

Draft Environmental Impact Report for The Farm at Alamo Creek Specific Plan Project

SCH NO. 2017062068



Prepared for **CITY OF VACAVILLE PLANNING DIVISION**

650 Merchant Street, Vacaville, California 95688

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FEBRUARY 2018

Prepared by
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1102 R Street
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CHAPTER 1 INTRODUCTION AND SCOPE OF THE EIR

1.0 PURPOSE AND INTENDED USE OF THIS EIR

The City of Vacaville (City) has prepared this Draft Environmental Impact Report (Draft EIR) to inform the general public, the local community, responsible agencies, trustee agencies, and other interested public agencies, and the City's decision-making bodies (City Council) regarding the potential significant environmental effects resulting from implementation of the Farm at Alamo Creek Specific Plan Project (proposed project), as well as possible measures to mitigate those significant effects and alternatives to the proposed project that were not covered in the certified 2015 Program EIR prepared for the City's General Plan Update (General Plan EIR). This Draft EIR was prepared in compliance with the California Environmental Quality Act (CEQA) (California Public Resources Code, § 21000 et seq.), the CEQA Guidelines (14 CCR 15000 et seq.), and the City's procedures for implementing CEQA. This Draft EIR is a "Project EIR," pursuant to CEQA Guidelines Section 15161. A Project EIR examines the environmental impacts of a specific project. This EIR focuses on the environmental effects peculiar to the proposed project that are not covered by the General Plan EIR as contemplated by Sections 15168 and 15183 of the CEQA Guidelines.

As described in CEQA Guidelines Section 15121(a), an EIR is an informational document that assesses potential environmental impacts of a proposed project, as well as identifies mitigation measures and alternatives to a proposed project that could reduce or avoid adverse environmental impacts. As the CEQA lead agency for this project, the City is required to consider the information in the EIR along with any other available information in deciding whether to approve the project entitlements requested. The basic requirements for an EIR include providing information that establishes the environmental setting (or project baseline), and identifying environmental impacts, mitigation measures, project alternatives, growth inducing impacts, and cumulative impacts. In a practical sense, an EIR functions as a method of fact-finding, allowing an applicant, the public, other public agencies, and agency staff an opportunity to collectively review and evaluate baseline conditions and project impacts through a process of full disclosure. Additionally, this EIR provides the primary source of environmental information for the lead agency and also those responsible agencies to consider when exercising any permitting authority or approval power directly related to implementation of this project. It is not the intent of an EIR to recommend either approval or denial of a project.

1.1 USE OF PREVIOUSLY PREPARED ENVIRONMENTAL DOCUMENTATION

On August 11, 2015, the City of Vacaville City Council certified the General Plan EIR (SCH # 2011022043) and approved the City of Vacaville General Plan. A Modified Initial Study has been prepared (Appendix B) to identify and assess the anticipated environmental impacts of the

proposed project that were not adequately covered by the General Plan EIR. The environmental analysis in the Modified Initial Study is based on Section 21094 of the California Public Resources Code and Sections 15168 and 15183 of the CEQA Guidelines, which governs program EIRs and projects consistent with a general plan or community plan. Under these sections, the program EIR, in this case the City's General Plan EIR, serves as a basis for the Modified Initial Study to determine if project-specific impacts would occur that are not adequately covered in the previously certified EIR. Here, a majority of the proposed project's land uses and development assumptions are consistent with the City's General Plan and General Plan EIR; therefore, the project is within the scope of the General Plan and the General Plan EIR. The Modified Initial Study provides an analysis of whether the General Plan EIR adequately analyses the environmental impacts of the proposed project. The Modified Initial Study indicates whether the proposed project would result in significant impacts that: (1) are peculiar to the project or the project site; (2) were not identified as a significant effect in the General Plan EIR; or (3) are previously identified significant effects which as a result of substantial new information that was not known at the time that the General Plan EIR was certified, and are determined to have a more severe adverse impact than discussed in the General Plan EIR. Such impacts are evaluated in this EIR. Pursuant to Section 21094, if approved, the proposed project would be required to be conditioned or otherwise obligated to mitigate to the extent feasible, the significant environmental effects identified in the General Plan EIR that are not further analyzed in this EIR. The Modified Initial Study identifies the policies and mitigation measures developed during the environmental review of the General Plan and discusses how the proposed project would comply with those policies and measures.

CEQA Guidelines Section 15150 allows for incorporation by reference of "all or portions of another document which is a matter of public record or is generally available to the public." Incorporation by reference is used principally as a means of reducing the size of EIRs. This Draft EIR relies in part on data, environmental evaluations, mitigation measures, and other components of EIRs and plans prepared by the City for areas within the project vicinity. These documents are listed here and used as source documents for this EIR. All documents are available for public review during normal business hours (Monday through Friday, 8:30 a.m. to 5 p.m.) at the City of Vacaville Planning Division, 650 Merchant Street, Vacaville, California 95688, and on the City's website at www.ci.vacaville.ca.us/.

- City of Vacaville General Plan and Energy and Conservation Action Strategy (ECAS), adopted August 11, 2015
- Draft and Final General Plan and ECAS EIR, City of Vacaville General Plan (SCH No. 2011022043)
- Vacaville Municipal Code, updated through February 2017.

1.2 LEAD, RESPONSIBLE, AND TRUSTEE AGENCIES

Lead Agency

In accordance with CEQA Guidelines Sections 15050 and 15367, the City of Vacaville has been designated the “lead agency,” which is defined as the “public agency which has the principal responsibility for carrying out or disapproving a project.” The lead agency is also responsible for determining the scope of the environmental analysis, preparing the EIR, and responding to comments received on the Draft EIR. Prior to making a decision to approve a project, the lead agency is required to certify that the EIR has been completed in compliance with CEQA, that the decision-making body has reviewed and considered the information in the EIR, and that the EIR reflects the independent judgment of the City.

Responsible Agencies

Responsible agencies are state and local public agencies, other than the lead agency, that have some authority to carry out or approve a project or that are required to approve a portion of the project or approve a permit for which a lead agency is preparing or has prepared an EIR or Initial Study/Negative Declaration (CEQA Guidelines §15813). The following agencies would potentially act as responsible agencies for the purposes of this project:

- **Central Valley Regional Water Quality Board (CVRWQCB).** Ensures compliance with the City’s National Pollutant Discharge Elimination System (NPDES) Permit for any stormwater discharge associated with construction activity.
- **Yolo-Solano Air Quality Management District (YSAQMD).** Oversees air quality and has the authority to require mitigation fees.
- **Solano Local Agency Formation Commission (LAFCO).** Makes the determination to either approve or deny the City’s request to annex the 210.5-acre project site into the City’s boundary.
- **Solano Irrigation District (SID).** The project would require modifications to SID facilities that are located within the project area.
- **Solano County.** The project may require encroachment permits from the County for work in Hawkins Road and a grading permit to complete off-site improvements.

Trustee Agencies

Trustee agencies are designated public agencies with legal jurisdiction over natural resources that are held in trust for the people of California and that would be affected by a project, whether or not the agencies have authority to approve or implement the project (CEQA Guidelines

§15386). The following agency was identified as a trustee agency with potential jurisdiction over the proposed project:

- California Department of Fish and Wildlife

1.3 EIR PROCESS

Notice of Preparation

In accordance with CEQA Guidelines Section 15082, a Notice of Preparation (NOP) was circulated for public and agency review from June 28, 2017 through July 27, 2017 (included as Appendix A). The purpose of the NOP is to provide notification that an EIR for the proposed project was being prepared and to solicit guidance on the scope and content of the document. A summary of the comments received on the NOP is included in the Executive Summary, as well as in the introduction of each technical section.

Pursuant to CEQA Guidelines Section 15082, the lead agency held a public scoping meeting on July 18, 2017. Responsible agencies and members of the public were invited to attend and provide input on the scope of the EIR. Comments from agencies and the public in response to the NOP are provided in Appendix A. General concerns and issues raised in response to the NOP are summarized in the Executive Summary and addressed in this Draft EIR.

Draft EIR and Public Review

This Draft EIR is being circulated for public review and comment for a period of 45 days. During this period, the general public, organizations, and public agencies can submit comments to the lead agency on the Draft EIR's accuracy and completeness. Release of this Draft EIR marks the beginning of a 45-day public review period pursuant to CEQA Guidelines Section 15105. The 45-day public review period for the Draft EIR will be from March 7, 2018 through April 20, 2018. The public can review the Draft EIR at the following address during normal business hours (Monday through Friday, 8:30 a.m. to 5 p.m.) or on the City's website at www.ci.vacaville.ca.us/.

City of Vacaville
Planning Division
650 Merchant Street
Vacaville, California 95688

The City encourages all comments on the Draft EIR be submitted in writing. All comments or questions regarding the Draft EIR should be addressed to:

Amy Feagans, Contract Planner
City of Vacaville Planning Division
650 Merchant Street
Vacaville, California 95688
707.449.5140
communitydevelopment@cityofvacaville.com

Final EIR and EIR Certification

Upon completion of the Draft EIR public review period, a Final EIR will be prepared that will include written comments on the Draft EIR received during the public review period and the City's responses to those comments. The Final EIR will also include the Mitigation Monitoring Program (MMP) prepared in accordance with Section 21081.6 of the Public Resource Code. The Final EIR will address any revisions to the Draft EIR made in response to agency or public comments. The Draft EIR and Final EIR together will comprise the EIR for the proposed project. Before the City can review the project for approval, it must first certify that the EIR has been completed in compliance with CEQA, that the City Council has reviewed and considered the information in the EIR, and that the EIR reflects the independent judgment of the City. The City Council also would be required to adopt Findings of Fact and a Statement of Overriding Considerations (if any significant and unavoidable impacts are identified). If no significant and unavoidable impacts (assuming the City Council finds all proposed mitigation measures to be feasible), are identified the City Council would not be required to adopt a Statement of Overriding Considerations if it approves the proposed project (see also Public Resources Code §21081).

EIR Adequacy

The level of detail contained throughout this EIR is consistent with Section 15151 of the CEQA Guidelines, which states the following:

An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of the environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure.

1.4 SCOPE OF THE DRAFT EIR

Based on a review of the project and comments received during the NOP public review period and preparation of a Modified Initial Study (see Appendix B), the City determined that an EIR should be prepared that addresses the following technical issue areas:

- Air Quality
- Biological Resources
- Cultural Resources
- Hydrology and Water Quality
- Land Use and Planning
- Public Utilities
- Transportation and Circulation

The specific topics evaluated are described in each of the technical sections presented in Chapter 4.

Based on the analysis found in the Modified Initial Study, the proposed project's potential environmental impact related to the following topics were determined to be adequately covered in the General Plan EIR.

- Aesthetics
- Greenhouse Gas Emissions
- Population and Housing
- Agriculture and Forestry Resources
- Hazards and Hazardous Materials
- Mineral Resources
- Public Services
- Geology and Soils
- Noise
- Recreation

A summary of the Modified Initial Study's conclusions related to these impact categories is found in Chapter 2, Section 2.3 of this EIR.

This EIR evaluates the direct impacts, reasonably foreseeable indirect impacts, and cumulative impacts resulting from planning, construction, and operation of the proposed project using the most current information available and in accordance with the provisions set forth in CEQA and the CEQA Guidelines. In addition, the EIR recommends potentially feasible mitigation measures, where possible, and project alternatives that would reduce or eliminate significant adverse environmental effects.

The alternatives chapter of the EIR (Chapter 6, Project Alternatives) was prepared in accordance with Section 15126.6 of the CEQA Guidelines. CEQA requires that the lead agency adopt mitigation measures or alternatives, where feasible, to substantially lessen or avoid significant environmental impacts that would otherwise occur. Project modification or alternatives are not required, however, where significant environmental impacts will not occur.

The EIR evaluates the following alternatives to the proposed project:

Alternative 1: No Project/No Build Alternative. This alternative assumes no development would occur, and the site would remain in its current undeveloped condition.

Alternative 2: No Project/Existing General Plan Land Use Alternative. This alternative assumes the project would be developed consistent with the current General Plan land use designation which includes a designation of Urban Reserve on approximately one third of the project site.

Alternative 3: Reduced Intensity Alternative. This alternative assumes a reduction in the total number of residential units to a total of 676 (514 residential low-density, 162 residential medium-high density), 6.5 acres in neighborhood commercial uses and 17 acres in parks.

1.5 ORGANIZATION OF THE DRAFT EIR

Chapter 1, Introduction and Scope of the Draft EIR—Provides an introduction and overview of the EIR process and describes the intended use of the EIR and the review process.

