed parking supply was conducted and the expected demand based on the proposed number of units and the City of Napa's adopted parking codes were presented. The results are provided for informational purposes.

PROJECT IMPACTS

Existing Plus Project Analysis

Project traffic was added to the existing traffic volumes at the eight study intersections, as shown in **Figure 16.6**, to form the basis for the Project conditions analysis. The impact analysis evaluates the AM and PM peak-hour operations at each study intersection shown here. **Appendix I** contains the detailed peak-hour intersection LOS calculations.

The Existing Plus Project condition evaluates the immediate impacts that the proposed Project would have on the existing roadway network if the development were built and operational under existing traffic conditions. The traffic volumes used for the Existing Plus Project analysis are generated by adding the site-generated traffic to the existing roadway network.

Table 16.7 indicates the traffic operations at the intersections evaluated. Under existing conditions without the Project, all intersections currently operate at an acceptable LOS in the AM and PM peak periods. Under Existing Plus Project conditions, all intersections continue to operate at an acceptable LOS in the AM and PM peak periods. (Compare to Significance Criteria listed on page 16-15, 16-18-16-19.)

Signalized and Unsignalized Intersections

Impact Traf-1: Project-Specific Intersection Impacts. Under Existing Plus Project conditions, the proposed Project would contribute vehicular traffic to signalized and unsignalized intersections but would not cause any of the study intersections to worsen from the City's currently acceptable LOS to an unacceptable LOS. Therefore, the proposed Project's intersection impact would be *less than significant*.

As shown in **Table 16.7**, all study intersections operate at an acceptable LOS in the AM and PM peak periods with or without the Project.

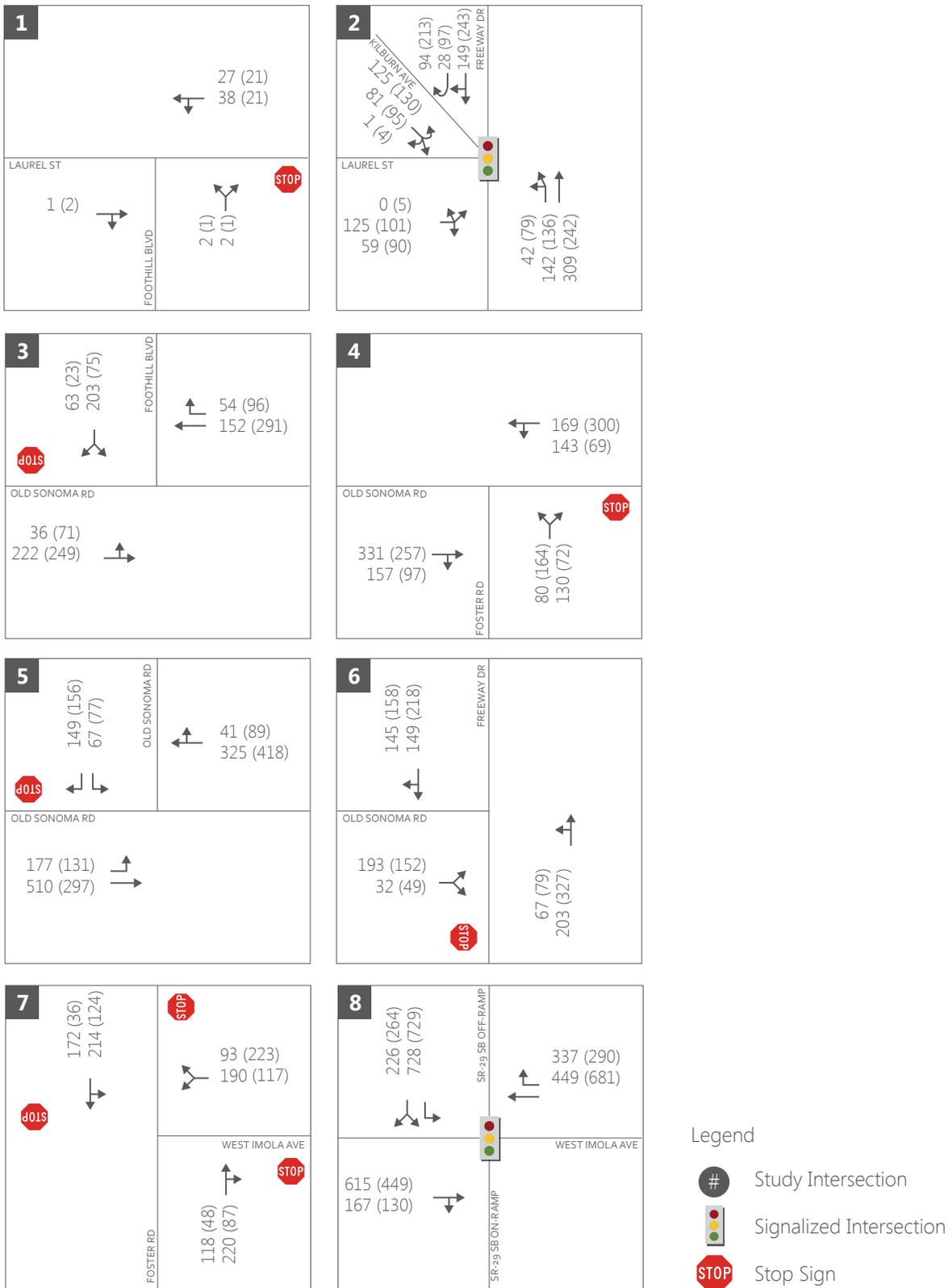


Figure 16.6:
Existing Plus Project Intersection Volumes

Source: Fehr & Peers, March 2013

Table 16.7: Peak Hour Intersection Level of Service, Existing and Existing Plus Project Conditions

Intersection	Traffic Control ¹	Peak Hour	Existing			Existing Plus Project		
			Delay (sec)	Total Delay (veh-hr) ²	LOS ³	Delay (sec)	Total Delay (veh-hr) ²	LOS ³
1. Laurel Street / Foothill Boulevard	SSS	AM	14 (NB)	-	B	14 (NB)	-	B
		PM	11 (NB)	-	B	11 (NB)	-	B
2. Laurel Street / Freeway Drive / Kilburn Avenue	Signal	AM	29	-	C	29	-	C
		PM	36	-	D	37	-	D
3. Old Sonoma Road / Foothill Boulevard	SSS	AM	23 (SB)	-	C	26 (SB)	-	D
		PM	16 (SB)	-	C	18 (SB)	-	C
4. Old Sonoma Road / Foster Road	SSS	AM	28 (NB)	-	D	34 (NB)	-	D
		PM	27 (NB)	1.65	D	36 (NB)	2.33	E
5. Old Sonoma Road / Connection to Freeway Drive	SSS	AM	42 (SB)	2.48	E	44 (SB)	2.65	E
		PM	24 (SB)	-	C	25 (SB)	-	D
6. Old Sonoma Road / Freeway Drive	SSS	AM	38 (EB)	2.32	E	39 (EB)	2.43	E
		PM	34 (EB)	1.91	D	35 (EB)	1.97	E
7. West Imola Avenue / Foster Road	AWS	AM	36	-	E	40	-	E
		PM	10	-	B	10	-	B
8. West Imola Avenue / SR 29 southbound ramps	Signal	AM	30	-	C	31	-	C
		PM	18	-	B	18	-	B

Notes:
1. Signal = signalized intersection; SSS = side-street stop; AWS = all-way stop.
2. Total Delay is shown for unsignalized intersections operating at LOS E or LOS F under Existing or Existing Plus Project conditions.
3. Signalized intersection LOS based on average control delay per vehicle and AWS intersection LOS based on total intersection delay, per the *Highway Capacity Manual 2000* (Transportation Research Board 2000). SSS intersection LOS presented for worst approach.
Source: Fehr & Peers 2013.

Road Segment Traffic Increases

Impact Traf-2: Collector Road Traffic Increases. The proposed Project would contribute vehicular traffic to collector roads, including Foster Road, Foothill Boulevard and Laurel Avenue, which are within the target capacity of collector roads (12,000 vehicles per day). Because the projected level of traffic is within the capacity of these roadways, the Project's impact on collector roadway traffic volumes would be *less than significant*.

24-hour bi-directional vehicle counts conducted on a representative Wednesday in February 2013 at Foster Road just south of Old Sonoma Road recorded a daily volume of 3,391 vehicles. Other collector streets in the vicinity of the Project are Foothill Boulevard and Laurel Street and because the Project would contribute trips to these streets, the Project trips could also create impacts on these streets. While daily traffic counts were not collected on either Foothill Boulevard or Laurel Street, the ratio of PM peak hour trips to daily trips across the road network is largely constant, and because the PM peak hour trips along Foothill Boulevard and Laurel Street are similar to those along Foster Road, these two streets could be reasonably expected to carry around 3,000 daily trips.

Based on ITE trip generation rates and trip assignments approved by the City of Napa, 208 daily Project trips are estimated to travel on Foster Road between Old Sonoma Road and West Imola Avenue, 104 northbound and 104 southbound (40% of all estimated daily Project trips, split evenly between both directions). Conservatively assuming that all 208 vehicles use Foster Road as their north-south route, estimated daily traffic along Foster Road will grow to 3,599 vehicles with the proposed Project. This represents a 6% increase from existing traffic conditions, as shown in **Table 16.8**. Substantially fewer Project trips would be assumed to travel on Foothill Boulevard and Laurel Street.

Table 16.8: Foster Road Traffic Increase

	Existing Daily Trips on Foster Road	Project Daily Trips on Foster Road ¹	Existing Plus Project Daily Trips	Project Daily Trips as % of Existing Daily Trips
Northbound	1,760	104	1,864	5.9%
Southbound	1,631	104	1,735	6.4%
Total	3,391	208	3,599	6.1%
Notes: Counts conducted on a Wednesday in February 2013 at Foster Road just south of Old Sonoma Road; volumes not adjusted by month or day to ensure most conservative estimate of percent increase in traffic volume due to Project trips. 1. Foster Road Project trips based on ITE trip generation rates and trip assignments approved by City of Napa. Source: Fehr & Peers 2013.				

Because the projected level of traffic is within the capacity of these roadways, the proposed Project's impact to traffic levels on Foster Road, Foothill Boulevard and Laurel Street would be considered *less than significant*.

Impact Traf-3: Local Road Traffic Increases. The proposed Project could contribute vehicular "cut-through" traffic to Casswall Street, a local access road. Because the projected traffic volume on this street is within the identified capacity for local streets (5,000 vehicles per day), the Project's impact related to local roadway traffic volumes would be *less than significant*.

Casswall Street is the only local street in the area for which any substantial cut-through travel is anticipated. The Project is not expected to contribute substantial trips to any other local streets.

The potential increase in "cut-through" traffic on Casswall Street due to the proposed Project was studied. Such traffic would be the result of an increase in vehicles that use the local Casswall Street instead of the collector Foster Road to travel between Old Sonoma Road west of Foothill Boulevard and West Imola Avenue, in order to avoid perceived delays at the intersection of Foster Road and Old Sonoma Road. In response to these concerns, a study was conducted to better understand current traffic patterns and to estimate the extent to which trips generated by the proposed Project would be likely to use Casswall Street as a cut-through route.

Vehicle counts were conducted at two strategic locations in the study area. These two screenlines were established at:

- Foster Road immediately south of Old Sonoma Road; and
- Casswall Street immediately south of Old Sonoma Road.

Vehicles were counted over the course of one day (a representative Wednesday in February) as they passed these screenlines in the northbound/southbound directions. Counts were adjusted upwards based on the City of Napa's count adjustment factors to reflect the baseline conditions of a Thursday in August.

A proportion of the trips traveling through the Casswall Street screenline are not cut-through trips because they are trips made by residents of Casswall Street (and adjacent feeder streets). Based on ITE trip generation rates, these 54 homes are estimated to generate 45 trips in the AM peak hour and 61 trips in the PM peak hour. These generated trips are not discounted from the cut-through trip estimations so as to present a conservative scenario. Additionally, it is assumed that all trips traveling through the Casswall Street screenline come from or head to Old Sonoma Road west of Foothill

Boulevard. Thus, for this analysis, all counted trips across the Casswall Street screenline are assumed to be cut-through trips between Old Sonoma Road west of Foothill Boulevard and Foster Road south of Utah Street, and thus the estimate of cut-through trips is a highly conservative upper bound.

Assumptions were made to estimate the number of trips between Old Sonoma Road west of Casswall Street and Foster Road south of Utah Street, via the intersection of Old Sonoma Road and Foster Road. These trips are “not cut-through”. Those trips between these two locations but via Casswall Street are “cut-through”.

For the northbound direction, “not cut-through” trips would need to pass northbound through the Foster Road screenline, make a northbound-left turn onto Old Sonoma Road, and make a westbound-through at Foothill Boulevard. Thus the volume of “not cut-through” trips is equal to the number of northbound Foster Road screenline trips multiplied by the proportion of these trips that turn left onto westbound Old Sonoma Road, multiplied by the proportion of westbound approach trips at Old Sonoma Road/Foothill Boulevard Road that come from northbound Foster Road. The proportion of trips from Utah Street/Foster Road to the Project site that are “cut-through” is equal to the northbound Casswall Street screenline volume (which is the “cut-through” volume) divided by the sum of the “cut-through” volume and the “not cut-through” volume. This proportion is 55% and 18% for AM and PM peak hours, respectively (see **Table 16.9** and **Figure 16.7**).