Chapter 2, Executive Summary—Summarizes the elements of the project and the environmental impacts that could result from implementation of the proposed project and provides a table that lists impacts, describes proposed mitigation measures, and indicates the level of significance of impacts before and after mitigation.

Chapter 3, Project Description—Provides a detailed description of the proposed project, including its location, background information, project objectives, and technical characteristics.

Chapter 4, Environmental Impacts and Mitigation Measures—Describes the baseline environmental setting and provides an assessment of potential project impacts for each

technical issue area presented. Each section is divided into four sub-sections: Introduction, Environmental Setting, Regulatory Background, and Impacts and Mitigation Measures (project-specific and cumulative).

Chapter 5, CEQA Considerations—Provides information required by CEQA regarding impacts that would result from the proposed project, including a summary of cumulative impacts, secondary impacts including potential impacts resulting from growth inducement, and significant irreversible changes to the environment.

Chapter 6, Project Alternatives—Describes and compares the proposed project alternatives to the proposed project.

Chapter 7, References—Provides a list of references used in preparation of the environmental analysis.

Chapter 8, EIR Preparation—Lists report authors who provided technical assistance in the preparation and review of the EIR.

Appendices—Includes various documents and data that support the analysis presented in the Draft EIR.

CHAPTER 2 EXECUTIVE SUMMARY

2.1 PROJECT UNDER REVIEW

This Draft Environmental Impact Report (Draft EIR) evaluates the environmental impacts of the proposed Farm at Alamo Creek Specific Plan Project (proposed project) in the City of Vacaville (City). The proposed project includes development of a 768-unit residential project along with 7.4 acres of Neighborhood Commercial uses, and 45 acres in parks, trails and open space on an approximately 210-acre site in the East of Leisure Town Road area within the City's Sphere of Influence. A detailed description of the project and all its components is contained in Chapter 3, Project Description.

This document has been prepared to satisfy the California Environmental Quality Act (CEQA), Public Resources Code (Section 21000 et seq.) and the State CEQA Guidelines (14 CCR 15000 et seq.). CEQA requires that all state and local government agencies consider the environmental consequences of projects over which they have discretionary authority before acting on those projects. The environmental analysis in the Modified Initial Study (Appendix B) is based on Sections 15168 and 15183 of the CEQA Guidelines, which governs program EIRs and projects consistent with a general plan or community plan. Under these sections, the program EIR, in this case the City's General Plan EIR, serves as a basis for the Modified Initial Study to determine if project-specific impacts would occur that are not adequately covered in the previously certified EIR. A majority of the proposed project's land uses and development assumptions are consistent with the City's General Plan.

This Draft EIR evaluates the environmental impacts of the proposed project that are not addressed in the General Plan EIR. The Modified Initial Study prepared for the project indicated whether the proposed project would result in significant impact that: (1) is peculiar to the project or the project site; (2) was not identified as a significant effect in the General Plan EIR; or (3) are previously identified significant effects which as a result of substantial new information that was not known at the time that the General Plan EIR was certified, and are determined to have a more severe adverse impact than discussed in the General Plan EIR (see Appendix B). Such impacts are evaluated in this EIR (CEQA Guidelines §15183).

2.2 SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION

This summary chapter provides an overview of the technical analysis of the project's environmental effects contained in Sections 4.1 through 4.7 in Chapter 4, Environmental Analysis. This summary also includes an overview of: (a) effects found to be less than significant, (b) comments received in response to the Notice of Preparation (NOP), (c) potential areas of controversy, (d) potentially significant impacts and mitigation measures to avoid or

reduce identified significant impacts, and (e) alternatives to the proposed project. Each of these issues is discussed in detail in this Draft EIR.

The California Environmental Quality Act (CEQA) Guidelines Section 15382 defines a significant effect as a substantial, or potentially substantial, adverse change in any physical conditions within the area affected by the project including land, air, water minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. Implementation of the proposed project would result in significant impacts to the environment. As lead agency, the City determined that this Draft EIR will address the following technical issue areas:

- Air Quality
- Biological Resources
- Cultural Resources
- Hydrology and Water Quality
- Land Use and Planning
- Public Utilities
- Transportation and Circulation

The specific topics evaluated are described in each of the technical sections presented in Chapter 4. A brief summary of the findings in each of the technical sections in Chapter 4 is included below followed by a discussion of those issue areas determined to be less than significant further addressed in the Modified Initial Study (see Appendix B) and therefore not further evaluated in this Draft EIR, as detailed in Section 2.3.

Air Quality

This section describes the project's impacts on local and regional air quality and contribution to regional air quality conditions. The analysis evaluates construction and operational air emissions associated with the proposed project. Construction-related activities are considered short-term and include site clearing, grading, and the use of construction equipment that would generate air pollutants. Operational impacts associated with an increase in vehicle trips and use of consumer equipment was also evaluated. The analysis was prepared in compliance with the Yolo-Solano Air Quality Management District (YSAQMD) guidelines.

An increase in construction-related air emissions and dust would not exceed the YSAQMD thresholds. However, localized fugitive dust from construction could still create nuisance issues. Therefore, a potentially significant impact would occur. Implementation of mitigation measures identified in Section 4.1, Air Quality and in Table 2-1, Summary of Impacts and Mitigation Measures would reduce impacts to less than significant. Emissions associated with project operation would result in a significant impact associated with the increase in reactive organic gases (ROG) and nitrogen dioxide (NO_x). Implementation of mitigation measures would not reduce the impact to less than significant; therefore, the impact would be significant and

unavoidable. The proposed project would also result in a significant and unavoidable cumulative impact associated with operational emissions. The proposed project would result in less-than-significant impacts related to CO emissions and exposure of sensitive receptors to substantial pollutant concentrations.

Biological Resources

This section evaluates the potential effects on biological resources associated with construction and operation of the proposed project. The biological resources present within the project site are described and special-status plant and wildlife species that could occur within the project site are identified. Potential impacts to biological resources associated with proposed off-site improvements are also evaluated. Biological surveys were prepared for the project site to determine the presence or absence of species and are reported and discussed in this section (see Appendix D).

With implementation of the mitigation measures identified in Section 4.2, Biological Resources, and in Table 2-1, Summary of Impacts and Mitigation Measures, the project would have a less-than-significant impact on special-status species, including valley elderberry longhorn beetle, western pond turtle, burrowing owl, Swainson's hawk, bats, and nesting birds and foraging raptors. Mitigation measures would also reduce impacts to sensitive natural communities, wetlands, and conflicts with biological resources policies to less than significant.

Cultural Resources

The cultural resources section describes the existing historic and archaeological resources within the project site and evaluates the potential for unknown resources to exist, including any tribal cultural resources. A Cultural Resource Assessment for the project site was prepared (see Appendix E). There are a few structures located within and adjacent to the project site that were evaluated to determine if they would be considered eligible as historic resources. Based on the evaluation the structures do not meet the guidelines for eligibility. Therefore, there are no potential impacts to historic resources.

The proposed project would result in potentially significant impacts associated with the potential to unearth unknown archaeological resources or human remains during site construction. Cumulative loss of cultural, historic, archeological and paleontological resources within the County would be a potentially significant impact. Implementation of mitigation measures identified in Section 4.3, Cultural Resources, and in Table 2-1, Summary of Impacts and Mitigation Measures, would reduce project impacts on cultural resources to less than significant.

Hydrology and Water Quality

This section describes the existing hydrology, drainage and water quality of the project site and identifies infrastructure improvements associated with the proposed project. The increase in impervious surface area and the potential for an increase in localized flooding is evaluated along with hazards associated with a levee or dam failure.

Based on the Drainage Plan prepared for the project site (see Appendix F) and assuming compliance with existing federal, state, and local regulations and mitigation measures identified in Section 4.4, Hydrology and Water Quality, and in Table 2-1, Summary of Impacts and Mitigation Measures, impacts associated with the potential to adversely degrade water quality associated with project construction, water quality degradation associated with urban runoff, and increased peak stormwater flows would be less than significant.

Land Use and Planning

This section of the Draft EIR describes existing and planned land uses in and adjacent to the project site, current land uses, General Plan land use designations and zoning, and analyzes the consistency of the proposed project with existing land use plans and policies as well as land use compatibility with adjacent lands. CEQA Guidelines Section 15125(d) provides that the environmental setting of an EIR must discuss “any inconsistencies between the proposed project and applicable general plans and regional plans.” Potential inconsistencies between the proposed project and the City of Vacaville General Plan, the City of Vacaville General Plan 2015–2023 Housing Element (adopted May 12, 2015), the City of Vacaville Zoning Ordinance, and the Travis Air Force Base Land Use Compatibility Plan.

The analysis concludes that the proposed project would be consistent with the intent of the City’s General Plan and Zoning Ordinance and would be compatible with the existing adjacent uses. Population generated by the project is anticipated in the City’s Housing Element and would not result in any plan inconsistencies.

Public Utilities

This section describes the utility systems and facilities within the project area and potential impacts resulting from implementation of the proposed project. Utilities and service systems considered in the analysis include wastewater treatment and collection, solid waste collection and disposal, and energy. This section describes the existing energy resources derived from petroleum products, electricity, and natural gas available within the project area and analyzes impacts related to energy resources resulting from implementation of the proposed project.

Implementation of the proposed project would contribute to an increased demand for public services and utilities in the City of Vacaville. However, the increase in demand would not exceed capacity or exceed City projections; therefore, impacts are less than significant.

Transportation and Circulation

This section describes potential impacts to the transportation system near the proposed project site. The impact analysis examines the roadway, transit, bicycle, pedestrian, and construction components of the overall transportation system under existing conditions, existing plus project, existing plus approved projects, existing plus approved projects plus project, cumulative no project, and cumulative plus project conditions.

The proposed project would increase traffic on local roadways and intersections during project construction and operation. During project operation, under existing plus project conditions, the level of service (LOS) on area roadways and roadway segments, and intersections would be affected, but implementation of mitigation would reduce all of the impacts to less than significant with the exception of one roadway segment that is not part of the Jepson Parkway Road Widening project. Under Existing plus Project conditions impacts at the Nut Tree Road and Ulatis Drive intersection and the Depot Street and Mason Street intersection would be significant and unavoidable. Impacts to freeway segments, transit, bicycle and pedestrian facilities under existing plus project conditions would also be impacted, but mitigation would reduce to less than significant. Mitigation is also required to ensure there is no delay to emergency vehicles due to traffic calming devices. Under Existing plus Approved Project conditions the project would result in impacts to four intersections. Implementation of required mitigation would reduce all impacts to less than significant with the exception of two intersections, Nut Tree Road and Ulatis Drive and Peabody Road and Elmira Road, which are not part of the Jepson Parkway Road Widening project and would remain significant and unavoidable. Under Cumulative plus Project conditions the project would result in impacts to six intersections. All impacts would be mitigated to less than significant with the exception of three intersections that would remain significant and unavoidable.

2.3 EFFECTS FOUND TO BE ADEQUATELY ADDRESSED IN THE GENERAL PLAN EIR

As described in further detail in Chapter 1, Section 1.1 of this EIR, the Modified Initial Study (Appendix B) provides an analysis of whether the General Plan EIR adequately analyzes the environmental impacts of the proposed project. The Modified Initial Study indicates whether the proposed project would result in significant impacts that: (1) are peculiar to the project or the project site; (2) were not identified as a significant effect in the General Plan EIR; or (3) are previously identified significant effects which as a result of substantial new information that was

not known at the time that the General Plan EIR was certified, and are determined to have a more severe adverse impact than discussed in the General Plan EIR. The Modified Initial Study concludes that the following impact topics were adequately addressed in the General Plan EIR and that, due to certain aspects of the project, project characteristics, or existing regulatory requirements, the project is not anticipated to have significant impacts on the following resources: aesthetics, agricultural and forestry resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, mineral resources, noise, population and housing, public services, and recreation. Under CEQA Sections 15168 and 15183, the City's General Plan EIR, serves as a basis for the Modified Initial Study to determine if project-specific impacts would occur that are not adequately covered in the previously certified General Plan EIR. The majority of the proposed project's land uses and development assumptions are consistent with the City's General Plan and are adequately evaluated in that program EIR. The following analysis provides an overview that explains why the project would not adversely affect these resources and therefore these resources are not further analyzed in this Draft EIR. The Modified Initial Study prepared for the project includes more information that addresses these issue areas and is included in Appendix B.