Table 16.9: Estimated “Cut-Through” Traffic on Casswall Street

	Foster Road Screenline		Casswall Street Screenline		% of Screenline Volumes that are Cut-Through Along Casswall Street (Upper Bound)		Project Trips between Old Sonoma Rd West of Foothill Blvd and West Imola Avenue		Maximum Cut-Through Project Trips	
	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
AM Peak Hour (7:30-8:30 AM)	198	297	53	33	55%	34%	4	12	2	4
PM Peak Hour (4:45-5:45PM)	218	158	19	16	18%	22%	14	8	3	2
Notes: Counts adjusted to Thursday in August, based on City of Napa seasonal adjustment factors. Source: Fehr & Peers 2013.										

For the southbound direction, “not cut-through” trips would need to travel eastbound-through on Old Sonoma Road past Foothill Boulevard, make an eastbound-right turn onto Foster Road, and pass southbound through the Foster Road screenline. Thus the volume of “not cut-through” trips is equal to the number of southbound Foster Road screenline trips multiplied by the proportion of these trips that come from eastbound Old Sonoma Road, multiplied by the proportion of eastbound approach trips at Old Sonoma Road/Foster Road that come from eastbound Old Sonoma Road west of Foothill Blvd. The proportion of trips from the Project site to Utah Street/Foster Road that are “cut-through” is equal to the southbound Casswall Street screenline volume (which is the “cut-through” volume) divided by the sum of the “cut-through” volume and the “not cut-through” volume. This proportion is 34% and 22% for AM and PM peak hours, respectively (see **Table 16.9** and **Figure 16.8**).

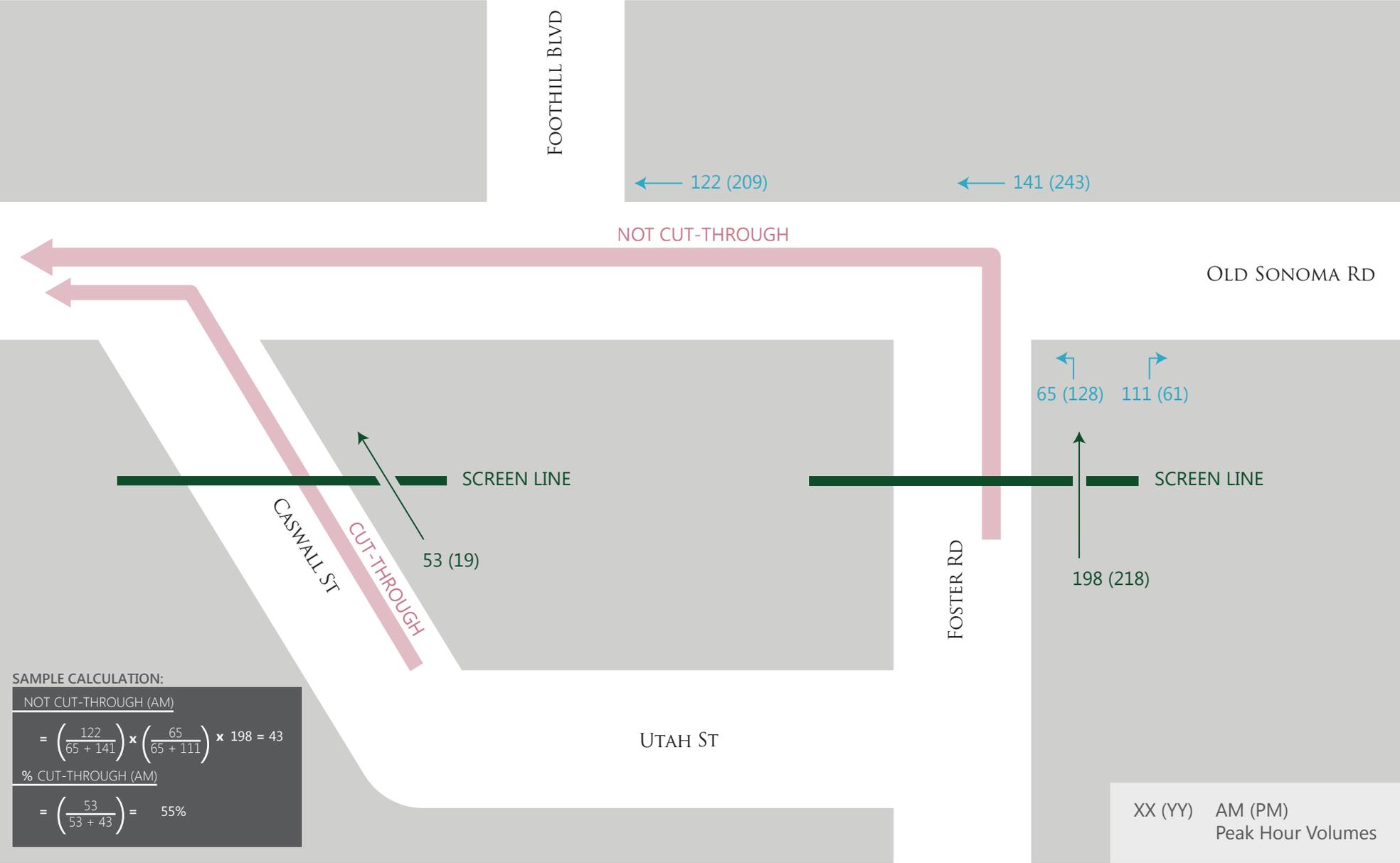


Figure 16.7: Casswall Street Cut-Through (Northbound)

Source: Fehr & Peers, March 2013

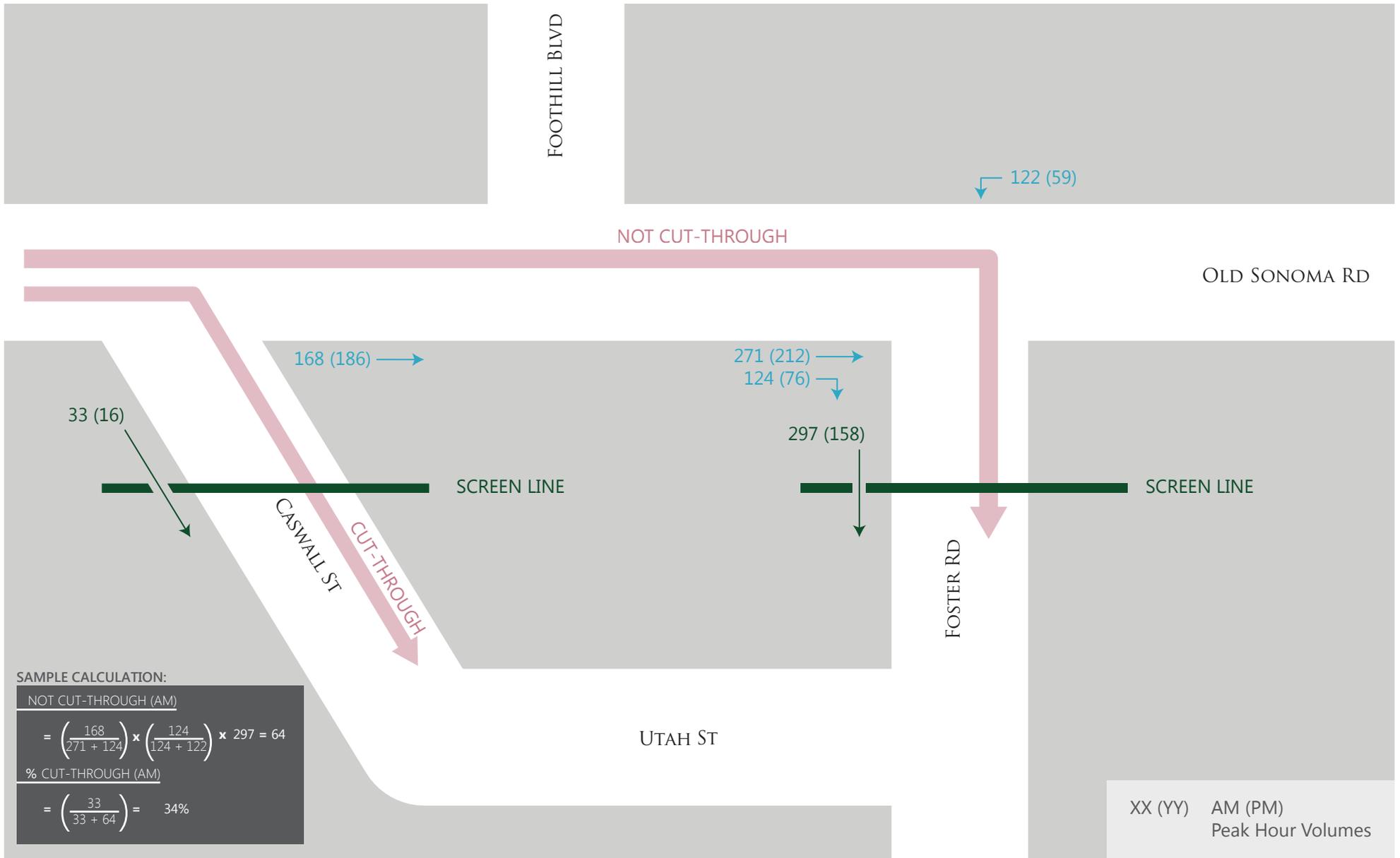


Figure 16.8: Casswall Street Cut-Through (Southbound)

Source: Fehr & Peers, March 2013

Based on Project trip distribution and assignment assumptions, 40% of Project trips will travel between the Project site entrance on Old Sonoma Road west of Foothill Boulevard and West Imola Avenue using either Foster Road or Casswall Street. Traffic models estimate that 12 vehicles will leave the Project site each morning during the AM peak hour and eight vehicles will leave the Project site each evening during the PM peak hour, crossing either the Foster Road or Casswall Street screenline in the southbound direction. Similarly, four vehicles will enter the Project site each morning during the AM peak hour and 14 vehicles will enter the Project site each evening during the PM peak hour, crossing either the Foster Road or Casswall Street screenline in the northbound direction.

Assuming that the AM and PM peak hour upper bound “cut-through” proportions calculated above for existing trips also apply to Project trips, the resulting Project-generated cut-through southbound traffic would be four vehicles in the AM peak hour and two vehicles in the PM peak hour. Similarly, northbound cut-through traffic would be two vehicles in the AM peak hour and three vehicles in the PM peak hour.

Based on this analysis, the proposed Project would generate a maximum of 5 or 6 cut-through trips on Casswall Street during the AM and PM peak hours, or one vehicle every 10 to 12 minutes. Because trips generated from homes along Casswall Street were not deducted, these totals are a conservative upper bound. Cut-through traffic calculations can be found in **Appendix I**.

A sum of 361 vehicles per day was observed traveling in both directions along Casswall Street just south of Old Sonoma Road. Conservatively assuming that cut through volumes would occur over the 24 hours of a day at the same rate as during the PM peak hour, i.e. one vehicle every ten minutes, the addition of 144 cut-through trips would not cause the projected traffic volume on this street to rise above the identified capacity for local streets (5,000 vehicles per day). Therefore, the Project’s impact related to local roadway traffic volumes would be *less than significant*.

Bicycle Facilities

Although CEQA does not require an agency to consider the impact of existing conditions on future project users per recent case law⁴, the following discussion is included for informational purposes.

Old Sonoma Road is identified as a future Class II bicycle facility in the City of Napa General Plan and the City of Napa Bicycle Plan. Class II bicycle lanes are currently present on Old Sonoma Road terminating east of the Project site at the intersection of Old Sonoma Road and Foster Road. Old Sonoma Road provides the only site access to the proposed development, thus any bicycle trips to and/or from the site would use Old Sonoma Road, adding riders to the portion of Old Sonoma Road between the westerly end of the Project site and Foster Road currently without dedicated bike lanes. The bike lanes should be extended beyond the main Project driveway to the westerly edge of the Project site because the emergency vehicle appurtenance would allow for bicycle access onto Old Sonoma Road at this location in addition to bicyclists accessing the Project using the main driveway.

The following is included as a condition of approval for the Project to address the lack of bike lanes on portions of Old Sonoma Road:

- Extend Old Sonoma Road Bike Lanes. The proposed Project shall fund and construct the necessary improvements to continue the existing Class II bike lanes on Old Sonoma Road from

⁴ *CBIA v BAAQMD*, December 17, 2015.

their current termini at the Old Sonoma Road and Foster Road intersection to the westerly end of the Project site, thereby connecting the Project site to the citywide bicycle network.

This condition of approval is consistent with the goals and policies of both the City of Napa General Plan and the City of Napa Bicycle Plan and will help ensure a direct connection between the Project site and the Citywide bicycle network.

Pedestrian Facilities

Internal Pedestrian Facilities

Impact Traf-4: Create New Pedestrian System Deficiencies. Pedestrian crossing facilities (i.e. curb ramps with truncated domes) are absent from the proposed plan at a number of locations required by the Americans with Disabilities Act (ADA). Therefore, the proposed Project would result in potential conflict for pedestrians within the Project site, conflict with adopted City policies supporting walking as well as ADA requirements, and be inconsistent with City goals to develop and maintain a safe, integrated pedestrian network. This is a *significant impact*.

Mitigation Measure

Traf-4: Pedestrian Curb Ramps. The approved site plan shall specify and the roadways be constructed to include pedestrian curb ramps at all on-site crosswalks as defined by California Vehicle Code Section 275.

Implementation of Mitigation Measure Traf-4 would reduce the impact related to on-site pedestrian facilities to *less than significant* levels by requiring pedestrian curb ramps at all intersections to meet ADA requirements and City goals and policies.

External Pedestrian Facilities

Although CEQA does not require an agency to consider the impact of existing conditions on future project users per recent case law⁵, the following discussion is included for informational purposes.