Aesthetics

The project site is bounded by Leisure Town Road to the west, Hawkins Road to the north, Elmira Road to the south, and undeveloped agricultural lands to the east. The City does not have any designated State Scenic Highways (City of Vacaville 2015). The City recognizes uninterrupted views of vistas within the rural residential and agricultural area near the project site which are provided along Hawkins Road and Elmira Road in the City's East of Leisure Town Road Growth Area (City of Vacaville 2014). The City's 2035 General Plan includes policies that encourage preservation of scenic features and the character of the City. These policies include Policy LU-P1.2, which requires the protection of the City's natural environment by integrating hills, creeks, and other natural features into major development plans. Policies COS-P8.1 and P8.2 require preservation of scenic features including view corridors to the hills, and retaining major ridgelines and hillsides as open space.

Since there are no designated State Scenic highways within the City, the General Plan EIR concluded that future buildout would have no impact on scenic resources within a State Scenic Highway. Future development in the East of Leisure Town Growth area, which includes the project site, currently contains large open spaces and provides expansive views of the hillsides to the north and west. Much of the undeveloped land in the east of Leisure Town area is designated for development under the City's General Plan. Compliance with General Plan policies requires that development preserve natural areas and view corridors and integrate open spaces and buffer areas into proposed developments.

The City's Land Use Development Code includes guidelines for limiting the amount of light and glare from a project site. The General Plan EIR concluded that with implementation of General Plan policies and compliance with other applicable codes, impacts from development on scenic vistas and increasing nighttime light and glare would be less than significant. Due to the substantial amount of undeveloped lands in the planning area buildout of the General Plan would substantially change the character and appearance of these undeveloped areas. The General Plan EIR concluded the change could not be mitigated except by foregoing development and identified this as a significant and unavoidable impact. Development of a majority of the project site is anticipated under the General Plan. The portion of the site designated Urban Reserve is anticipated for future development, but does not include any land use designations. Because it is anticipated to be developed and it within the boundaries of what the General Plan EIR evaluated it can be concluded that impacts to aesthetics have been adequately addressed in the General Plan EIR and the project would not have any new impacts that are peculiar to the project or the project site.

Agricultural and Forestry Resources

The project site is designated as Prime Farmland on the Department of Conservation Important Farmland Maps (DOC 2014). The project site is not under an active Williamson Act contract or a Farmland Security Zone contract (City of Vacaville 2013, Figure 4.2-2). The City's General Plan includes policies that encourage the preservation of existing local agricultural lands and operations in areas outside of the City and development that reduces conflict between existing agricultural areas and areas of new development. These policies include Policy LU-P5.2, which requires preservation of at least one acre of land outside the Urban Growth Boundary for every acre of agricultural land developed, and Policy COS-P4.1, which requires new developments to maintain a 300- to 500-foot-wide buffer along the eastern boundary of all residential developments and existing agricultural lands.

The City's General Plan EIR identified approximately 199 acres of Prime Farmland and 1,079 acres of non-prime farmland under active Williamson Act contracts within the City. Although the City still contains agricultural land or land designated as Prime Farmland, Farmland of Statewide Importance and Unique Farmland, much of this land within the City has been designated and zoned for development, and in many instances, has been entitled for future development. It is the City's policy to limit the conversion of agricultural lands outside of the City limits. By keeping development within established growth areas, the City seeks to limit urban sprawl into other agricultural regions, thereby helping to minimize or reduce impacts on agricultural resources and operations in more agriculturally productive areas. Infrastructure already exists or is planned for undeveloped areas within the City, signaling the City's intention for urban growth to occur. The General Plan EIR concluded that impacts to agricultural resources, specifically conversion of farmland and land under Williamson Act contracts, that could occur with implementation of the General Plan would be significant and unavoidable. Development of the entire project site and the loss of agricultural land

was evaluated in the General Plan EIR; therefore, the impact has been adequately addressed in the General Plan EIR and the project would not have any additional impacts. The project is required to mitigate for the conversion of prime agricultural land consistent with General Plan Policy LU-P5.2.

Within the project site there are numerous mature trees that line both sides of Old Alamo Creek. The project is proposing to retain the trees and only remove trees that are dead or in poor health and to clear out some of the weedy understory. There are no trees within the project boundaries that would be considered timberland or forest land. Forestry resources or forest land is typically defined as land covered with forests or reserved for the growth of forests. The Solano County Zoning Code does not contain a zoning district for forest or timberland and the project site is not located in an area mapped by the California Department of Forestry and Fire Protection as forest or timberland (City of Vacaville 2013, Figure 4.2-4). Construction of the project would not result in the loss of protected forestry resources, and no impact would occur.

Geology and Soils

The project site is located in the City of Vacaville, which is considered a seismically active region and earthquakes have the potential to cause ground shaking or liquefaction. One fault system, the Vaca-Kirby Fault System, passes through the City, although the Vaca fault has not experienced displacement for the past 11,700 years and the Kirby Hills fault has no evidence of displacement in the last 700,000 years (KC Engineering Company 2016a). There are no regulated Earthquake Fault Zones or mapped seismic hazard zones in the City. All development in California is subject to the requirements of the California Building Code (CBC). The CBC contains more stringent building standards than the Uniform Building Code, specific to conditions in California.

The project site is generally flat and does not contain any slopes steep enough to present a landslide hazard during construction or operation of the project. The project does not require the import or export of soils. All grading would be balanced on the site.

Grading activities associated with project construction would result in the disruption, displacement, compaction, and over covering of soils associated with site preparation (grading and trenching for utilities). There are no notable topographic features on the site with the exception of a portion of Old Alamo Creek that traverses the southern portion of the site. Any grading activities would be limited to the project site with the exception of limited grading proposed on land adjacent to the eastern boundary on land within the County. All grading and improvement plans on-site would be required to comply with the Vacaville Land Use and Development Code Chapters 14.20 (California Building Code), 14.19, (Grading and Erosion Sediment Control), and 14.26 (Urban Storm Water Quality Management and Discharge Control Ordinance) for consistency with the City's development standards. Grading activities would

require a grading permit from the City (or the County), which requires including the provision of proper drainage and appropriate dust control and erosion control measures. Grading and erosion control measures would be incorporated into the required grading plans. Project construction is also subject to the requirements of the National Pollutant Discharge Elimination System (NPDES) permit requirements. Compliance with the requirements of the City Code and the federal NPDES, and the limited exposure of soils would ensure the potential for substantial soil erosion or loss of topsoil is less than significant.

Additionally, the City's General Plan finds such impacts to be less than significant since new buildings and structures are required to comply with all applicable state and local building codes. Development of the project site is anticipated under the General Plan; the impact has been adequately addressed in the General Plan EIR and the project would not have any additional impacts.

Greenhouse Gas Emissions

The 2006 California Assembly Bill (AB) 32 requires that California reduce its greenhouse gas (GHG) emissions to 1990 levels by 2020. The AB 32 Scoping Plan, approved December 12, 2008, includes a range of GHG reduction actions including a cap and trade program that covers 85% of the State's emissions. The Association of Bay Area Governments and the Metropolitan Transportation Commission are preparing a sustainable communities strategy for the Bay Area, Plan Bay Area, which includes the City of Vacaville. A 2008 GHG emissions inventory for the City was prepared to use as a baseline against which to measure future GHG emissions reductions. The City's Energy Conservation Action Strategy (ECAS) includes the 2008 GHG emissions inventory, a 2020 Business as Usual (BAU) forecast model, targets for GHG emissions reduction and measures to meet those reduction targets.

The General Plan EIR concluded that the ECAS was a qualified GHG emissions reduction strategy because it contained the elements required by the BAAQMD. The General Plan includes policies to ensure that future development is consistent with the policies outlined in the ECAS aimed at reducing GHG emissions in the City. Since the City is required to conduct a GHG emissions inventory every five years, future development would be subject to relevant environmental design standards necessary to attain ECAS goals. The General Plan EIR concluded that future development, including the proposed project, would not conflict with the ECAS and would have a less-than-significant impact on the generation of GHG emissions.

Executive Order S-03-05 establishes a target for statewide GHG emissions reduction by 80% below 1990 levels by 2050. However, the timeframe for the General Plan and the ECAS do not go up to the year 2050. The General Plan EIR concluded that buildout of the General Plan, including application of measures in the ECAS, would conflict with the State's reduction goal and the impact would be significant. It is assumed that a majority of the reductions needed to

reach the 2050 goals would come from State measures. All feasible GHG emission reduction measures considered during the ECAS process have already been included in the ECAS. Since no additional mitigation is available, the General Plan EIR determined this impact to be significant and unavoidable. GHG emissions are cumulative in nature and the project's contribution to GHG emissions was assumed by the land uses for the project site included in the City's General Plan GHG forecast. The General Plan did not assign land uses to the approximately 60-acre portion of the site designated Urban Reserve, but the contribution to GHGs from developing this portion of the site would be very small and would not significantly change what was evaluated in the General Plan EIR. The GHG assessment for the project is provided in the Modified Initial Study (Appendix B). The project is generally consistent with the City's designated land uses and would not result in a new significant impact not already identified in the General Plan EIR.

Hazards and Hazardous Materials

According to a Phase I Environmental Site Assessment (ESA) completed for the project there are no recognized environmental conditions present on the site and no hazardous substances, pollutants, contaminants, petroleum or petroleum products identified on the project site (Appendix G - KC Engineering Company 2016b). The proposed project would be expected to generate limited amounts of household hazardous waste and would not generate hazardous waste equal to the quantities regulated by the Solano County Hazardous Waste Management Plan. The project site is not included in the Cortese List for hazardous waste and substances (DTSC 2007). The project site is not mapped in an area of moderate or high wildland fire risk; however, open space agricultural lands in eastern Vacaville pose a threat related to grass fires. The City has adopted the Association of Bay Area Governments (ABAG's) regional hazard mitigation plan, *Taming Natural Disasters: Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area*, as the local hazard mitigation plan for natural disasters and emergency response (City of Vacaville 2015, p. SAF-24-25).

The General Plan EIR did not identify any significant impacts from future development associated with the release of hazardous materials through routine transport, use, disposal or reasonably foreseeable upset and accident conditions. Additionally, the General Plan EIR did not identify any significant impacts from future development on known hazardous materials sites. The General Plan EIR concluded for these impacts that implementation of General Plan policies and compliance with applicable federal and state laws would ensure that impacts would be less than significant. The project would be required to comply with all applicable federal and state regulations and General Plan policies and the impact would not change from what was evaluated in the General Plan EIR.

The project site is located within Compatibility Zone D for Travis Air Force Base. Compatibility Zone D does not limit residential development or other uses, but would require airspace review

for objects greater than 200 feet tall and to address wildlife attractant hazards created by the project (Solano County 2015). Since there would be no buildings or structures that would exceed 200 feet no airspace review is required and this impact would be less than significant.

The General Plan EIR concluded that General Plan policies requiring City of Vacaville Fire Department (VFD) review of all development applications would reduce risks related to inadequate emergency access or impairment of the local hazard mitigation plan. The project would be required to get review and approval from the VFD and this impact would not change from what was evaluated in the General Plan EIR. The General Plan EIR also concluded that General Plan policies and compliance with the Land Use and Development Code would be sufficient to reduce risks related to wildfires to a less-than-significant level. The project would include an 85-foot-wide defensible fire protection zone along the eastern boundary of the site to reduce the risk from potential wildland fires (each phase of project construction, 85-foot wide fire breaks would be provided along the boundary of developed and undeveloped lands), an Emergency Access and Evacuation Plan would be prepared for each phase of development, and roads would be sized adequately to accommodate fire trucks in accordance with General Plan policies and the Land Use and Development Code. Therefore, this impact would not change from what was evaluated in the General Plan EIR.

Mineral Resources

The project site is not located near Cement Hill or the western hills, which are the only places within the City where mineral resources are known to exist. California Geologic Survey has not mapped the City as an area containing aggregate mines (CGS 2012, Map Sheet 52). Additionally, there are no mapped Mineral Resource Zone (MRZ)-2 zones in the City, which are the zones where adequate information indicates the presence or high likelihood of the presence of significant mineral resource deposits.

The General Plan EIR concluded that due to the lack of designated MRZ-2 zones within the City and any delineated locally important resource recovery sites there would be a less-than-significant impact to mineral resources. The project site is not located in an area known to contain mineral resources or have active or historic mineral resource recovery sites. In addition, development of the project site is anticipated under the General Plan and was evaluated in the General Plan EIR; therefore, the impact has been adequately addressed in the General Plan EIR and the project would not have any additional impacts.

Noise

The project site is surrounded by undeveloped agricultural land to the north and east, residential development and Leisure Town Road to the west, Elmira Road and the Brighton Landing Specific Plan under construction to the south. The closest sensitive receptors would be

residences located across Leisure Town Road to the west. Documented sources of audible noise include vehicle traffic, aircraft overflights, heavy equipment associated with construction activity, loading and unloading operations, commercial activities, dogs barking, birds chirping, wind blowing and people conversing. Noise monitoring conducted by LSA in 2010 for the General Plan EIR indicates that existing daytime noise levels throughout the City range from 54 to 70 dBA L_{eq} , which is typical of urban or suburban settings (City of Vacaville 2013, p. 4.11-18). According to measurements conducted in 2009 adjacent to Leisure Town Road between Elmira and Marshall Roads, the ambient noise level near the project site is 74.8 L_{dn} (City of Vacaville 2013, Table 4.11-7). The project site is not located within a noise contour for Travis Air Force Base or the Nut Tree Airport. The General Plan includes policies for noise and vibration reduction including Policy NOI-P2.5 which encourages the use of open space, parking, accessory buildings, and landscaping to buffer new and existing development, and Policy NOI-P2.7 which requires setbacks at least 100 feet from the centerline of railroad tracks. Policy NOI-P4.2 lists construction noise control measures including use of mufflers, location of stationary noise-generation equipment and limited hours of operation.

The General Plan EIR concluded that future development would have a less-than-significant impact related to exposure of sensitive receptors to noise impacts from stationary sources, rail sources, transportation sources and ground-borne vibration with implementation of General Plan policies. The General Plan EIR also concluded that with implementation of General Plan policies and compliance with the City's Noise Ordinance (Section 8.10.030 of the City's Municipal Code) impacts related to short-term construction noise would be less than significant. The project would be required to comply with all provisions of the Noise Ordinance and with General Plan policies; therefore, this impact would not change from what was identified in the General Plan EIR.

The project is consistent with the land uses assumed in the General Plan EIR and would implement and comply with all General Plan policies to reduce traffic related noise impacts. Therefore, the project would not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project, and the impact would not change from what was identified in the General Plan EIR.

No portion of the City falls within the 60 dBA community noise equivalent level (CNEL) noise contour for Travis Air Force Base. Some portions of the City fall within the 60 dBA CNEL noise contour for the Nut Tree Airport; however, all proposed land use designations within these areas are compatible with the 60 dBA contour. The General Plan EIR concluded that compliance with land use designations and General Plan policies would ensure any potential aircraft noise impacts on sensitive receptors associated with future development would be less than significant. Since the project site is not within a noise contour for the Nut Tree Airport or Travis Air Force Base and is not within the vicinity of a private airstrip this impact would not change from what was identified in the General Plan EIR.

Population and Housing

The City's most recent Housing Element was adopted on May 12, 2015, and includes a housing needs assessment that identifies current and projected housing needs, as well as policies to accommodate affordable housing development for a range of income and household types. Future buildout of the City's General Plan includes 9,680 new dwelling units, 26,500 new residents, 9,720 new jobs, 1 million square feet of new commercial space, 1.1 million square feet of new office space, and 2.1 million square feet of new industrial space (City of Vacaville 2013, Table 4.12-3). ABAG projections for development by 2035 in the City includes 4,550 new households, 11,400 new residents and 13,730 new jobs between 2010 and 2035 (City of Vacaville 2013, p. 4.12-6). However, because ABAG projections did not accurately reflect past development trends, the City did not use the ABAG projections and instead based projections off of actual development trends within the City. In the East of Leisure Town Growth Area the General Plan assumes development of up to 2,175 new residential units; however, the General Plan EIR assumed development of up to 2,340 residential units, which includes the entirety of the project site.

General Plan policies require that development in new urban areas should be planned and new growth should only occur in areas served by existing utilities and public services. The City's urban growth boundary (UGB) would continue to protect agricultural lands from conversion to non-agricultural uses. General Plan and ECAS policies require orderly, planned growth within the UGB in areas already served, or planned to be served, by urban services. However, since buildout of the General Plan would significantly exceed development projected by the ABAG's existing and future 2035 projections, this would be a significant impact. The General Plan EIR determined that in order to meet ABAG projections for population growth, housing opportunities would have to be reduced to less than half of what is currently projected in the General Plan. The City has already approved projects accounting for 4,900 new units, which would exceed the ABAG's projections. The General Plan EIR concluded that this impact would be significant and unavoidable because it is not feasible to rescind existing development entitlements or to reduce development to meet ABAG projections. The project site is assumed for neighborhood commercial and residential development under the City's General Plan and development of the entire site was assumed in the General Plan EIR (but only the western portion of the site was designated with General Plan land uses); therefore, the projected population increase and the secondary effects of the increase in population was evaluated as part of the General Plan EIR. The project would not contribute to an additional significant impact beyond what was identified in the General Plan EIR.

Most of the future development within the City would be developed on agricultural, vacant or underutilized parcels. The General Plan EIR concluded that impacts related to displacing people or housing as a result of future development would be less than significant. The project site is

currently vacant and does not contain housing or people. Therefore, implementation of the proposed project would not change from what was identified in the General Plan EIR.

Public Services

Fire and emergency medical services are currently provided by Solano County, but would be provided to the project site by the Vacaville Fire Department (VFD) and law enforcement services would be provided by Vacaville Police Department (VPD) upon annexation of the site into the City limits. The closest VFD station is Station 72 located on Ulatis Drive approximately 1 mile west of the project site. VFD's adopted standard response time and success rate is 7 minutes for 90% of calls, which refers to the time period between VFD notification and arrival on the scene of the incident within the City limits (City of Vacaville 2013, p. 4.13-12). The single main VPD police station is located at 660 Merchant Street, adjacent to Vacaville City Hall, and is approximately 3.40 miles west of the project site. VPD standards for average response time are 6 minutes and 1 second for Priority I calls and 16 minutes and 28 seconds for Priority II calls. The VPD has an average response time of 6 minutes for Priority I calls and 15 minutes for Priority II calls (City of Vacaville 2013, p. 4.13-3).

New development would be required to create or annex into a Community Facilities District (CFD) and pay a fair and equitable impact fee to offset for the cost of fire and emergency medical services and law enforcement services under General Plan policies PUB-P1.2 and PUB-P2.3. The City's development and review process would ensure that adequate fire and law enforcement services are available to serve new development. The General Plan EIR concluded that impacts to the provision of fire and emergency services as well as law enforcement services would be less than significant. The project would comply with all General Plan policies and the impact would not change from what was identified in the General Plan EIR.

The project site is located with the Vacaville Unified School District (VUSD) and students would attend Callison Elementary School, located approximately 0.80 mile to the southwest, Vaca Pena Middle School located approximately 1.0 miles southwest, and Will C. Wood High School located approximately 2.50 miles west.

Buildout of the General Plan could generate over 3,000 new students which would exceed the capacity of the VUSD. VUSD has plans for future school sites and the General Plan identifies three new schools in the area east of Leisure Town Road, including a middle school site in the Roberts' Ranch Specific Plan area and an Elementary School in the Brighton Landing Specific Plan. Both located to the south of the project site. Development of these school sites would increase capacity by approximately 1,300 students, which would accommodate new students generated by future development under the General Plan. The General Plan EIR concluded that impacts to the VUSD would be less than significant since payment of development (or school) fees is deemed to fully mitigate the impacts of new development on school facilities under

Section 65996 of the California Government Code. The project would pay the required development/school fees and this impact would not change from what was identified in the General Plan EIR.

The City is currently served by two libraries, the Town Square Branch Library, located at 1 Town Square Place and the Cultural Center Branch Library, located at 1020 Ulatis Drive (City of Vacaville 2013, p. 4.13-33). Buildout of the General Plan would increase the population and could increase demand for other public services such as libraries. It is anticipated that school library facilities would decrease the potential impact of new development on City and County library facilities. The General Plan EIR concluded that impacts to library facilities would be less than significant with compliance with General Plan policies. Since the project would comply with General Plan policies the impact would not change from what was identified in the General Plan EIR.

Recreation

The City's General Plan classifies park and recreational facilities into six categories: Neighborhood parks, community parks, regional parks, accessible open space, special purpose facilities, and bikeways, multi-use trails and nature trails (City of Vacaville 2015, p. PR-1-3). Development of parks, recreation and open space facilities in the City is guided by the City's *Comprehensive Parks, Recreation, and Open Space Master Plan* adopted in 1992. The City's standards for the provision of parks and open space is 1.8 acres per 1,000 people for neighborhood parks, 1.7 acres per 1,000 people for community parks, and 1.0 acre per 1,000 people for regional parks (City of Vacaville 2015, p. PR-13). The City is currently deficient in meeting the provision standards for neighborhood and community parkland, but exceeds the standard for regional and total parkland. The City is also currently deficient in meeting the service standard for eight of the eleven types of recreational facilities (City of Vacaville 2013, p. 4.13-53).

The nearest existing neighborhood parks to the project site are Patwin Park located approximately .20 of a mile southwest, Stonegate Park located approximately 0.35 of a mile to the northwest, and the nearest existing community park is Andrew Park, located approximately 2.8 miles west. The only regional park in the project area is Pena Adobe/Lagoon Valley Regional Park, located approximately 4.6 miles generally southwest of the project site. A new neighborhood park, East of Leisure Town Road Park, is planned just south of the project site (City of Vacaville 2015, Figure PR-4).

The General Plan is projected to increase Vacaville's total population to 112,000 residents by 2035, which would exacerbate the deficiencies in neighborhood and community parks and recreational facilities. It is estimated that in order to meet these standards by 2035, an additional 91 acres of neighborhood parkland and 50 acres of community parkland would be needed (City of Vacaville 2013, p. 4.13-49). Parkland and recreational facility goals are met through General

Plan policies requiring the construction of new park facilities or payment of an in-lieu park fee for land acquisition and development impact fees. The proposed project would include a total of five parks for approximately 26.6 acres throughout the project site. The General Plan EIR concluded that with implementation of General Plan policies, impacts to parks and recreational facilities would be less than significant. In addition to providing parks, trails and open space, the project would comply with General Plan policies and pay any required park fees related to the adequate provision and/or maintenance of parkland and recreational facilities. Therefore, the project's impacts on recreation facilities and parks would not result in a significant impact not already identified in the General Plan EIR.

2.4 COMMENTS RECEIVED IN RESPONSE TO THE NOTICE OF PREPARATION

The NOP for this Draft EIR was released on June 28, 2017, and the public comment period closed on July 27, 2017. The City received a total of six letters; two comment letters were received from the public. Comment letters received from four public agencies include from the Yolo-Solano Air Quality Management District (YSAQMD), Solano Local Agency Formation Commission (LAFCO), Central Valley Regional Water Quality Control Board, and the Solano County Department of Resource Management. A brief overview of the primary concerns raised in the NOP comment letters is included below. One of the comment letters from the public requested the project provide smaller homes that are single-story and wheelchair accessible. These comments are not relevant to the EIR, but have been provided to the applicant and decision-makers for their review. The purpose of the NOP process is to solicit input from public agencies and the public on the scope of the EIR analysis. Opinions on the merits of the project are noted, but are not considered relevant for the purposes of defining the scope of the analysis. The Introduction of each technical section in Chapter 4 provides a brief summary of comments relevant to that particular issue area. All of the NOP comment letters received are included in Appendix A.

Agricultural Resources

Comments from Solano LAFCO regarding the conversion of prime agricultural lands require the EIR include mitigation measures for the conversion of lands that meet the definition of prime agricultural land, as defined in Government Code section 56064.

A comment was received by an individual that lives near the site requesting more information on the agricultural boundary and where an aerial showing the boundaries of the project site is available.

Air Quality

Comments received from the YSAQMD requested potential air quality impacts associated with project construction and operation should use the thresholds provided in the District's *CEQA Handbook for Assessing and Mitigating Air Quality Impacts*. Other comments received included a recommendation that the CalEEMod model be used to calculate construction and operation emissions and the construction equipment assumed in the model should reflect real-world conditions and any changes to the model defaults should be clearly identified. If the model makes any changes to the number of vehicle trips an explanation needs to be included in the EIR explaining why different vehicle trips were assumed. All emissions that exceed the thresholds should be mitigated to the extent feasible. For mitigating fugitive dust the District recommends implementing the best management practices included in the CEQA Handbook. The District also requests the EIR include a discussion of toxic air contaminants (TACs) and odors and if the project could locate new uses in proximity to sources of TACs and existing sources of odors. The District encourages including infrastructure to support electric vehicles near the neighborhood commercial uses and to maximize opportunities to support bicycle and pedestrian modes of transportation throughout the project site. The District also requests that the EIR needs to include a map that shows the proposed transportation infrastructure including cross section of roadway widths, bike lanes and sidewalks.