Even with sidewalks along the Project's Old Sonoma Road frontage, there would not be a contiguous off-site connection to the City of Napa's sidewalk network, requiring pedestrians to walk on the roadway, which is considered a potential safety concern, and which would exacerbate the existing pedestrian condition. The sidewalk along the south side of Old Sonoma Road begins approximately 300 feet east of the Project site. Additionally, residents living in the northwest corner of the Project site (e.g. along "F" Street, "G" Court or "H" Court) would be deterred from walking towards other locations within the City of Napa due to the absence of a sidewalk along Old Sonoma Road between the appurtenant access at the northwest corner of the site and the Project's main access. Absent a sidewalk in this location, pedestrians would need to make a substantial detour along "F" Street and "A" Street internal to the site or walk along a roadway without a sidewalk. Therefore, the proposed Project would result in potential conflict for residents walking to nearby areas outside of the Project site, conflict with adopted City policies supporting walking, and be inconsistent with City goals to develop and maintain a safe, integrated pedestrian network.

⁵ *CBIA v BAAQMD*, December 17, 2015.

The following is included as a condition of approval for the Project to address the lack of external pedestrian facilities:

- The applicant shall pay a fair share percentage to the City for the construction of a sidewalk along the south side of Old Sonoma Road between the secondary access at the northwest corner of the site and the intersection of Lilienthal Avenue. This sidewalk can be constructed entirely within City right-of-way. The applicant shall construct a sidewalk along the south side of Old Sonoma Road east of Lilienthal Avenue to the resumption of the sidewalk approximately 300 feet east of the Project site. The 60-foot right-of-way at this location is wide enough to accommodate the sidewalk. These improvements would facilitate convenient and safe pedestrian access to the rest of the city along their desired line.

Transit

Impact Traf-5: Transit Ridership Increase. The proposed Project would increase transit ridership along Route 2 and Route 3 on Napa's VINE system. According to the 2011 American Community Survey 5-year Estimates conducted by the U.S. Census Bureau, public transportation accounts for approximately 1% of commute trips within the City of Napa. If this rate were applied to all trips generated by the proposed Project, it would equate to fewer than 10 trips per day with one trip in the PM peak hour. Anticipated ridership demand associated with the Project is not expected to exceed available capacity on Route 2 or Route 3. Because the transit demand will not be raised above a level which local transit operators or agencies can provide, or would have other adverse impacts on transit operations, the proposed Project's impact on the City's existing transit system would be *less than significant*.

Site Access and Sight Distances

Emergency Vehicle Access and Circulation

Impact Traf-6: Inadequate Number of and Grade/Location of Emergency Vehicle Access Routes. The General Plan requires that all streets are designed consistent to the Public Works Department standard specifications to ensure adequate emergency vehicle access. Because the proposed Project has more than 50 dwelling units, two points of fire apparatus access must be provided on the site. The main entrance to the Project site would be from a proposed driveway off of Old Sonoma Road opposite Lilienthal Avenue. An auxiliary access and utility easement would be provided off of Old Sonoma Road just outside of the proposed Project's western boundary, which would not be utilized for normal site access but would serve as access for emergency vehicles. Emergency vehicle only access routes are not permitted as a means to satisfy the second point of access requirement under the General Plan without additional measures approved by the Fire Marshal. Because the proposed Project does not contain a second point of fire vehicle access that is not an emergency vehicle only access route, inadequate emergency vehicle access is provided. Also, the emergency-vehicle only access point has a grade of 18.5%, which is greater than the maximum longitudinal grade of 15% required by the General Plan and may not be located the recommended distance from the primary access. This is a *significant impact*.

A review of emergency vehicle access was conducted using AutoTurn software, and it was determined that all of the proposed Project's roadways and entrance driveways can appropriately accommodate the standard Napa fire truck, which is the critically sized emergency vehicle. It is only the secondary access point that does not meet standards.

Mitigation Measure

Traf-6: **Fire Plan.** The Project shall implement a Fire Plan subject to approval by the Fire Department. Per the Fire Marshal, in lieu of providing a second point of access that meets Public Works specifications, the Project may develop a Fire Plan with shelter-in-place and defensible space allowances subject to approval by the City Fire Department, whilst retaining the second point of access as proposed. The Fire Plan must ensure adequate maintenance of the internal roadways to ensure that they are drivable in case of wildland fire, which would require aggressive vegetation management requirements in perpetuity. The Fire Plan must also ensure that defensible space is maintained around each home.

Implementation of Mitigation Measure Traf-6 would reduce the impact related to adequate emergency access to a level of *less than significant* by requiring an approved Fire Plan.

Driveway Sight Distance

Impact Traf-7: **Inadequate Sight Distance.** Creating a new access point onto Old Sonoma Road with inadequate sight distance could increase the potential for collisions at this intersection. The sight distance of eastbound traffic for drivers exiting the Project site is inadequate under proposed conditions. This is considered a *significant impact*.

There are two widely accepted methods to calculate the minimum required sight distance:

- American Association of State Highway and Transportation Officials (AASHTO) – A Policy on Geometric Design of Highways and Streets
- Caltrans – Highway Design Manual (HDM)

Both methodologies take into account design speed, driver setback, object height, and time gap acceptance; however, AASHTO tends to produce slightly more conservative results due to a greater driver setback, smaller object height, and smaller time gap adjustments.

The two applicable sight distance calculations for a side street stop (SSS) controlled intersection, in this case the Project driveway, are corner sight distance and stopping sight distance. Corner sight distance (CSD) is the line of sight distance of oncoming traffic that must be maintained by the driver waiting at a driveway to enter into traffic without forcing the driver of an approaching vehicle to substantially alter his speed. Stopping sight distance (SSD) is the distance required by the driver of a vehicle, traveling at a given speed, to bring the vehicle to a stop in advance of reaching an object or other vehicle that becomes visible in the road.

The posted speed limit along Old Sonoma Road is 35 MPH in both directions. A speed survey was conducted on a typical weekday during the PM peak hour in February 2013 to determine the prevailing (85th percentile) speed along the roadway at the proposed Project site – the speed that 85 percent of motorists are driving at or below. This speed typically represents the criteria for most roadway design. The observed 85th percentile speed along Old Sonoma Road was 45 MPH in both directions, well above the posted speed limit.

Table 16.10 compares the minimum corner sight distances and stopping sight distances for various design speeds under the AASHTO and HDM calculation methodologies. According to the more conservative AASHTO guidelines, the observed vehicle speed of 45 MPH correlates to a minimum required corner sight distance of 500 feet and a minimum required stopping sight distance of 360 feet.

Table 16.10: Required Sight Distance

Design Speed (MPH)	AASHTO Methodology ¹		HDM Methodology ²	
	Corner Sight Distance (feet)	Stopping Sight Distance (feet)	Corner Sight Distance (feet)	Stopping Sight Distance (feet)
30	335	200	330	200
35	390	250	385	250
40	445	305	440	300
45	500	360	495	360
50	555	425	550	430
55	610	495	605	500

Notes:
Bold = observed 85th percentile speed limit
 1. American Association of State Highway and Transportation Officials (AASHTO) – A Policy on Geometric Design of Highways and Streets, 6th edition, 2011; Exhibit 9-55.2.
 2. Caltrans Highway Design Manual, 6th edition, 2012; Table 405.1A and Table 201.1.
 Source: Fehr & Peers 2013.

Existing sight distance along Old Sonoma Road at the proposed Project driveway at Lilienthal Avenue was estimated at a six foot setback from the southern edge of the current roadway. Observations show that at a six foot setback, sight distance is limited to approximately 300 feet looking west at eastbound traffic along Old Sonoma Road and at least 1,000 feet looking east at westbound traffic along Old Sonoma Road. **Figure 16.9** depicts the current sight distances from the proposed site entrance.

From the proposed Project driveway, observed sight distance of westbound traffic along Old Sonoma Road is sufficient for both corner and stopping sight distance requirements; observed sight distance of eastbound traffic along Old Sonoma Road does not meet either corner or stopping sight distance minimum requirements at the vehicle speeds observed. Therefore, the sight distance of westbound traffic for drivers exiting the Project site is **adequate** under proposed conditions, and the sight distance of eastbound traffic for drivers exiting the Project site is **inadequate** under proposed conditions.

It can be noted that beyond the foliage, sight distance at the proposed site entrance is restricted to the west by a grassy embankment. The horizontal curvature of the road also presents a sight distance limitation to the west, but this limitation is relevant only in excess of around 800 feet, which is beyond the minimum required. Sight distance findings are summarized in **Table 16.11**.

Table 16.11: Proposed Project Sight Distances

	Measured Sight Distance (feet)	85 th Percentile Speed (MPH)	AASHTO Minimum Requirements			
			Corner Sight Distance (feet)	Met?	Stopping Sight Distance (feet)	Met?
WB	>1000	45	500	Exceeded	360	Exceeded
EB	300 (up to 550 feet with foliage removal)	45	500	Exceeded with foliage removal	360	Exceeded with foliage removal

Notes:
 1. American Association of State Highway and Transportation Officials (AASHTO) – A Policy on Geometric Design of Highways and Streets, 6th edition, 2011; Exhibit 9-55.2.
 2. Caltrans Highway Design Manual, 6th edition, 2012; Table 405.1A and Table 201.1.
 Source: Fehr & Peers 2013.

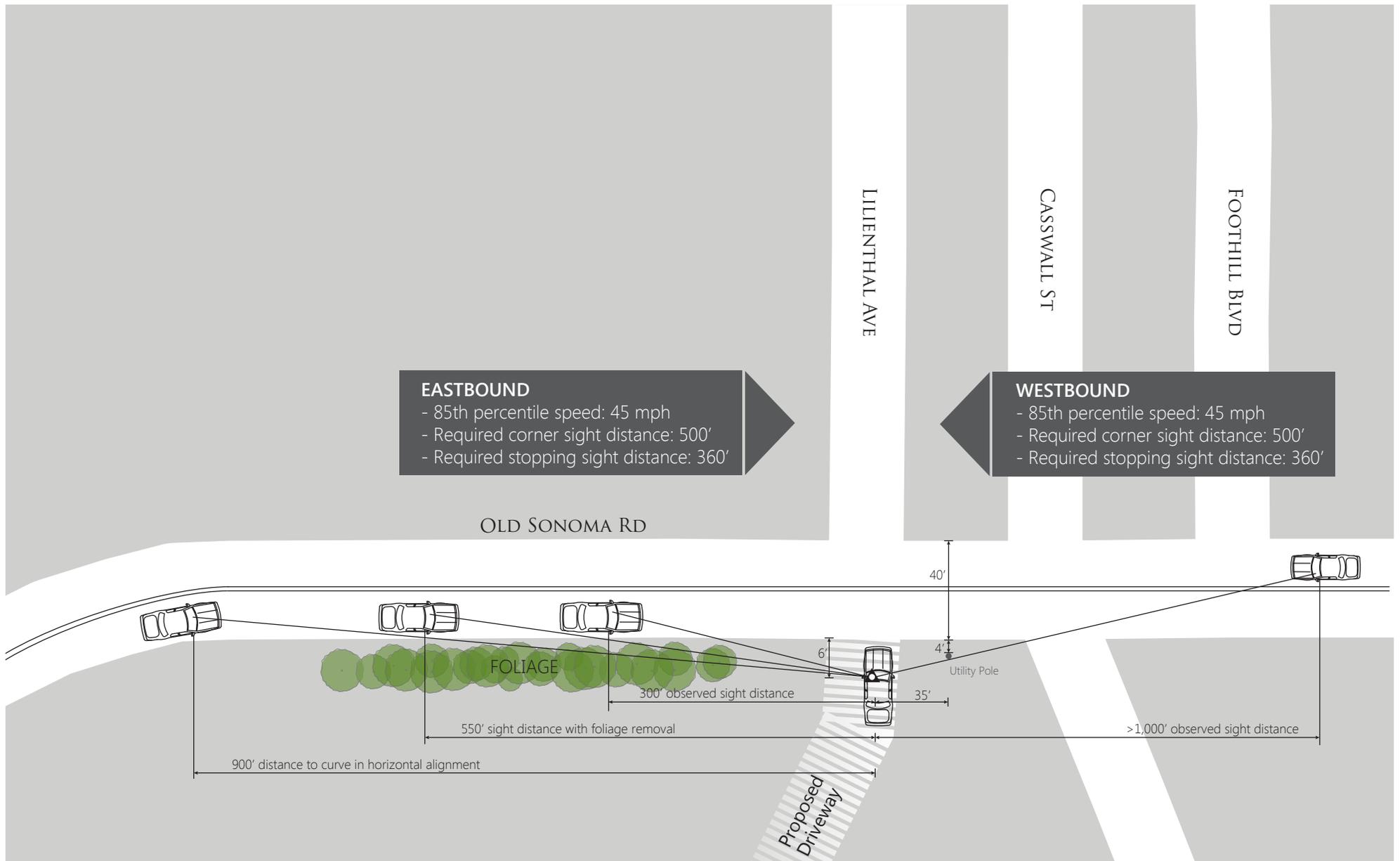


Figure 16.9: Sight Distances

Source: Fehr & Peers, March 2013

Mitigation Measure

Traf-7: Removal of Foliage on Old Sonoma Road. The applicant shall coordinate and implement prior to occupancy removal of foliage on Old Sonoma Road to improve sight distance to required levels. To mitigate the currently inadequate sight distance conditions, the strategic removal of 200 feet of foliage along the south side of Old Sonoma Road to the west of the proposed site entrance is required. This remediation would improve the sight distance of eastbound traffic by up to 250 feet and bring it within minimum requirements. The foliage that would need to be removed is on City of Napa right-of-way, which extends at a minimum depth of 14 feet to the south from the edge of asphalt along Old Sonoma Road west of the intersection with Lilienthal Avenue.