Hydrology, Water Quality, and Drainage

Comments received from the Regional Water Quality Control Board included information on the regulations protecting water quality and permit requirements that could be necessary for the proposed project. The comments state that the project's potential impacts to both surface and groundwater quality should be analyzed in the Draft EIR.

Land Use and Planning/Public Utilities

Comments received from the Solano Local Agency Formation Commission (LAFCO) note that LAFCO must be identified as one of the responsible agencies under CEQA. The EIR needs to address any potential impacts to those special districts that would be affected by the project including the Solano Irrigation District, County Lighting Service Area, Vacaville Fire Protection District, Vacaville Elmira Cemetery District and the Solano Resource Conservation District.

Transportation and Circulation/Drainage

Comments received from the Solano County Department of Public Works requested that the EIR address traffic and drainage impacts on the surrounding road system maintained by the County and also notes that the portion of Hawkins Road adjacent to the northern boundary of the project site would need to be annexed to the City.

2.5 POTENTIAL ISSUES OF CONCERN

The primary issues of concern raised were the potential increase in air pollutants associated with construction and operation of the project; conversion of prime agricultural land; and traffic and drainage concerns on roads maintained by the County.

Concerns raised by the YSAQMD regarding potential impacts to future residents related to TACs and existing odors are considered effects beyond the scope of analysis in this EIR because they are concerned with the existing environment's impact on the project and do not fall into one of the exceptions to CEQA's general rule, articulated in *CBIA v. BAAQMD* (2015 62 Cal.4th 369 and *CBIA v. BAAQMD* (2016) 2 Cal.App.5th 485), that an EIR must only evaluate the projects' impact on the environment. However, this EIR discloses these effects for information purposes and these topics may be addressed by the decision-makers as part of the land use planning review for this project.

2.6 SUMMARY OF PROJECT ALTERNATIVES

CEQA requires that the lead agency adopt mitigation measures or alternatives, where feasible, to substantially lessen or avoid significant environmental impacts that would otherwise occur. Project modification or alternatives are not required, however, where significant environmental impacts will not occur.

As is evident from the text of the EIR, all significant effects of the project would be mitigated to less-than-significant levels by the adoption of feasible mitigation measures with the exception of the contribution of air emissions of ROG and NO_x on both a project level and cumulative level which would result in a significant and unavoidable impact. In addition, the project would contribute to significant and unavoidable traffic impacts at the following intersections:

Existing plus Project

- Nut Tree Road at Ulatis Drive
- Depot Street at Mason Street

Existing plus Approved plus Project conditions

- Peabody Road at Elmira Road
- Nut Tree Road at Ulatis Drive

Cumulative plus Project conditions

- Leisure Town Road at I-80 EB Ramps
- Nut Tree Road at Ulatis Drive

- Allison Drive at Nut Tree Parkway

The EIR evaluates the following alternatives to the proposed project:

Alternative 1: No Project/No Development Alternative. This alternative assumes no development would occur, and the site would remain in its current undeveloped condition.

Alternative 2: No Project/Existing General Plan Land Use Alternative. This alternative assumes the project would be developed consistent with the current General Plan land use designation which includes a designation of Urban Reserve on approximately one third of the project site.

Alternative 3: Reduced Intensity Alternative. This alternative assumes a reduction in the overall number of residential units from 768 to 676 and a reduction on neighborhood commercial to 6.5 acres and 17 acres in parks.

2.7 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Information in Table 2-1, Summary of Impacts and Mitigation Measures, has been organized to correspond with environmental issues discussed in Chapter 4. The summary table is arranged in four columns and organized as follows:

1. Environmental impacts;
2. Level of significance prior to mitigation;
3. Applicable mitigation; and
4. The level of significance after implementation of mitigation.

This Draft EIR assumes that all applicable plans, policies, and regulations would be implemented, including state laws and regulations, the City of Vacaville General Plan policies, and requirements or recommendations of the City of Vacaville and applicable building codes. Applicable plans, policies, and regulations are identified and described in the Regulatory Setting of each issue area in Chapter 4 and within the relevant impact analysis. A description of the organization of the environmental analysis, as well as key foundational assumptions regarding the approach to the analysis, is provided in Chapter 4, Introduction to the Analysis.

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
<i>4.1 Air Quality</i>			
<p>4.1-1: Construction of the proposed project could result in emissions of ROG, NO_x, or PM_{10/2.5} at levels that could substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions.</p>	<p>Potentially significant</p>	<p>AQ-1a The project applicant shall implement Best Management Practices and shall submit a construction dust control plan for the project prior to receiving a grading permit that includes the following conditions:</p> <ul style="list-style-type: none"> • During grading and other earthmoving activities, water all active construction sites at least twice daily. Frequency shall be based on the type of operation, soil, and wind exposure. • Ensure haul trucks maintain at least 2 feet of freeboard. • Cover all trucks hauling dirt, sand, or loose materials. • Apply non-toxic binders (e.g., latex acrylic copolymer) to exposed areas after cut and fill operations and hydroseed area. • Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days). • Plant vegetative ground cover in disturbed areas as soon as possible. • Cover inactive storage piles. • All construction equipment vehicle tires 	<p>Less than significant</p>

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		<p>shall be inspected and washed as necessary to be cleaned free of dirt prior to entering paved public roadways.</p> <ul style="list-style-type: none"> • Sweep streets if visible soil material is carried out from the construction site. • Treat project accesses to a distance of 100 feet from the paved road with either a 6-inch layer of gravel, or a 6- to 12-inch layer of wood chips or mulch to prevent track-out to public roadways. • No vehicle shall exceed 15 miles per hour on unpaved areas within the construction site, with the exception that vehicles may travel up to 25 miles per hour on stabilized unpaved roads as long as speeds do not create visible dust emissions. Visible speed limit signs shall be posted at the construction site entrances. <p>AQ-1b All off-road heavy-duty equipment and on-road heavy-duty trucks shall be properly maintained with the engines tuned to the engine manufacturer’s specifications, and shall comply with the In-Use Off-Road Diesel-Fueled Fleets Regulation and the In-Use On-Road Diesel-Fueled Vehicles Regulation, respectively. This includes limits on idling of all construction equipment and heavy-duty</p>	

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		on-road trucks to 5-minutes or less, except as permitted by the California Air Resources Board.	
4.1-2: Operation of the proposed project would result in emissions of ROG, NOx, or PM _{10/2.5} at levels that could substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions.	Potentially significant	<p>AQ-2 Operational Emission Reduction Measures. The project applicant shall incorporate the following measures to reduce emissions associated with vehicle trip generation and area sources from the proposed project:</p> <ul style="list-style-type: none"> • Equip all residential garages, as well as parking lots at parks, with infrastructure to install electric vehicle charging outlets and equipment. • Where feasible, provide sidewalks and/or paths, connected to adjacent land uses, transit stops, and the existing community-wide trail network. • The Farm at Alamo Creek Specific Plan shall be modified to include bicycle parking standards as follows: <ul style="list-style-type: none"> ○ For residential development, one, sheltered, secure bicycle parking space per dwelling unit shall be required. Garages, storage sheds, utility rooms, or similar areas that can be secured from unauthorized access and are sheltered from sun and rain would satisfy this 	Significant and unavoidable

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		<p>requirement without the addition of special improvements or racks. Additional convenience bicycle parking may be provided with exterior racks but does not count toward the sheltered bicycle parking requirement.</p> <ul style="list-style-type: none"> ○ New parking areas created to serve nonresidential uses (neighborhood commercial uses) shall provide one bicycle parking space for every 20 vehicle parking spaces, with a minimum of four bicycle spaces. ● All wood burning devices shall be prohibited in residential units. Only natural gas fueled hearths shall be permitted. ● During the Design Review process for each home design application, the City shall confirm compliance with measures incorporated into the City’s Energy & Conservation Action Strategy (ECAS), through use of a checklist identifying the residential design measures feasible for residential structures. 	
4.1-3: The proposed project would not result in CO concentrations that exceed the 1-hour	Less than significant	None required.	Less than significant

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
state ambient air quality standard (i.e., 20.0 ppm) or the 8-hour state ambient standard (i.e., 9.0 ppm).			
4.1-4: The proposed project would not result in the exposure of sensitive receptors to substantial pollutant concentrations.	Less than significant	None required.	Less than significant
4.1-5: The proposed project would result in a cumulatively considerable net increase of any criteria pollutant for which the project area is in non-attainment under an applicable federal or state ambient air quality standard (including the release of emissions that exceed quantitative thresholds for ozone precursors).	Significant and unavoidable	AQ-3 Implement Mitigation Measure AQ-2.	Significant and unavoidable

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
<i>4.2 Biological Resources</i>			
<p>4.2-1: Implementation of the proposed project may result in substantial adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.</p>	<p>Potentially significant</p>	<p>VELB</p> <p>BIO-1a All elderberry shrubs (which are defined as those with stems greater than 1 inch in diameter) shall be avoided completely during project construction. Prior to commencing construction activities, a qualified biologist shall flag each elderberry shrub and using construction fencing shall establish a buffer of at least 20 feet around the shrub. The following avoidance and minimization measures shall be implemented for all work within 165 feet of a shrub:</p> <ul style="list-style-type: none"> • All areas to be avoided during construction activities shall be fenced and/or flagged as close to construction limits as feasible. • Activities that could damage or kill an elderberry shrub (e.g., trenching, paving, etc.) shall not occur within 20 feet from the drip-line of any elderberry shrub. • A qualified biologist shall provide training for all contractors, work crews, and any on-site personnel on the status of the VELB, its host plant and habitat, the need to avoid damaging the 	<p>Less than significant</p>

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		<p>elderberry shrubs, and the possible penalties for noncompliance.</p> <ul style="list-style-type: none"> • A qualified biologist shall monitor the work area at project appropriate intervals to assure that all avoidance and minimization measures are implemented. • As much as feasible, all activities within 165 feet of an elderberry shrub shall be conducted between August and February. • Elderberry shrubs shall not be touched or trimmed. • Herbicides shall not be used within the drip-line of the shrub and insecticides shall not be used within 100 feet of an elderberry shrub. • Mechanical weed removal within the drip-line of the shrub shall be limited to the season when adults are not active (August - February) and shall avoid damage ng the elderberry. <p>If either a 20-foot diameter avoidance area around any elderberry shrub is found later to not be feasible or an elderberry shrub must be removed to accommodate construction, then the applicant shall notify the City and implement additional mitigation measures required by the City designed to reduce impacts to a less-than-significant level and based on the <i>Framework for Assessing Impacts to the Valley</i></p>	

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		<p><i>Elderberry Longhorn Beetle</i> (USFWS 2017b) after consultation with USFWS.</p> <p>Western Pond Turtle</p> <p>BIO-1b Prior to commencing any vegetation clean up and removal along Old Alamo Creek, including any work in the creek downstream of the project site as part of the project’s off-site improvements, a qualified biologist shall conduct a western pond turtle survey of the creek and any adjacent riparian areas where work shall occur within 48 hours prior to construction. If no western pond turtles or nests are found, no further mitigation is necessary. The impenetrable vegetation in and around the portion of Old Alamo Creek south of Elmira Road renders access to this area quite limited, and the results of any survey of this area may be inconclusive. Therefore, if the biologist cannot conduct a comprehensive survey, a biological monitor shall be present during vegetation thinning along this stretch of Old Alamo Creek. If a western pond turtle is observed within the proposed impact area, a qualified biologist shall relocate the individual to another portion of the creek outside of the proposed impact area prior to</p>	

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		<p>construction. If a western pond turtle nest is observed within the proposed impact area, the nest shall be fenced off and avoided if possible. If avoidance is not possible, the project applicant and the biologist shall consult with City staff to determine appropriate mitigation.</p> <p>Burrowing Owl</p> <p>BIO-1c Mitigation Measures BIO-1c through BIO-1d are consistent with Avoidance and Minimization Measures BO 1, BO 3, and BO 4 in Section 6.4.9 of the Draft Solano HCP (Solano County Water Agency 2012) and recommendations detailed in the <i>Staff Report on Burrowing Owl Mitigation</i> (CDFW 2012).</p> <p>a. Within 14 days prior to the anticipated start of construction, a qualified biologist shall conduct preconstruction surveys within the project site to identify burrowing owls or their nesting areas. This survey shall follow survey protocols outlined in the most current draft of the Solano HCP and as developed by the Burrowing Owl Consortium (Solano County Water Agency 2012; CDFW 2012). If no active</p>	