If implemented, Mitigation Measure Traf-7 would reduce the impact related to inadequate sight distance to a level of *less than significant* through foliage removal to ensure adequate sight distances.

ADDITIONAL PROJECT SITE ANALYSES**TRAFFIC COLLISION ANALYSIS**

Traffic collision data were collected from the California Highway Patrol Statewide Integrated Traffic Records System (SWITRS) for all intersections near the proposed Project site. The collision study area included Old Sonoma Road between Lilienthal Avenue and Foster Road, Casswall Street between Old Sonoma Road and Utah Street, Foster Road between Old Sonoma Road and West Imola Avenue, and Utah Street between Casswall Street and Foster Road. Traffic collision data covered the period from January 1, 2009 to December 31, 2011 – the most recent three years of available data.

As shown in **Table 16.12**, between 2009 and 2011 only five collisions occurred in the collision study area – one on Old Sonoma Road, three on Foster Road, and one on Casswall Street. Four of these collisions involved a motor vehicle striking a fixed object or parked car (i.e. non-intersection). The severity of all collisions was largely property damage only (PDO), but one resulted in non-severe visible injury. Causes of the four non-intersection collisions were improper turning, unsafe starting/backing, driving under the influence, and an unknown factor. One collision occurred at the intersection of Foster Road and Indiana Street and involved two motor vehicles. It resulted in non-severe complaint of pain injury, and it was caused by an automobile right-of-way violation. No collisions involving pedestrians or bicyclists were recorded.

This data does not show any recurring types or characteristics of collisions; therefore no potential Project impacts are identified and no areas of improvements or engineering measures are recommended.

PARKING

While the specifics of the layouts of the residences are somewhat flexible, it can be assumed that parking provisions will be consistent with City of Napa requirements. Each single family residence in the Project will be required to have at least two off-street parking spaces with at least one space in a garage, as delineated by Section 17.54.040 of the Napa Municipal Code. In addition, the Code requires one space for each bedroom in excess of two plus guest parking of one space per unit.

Table 16.12: Traffic Collisions, 2009-2011

Nearest Intersection	Collisions	Collision Year	Motor Vehicle Involved With	Injury Severity	Primary Collision Factor	Intersection
Old Sonoma Road/Lilienthal Avenue	none	-	-	-	-	-
Old Sonoma Road/Foothill Boulevard	1	2010	Fixed object	Property damage only	Improper turning	N
Old Sonoma Road/Roosevelt Street	none	-	-	-	-	-
Foster Road/Old Sonoma Road	1	2010	Fixed object	Injury, visible but not severe	Driving under the influence	N
Foster Road/Idaho Street	none	-	-	-	-	-
Foster Road/Iowa Street	none	-	-	-	-	-
Foster Road/Illinois Street	none	-	-	-	-	-
Foster Road/Indiana Street	1	2011	Other motor vehicle	Injury, complaint of pain	Automobile right of way	Y
Foster Road/Utah Street	1	2011	Parked motor vehicle	Property damage only	Unknown	N
Foster Road/Dorset Street	none	-	-	-	-	-
Foster Road/Wimbledon Street	none	-	-	-	-	-
Foster Road/West Imola Avenue	none	-	-	-	-	-
Casswall Street/Old Sonoma Road	1	2009	Parked motor vehicle	Property damage only	Unsafe starting or backing	N
Casswall Street/Idaho Street	none	-	-	-	-	-
Casswall Street/Iowa Street	none	-	-	-	-	-
Casswall Street/Illinois Street	none	-	-	-	-	-
Casswall Street/Indiana Street	none	-	-	-	-	-
Casswall Street/Utah Street	none	-	-	-	-	-
Utah Street/Somerset Place	none	-	-	-	-	-

Source: California Highway Patrol Statewide Integrated Traffic Records System (SWITRS), 2009-2011.

It should be noted that parking deficits alone are considered to be social effects, rather than impacts on the physical environment as defined by CEQA.⁶ Under CEQA, a project's social impacts need not be treated as significant impacts on the environment. The social inconvenience of parking deficits, such as having to hunt for scarce parking spaces, is not an environmental impact. It is possible for secondary physical environmental impacts to arise, such as increased traffic congestion at intersections, air quality impacts, safety impacts, or noise impacts caused by congestion resulting from inadequate parking. However, as noted above, the Project will meet local parking requirements and provide adequate parking for the Project, so there would be no secondary environmental impacts related to Project parking provisions.

CUMULATIVE ANALYSIS

This section discusses future year 2035 traffic conditions assuming reasonably foreseeable development with and without traffic from the proposed Project. Cumulative impacts to which the Project contributes substantial traffic volumes are identified and mitigations are recommended, where feasible, to reduce cumulative impacts to less than significant levels.

FORECASTING

Future Roadway Improvements

Cumulative (Year 2035) conditions were analyzed with roadway improvements in the City of Napa and Napa County that have been fully programmed and funded. Major transportation improvements assumed within a one mile radius of the Project site are:

- Widening of First Street overcrossing of SR 29 to four lanes;
- Conversion of First and Second Streets between Jefferson Street and Main Street to two-way operations; and
- Southward extension of Solano Avenue to connect with First Street at Freeway Drive.

Although other improvements in the area may be planned or are being studied, no funding has been identified and there remains some uncertainty about whether or how they would be implemented. Thus, these other improvements have not been incorporated into the analysis.

Traffic Forecasts

Cumulative (Year 2035) traffic forecasts are based on output from the Napa/Solano County Travel Demand Forecasting (TDF) Model and previously prepared transportation impact analyses. The travel demand model takes into account build-out conditions under the relevant General Plans in the region. The Napa/Solano County TDF model was developed for purposes of forecasting regional traffic within Napa and Solano Counties. The Napa/Solano County TDF model was certified by the Metropolitan Transportation Commission (MTC) as being valid for forecasting regional traffic volumes. Cumulative (Year 2035) Without Project intersection turning movement volumes are displayed in **Figure 16.10**.

⁶ *San Franciscans Upholding the Downtown Plan v. City and County of San Francisco* (1st Dist. 2002) 102 Cal.App.4th 656.



Legend

- Study Intersection
- Signalized Intersection
- Stop Sign

Figure 16.10:
Cumulative Intersection Volumes

Source: Fehr & Peers, March 2013

INTERSECTION OPERATIONS

Cumulative Without Project Conditions Intersection Operations

The level of service was calculated at each study intersection for the cumulative weekday AM and PM peak hour (see **Appendix I** for detailed LOS calculations). As shown in **Table 16.13**, Cumulative Without Project Conditions would result in seven of the eight study intersections operating unacceptably.

Table 16.13: Peak Hour Intersection Level of Service, Cumulative and Cumulative Plus Project Conditions

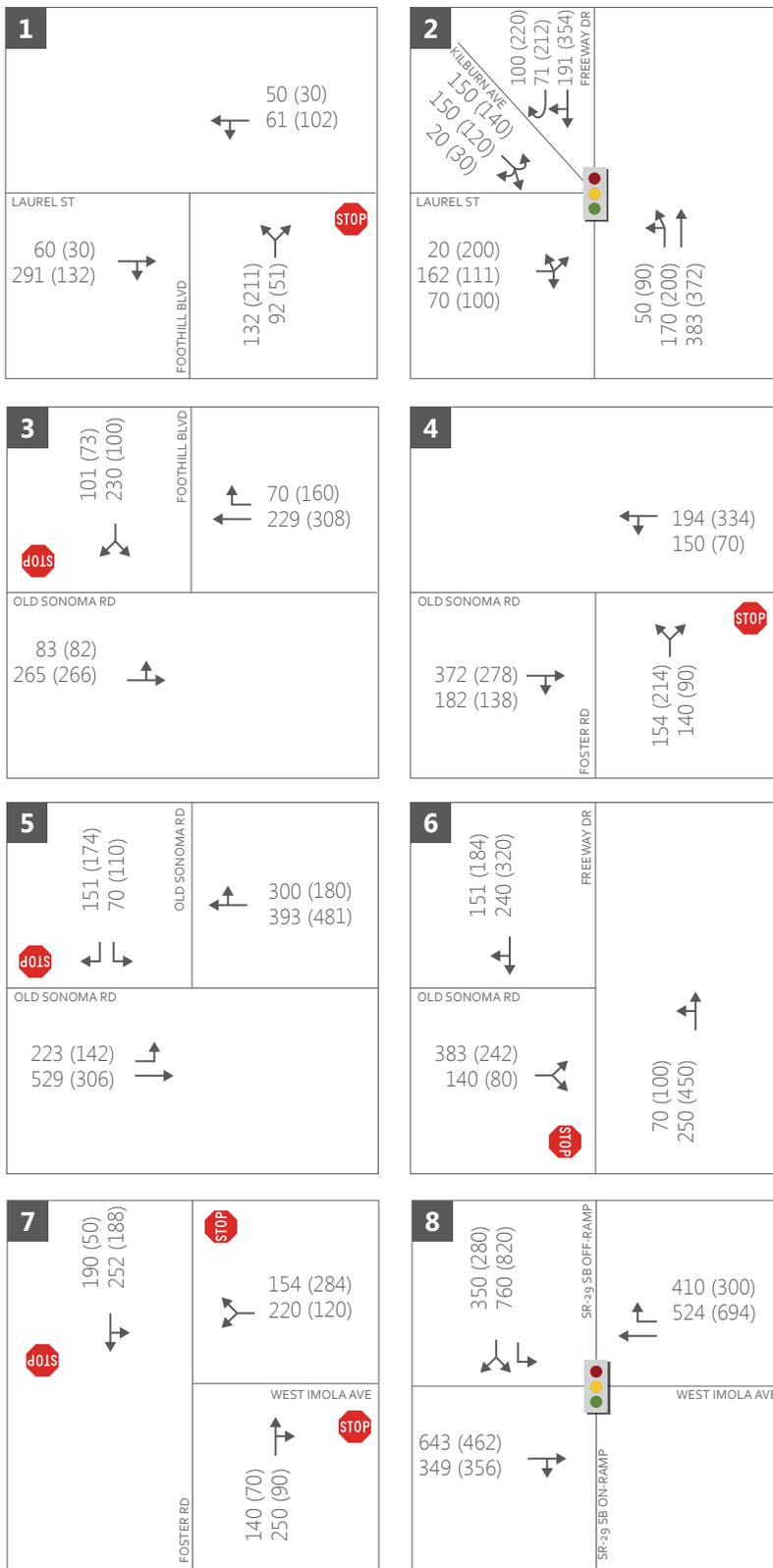
Intersection	Traffic Control ¹	Peak Hour	Cumulative			Cumulative Plus Project		
			Delay (sec)	Total Delay (veh-hr) ²	LOS ³	Delay (sec)	Total Delay (veh-hr) ²	LOS ³
1. Laurel Street / Foothill Boulevard	SSS	AM	23 (NB)	-	C	24 (NB)	-	C
		PM	16 (NB)	-	C	16 (NB)	-	C
2. Laurel Street / Freeway Drive / Kilburn Avenue	Signal	AM	57	-	E	58	-	E
		PM	>80	-	F	>80	-	F
3. Old Sonoma Road / Foothill Boulevard	SSS	AM	>50 (SB)	>10	F	>50 (SB)	>10	F
		PM	20 (SB)	-	C	21 (SB)	-	C
4. Old Sonoma Road / Foster Road	SSS	AM	>50 (NB)	>10	F	>50 (NB)	>10	F
		PM	>50 (NB)	6.39	F	>50 (NB)	9.65	F
5. Old Sonoma Road / Connection to Freeway Drive	SSS	AM	>50 (SB)	>10	F	>50 (SB)	>10	F
		PM	>50 (SB)	4.18	F	>50 (SB)	4.69	F
6. Old Sonoma Road / Freeway Drive	SSS	AM	>50 (EB)	>10	F	>50 (EB)	>10	F
		PM	>50 (EB)	>10	F	>50 (EB)	>10	F
7. West Imola Avenue / Foster Road	AWS	AM	>50	-	F	>50	-	F
		PM	12	-	B	13	-	B
8. West Imola Avenue / SR 29 southbound ramps	Signal	AM	70	-	E	73	-	E
		PM	28	-	C	29	-	C

Notes:
Bold = unacceptable LOS/operations.
 1. Signal = signalized intersection; SSS = side-street stop; AWS = all-way stop.
 2. Total Delay is shown for unsignalized intersections operating at LOS E or LOS F under Existing or Existing Plus Project conditions.
 3. Signalized intersection LOS based on average control delay per vehicle and AWS intersection LOS based on total intersection delay, according to the *Highway Capacity Manual 2000* (Transportation Research Board 2000). SSS intersection LOS presented for worst approach.
 Source: Fehr & Peers 2013.

Cumulative Plus Project Conditions Intersection Operations

As shown in **Table 16.13**, Cumulative Plus Project Conditions would result in seven of the eight study intersections operating unacceptably – the same intersections that would operate unacceptably under Cumulative Without Project Conditions. Cumulative (Year 2035) With Project intersection turning movement volumes are displayed in **Figure 16.11**.

Table 16.13 presents the resulting LOS and corresponding delay at each study intersection under the cumulative scenario. As shown, seven of the eight study intersections are forecasted to operate unacceptably in the AM peak hour. Four of those seven intersections are also forecasted to operate unacceptably in the PM peak hour.



Legend

- Study Intersection
- Signalized Intersection
- Stop Sign

Figure 16.11:
Cumulative Plus Project Intersection Volumes

Source: Fehr & Peers, March 2013

CUMULATIVE PROJECT IMPACTS

Signalized and Unsignalized Intersections

Impact Traf-8: **Project-Specific Intersection Cumulative Impacts.** Under Cumulative Plus Project conditions, the proposed Project would contribute vehicular traffic to signalized and unsignalized intersections but would not cause any of the study intersections to worsen from the City’s currently acceptable LOS to an unacceptable LOS. Therefore, the proposed Project’s cumulative intersection impact would be *less than significant*.

UTILITIES

INTRODUCTION

This chapter describes existing public utilities setting and evaluates the impact of the proposed Project on the provision of public utilities and possible adverse physical impacts to the environment.

SETTING

WASTEWATER

The Napa Sanitation District (NSD) provides wastewater collection, treatment and disposal services to over 75,000 customers in the City of Napa and surrounding unincorporated areas. NSD treats an average of 9 million gallons of wastewater each day, and produces recycled water and biosolids for reuse. NSD maintains approximately 270 miles of pipeline that collect wastewater from homes and businesses in Napa and carry it to the wastewater treatment plant (WWTP). The District's Soscol Water Recycling Facility (the WWTP) treats an average of 10 million gallons per day (MGD) of wastewater. The WWTPs dry weather treatment capacity is 15.4 MGD.¹

NSD has a Wastewater Master Plan that identifies capital improvements to increase system capacities to meet projected future demands through a 2030 planning year.²

As noted in the Project description, the Project includes a potential upgrade of the sewer main in adjacent and nearby Old Sonoma Road to accommodate increased flows from the Project. Approximately 1,600 linear feet of the 8" sewer main would be replaced with a 10" sewer main. Due to site topography, some home sites would require a sewer pump.

WATER

The City of Napa Public Works Water Division is responsible for the operation, maintenance, and improvement of the municipal water system serving more than 86,000 people in the City of Napa and

¹ Napa Sanitation District website: <http://www.napasan.com/>.

² Napa Sanitation District, prepared by Brown and Caldwell and Carollo Engineers, Wastewater Treatment Plant Master Plan, April 2011.

adjacent areas. The Division is dedicated to providing a safe and reliable supply of high-quality drinking water for its residential, commercial, industrial, and institutional customers.³

The City of Napa currently meets its demands by supplying water from three major sources: Lake Hennessey, Milliken Reservoir, and State Water Project (SWP) water delivered through the North Bay Aqueduct (NBA). Lake Hennessey and Milliken Reservoir are two local surface water reservoirs along tributaries of the Napa River. SWP water is supplied through an agreement with the Napa County Flood Control & Water Conservation District (NCFWCWD), the SWP contract administrator for several municipalities in Napa County. Water from these three sources is introduced into the City of Napa distribution system from three separate water treatment plants. Hennessey water treatment plant (WTP) treats the Lake Hennessey supply. Milliken WTP treats Milliken Reservoir water. SWP water is treated at the Edward I. Barwick Jamieson Canyon WTP southeast of the City.

Healthy surpluses ranging from 52% to 55% of supply are projected in normal years through 2035. Total reliable supplies are more than double the projected demand for all years projected. Overall, the City projects generally strong, reliable water service through projection years. No shortfalls are expected for normal years or multiple-dry year periods through 2035. Based on conservative assumptions, the City could experience water shortages up to 6% in critical single-dry years through 2025, despite the long-term demand reductions associated with ongoing conservation efforts. If no imported dry year supplies were obtained, additional demand reduction could be generated through public notification of drought conditions and voluntary actions in the City's Water Shortage Contingency Plan.

In December 2002, the City joined the California Urban Water Conservation Council (CUWCC), a consensus-based partnership of urban water suppliers, public advocacy organizations, and other parties concerned with water supply issues. Formed in 1991 at the height of the six-year drought, the CUWCC oversees the Memorandum of Understanding Regarding Urban Water Conservation in California (MOU) which sets forth Best Management Practices (BMPs) in water use efficiency. In 2010, the City was meeting and exceeding their target water consumption goals at 138.3 gallons per capita per day, though it is expected this usage rate would further lower over time.

The City has adopted local High Performance Building Regulations that are more stringent than the 2010 California Green Building Standards Code (CALGreen), making several CALGreen voluntary provisions mandatory. The City has also adopted a local Water Efficient Landscape Ordinance (WELO) more stringent than the State Model. These two local measures ensure water efficient design in new development.

The City of Napa is a drinking water supplier only. NSD, the wastewater treatment provider, produces recycled water at their WWTP and with it supplies a limited number of City customers with non-potable recycled water for irrigation purposes within a limited service area to the east of Napa River only. This recycled water service area does not include the Project site.

As noted in the Project description, the Project includes upgrade of the water main in adjacent and nearby Old Sonoma Road to accommodate increased flows to the Project. Approximately 947 linear feet of the 4" water main and approximately 343 linear feet of the 6" water main would be replaced with an 8" water main.

³ City of Napa website, Water Division page, available at http://www.cityofnapa.org/index.php?option=com_content&task=view&id=53&Itemid=281.

Furthermore, the Project will include the installation of approximately 3,232 feet of 8" water main on Buhman Avenue. This requirement is necessary to provide adequate flow for fire protection of 750 gpm, which is required for residences over 3,600 square feet in surface area. This requirement is based on a 2011 hydraulic analysis conducted by West Yost Associates at the request of the City of Napa.

STORMWATER

The City of Napa participates in the Napa Countywide Stormwater Pollution Prevention Program (NCSPPP), a joint effort of the County of Napa, cities of American Canyon, Napa, St. Helena and Calistoga, and the Town of Yountville to coordinate and implement local programs throughout the county to minimize and prevent urban runoff pollution. Under the Phase II National Pollutant Discharge Elimination System General Permit, each of the NCSPPP partners are required to develop, implement, and enforce a program to ensure that new development and redevelopment projects incorporate site design, source control, and/or treatment control BMPs to protect water quality and control the volume and rate of stormwater runoff.

SOLID WASTE

Napa Recycling and Waste Services (NRWS) provides garbage, recycling, and curb-side yard waste services in the Cities of Vallejo, Napa and American Canyon and southern unincorporated Napa County. Refuse is brought to the Devlin Road Recycling & Transfer Facility. Solid waste is ultimately sent to Keller Canyon Landfill in Pittsburg, CA.

The Devlin Road facility has an annual throughput of 250,000 - 499,999 tons/year, which is below the facility's projected capacity of 500,000 - 999,999 tons/year. Keller Canyon Landfill has a maximum permitted throughput of 3,500.00 tons/day and a remaining capacity of 63,408,410 cubic yards, which is expected to last through 2030.⁴

Since the year 2000, the City of Napa has consistently met or exceeded the state mandate to divert at least 50 percent of solid waste from the landfill. Building off this success, on July 24, 2012, the Napa City Council adopted a Disposal Reduction Policy, which established a goal that at least 75 percent of the solid waste generated by the city of Napa will be source-reduced, recycled, or composted by the year 2020. The reported diversion rate for 2013 was 65%. Rate increases linked to expanding composting programs are expected to increase diversion rates an additional 7-8% in the coming years.⁵

REGULATORY SETTING

FEDERAL LAWS AND REGULATIONS

Clean Water Act (CWA)

The Clean Water Act (CWA) was enacted by Congress in 1972 and amended several times since its inception. It is the primary federal law regulating water quality in the United States, and forms the basis

⁴ California Department of Resources Recycling and Recovery webpage, Facility/Site Search, available at: <http://www.calrecycle.ca.gov/SWFacilities/Directory/Search.aspx>.

⁵ City of Napa, City Council Agenda Report, Solid Waste and Recycling Collection Rates, January 20, 2015.

for several state and local laws throughout the country. Its objective is to reduce or eliminate water pollution in the nation's rivers, streams, lakes, and coastal waters. The CWA prescribed the basic federal laws for regulating discharges of pollutants as well as set minimum water quality standards for all waters of the United States. At the Federal level, the CWA is administered by the U.S. Environmental Protection Agency (EPA). At the state and regional level, the CWA is administered and enforced by the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs). The State of California has developed a number of water quality laws, rules, and regulations to assist in the implementation of the CWA and related federally mandated water quality requirements. In many cases, the Federal requirements set minimum standards, and the laws, rules, and regulations adopted by the State and Regional Boards are more restrictive, i.e., more protective of the environment.

STATE LAWS AND REGULATIONS

Urban Water Management Planning Act

In 1983, the Urban Water Management Planning Act (Act) was adopted by the California State Legislature as Assembly Bill (AB) 797. Originally signed into law by Governor Deukmejian in 1984 and amended several times since then, the Act is contained in California Water Code Division 6, Part 2.6, Sections 10610 through 10656. The Act requires all urban water suppliers serving more than 3,000 customers or supplying more than 3,000 acre-feet (AF) annually to develop an Urban Water Management Plan (UWMP). The required contents of the UWMP are set forth in the Act. An UWMP describes and evaluates sources of water supply, projected population and future water demand, demand management measures, strategies for responding to water shortages, and other relevant information and programs. Essentially the Act directs water agencies in carrying out long-term resource planning responsibilities to ensure adequate water supplies are available to meet existing and future demands. Under the Act, urban water suppliers are required to update their UWMP and submit a complete plan to the State Department of Water Resources (DWR) every five years. With its water system size well above the thresholds in the Act, the City of Napa has complied with the UWMP provisions since the Act's inception.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act establishes the SWRCB and the RWQCB as the principal state agencies having primary responsibility for coordinating and controlling water quality in California. The Porter-Cologne Act establishes the responsibility of the RWQCBs for adopting, implementing, and enforcing water quality control plans (Basin Plans), which set forth the state's water quality standards (i.e., beneficial uses of surface waters and groundwater) and the objectives or criteria necessary to protect those beneficial uses.

San Francisco Bay Water Quality Control Plan (Basin Plan)

The City of Napa is located within the San Francisco Bay RWQCB, which is responsible for the development, adoption, and implementation of the Water Quality Control Plan (Basin Plan) for the San Francisco Bay region. The Basin Plan is the master policy document that contains descriptions of the legal, technical, and programmatic bases of water quality regulation in the San Francisco Bay Region. The Basin Plan identifies beneficial uses of surface waters and groundwater within its region and specifies effluent limitations, discharge prohibitions, and water quality objectives to maintain the existing potential beneficial uses of the waters. The proposed Project is required to adhere to all applicable requirements of the Basin Plan.

California Integrated Waste Management Act

California's Integrated Waste Management Act (IWMA) of 1989 (AB 939) set a requirement for Cities and Counties throughout the State to divert 50 percent of all solid waste from landfills by January 1, 2000, through source reduction, recycling and composting. AB 939 also established the goal for all California counties to provide at least 15 years of on-going landfill capacity. Recently, Assembly Bill 341 (AB 341) has updated the waste diversion requirement to 75% by 2020.

IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The following thresholds for measuring a Project's environmental impacts are based upon CEQA Guidelines:

1. Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?
2. Would the project require substantial expansion or alteration of the City's water or wastewater treatment and collection facilities?
3. Would the project require or result in the construction of new storm water drainage facilities or expansion of existing facilities?
4. Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?
5. Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?
6. Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?
7. Would the project comply with federal, state, and local statutes and regulations related to solid waste?

WATER SUPPLY AND FACILITIES / WASTEWATER TREATMENT, FACILITIES AND CAPACITY

Impact Util-1: Increased Water Demand and Wastewater Generation. The proposed Project represents new development and related increases in water demand and wastewater generation within the existing service area for the Napa Water Division. As a standard condition of any project, the proposed Project will pay appropriate development impact and utility connection fees toward ongoing improvement and maintenance of the water and wastewater systems and comply with all applicable regulations. While the proposed Project would lead to an increase in demand for water and generation of wastewater, it would utilize existing water facilities and resources and would not cause an exceedance of wastewater treatment requirements or result in the need for new off-site facilities. Therefore, the impacts related to water and wastewater are *less than significant*.

The Urban Water Management Plan is required to be updated every five years. The 2010 Update was adopted in 2011 and is the most recent plan. At the 2010 rate of 138.3 gallons per capita per day, the Project is estimated to require approximately 0.020 MGD, which equates to approximately 22.4 AF per year. Wastewater is assumed to be 90% of the water demand, 0.018 MGD (20.4 AF per year). This represents 0.04% of existing and projected water supplies.⁶

As stated above, Napa Water Division is projected to have sufficient water supply through the projected years (to 2035) to accommodate the future demand under buildout of the City's General Plan. While the Napa Water Division growth projections may not include demand projections for this specific Project, the Project is within the number of proposed housing units in city-wide projections.

The projected increase in wastewater is a very small portion of existing demand and would be within current capacity. As stated above, cumulative increases in demand under the General Plan are anticipated to result in the need for system-wide improvements. The Project's contribution to the ultimate need for new facilities is mitigated through payment of required capacity charges and sanitary sewer impact fees.

As noted in the Project description, the Project includes upgrade of the water and sewer mains in adjacent and nearby Old Sonoma Road to accommodate increased flows from the Project, and the installation of a new water main in Buhman Avenue to accommodate required flows for water protection.

The impact related to increases in water demand and wastewater generation would be *less than significant*.

STORMWATER DRAINAGE FACILITIES

As described in more detail in Chapter 12: Hydrology and Water Quality, stormwater currently sheet flows off the site. The Project proposes to capture stormwater from the development area, detain increased flows in stormwater ponds and ultimately release the water at existing flow rates either into an existing storm drain system or to downslope portions of the site, as appropriate. Therefore, the proposed Project would have *no impact* related to Project-specific or cumulative storm water drainage facilities.

SOLID WASTE

Impact Util-2: Increased Solid Waste Generation. The Project would increase solid waste generation at the site but would be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs, and would not impede the ability of the City to meet the applicable federal, state and local statutes and regulations related to solid waste. The Project would have a *less than significant* impact with no mitigation warranted.