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		<p>burrows or burrowing owls are observed, no further mitigation is required. If a lapse in construction of 15 days or longer occurs during the nesting season, additional preconstruction surveys shall be repeated before work may resume.</p> <p>b. If burrowing owls or active burrows are identified within the project site during the preconstruction surveys, the following measures shall be implemented:</p> <ol style="list-style-type: none"> 1. During the non-breeding season for burrowing owls (September 1 through January 31), exclusion zones shall be established around any active burrows identified during the preconstruction survey. The exclusion zone shall be no less than 160 feet in radius centered on the active burrow. With approval from the City after consultation with CDFW, burrowing owls shall be passively evicted and relocated from the burrows using one-way doors. The one-way doors shall be left in place for a minimum of 48 hours and shall be monitored daily to ensure proper function. Upon the end of the 48-hour period, the burrows shall be excavated with the use of hand tools 	

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		<p>and refilled to discourage reoccupation.</p> <p>2. During the breeding season (February 1 through August 31), a qualified biologist familiar with the biology and behavior of this species shall establish exclusion zones of at least 250 feet in radius centered on any active burrow identified during the preconstruction survey. No construction activities shall occur within the exclusion zone as long as the burrow is active and young are present. Once the breeding season is over and young have fledged, passive relocation of active burrows may proceed as described in measure b.1, above.</p> <p>3. The buffer widths may be reduced with the following measures:</p> <ul style="list-style-type: none"> • A site specific analysis, reviewed and approved by the City after consultation with CDFW, shall be prepared that documents and described how the nesting or wintering owls would not be adversely affected by construction activities; • Monitoring shall occur by a 	

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		<p>qualified biologist for a minimum of 10 consecutive days following initiation of construction indicating that the owls do not exhibit adverse reactions to construction activities;</p> <ul style="list-style-type: none"> • Burrows are not in danger of collapse due to equipment traffic; and • Monitoring is continued at least once a week through the nesting/wintering cycle at the site and no change in behavior by owls is observed; biological monitoring reports shall be submitted to CDFW. <p>BIO-1d Mitigation for the permanent loss of burrowing owl foraging habitat for urban development or other permanent facilities shall be provided at a 1:1 land/area ratio. The irrigated agricultural preserve mitigation provided for Swainson’s hawk Mitigation BIO-1f, below, may satisfy the requirements for BIO-1d, provided the following additional measures are implemented on the Swainson’s hawk irrigated agriculture mitigation lands.</p>	

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		<ul style="list-style-type: none"> • No more than 20 percent of the mitigation area may support tree and shrub canopy or tall, dense grass cover. • Burrowing owl habitat mitigation areas shall be subject to deed restrictions that would limit future urban development. • A Habitat Maintenance Plan shall be prepared and implemented to ensure open space lands within the project site (if habitat remains) and the irrigated agriculture mitigation lands are maintained, to the extent feasible, to be compatible with burrowing owl use. • Adequate funding shall be provided to manage the owl mitigation area in perpetuity. <p>Swainson’s Hawk</p> <p>BIO-1e This Mitigation Measure is consistent with Avoidance and Minimization Measures SH-1 through SH-5 in the Solano HCP (Solano County Water Agency 2012).</p> <p>a. If construction occurs during the nesting season for Swainson’s hawk (March 1 through August 31), a qualified biologist shall conduct preconstruction surveys no more than 15 days prior to construction</p>	

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		<p>to identify nesting Swainson’s hawk within 0.25 mile of the project site. If a lapse in project-related construction activities of 15 days or longer occurs, additional preconstruction surveys shall be conducted prior to reinitiating work.</p> <p>b. If an active Swainson’s hawk nest is identified within 0.25 mile of the project site, an exclusion buffer shall be established in consultation with the biologist and CDFW. No construction work such as grading, earthmoving, or any operation of construction equipment shall occur within the buffer zone except as provided below in mitigation measure BIO-5 and in consultation with CDFW. Construction may commence normally in the buffer zone if the nest becomes inactive (e.g.n the young have fully fledged), as determined by the qualified biologist.</p> <p>BIO-1f The project applicant shall mitigate for the loss of Swainson’s hawk irrigated foraging habitat by preserving a minimum of 1:1 land/area ratio of similar habitat. The final acreage for mitigation calculations shall be determined based on final design of the open space areas within the project site. The</p>	

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		<p>preservation of the mitigation area shall be accomplished through purchase of credits from a bank approved by the CDFW to provide such credits, such as the Elsie Gridley Mitigation Bank or the Burke Ranch Conservation Bank (CDFW 2016) or through preservation of irrigated agricultural lands protected in perpetuity by a conservation easement or City approved in-lieu fee program established to preserve irrigated agricultural lands protected in perpetuity by a conservation easement at a minimum of 1:1 land/area ratio. Such an easement or fee program shall include provisions that provide for agricultural uses that are compatible with Swainson’s hawk foraging needs. Agricultural foraging habitats shall consist of alfalfa, tomatoes, other annual vegetable row crops, and grain. The mitigation area shall not include crop types and land uses incompatible with Swainson’s hawk foraging. The following additional restrictions and prohibited uses, at a minimum, shall also be noted as forbidden within the conservation easement:</p> <ul style="list-style-type: none"> • Commercial feedlots, which are defined as any open or enclosed area where domestic livestock are grouped together 	

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		<p>for intensive feeding purposes.</p> <ul style="list-style-type: none"> • Horticultural specialties, including sod, nursery stock, ornamental shrubs, ornamental trees, Christmas trees, or flowers. • Commercial greenhouses or plant nurseries. • Commercial aquaculture of aquatic plants, animals, and their byproducts. • Planting orchards or vineyards for the production of fruits, nuts, or berries except in designated farmstead areas. • Cultivation of perennial vegetable crops such as artichokes and asparagus, as well as annual crops such as cotton or rice. • Construction, reconstruction, or placement of any building, billboard or sign, antennas, towers, and facilities for generation of electrical power, or any other structure or improvement of any kind, except as may be specifically permitted in site-specific management plan. Acreage occupied by any such existing facilities may not be counted toward mitigation requirements. <p>The City shall consult with CDFW prior to approving the site, conservation easement, and conservation easement holder.</p>	

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		<p>Tricolored Blackbird, Northern Harrier, White-Tailed Kite, and Loggerhead Shrike</p> <p>BIO-1g Mitigation for the permanent loss of foraging habitat for northern harrier, white-tailed kite, loggerhead shrike, and tricolored blackbird from project urban development or other permanent facilities shall be provided at a 1:1 land/area ratio. The irrigated agriculture preserve mitigation provided for Swainson’s hawk Mitigation BIO-1f, above, may satisfy the requirements for BIO-1g, provided the following additional measure is implemented on the Swainson’s hawk irrigated agriculture mitigation lands.</p> <ul style="list-style-type: none"> • A Habitat Maintenance Plan shall be prepared and implemented to insure open space lands within the project site (if habitat remains) and the irrigated agriculture mitigation lands are maintained, to the extent feasible, to be compatible with use by tricolored blackbird, northern harrier, white-tailed kite, and loggerhead shrike. 	

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		<p>Bats</p> <p>BIO-1h Pre-construction roosting bat surveys shall be conducted by a qualified bat biologist within 14 days prior to any tree removal or construction activities along Old Alamo Creek that occurs during the breeding season (April through August). If pre-construction surveys indicate that no roosts of special-status bats are present, or that roosts are inactive or potential habitat is unoccupied, no further mitigation is required. If roosting bats are found, exclusionary measures approved by the City shall be installed by a qualified bat biologist. Once the bats have been excluded, tree removal may occur. If these actions do not result in exclusion, a qualified biologist in possession of an applicable California Department of Fish and Wildlife Memorandum of Understanding shall consult with CDFW to determine appropriate relocation methods.</p>	
<p>4.2-2: Implementation of the proposed project could result in a substantial adverse effect on any riparian habitat or other sensitive</p>	<p>Potentially significant</p>	<p>BIO-2a The following Best Management Practices shall be implemented during all site preparation and construction activity within the project site, especially in those areas adjacent to Old Alamo Creek to control pollutant sources associated with the</p>	<p>Less than significant</p>

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
<p>natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS.</p>		<p>handling and storage of construction materials and equipment, as well as waste management and disposal.</p> <ul style="list-style-type: none"> a. Construction raw materials (e.g., dry materials such as concrete mix, paints, petroleum products) shall be stored in designated areas that are located at least 100 feet away from the top of bank of Old Alamo Creek and are surrounded by earthen berms or other barriers, if necessary. Construction employees working on the site shall be trained in proper materials handling practices to ensure that, to the maximum extent practicable, construction materials are properly stored. b. Year-round, install temporary barriers around soil stockpile perimeters to prevent contact with stormwater when required. Temporary barriers can be berms, dikes, silt fences, straw bales, or sandbag barriers. During the rainy season (generally December to April), cover inactive soil stockpiles or protect them with soil stabilization at all times. During the non-rainy season, cover inactive soil stockpiles or protect them with linear barriers prior to rain events. c. Whenever possible, wash out concrete 	

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		<p>trucks off site in City designated areas. If the trucks are washed on site, contain the wash water in a temporary pit adjacent to the construction activity where waste concrete can harden for later removal, no nearer than 100 feet from the top of bank of Old Alamo Creek. Place sign at the designated washout locations and instruct drivers of the washout locations. Avoid washing fresh concrete from the trucks, unless the runoff is drained to a berm or level area, at least 100 feet away from the top of bank of Old Alamo Creek.</p> <p>d. Collect non-hazardous waste construction materials (e.g., wood, paper, plastic, cleared trees and shrubs, scrap metal, rubber, glass) and deposit in covered dumpsters at a designated waste storage area on-site at least 100 feet away from the top of bank of Old Alamo Creek. Recyclable construction materials shall be stored separately for recycling.</p> <p>e. Hazardous materials shall be stored in portable metal sheds with secondary containment. The quantities of these materials stored on-site shall reflect the quantities needed for site construction.</p>	

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		<p>Avoid over-application of fertilizers, herbicides, and pesticides. Do not mix hazardous waste with other waste produced on site. Contract with a Certified Waste Collection contractor to collect hazardous wastes for disposal at an approved hazardous waste facility.</p> <p>f. Waste oil and other equipment maintenance waste shall be properly disposed of in compliance with federal, State and local laws, regulations and ordinances.</p>	
		<p>BIO-2b To protect the existing trees along Old Alamo Creek from damage associated with construction activities and to avoid soil compaction in the root zone, the project applicant shall do the following:</p> <ul style="list-style-type: none"> • No vehicles, construction equipment, mobile offices, or materials shall be parked, stored or located within the driplines of any oak trees. • Install 4-foot tall, orange, synthetic mesh fencing outside the dripline of all trees greater than 6" dbh (diameter at breast height), or 10" dbh aggregate for multi-trunked trees. If site constraints do not allow for protection of a tree's entire dripline, fence off as much of the 	

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		<p>dripline as possible.</p> <ul style="list-style-type: none"> • If work or traffic must proceed within the driplines, one of the following techniques shall be followed: (1) place 6-12 inches of mulch in the work or traffic area; (2) place at least 4 inches of mulch in the work or traffic area and then place sheets of ¾ inch plywood or 4x4 inch lumber; or (3) place 4 – 6 inches of gravel with geotextile fabric beneath. • Soil surface removal greater than one foot shall not occur within the driplines of oak trees. No cuts shall occur within five feet of their trunks. • If roots are encountered during soil excavation, they shall be carefully pruned rather than left torn or crushed. Roots greater than 1 inch in diameter must always be pruned, and finer roots shall ideally also be pruned. Cut roots as far away from the trunk as possible. Use loppers, a handsaw, or a small chain saw to make a clear vertical cut. Leave adjacent root bark intact. • To the extent feasible, earthen fill greater than one foot deep shall not be placed within the driplines of oak trees, and no fill shall be placed within five feet 	

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		<p>of their trunks.</p> <ul style="list-style-type: none"> • No paving shall be permitted in the vicinity of oak trees. • Underground utility line trenching shall not be placed within the driplines of oak trees. If it is absolutely necessary to install underground utilities within the driplines of preserved oak trees, the trench shall either be bored or drilled but not within five feet of the trunk. 	
<p>4.2-3: Implementation of the proposed project may result in placement of fill into potential jurisdictional waters of the U.S and State.</p>	<p>Potentially significant</p>	<p>BIO-3 To mitigate for the loss of potentially jurisdictional waters of the United States and/or waters of the State, the project applicant shall create, preserve, or restore jurisdictional waters to the extent required under the Clean Water Act or Waste Discharge Requirements (WDRs), as applicable. If Section 404, 401, WDR authorizations are required, mitigation acreage requirements shall be determined in consultation with the U.S. Army Corps of Engineers, and the Regional Water Quality Control Board.</p> <p>In addition, if construction activities will impact CDFW jurisdictional resources, the applicant shall obtain, and comply with, a Lake and Streambed Alteration Agreement from CDFW.</p>	<p>Less than significant</p>