The proposed Project would increase the amount of development at the site, resulting in an increase of solid waste through the transfer station and to the Keller Canyon Landfill. With no assumed diversion, the Project is estimated to generate approximately 116 tons of solid waste per year.⁷ Additionally, the

⁶ City of Napa, *Urban Water Management Plan 2010 Update*, Adopted June 21, 2011, Table 3-4.

⁷ Based on an average of 4.38 pounds of solid waste generated per person per day reported for 2012 by U.S. EPA, <http://www.epa.gov/epawaste/nonhaz/municipal/index.htm>

City has a confirmed solid waste diversion rate of at least 65% through recycling and composting programs with a goal of 75% diversion. At the diversion rate of 65%, the solid waste generation would be 40.6 tons per year. This amount represents around 1 percent of the permitted maximum amount accepted daily at this landfill (approximately 1.16 percent).

As described in the setting, the transfer station and landfill that would serve the Project site currently have existing capacity and are expected to accommodate City of Napa waste disposal through the planning horizon of 2030. The City of Napa is anticipated to meet relevant waste reduction requirements. The proposed Project would not impede the City's compliance with waste reduction requirements or contribute to a facility with insufficient capacity, and therefore, the impact related to solid waste generation and compliance with solid waste regulations would be *less than significant* and no mitigation measures are required.

ENERGY

While not a specific threshold of significance, the CEQA Guidelines recommend assessment of a Project's energy usage. The Project would be considered to have a significant impact related to energy use if it would violate applicable federal, state and local statutes and regulations relating to energy standards and/or if energy consumption increases resulting from the Project would trigger the need or expanded off-site energy facilities that would have a significant environmental impact.

Impact Util-3: Increased Energy Consumption. The Project would have an incremental increase in the demand for gas and electrical power. However, the Project is expected to be served with existing capacity and would not require or result in construction of new energy facilities or expansion of existing off-site facilities and would not violate applicable federal, state and local statutes and regulations relating to energy standards. The Project would have a *less than significant* impact relating to energy consumption with no mitigation warranted.

The Project is estimated to require approximately 382 megawatt hours/year of electricity and 1,905 million British Thermal Units (MMBTU) of natural gas.⁸ The Project would be required by the City to comply with all standards of Title 24 of the California Code of Regulations and the new CALGreen standards, as applicable, aimed at the incorporation of energy-conserving design and construction, which would be likely to further reduce these estimates. This Project is anticipated to have similar energy requirements as other similar developments elsewhere.

PG&E infrastructure would be extended onto the Project site as a part of the Project, the specifics of which would be determined in consultation with PG&E prior to installation. As a result, although the Project would incrementally increase energy consumption, it would not result in a significant impact related to the provision of energy services.

CUMULATIVE UTILITIES IMPACTS

The geographic context for a discussion of cumulative impacts to utilities is the service area of the utility in question. The cumulative impacts analysis for each utility includes all cumulative growth within its respective service area, as identified by the providers' demand projections. The cumulative

⁸ Electricity and natural gas usage reported by the CalEEMod emissions model utilized for the emissions modeling and included in Appendix B.

context has been taken into account in the impact analysis above and there would be no additional cumulative impacts.

OTHER CEQA CONSIDERATIONS

INTRODUCTION

This chapter of the Draft EIR contains discussion of the following additional CEQA considerations:

- Mandatory Findings of Significance
- Significant Irreversible Modifications in the Environment
- Growth Inducing Impacts

MANDATORY FINDINGS OF SIGNIFICANCE

Appendix G of the CEQA Guidelines (Environmental Checklist) contains a list of mandatory findings of significance that may be considered significant impacts if any of the following occur:

- Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of California history or prehistory?
- Does the project have impacts that are individually limited, but cumulatively considerable?
- Does the project have environmental effects which will cause substantial adverse effects on human beings either directly or indirectly?

QUALITY OF THE ENVIRONMENT

Project implementation could lead to development that adversely affects the environment in terms of impacts to various CEQA issue topics, as discussed in this EIR. However, impacts of the Project are considered to be less than significant with mitigation. Implementation of the Project would not degrade the quality and extent of the environment provided all policies, rules, and regulations of all relevant governing bodies are adhered to, and the mitigation measures contained within this document are implemented.

CUMULATIVE IMPACTS

The Project is located at the edge of a developed urban environment adjacent to unincorporated area that is expected to remain agricultural. The cumulative context for analysis in this EIR includes the

existing development as well as the cumulative buildout under the City of Napa General Plan. As the last undeveloped area within the City limits in the vicinity, no additional development was assumed in the immediate vicinity of the Project. Additional development in the immediate vicinity is not currently planned and would be required to perform environmental analysis to determine impacts when and if it were proposed.

Cumulative impacts of the Project are considered to be less than significant with mitigation. As discussed in the preceding sections of this checklist, implementation of the Project would not cumulatively impact the environment provided all policies, rules and regulations of all relevant governing bodies are adhered to, and the mitigation measures contained within this document are implemented.

ADVERSE EFFECTS ON HUMAN BEINGS

The Project would not have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly. Impacts related to effects on human beings, including emissions, seismic activity and soil instability, noise levels at future residences, potential vehicle/pedestrian/bicycle conflicts, and potentials for hazards related to sub-standard secondary access and inadequate sight distance are *less than significant with mitigation*. The Project would not expose people to significant new hazards. There would be no other adverse effects on human beings.

SIGNIFICANT IRREVERSIBLE MODIFICATIONS IN THE ENVIRONMENT

An EIR must identify any significant irreversible environmental changes that could be caused by a project. These may include current or future uses of non-renewable resources, and secondary or growth-inducing impacts that commit future generations to similar uses. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified. The *CEQA Guidelines* describe three distinct categories of significant irreversible changes: 1) changes in land use which would commit future generations to specific uses; 2) irreversible changes from environmental actions; and 3) consumption of non-renewable resources.

CHANGES IN LAND USE WHICH WOULD COMMIT FUTURE GENERATIONS

The Project would require a change in land use to allow the proposed Project that would commit future generations. As discussed in more detail in Chapter 19: Alternatives, this would result in 42 more residential units on the site than could be allowed under the existing land use designations. It is within the City's purview to determine what locations are appropriate to meet demands for residential development.

IRREVERSIBLE CHANGES FROM ENVIRONMENTAL ACTIONS

This Project would contribute to regional emissions of air pollutants and greenhouse gasses, largely from vehicle emission of residents traveling to and from the site. However, the level of impact was determined to be less than significant and is expected to be further reduced over time as regulations and changes in travel habits lead to reduced vehicle emissions.

The Project would also result in removal of some of the oak woodlands and a small portion of wetlands on the site. While loss of these biological resources on site would be fully mitigated by preservation and protection on- and off-site, the changes on the site would be considered permanent.

CONSUMPTION OF NONRENEWABLE RESOURCES

Consumption of nonrenewable resources can include increased energy consumption, conversion of agricultural or forested lands, and lost access to mining reserves. The Project would not result in the loss of agricultural or forested lands or mining reserves. (Oak woodlands are considered biological resources and not productive timber and are discussed above.) Development of the Project area as proposed could result in the commitment of nonrenewable resources (e.g., gravel and petroleum products) and slowly renewable resources (e.g., wood products) used in construction. The operation of the proposed use would also require commitment of water and energy resources (e.g., petroleum products for vehicle operations, natural gas and electricity for lighting, heating, and cooling). However, the relative amount of resource use is low and would comply with applicable regulations.

GROWTH INDUCING IMPACTS

The Project is located within the city limits though at the edge of a developed urban environment adjacent to unincorporated area that is expected to remain agricultural. Other than direct increase in development on the site analyzed in this document, the Project would not be anticipated to have a growth-inducing effect.

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ALTERNATIVES

INTRODUCTION

The California Environmental Quality Act Guidelines (CEQA Guidelines, 1970, as amended, Section 15126.6) require an EIR to include a discussion of a reasonable range of alternatives to the proposed project. The CEQA Guidelines also require that the EIR explain why specific project alternatives considered at one time were rejected in favor of the proposed project. The selection of alternatives is to be guided by the provision of reasonable choices and the promotion of informed decision making and informed public participation. An EIR need not evaluate alternatives that would have effects that cannot be determined, or for which implementation would be remote and speculative.

The Guidelines also require that the EIR specifically evaluate a “no project” alternative within this discussion and that an “environmentally superior” alternative be identified (Section 15126.6 [e]).

The alternatives addressed in this EIR were selected based on the following factors:

1. The extent to which the alternative would accomplish most of the basic project objectives.
2. The extent to which the alternative would avoid or lessen any of the identified significant environmental effects of the project (discussed in Chapters 4 through 18).
3. The potential feasibility of the alternative (as discussed in this Chapter).
4. The extent to which the alternative contributes to a “reasonable range” of alternatives necessary to permit a reasoned choice.

The proposed Project is fully described in Chapter 3 of this EIR (Project Description). The environmental consequences are addressed in Chapters 4 through 18 of this EIR.

PROJECT OBJECTIVES

CEQA requires the analysis of alternatives that would feasibly attain “most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project.”¹ Therefore, the stated objectives can be used as a metric against which an alternative can be measured when determining overall feasibility.² Additionally, CEQA requires the evaluation of a proposed project to address only impacts to the physical environment; economic and social effects can be

¹ *CEQA Guidelines*, Section 15126.6 (a)

² *Ibid.*, Section 15126.6 (a)

analyzed only as one link in a chain of cause and effect from a proposed decision (e.g., physical changes caused, in turn, by economic and social changes).³ However, economic viability can be considered when determining the feasibility of a project alternative.⁴

The following are the objectives that would be fulfilled by the proposed Project. Alternatives will be evaluated in part based on their ability to meet these objectives.

1. To create a low-density residential project that will respect the unique physical and environmental attributes of the project site, including utilizing the Project site's previously graded areas.
2. To allow development of a high-quality yet economically feasible project, being one that allows for the development of enough low density housing to support public benefits including public trails, conservation areas, drainage improvements, fire safety plan, and water supply improvements.
3. To help Napa achieve its goal of providing housing types currently undersupplied in the City of Napa within its Rural Urban Limit line.
4. To enhance the overall quality of the community and provide visual and architectural variety within the project in an aesthetically pleasing manner.
5. To provide economic benefit to the City of Napa through increased property tax and the multiplier effect from executive relocation opportunities.

PROJECT IMPACTS

Based on the analysis contained in this Draft EIR, implementation of the Project would not result in any significant and unavoidable impacts.

The Project would result in potentially significant impacts associated with the following topics, which would be significant without the implementation of mitigation measures, but would be reduced to a less than significant level if the mitigation measures recommended in this document are implemented.

- Agriculture and Forestry Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Noise
- Transportation and Circulation

All other topic areas would have no impact or less than significant impacts only. Therefore, after implementation of the above-described mitigation measures, the proposed Project would not result in any significant impacts.

³ *CEQA Guidelines*, Section 15131.

⁴ *Ibid.*, Section 15126.6(f)(1).

A comparison of the alternatives with respect to all the topic areas listed above is included in Table 19.1 at the end of this chapter.

ALTERNATIVES ANALYSIS

The alternatives analysis is presented as a comparative analysis to the proposed Project. A project may have the potential to generate significant impacts, but changes to certain features may also afford the opportunity to avoid or reduce such impacts. The following alternatives analysis compares the potential significant environmental impacts of the alternatives with those of the proposed Project for each of the environmental topics analyzed in detail in Chapters 4 through 18 of the EIR and discusses feasibility of implementation, and ability to meet objectives.

SELECTION OF ALTERNATIVES

- A. No Project, No Development
- B. Reduced Density, General Plan Allowance
- C. Reduced Density, 25% Reduction
- D. Reduced Density, 40% Reduction

Four alternatives were evaluated. Each of the alternatives are located on the Project site. The alternatives focus on reducing the size of the Project, which could further reduce impacts related to biological resources that are already reduced to less than significant levels through mitigation.

In addition to the specific alternatives analyzed below, larger residential projects were previously proposed at this site with various environmental documents circulating between 1999 and 2002. A Final EIR was completed and certified by the City of Napa for the former Napa Oaks project, dated August 2002 (State Clearinghouse Number 1998012049), but the project was not approved. That Former Certified EIR analyzed a project composed of 63 new large single-family homes and project alternatives, including prior proposals with additional lots. The current Project is revised from that previously proposed Napa Oaks Project. That prior analysis was considered in the review and selection of the alternatives considered in this document.

The four alternatives to be analyzed in comparison to the proposed Project are shown in **Table 19.1** and are as follows:

Alternative A: No Project Alternative. Alternative A is a “no project” alternative. It assumes the proposed Project is not approved and the site would remain as it is today, with two existing residences and use of the site for cattle grazing. While both residences are currently vacant, it is assumed for this alternative that they would both become occupied. Alternative A would not provide the public access and other improvements beneficial to the City.

Alternative B: Reduced Density, Current General Plan Allowance Alternative. Alternative B assumes the site would be developed generally as proposed, but at a lower density consistent with the current General Plan designation. This is differentiated from the “no project” alternative because it would require discretionary approval to allow rural residential even though it can be approved without a General Plan amendment. Alternative B would not provide the public access and other improvements beneficial to the City.

The majority of the property (78 acres) is designated “RA - Resource Area” by the Napa General Plan. In this designation, limited, very-low density residential use (up to 1 home per existing parcel) is permitted, with discretionary review of the site development details. Other low intensity uses, such as rural residential (to a maximum of 1 dwelling unit per 20 acres) may be considered at the discretion of the City on a case by case basis. This calculates to 3.9 units allowed for the property designated Resource Area.

The remaining 2.6-acre northeastern corner of the site is designated for “SFR – Single Family Residential” use, at densities of 0 to 3 residential units per acre. This calculates to 7.8 units allowed for the property designated as SFR.

These calculations round down to a total of 11 allowable units under the current zoning designations. This is 21% of the units proposed under the Project. While there would not be further constraint on location of the units, it can be assumed these would likely be located along the loop from the main entry at Old Sonoma Road to the EVA along Old Sonoma Road and could encompass the same area shown in the plans for lots 1 to 6 and 36 to 53 (with the potential for larger lots in the same general area).

Alternative C: Reduced Density, 25% Reduction Alternative. Alternative C assumes the site would be developed generally as proposed, but with a 25% reduction in density (i.e., from 53 to 40 dwelling units).

Alternative D: Reduced Density, 40% Reduction Alternative. Alternative D assumes the site would be developed generally as proposed, but with a 40% reduction in density (i.e., from 53 to 32 dwelling units).

Alternatives Rejected as Infeasible

As described above, Section 15126.6(c) of the CEQA Guidelines requires an EIR to identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency’s determination.

An off-site alternative was rejected because the project sponsor does not have control of another underdeveloped site with the potential for residential development in the City of Napa. The proposal is specifically development of the subject site.

The currently proposed project is the culmination of over a decade of revisions in the project, including reduction in units, minimization of grading, and retention of the majority of oak woodlands on the site. The currently proposed Project is fully mitigatable, with no significant and unavoidable impacts. Therefore, reduced density alternatives would not have the effect of avoiding or substantially lessening significant impacts, but have been chosen to compare minor reductions in already less than significant impacts.

It is not possible to fully evaluate every possible alternative to the proposed Project. Alternatives A, B, C and D satisfy the requirement to consider and discuss “a range of reasonable alternatives to the project” pursuant to CEQA Guidelines section 15126.6. As discussed in the descriptions above, these alternatives were chosen as reasonable alternatives at this site and no additional alternatives were identified that would substantially contribute to a meaningful evaluation, analysis, and comparison of the project to possible alternatives.

ALTERNATIVE A: NO PROJECT ALTERNATIVE, NO DEVELOPMENT

Impact Analysis

Impact Summary

Under a “no development” alternative, the Project site would remain as it is today, with assumed continuation of cattle grazing and occupancy of the two residential units. Re-occupation of the two homes on the site would generate a small amount of traffic and emissions that do not exist today, but not enough to result in significant impacts.

Ability to Accomplish Project Objectives and Feasibility

A No Project/No Development alternative would not meet any of the project objectives, as it would not create new housing or related property taxes or provide conservation areas or public trails.

This alternative represents the possibility that no project is approved on this site. However, there is no current proposal for the City or other agency to purchase this site or otherwise preserve it in an undeveloped state. This site is zoned to allow for some amount of additional residential development (see also Alternative B). Therefore, while this alternative analyzes a no development scenario, it is not necessary feasible to assume the site would remain undeveloped in the long term.

ALTERNATIVE B: REDUCED DENSITY ALTERNATIVE, GENERAL PLAN ALLOWANCE

Impact Analysis

Impact Summary

While Alternative B would substantially reduce the number of units proposed at the site, impacts would be only marginally reduced as they are already less than significant or mitigated to that level under the Project. The area of impacted oak woodland and wetlands would be reduced (by 2.86 acres and 0.19 acre respectively), which would require a smaller amount of replacement and compensation. Additionally, homes would likely be located farther from agricultural uses, though would still require acoustical modeling and construction methods to ensure noise levels would be acceptable. Because Alternative B is less than 50 residential units, a Fire Plan and second access point would not strictly be required though is still considered desirable.

Aesthetics

Views toward the Project site would likely be similar under the proposed Project or Alternative B except that visibility of the homes from Old Sonoma Road would likely be reduced and fewer homes may be visible in views from other directions depending on the ultimate locations of proposed home sites. However, no Project impacts related to aesthetics would be considered significant, so Alternative B would lessen already less than significant impacts related to aesthetics.

Air Quality and Greenhouse Gas Emissions

This Alternative would result in approximately 21% of the daily vehicle trips assumed under the proposed Project, as well as less building space that would require water and use energy. Operational air quality impacts and greenhouse gas emissions would be expected to be approximately 79% less than

those identified under the proposed Project. However, air quality and GHG emissions would be anticipated to be below the threshold of significance for both the Project and Alternative B. Thus, Alternative B would lessen already less than significant impacts related to emissions under the Project.

While Alternative B would reduce construction activities and therefore emissions, mitigation for construction-period emissions would be anticipated to still be required to reduce emissions levels to less than significant levels, as required under the proposed Project.

Oak Woodlands

Because it can be assumed the site would still require grading and connecting roadways, impacts related to biological resources would be similar under this alternative as under the Project, and would require all construction-related mitigation. Assuming development of only a loop road on the northern approximately 2/3 of the site, loss of oak woodland habitat would occur on approximately 6.5 acres (69% the oak woodland area affected by the Project), and wetland fill would occur on approximately 0.24 acre (56% of the wetland area affected by the Project). However, under either the proposed Project or Alternative B, these impacts would be mitigated to less than significant levels through wetland replacement and establishment of woodland preserves. The mitigated scenario would not be substantially different between the Project and Alternative B.

Noise

Assuming development of only a loop road on the northern approximately 2/3 of the site, Alternative B would have residences placed somewhat farther from agricultural activities and related noise such as from fans and tractors (approximately 1,000 feet to the nearest home in alternative B compared to 500 feet for the Project). However, under either the proposed Project or Alternative B, noise levels would be reduced to within levels considered acceptable through the use of acoustical construction planning and methods.

Transportation and Circulation

The reduced development proposed under Alternative B would result in new vehicle trips in the vicinity, but these would equate to approximately 21% of the PM peak hour trips assumed under the proposed Project. However, impacts related to traffic volumes would be anticipated to be below the threshold of significance for both the Project and Alternative B. Thus, Alternative B would lessen already less than significant impacts related to traffic under the Project.

Impacts and mitigation measures related to bicycle and pedestrian connections, sidewalks, and sight distance would remain applicable to Alternative B as they are under the Project. While a secondary access point is still likely desirable, it would not be strictly required under Alternative B, so the impact related to secondary access and the requirement to implement a Fire Plan (Traf-8) would not be applicable to Alternative B.

Other Environmental Topic Areas

Other than those discussed above, all impacts under Alternative B would be similar to those under the Project and there would be no additional impacts under Alternative B. Impacts and mitigation related to construction activities, seismic activity and soils, and hydrology would remain applicable and similar under either the Project or Alternative B. All these impacts were less than significant or reduced to that level through mitigation that would be anticipated to be required under the Project or Alternative B.

Ability to Accomplish Project Objectives and Feasibility

Alternative B would have the following ability to meet project objectives:

1. Alternative B would meet the objective to create a low-density residential project that will respect the unique physical and environmental attributes of the project site, including utilizing the Project site's previously graded areas. Alternative B would be lower density and not utilize all the previously graded areas.
2. Alternative B would meet to a lesser degree the objective to development a high-quality yet economically feasible project that will support public benefits including public trails, conservation areas, drainage improvements, fire safety plan, and water supply improvements. Fewer units would support less conservation and trails.
3. Alternative B would meet to a lesser degree the objective to help Napa achieve its goal of providing housing types currently undersupplied. Only 8 net new units would be developed under Alternative B compared to 51 under the proposed Project.
4. Alternative B would meet the objective to enhance the overall quality of the community and provide visual and architectural variety within the project in an aesthetically pleasing manner. It can be assumed housing under Alternative B would meet the same standards of quality and aesthetics as that proposed under the Project.
5. Alternative B would meet to a lesser degree the objective to provide economic benefit to the City of Napa through increased property tax and the multiplier effect from executive relocation opportunities. It can be assumed tax revenue from 8 net new units would be substantially lower than from 51 net new units.

The reduced intensity of development under Alternative B would meet all of the Project Objectives, though some would be to a lesser degree than would the proposed Project. It should also be noted that the financial feasibility of this Alternative has not been determined, as the private residential development would need to fund construction of roadway and utility connections as well as conservation efforts and ideally a public trail. The inclusion of less residential development may make the development financially infeasible.

ALTERNATIVE C: REDUCED DENSITY, 25% REDUCTION ALTERNATIVE

Impact Analysis

Impact Summary

While Alternative C would reduce the number of units proposed at the site from 53 to 40 dwelling units, impacts would be only marginally reduced as they are already less than significant or mitigated to that level under the Project. The area of impacted oak woodland and wetlands would be reduced (by 2.34 acres and 0.1 acre respectively), which would require a smaller amount of replacement and compensation. Because Alternative C would develop fewer than 50 residential units, a Fire Plan and second access point would not strictly be required though is still considered desirable.

Air Quality and Greenhouse Gas Emissions

This Alternative would result in approximately 75% of the daily vehicle trips assumed under the proposed Project, as well as less building space that would require water and use energy. Operational air quality impacts and greenhouse gas emissions would be expected to be approximately 25% less than those identified under the proposed Project. However, air quality and GHG emissions would be

anticipated to be below the threshold of significance for both the Project and Alternative C. Thus, Alternative C would lessen already less than significant impacts related to emissions under the Project.

While Alternative C would reduce construction activities and therefore emissions, standard mitigation for construction-period emissions would be anticipated to still be required to reduce emissions levels to less than significant levels, as required under the proposed Project.

Oak Woodlands

Because it can be assumed the site would still require grading and connecting roadways, impacts related to biological resources would be similar under this alternative as under the Project, and would require all construction-related mitigation. Assuming a reduction in disturbed area consistent with the reduction in development density, the loss of oak woodland habitat would occur on approximately 7.02 acres, and wetland fill would occur on approximately 0.29 acre. However, under either the proposed Project or Alternative C, these impacts would be mitigated to less than significant levels through wetland replacement and establishment of woodland preserves. The mitigated scenario would not be substantially different between the Project and Alternative C.

Transportation and Circulation

The reduced development proposed under Alternative C would result in new vehicle trips in the vicinity, but these would equate to approximately 75% of the PM peak hour trips assumed under the proposed Project. However, impacts related to traffic volumes would be anticipated to be below the threshold of significance for both the Project and Alternative C. Thus, Alternative C would lessen already less than significant impacts related to traffic under the Project.

While a secondary access point is still likely desirable, it would not be strictly required under Alternative C, so the impact related to secondary access and the requirement to implement a Fire Plan (Traf-6) would not be applicable to Alternative C.

Other Environmental Topic Areas

Other than those discussed above, all impacts under Alternative C would be similar to those under the Project and there would be no additional impacts under Alternative C. Impacts and mitigation related to construction activities, seismic activity and soils, and hydrology would remain applicable and similar under either the Project or Alternative C. All these impacts were less than significant or reduced to that level through mitigation that would be anticipated to be required under the Project or Alternative C.

Ability to Accomplish Project Objectives and Feasibility

Alternative C would have the following ability to meet project objectives:

6. Alternative C would meet the objective to create a low-density residential project that will respect the unique physical and environmental attributes of the project site, including utilizing the Project site's previously graded areas.
7. Alternative C would meet to a lesser degree the objective to development a high-quality yet economically feasible project that will support public benefits including public trails, conservation areas, drainage improvements, fire safety plan, and water supply improvements. Fewer units would support less conservation and trails.

8. Alternative C would meet to a lesser degree the objective to help Napa achieve its goal of providing housing types currently undersupplied. Only 40 new units would be developed under Alternative C compared to 53 under the proposed Project.
9. Alternative C would meet the objective to enhance the overall quality of the community and provide visual and architectural variety within the site in an aesthetically pleasing manner. It can be assumed housing under Alternative C would meet the same standards of quality and aesthetics as that proposed under the Project.
10. Alternative C would meet to a lesser degree the objective to provide economic benefit to the City of Napa through increased property tax and the multiplier effect from executive relocation opportunities. It can be assumed tax revenue from 40 new units would be lower than from 53 new units.

The reduced intensity of development under Alternative C would meet all of the Project Objectives, though some would be to a lesser degree than would the proposed Project. It should also be noted that the financial feasibility of this Alternative has not been determined, as the private residential development would need to fund construction of roadway and utility connections as well as conservation efforts and ideally a public trail.

ALTERNATIVE D: REDUCED DENSITY, 40% REDUCTION ALTERNATIVE

Impact Analysis

Impact Summary

While Alternative D would reduce the number of units proposed at the site from 53 to 32 dwelling units, impacts would be only marginally reduced as they are already less than significant or mitigated to that level under the Project. The area of impacted oak woodland and wetlands would be reduced (by 3.74 acres and 0.16 acre respectively), which would require a smaller amount of replacement and compensation. Because Alternative D would develop fewer than 50 residential units, a Fire Plan and second access point would not strictly be required though is still considered desirable.

Air Quality and Greenhouse Gas Emissions

This Alternative would result in approximately 60% of the daily vehicle trips assumed under the proposed Project, as well as less building space that would require water and use energy. Operational air quality impacts and greenhouse gas emissions would be expected to be approximately 40% less than those identified under the proposed Project. However, air quality and GHG emissions would be anticipated to be below the threshold of significance for both the Project and Alternative B. Thus, Alternative D would lessen already less than significant impacts related to emissions under the Project.

While Alternative D would reduce construction activities and therefore emissions, mitigation for construction-period emissions would be anticipated to still be required to reduce emissions levels to less than significant levels, as required under the proposed Project.

Oak Woodlands

Because it can be assumed the site would still require grading and connecting roadways, impacts related to biological resources would be similar under this alternative as under the Project, and would require all construction-related mitigation. Assuming a reduction in disturbed area consistent with the reduction in development density, the loss of oak woodland habitat would occur on approximately 5.62 acres, and wetland fill would occur on approximately 0.23 acre. However, under either the proposed

Project or Alternative D, these impacts would be mitigated to less than significant levels through wetland replacement and establishment of woodland preserves. The mitigated scenario would not be substantially different between the Project and Alternative D.