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
4.2-4: Implementation of the proposed project may interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.	Less than significant	None required.	Less than significant
4.2-5: Implementation of the proposed project could conflict with applicable land use plans, policies, regulations, or ordinances, of an agency with jurisdiction over the project, including the Solano County Water Agency's draft HCP adopted for the purpose of protecting biological resources or avoiding and mitigating impacts to biological resources.	Potentially significant	BIO-4 Implement Mitigation Measures BIO-1d and BIO-1f.	Less than significant

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
4.2-6: The proposed project could contribute to cumulative impacts to special-status species in the region due to removal of foraging and breeding habitat.	Significant	BIO-5 Implement Mitigation Measures BIO-1c, BIO-1d, BIO-1e, and BIO-1f.	Less than significant
<i>4.3 Cultural Resources</i>			
4.3-1: Implementation of the proposed project may cause a substantial adverse change in the significance of an archaeological resource.	Potentially significant	CUL-1 If deposits of prehistoric or historical archaeological materials are encountered during construction activities, all work within 25 feet of the discovery shall be redirected until an archaeologist is contracted to assess the finds, consult with agencies and descendant communities (as appropriate), and make recommendations for the treatment of the discovery. If preservation in place is not feasible, an archaeologist that meets the secretary of the interior standards shall evaluate the deposit for its eligibility for listing in the California Register of Historical Resources. If the deposit is not eligible, mitigation is not necessary. If the deposit is eligible, mitigation shall include excavation of the archaeological deposit in accordance with a data recovery plan (see <i>CEQA Guidelines</i> Section 15126.4(b)(3)(C)). The City of Vacaville shall ensure that descendant communities are consulted for their input and	Less than significant

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		<p>concerns during the development and implementation of any mitigation plan.</p> <p>Upon completion of the evaluation and/or mitigation, the report shall be submitted to the City of Vacaville, the applicant, the Northwest Information Center at Sonoma State University, and descendant communities.</p>	
<p>4.3-2: Implementation of the proposed project may cause a substantial adverse change in the significance of an historical resource.</p>	<p>Less than significant</p>	<p>None required.</p>	<p>Less than significant</p>
<p>4.3-3: Implementation of the proposed project may disturb human remains, including those interred outside of formal cemeteries.</p>	<p>Potentially significant</p>	<p>CUL-2 In the event that human remains are encountered, the on-site construction foreman shall stop all work within 25 feet of the discovery and shall immediately contact the City's Community Development Department and the County Coroner. At the same time, an archaeologist that meets the secretary of the interior standards shall be contacted to assess the situation and consult with agencies, as appropriate. On-site construction workers shall not collect or move any human remains and associated materials. If the human remains are of Native American origin, the coroner must notify the Native American Heritage Commission within</p>	<p>Less than significant</p>

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		<p>24 hours of this identification. The Native American Heritage Commission shall identify a Most Likely Descendant to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods. Upon completion of the assessment, the archaeologist shall prepare a report documenting the methods and results, and provide recommendations for the treatment of the human remains and any associated cultural materials, as appropriate, and in coordination with the recommendations of the Most Likely Descendant. The report shall be submitted to the City of Vacaville Community Development Department and the Northwest Information Center, and descendant communities.</p>	
<p>4.3-4: Implementation of the proposed project may cause a substantial adverse change in the significance of a known Tribal Cultural Resource.</p>	<p>Potentially significant</p>	<p>CUL-3 While no Tribal Cultural Resources (TCRs) have been identified that may be affected by the project, the following approach for the inadvertent discovery of TCRs has been prepared to ensure there are no impacts to unanticipated resources.</p> <ul style="list-style-type: none"> • Should a potential TCR be inadvertently encountered, construction activities near the encounter shall be temporarily halted and the City’s Community Development Department notified. The 	

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		<p>City shall immediately notify the Yocha Dehe Wintun Nation to evaluate the resource. If the unanticipated resource is archaeological in nature, appropriate management requirements shall be implemented as outlined in Mitigation Measure CUL-1. If the City determines that the potential resource appears to be a tribal cultural resource (as defined by PRC Section 21074), the Yocha Dehe Wintun Nation shall be provided a reasonable period of time to conduct a site visit and make recommendations regarding future ground disturbance activities, as well as the treatment and disposition of any discovered tribal cultural resources. Depending on the nature of the potential resource and Tribal recommendations, review by a qualified archaeologist may be required. Implementation of proposed recommendations shall be made based on the determination of the City that the approach is reasonable and feasible. All activities shall be conducted in accordance with regulatory requirements.</p>	

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
4.3-5: The proposed project could contribute to cumulative impacts to historical, archaeological, tribal cultural resources and paleontological resources in the area.	Potentially significant	CUL-4 Implement Mitigation Measures CU-1 and CUL-2.	Less than significant
<i>4.4 Hydrology, Water Quality and Drainage</i>			
4.4-1: Implementation of the proposed project may violate water quality standards or waste discharge requirements, or otherwise substantially degrade water quality.	Less than significant	None required.	Less than significant
4.4-2: Implementation of the proposed project may alter the existing drainage pattern of the site or area in a manner which would result in substantial erosion or siltation on- or off-site.	Less than significant	None required.	Less than significant
4.4-3: Implementation of the proposed project may substantially alter the existing drainage	Less than significant	None required.	Less than significant

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
pattern of the site or area or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.			
4.4-4: Implementation of the proposed project may create or contribute to runoff water which would exceed the capacity of the existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.	Less than significant	None required.	Less than significant
4.4-5: The proposed project, in addition to other projects in the watershed, could result in the generation of polluted runoff that could violate water quality standards or waste discharge requirements for receiving waters.	Less than significant	None required.	Less than significant

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
<i>4.5 Land Use and Planning</i>			
4.5-1: Implementation of the proposed project may conflict with a regional land use plan, policy or regulation.	Potentially significant	LU-1 The project applicant shall design the detention basin and the area surrounding the basin to minimize attractiveness for waterfowl. This shall include the following: <ul style="list-style-type: none"> • The basin shall be configured to reduce the line of sight for birds. • The basin shall be designed with a slope of not less than 2:1. • A water aerator (fountain) shall be included in the basin. • Educational signage shall be included in areas around the basin stating no feeding of birds is allowed. 	Less than significant
<i>4.6 Public Utilities</i>			
4.6-1: The proposed project could exceed the treatment requirements of the applicable Regional Water Quality Control Board.	Less than significant	None required.	Less than significant

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
4.6-2: The proposed project could require or result in the construction of new wastewater facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects.	Less than significant	None required.	Less than significant
4.6-3: The proposed project could result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.	Less than significant	None required.	Less than significant
4.6-4: The proposed project could be served by a landfill without sufficient permitted capacity to accommodate the project's solid waste disposal needs. This would be a less-than-significant impact.	Less than significant	None required.	Less than significant

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
4.6-5: The proposed project could require or result in the construction of new energy production and/or transmission facilities or expansion of existing facilities.	Less than significant	None required.	Less than significant
4.6-6: The proposed project could contribute to a cumulative increase in the demand for wastewater treatment, which could result in inadequate capacity and require the construction of new or expansion of existing wastewater treatment facilities.	Less than significant	None required.	Less than significant
4.6-7: The proposed project could contribute to a cumulative increase in solid waste, which could result in either the construction of new solid waste facilities or the expansion of existing facilities, the construction of which could cause	Less than significant	None required.	Less than significant

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
significant environmental effects.			
4.6-8: The proposed project could contribute to a cumulative increase in energy demand, which could result in the need for construction of new energy production and/or transmission facilities or expansion of existing facilities.	Less than significant	None required.	Less than significant
<i>4.7 Transportation and Circulation</i>			
4.7-1: Implementation of the proposed project under Existing plus Project conditions would degrade operations at two study intersection that trip the City's thresholds of significance.	Significant	TRAFF-1a At the Leisure Town Road and Elmira Road (#6) intersection, the project applicant shall install the following improvements or pay in-lieu traffic fees to the City: <ul style="list-style-type: none"> • Westbound – Provide west bound approach with three lanes as follows: West Bound Left Turn Lane, West Bound Through Lane, and West Bound Right Turn Lane, and provide an additional through lane for the northbound and southbound approaches 	Less than significant
		At the Nut Tree Road and Ulatis Drive (#10) and Depot Street at Mason Street (I-80 ramps) (#20)	Significant and

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		intersections there are no feasible mitigation measures due to operational and right-of-way restrictions.	unavoidable
4.7-2: Implementation of the proposed project would increase traffic volumes along study freeway segments in the CMP system, but would not exceed LOS thresholds of significance.	Less than significant	None required	Less than significant
4.7-3: Implementation of the proposed project, including installation of traffic circles and other traffic calming devices, may delay emergency response or impede movement of emergency vehicles.	Potentially significant	TRAFF-3 Roundabouts and traffic circles shall be designed to accommodate fire trucks and other large vehicles to travel through the intersection at an appropriate speed for emergency response. On-street parking shall be prohibited near the traffic circles to ensure clear passage. All traffic calming devices shall be designed in accordance with City standards and be approved by the City.	Less than significant
4.7-4: Implementation of the proposed project could conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or	Potentially significant	TRAFF-4 The project-level site plan shall be submitted for each phase of the project development for review and approval by the City to ensure safe and direct facilities for pedestrians, bicyclists, and transit riders are provided and the design does not conflict with adopted plans, policies,	Less than significant

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
otherwise decrease the performance or safety of such facilities.		and programs related to such facilities.	
4.7-5: Under Existing plus Approved plus Project conditions, traffic volumes would trip the City's threshold of significance at three intersections.	Significant	<p>TRAFF-5a At the Leisure Town Rd at Sequoia Drive (#4) intersection, the project applicant shall install the following improvements or pay in-lieu traffic fees to the City:</p> <ul style="list-style-type: none"> • Southbound Approach – Add a through lane on southbound Leisure Town Road to provide one left-turn lane, one through lane and one shared through-right lane on the southbound approach. • Southbound Departure – Widen the south leg of the intersection to provide a corresponding receiving lane. 	Less than significant
		<p>TRAFF-5b At the Leisure Town Rd at Elmira Road (#6) intersection, the project applicant shall install the following improvement or pay in-lieu traffic fees to the City:</p> <ul style="list-style-type: none"> • Restripe the west bound approach within existing pavement to accommodate dual West Bound Left Through Lanes, West Bound Through Lane, and a West Bound Through/ Right Turn Lane (expand from three lanes to a four lane approach). 	Less than significant

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		At the Nut Tree Road and Ulatis Drive (#10) and Peabody Road at Elmire Road (#17) intersections there are no feasible mitigation measures due to operational and right-of-way restrictions.	Significant and unavoidable
4.7-6: Under Cumulative plus Project conditions, intersection operations would trip the threshold of significance at six intersections.	Significant	TRAFF-6a At the Leisure Town Road and Ulatis Drive / Hawkins Road (#5) intersection, the project applicant shall install the following improvements: <ul style="list-style-type: none"> • Westbound – Add a separate West Bound Right turn pocket on the westbound approach of Ulatis Drive / Hawkins Road. 	Less than significant
		TRAFF-6b At the Leisure Town Road and Elmira Road (#6) intersection, the project applicant shall install the following improvements: <ul style="list-style-type: none"> • Westbound – Restripe the West Bound approach within existing pavement to accommodate a dual West Bound Lane, West Bound Through Lane, and West Bound Through/Right Turn Lane (expand from three lanes to a four lane approach). 	Less than significant
		TRAFF-6c At the Allison Drive and Elmira Road (#16) intersection, the project applicant shall install the following improvements or	Less than significant

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		pay in-lieu traffic fees to the City: <ul style="list-style-type: none"> • Westbound – Restripe the westbound approach of Elmira Road to add an additional westbound through lane. 	
4.7-7: Traffic volumes under Cumulative plus Project conditions would be LOS C or better conditions on all study road segments.	No impact	Due to operational, and right-of-way restrictions, there is no feasible mitigation for the following intersections: Leisure Town Road at I-80 EB Ramps (#1), Nut Tree Road at Ulatis Drive (#10), and Allison Drive at Nut Tree Parkway (#12).	Significant and unavoidable
4.7-8: Implementation of the proposed project under Existing plus Approved plus Project conditions would increase traffic volumes along study freeway segments in the CMP system but would not exceed LOS thresholds of significance.	Less than significant	None required	Less than significant

**Table 2-1
Summary of Impacts and Mitigation Measures**

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
4.7-9: Implementation of the proposed project under Cumulative plus Project conditions would increase traffic volumes along study freeway segments in the CMP system but would not exceed LOS thresholds of significance.	Less than significant	None required	Less than significant

2.8 REFERENCES

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- KC Engineering Company. 2016b. *Phase I Environmental Site Assessment on Roberts' Ranch Subdivision at Leisure Town Road & Fry Road Vacaville, California*. March 15, 2016.
- Solano County. 2015. "Solano County Code Chapter 28 Zoning Regulations." October 6, 2015. Accessed April 7, 2016. <https://admin.solanocounty.com:4433/civicax/filebank/blobdload.aspx?blobid=12826>.