Transportation and Circulation

The reduced development proposed under Alternative D would result in new vehicle trips in the vicinity, but these would equate to approximately 60% of the PM peak hour trips assumed under the proposed Project. However, impacts related to traffic volumes would be anticipated to be below the threshold of significance for both the Project and Alternative D. Thus, Alternative D would lessen already less than significant impacts related to traffic under the Project.

While a secondary access point is still likely desirable, it would not be strictly required under Alternative D, so the impact related to secondary access and the requirement to implement a Fire Plan (Traf-6) would not be applicable to Alternative D.

Other Environmental Topic Areas

Other than those discussed above, all impacts under Alternative D would be similar to those under the Project and there would be no additional impacts under Alternative D. Impacts and mitigation related to construction activities, seismic activity and soils, and hydrology would remain applicable and similar under either the Project or Alternative D. All these impacts were less than significant or reduced to that level through mitigation that would be anticipated to be required under the Project or Alternative D.

Ability to Accomplish Project Objectives and Feasibility

Alternative D would have the following ability to meet project objectives:

11. Alternative D would meet the objective to create a low-density residential project that will respect the unique physical and environmental attributes of the site, including utilizing the Project site's previously graded areas.
12. Alternative D would meet to a lesser degree the objective to development a high-quality yet economically feasible project that will support public benefits including public trails, conservation areas, drainage improvements, fire safety plan, and water supply improvements. Fewer units would support less conservation and trails.
13. Alternative D would meet to a lesser degree the objective to help Napa achieve its goal of providing housing types currently undersupplied. Only 32 new units would be developed under Alternative D compared to 53 under the proposed Project.
14. Alternative D would meet the objective to enhance the overall quality of the community and provide visual and architectural variety within the project in an aesthetically pleasing manner. It can be assumed housing under Alternative D would meet the same standards of quality and aesthetics as that proposed under the Project.
15. Alternative D would meet to a lesser degree the objective to provide economic benefit to the City of Napa through increased property tax and the multiplier effect from executive relocation opportunities. It can be assumed tax revenue from 32 new units would be lower than from 53 new units.

The reduced intensity of development under Alternative D would meet all of the Project Objectives, though some would be to a lesser degree than would the proposed Project. It should also be noted that the financial feasibility of this Alternative has not been determined, as the private residential

development would need to fund construction of roadway and utility connections as well as conservation efforts and ideally a public trail.

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

In addition to the discussion and comparison of impacts of the proposed Project and the alternatives, Section 15126.6 of the CEQA Guidelines requires that an “environmentally superior” alternative be selected and the reasons for such a selection disclosed. In general, the environmentally superior alternative is the alternative that would be expected to generate the least amount of significant impacts. As explained above, after implementation of the above-described mitigation measures, the proposed Project is not expected to generate any significant environmental impacts. As a result, in this case, although neither the proposed Project nor any of the alternatives are expected to generate any significant environmental effects, the environmentally superior alternative is the alternative that is expected to generate the least severe environmental effects. Identification of the environmentally superior alternative is an informational procedure and the alternative selected may not be the alternative that best meets the goals or needs of the City.

Table 19.1, on the following pages, provides a summary comparison of the environmental impacts of the alternatives compared to the proposed Project for each of the topic areas in which a potentially significant impact was identified under the Project. The table lists the level of significance of the impacts of the proposed Project to each of the environmental topics areas analyzed in the EIR and shows whether the impacts anticipated under each proposed alternative would be similar to (“s”), greater (“+”) or lesser (“-”) than the proposed Project or whether the impact would be avoided (“-a”).

No significant and unavoidable impacts were identified under the proposed Project. All Project impacts are either less than significant or can be reduced to those levels through implementation of the mitigation contained in this Draft EIR. Because of the low impact of the proposed Project, differences between it and the Alternatives are marginal and confined to reductions in already less than significant impacts. Alternative A, the No Project Alternative, has no impacts as it does not propose any change to the site. Alternative A would be the environmentally superior alternative.

The CEQA Guidelines also require that “if the environmentally superior alternative is the ‘no project’ alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives” (CEQA Guidelines Section 15126.6(e)(2)). In general, the environmentally superior alternative minimizes adverse impacts to the environment, while still achieving the basic project objectives.

Alternative B, the Reduced Density, General Plan Allowance Alternative would be the next most environmentally superior alternative with the lower density contributing to reduced impacts, especially as related to biological resources and noise. Alternative B would result in marginal reductions in already less than significant impacts, requiring mostly the same mitigation. However, the financial feasibility of this alternative is not known, as the reduction in units could undermine the financial feasibility of roadway and utility connections as well as conservation efforts and a public trail.

TABLE 19.1: SUMMARY COMPARISON OF IMPACTS, PROPOSED PROJECT AND ALTERNATIVES

ENVIRONMENTAL ISSUE AREA	Project	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D
		No Project (No Development)	Reduced Density (General Plan)	25% Reduced Density	40% Reduced Density
AESTHETICS					
<i>Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway or a scenic vista?</i>	LTS	-a	-s	-s	-s
<i>Would the project substantially degrade the existing visual character or quality of the site and its surroundings?</i>	LTS	-a	-s	-s	-s
<i>Would the project create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?</i>	LTS	-a	-s	-s	-s
AGRICULTURE AND FORESTRY RESOURCES					
<i>Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?</i>	No Impact	s	s	s	s
<i>Would the Project conflict with existing zoning for agricultural use, or a Williamson Act contract, or conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?</i>	No Impact	s	s	s	s
<i>Would the Project result in the loss of forest land or conversion of forest land to non-forest use?</i>	LTS (w/MM)	-a	-s	-s	-s

LTS = less than significant impact

LTS (w/MM) = an impact reduced to less than significant through incorporation of mitigation measures

SU = significant and unavoidable impact (not used)

s = same or similar impacts

-s = marginally reduced, similar impacts

-a = avoided impacts

(no impacts are substantially increased or reduced but not avoided)

ENVIRONMENTAL ISSUE AREA	Project	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D
<i>Would the Project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?</i>	LTS (w/MM)	-a	-s	-s	-s
AIR QUALITY					
<i>Would the project conflict with or obstruct implementation of the applicable air quality plan?</i>	No Impact	s	s	s	s
<i>Would the project violate any air quality standard, contribute substantially to an existing or projected air quality violation or result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?</i>	LTS (w/MM)	-a	-s	-s	-s
<i>Would the project expose sensitive receptors to substantial pollutants?</i>	LTS	-a	-s	-s	-s
<i>Would the project create objectionable odors affecting a substantial number of people?</i>	No Impact	s	s	s	s
BIOLOGICAL RESOURCES					
<i>Would the project have a substantial adverse effect, either directly or through habitat modifications, on species identified as candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Services?</i>	LTS (w/MM)	-a	-s	-s	-s
<i>Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game, or the US Fish and Wildlife Service?</i>	LTS (w/MM)	-a	-s	-s	-s

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 SU = significant and unavoidable impact (not used)

s = same or similar impacts
 -s = marginally reduced, similar impacts
 -a = avoided impacts
 (no impacts are substantially increased or reduced but not avoided)

ENVIRONMENTAL ISSUE AREA	Project	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D
<i>Would the project 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?</i>	LTS (w/MM)	-a	-s	-s	-s
<i>Would the project interfere substantially with the movement of any native resident of migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites?</i>	LTS	-a	s	s	s
<i>Would the project conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?</i>	LTS (w/MM)	-a	s	s	s
CULTURAL RESOURCES					
<i>Would the project cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5?</i>	LTS	-a	s	s	s
<i>Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5, directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or disturb any human remains, including those interred outside of formal cemeteries.</i>	LTS (w/MM)	-a	s	s	s
GEOLOGY AND SOILS					
<i>Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Faulting Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?</i>	No Impact	s	s	s	s

LTS = less than significant impact
 LTS (w/MM) = an impact reduced to less than significant through incorporation of mitigation measures
 SU = significant and unavoidable impact (not used)

s = same or similar impacts
 -s = marginally reduced, similar impacts
 -a = avoided impacts
 (no impacts are substantially increased or reduced but not avoided)

ENVIRONMENTAL ISSUE AREA	Project	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D
<i>Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving exposure to strong seismic ground shaking and/or seismic ground failure, including liquefaction, densification, and differential settlement or landslides?</i>	No Impact	s	s	s	s
<i>Would the project be located on a geologic unit or soil that is unstable (or that would become unstable as a result of the project) and which could potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?</i>	LTS (w/MM)	-a	-s	-s	-s
<i>Would development located on expansive soil, creating substantial risks to life and property</i>	No Impact	s	s	s	s
<i>Would the project result in soil erosion?</i>	LTS (w/MM)	-a	-s	-s	-s
<i>Would the project be located in an area where soils are incapable of adequately supporting the use of septic tanks or alternate waste water disposal systems where sewers are not available for the disposal of waste water?</i>	No Impact	s	s	s	s
GREENHOUSE GAS EMISSIONS					
<i>Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?</i>	LTS	-a	-s	-s	-s
<i>Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?</i>	No Impact	s	s	s	s
HAZARDS AND HAZARDOUS MATERIALS					
<i>Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?</i>	LTS	-a	-s	-s	-s

LTS = less than significant impact
 LTS (w/MM) = an impact reduced to less than significant through incorporation of mitigation measures
 SU = significant and unavoidable impact (not used)

s = same or similar impacts
 -s = marginally reduced, similar impacts
 -a = avoided impacts
 (no impacts are substantially increased or reduced but not avoided)

ENVIRONMENTAL ISSUE AREA	Project	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D
<i>Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school?</i>	No Impact	s	s	s	s
<i>Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?</i>	LTS (w/MM)	-a	-s	-s	-s
<i>Is the project located within an airport land use plan area, would it result in a safety hazard for people residing or working in the project area?</i>	No Impact	s	s	s	s
<i>Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?</i>	No Impact	s	s	s	s
<i>Would the project expose people or structures to a significant risk of loss, injury or death involving wild land fires, including where wild lands are adjacent to urbanized areas or where residences are intermixed with wild lands?</i>	LTS	-a	s	s	s
HYDROLOGY AND WATER QUALITY					
<i>Would the project violate water quality standards or waste discharge requirements?</i>	LTS (w/MM)	-a	s	s	s
<i>Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table?</i>	No Impact	s	s	s	s
<i>Would the project alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner, which would result in substantial erosion or siltation on- or off-site or flooding on- or off-site?</i>	LTS (w/MM)	-a	-s	-s	-s

LTS = less than significant impact
 LTS (w/MM) = an impact reduced to less than significant through incorporation of mitigation measures
 SU = significant and unavoidable impact (not used)

s = same or similar impacts
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ENVIRONMENTAL ISSUE AREA	Project	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D
<i>Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?</i>	No Impact	s	s	s	s
<i>Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows?</i>	No Impact	s	s	s	s
<i>Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?</i>	No Impact	s	s	s	s
<i>Would the project expose people or structures to inundation by seiche, tsunami, or mudflow?</i>	No Impact	s	s	s	s
LAND USE AND PLANNING					
<i>Would the project physically divide an established community?</i>	No Impact	s	s	s	s
<i>Would the project conflict with any applicable land use plan, policy or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect?</i>	LTS	-a	-s	s	s
<i>Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?</i>	No Impact	s	s	s	s
NOISE					
<i>Would the project result in exposure of persons to or generation of noise in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies or cause a substantial increase in ambient noise levels in the project vicinity above levels existing without the project?</i>	No Impact	s	s	s	s
<i>Would the project result in substantial temporary or periodic increase in ambient noise levels in the project vicinity?</i>	LTS	-a	-s	s	s

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ENVIRONMENTAL ISSUE AREA	Project	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D
<i>Would the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?</i>	LTS	-a	-s	-s	-s
<i>Would the project result in exposure of people residing or working at the project site to excessive noise levels from a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public use airport or a private airport?</i>	No Impact	s	s	s	s
POPULATIONS, SERVICES AND RECREATION					
<i>Would the project result in the inducement of substantial population growth in an area either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?</i>	LTS	-a	-s		
<i>Would the project result in the displacement of substantial numbers of existing housing or people, necessitating the construction of replacement housing elsewhere?</i>	No Impact	s	s	s	s
<i>Would the project result in increased use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?</i>	LTS	-a	-s	-s	-s
<i>Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities to provide public services?</i>	LTS	-a	-s	-s	-s

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ENVIRONMENTAL ISSUE AREA	Project	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D
TRANSPORTATION AND CIRCULATION					
<i>Would the project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?</i>	LTS	-a	-s	-s	-s
<i>Would the project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?</i>	LTS	-a	-s	-s	-s
<i>Would the project substantially increase hazards due to a design feature or incompatible uses?</i>	LTS (w/MM)	-a	s	s	s
<i>Result in inadequate emergency access?</i>	LTS (w/MM)	-a	s	s	s
<i>Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?</i>	LTS (w/MM)	-a	s	s	s
UTILITIES					
<i>Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?</i>	LTS	-a	-s	-s	-s
<i>Would the project require substantial expansion or alteration of the City's water or wastewater treatment and collection facilities or result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in</i>	LTS	-a	-s	-s	-s

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ENVIRONMENTAL ISSUE AREA	Project	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D
<i>addition to the provider's existing commitments?</i>					
<i>Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?</i>	LTS	-a	-s	-s	-s
<i>Would the project require or result in the construction of new storm water drainage facilities or expansion of existing facilities?</i>	No Impact	s	s	s	s
<i>Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs; Would the project comply with federal, state, and local statutes and regulations related to solid waste?</i>	LTS	-a	-s	-s	-s

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