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CHAPTER 3 PROJECT DESCRIPTION

3.0 INTRODUCTION

Vacaville S2 Investors LLC (project applicant) requests approval of various discretionary entitlements in support of the proposed Farm at Alamo Creek Specific Plan Project (proposed project), the reasonably foreseeable and potentially significant adverse environmental effects of which are evaluated in this Environmental Impact Report (EIR). Consistent with CEQA Guidelines Section 15124, this chapter includes: the location and boundaries of the proposed project as shown on a project location map and on a regional map; a statement of the objectives sought by the project applicant; a general description of the project's environmental characteristics, and supporting public utilities facilities; and a statement briefly describing the intended uses of the EIR, including a list of the agencies that are expected to use the EIR in their decision making, and a list of permits and other approvals required to implement the project.

Information has been provided by the project applicant and the City of Vacaville (City) staff. The following project description serves as the basis for the environmental analysis contained in this EIR. The City will serve as the lead agency with final authority to approve the proposed project and certify the EIR.

3.1 PROJECT SITE

Location and Surrounding Land Uses

The 210.5-acre project site (Assessor Parcel numbers: 138-010-010, 020, 030, 050, 080) is located in northern Solano County adjacent to the southeastern portion of the City of Vacaville approximately four miles from Downtown Vacaville, as shown in Figure 3-1, Regional Location. The project site is located inside of the City's proposed Sphere of Influence and Urban Growth Boundary (UGB), with 61 acres located within an area designated as Urban Reserve (UR) in the City's General Plan (City of Vacaville 2015). The project includes a request to the Solano County Local Agency Formation Commission or LAFCo to annex the project site into the City of Vacaville including the portion of Hawkins Road immediately adjacent to the northern boundary of the project site and a 3.68 acre portion of the project site located in the southwest corner of site that is within the boundary of the specific plan area, but not included within the project's proposed tentative map.

The project site is bounded by Leisure Town Road on the west, Elmira Road on the south, Hawkins Road to the north, and the City's agricultural buffer and UGB to the east, as shown in Figure 3-2, Project Location.

Adjacent land uses include single-family residential development and light industrial uses directly west of the project site across Leisure Town Road; the Brighton Landing Specific Plan project currently under construction is located south of the project site across Elmira Road, with undeveloped land primarily in agricultural use to the north and east. There is an existing PG&E easement east of the UGB for 500 kilovolt (kV) and 230 kV overhead transmission lines that are part of the statewide electrical system.

Project Site Characteristics

Existing Uses and On-Site Characteristics

The topography of the project site is generally flat and located between 67 to 80 feet above mean sea level. The site is currently under active agricultural uses and crops grown on the site currently include alfalfa and clover. Old Alamo Creek bisects the southern portion of the site where there are numerous mature trees. There is also a Solano Irrigation District (SID) right-of-way that borders the site on the west and north and traverses the middle of the property from north to south that is used to convey irrigation water through an earthen-lined ditch. The only buildings located on the project site are located in the southwest corner of the site. The removal of these buildings is not a part of the project approvals and would remain until the landowner submits an application to the City to develop this portion of the project site.

Solano County General Plan and Zoning Designations

The project site is designated Agriculture in the 2008 Solano County General Plan and also zoned A-40, Exclusive Agricultural 40 acres (Solano County 2008), as shown on Figure 3-3.

City of Vacaville General Plan and Zoning Designations

The project site is designated as a future Specific Plan in the City's General Plan and also designated as a growth area as part of the East of Leisure Town Road Growth Area (City of Vacaville 2015, Figure LU-2). The City's revised General Plan Land Use Designations in the East of Leisure Town Road Growth area figure (City of Vacaville 2015, Figure 2) designates various portions of the project site Residential Low Density (3.1-5 units/acre), Residential Low-Medium Density (5.1-8.0 units/acre), Residential Medium Density (8.1-14 units/acre), Residential High Density (20.1-24 units/acre), Neighborhood Commercial, Agricultural Buffer, Urban Reserve, and Public Parks, as shown in Figure 3-3. The project site does not currently include City of Vacaville zoning because it is located outside of the City limits.

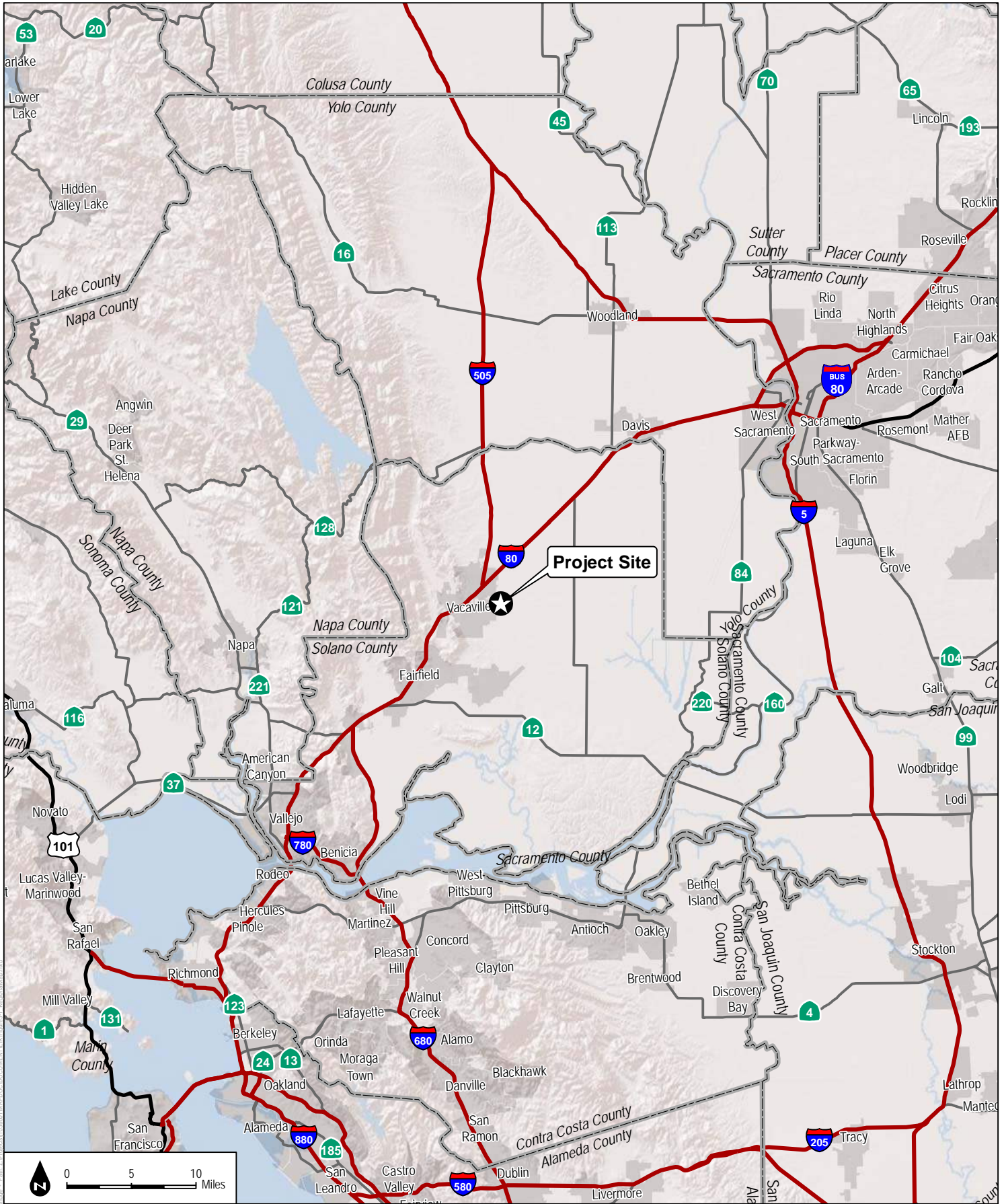


FIGURE 3-1

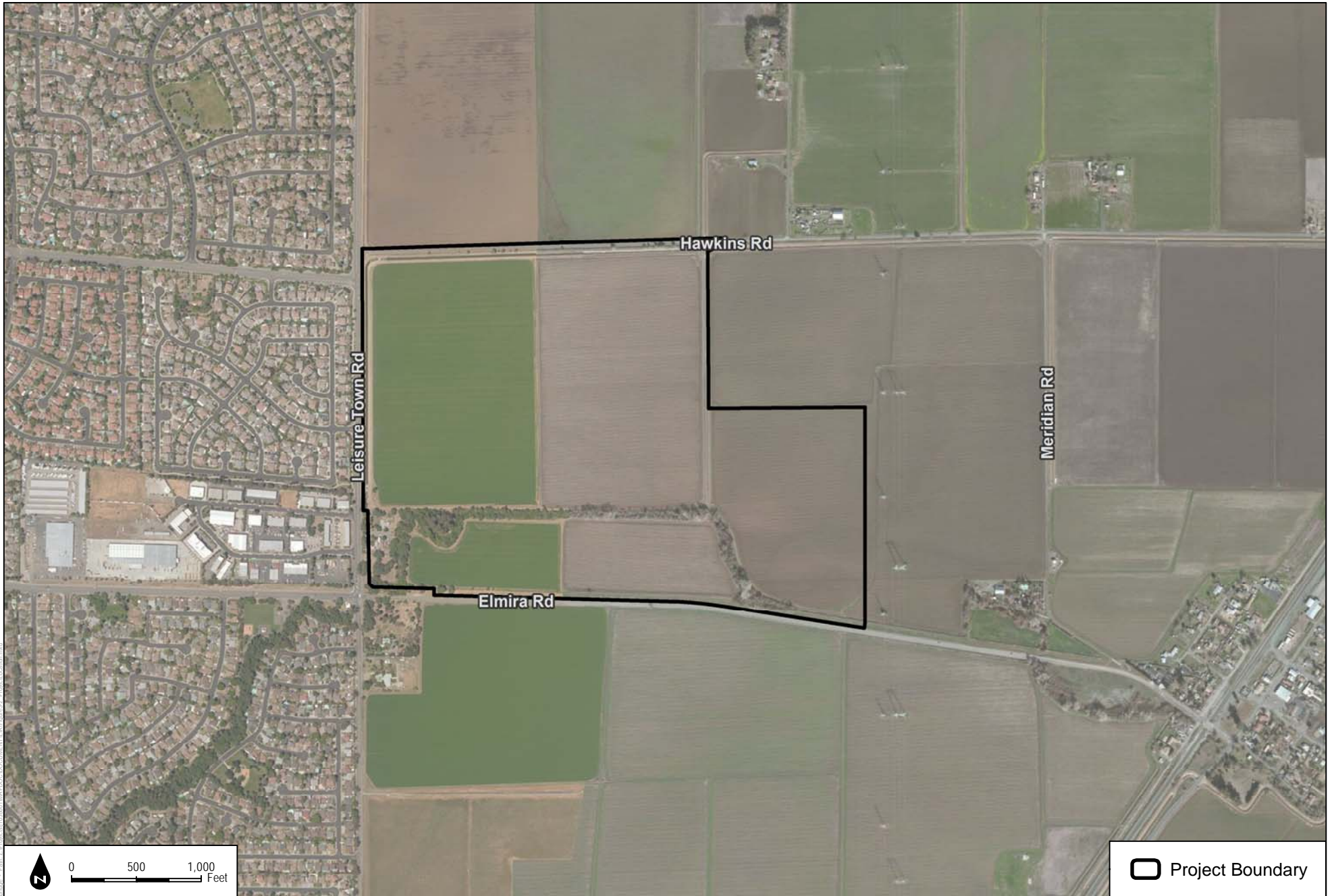
Regional Location Map



SOURCE: Esri Basemaps

The Farm at Alamo Creek Specific Plan EIR

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SOURCE: Bing Maps (Accessed 2017)

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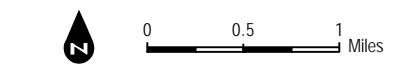
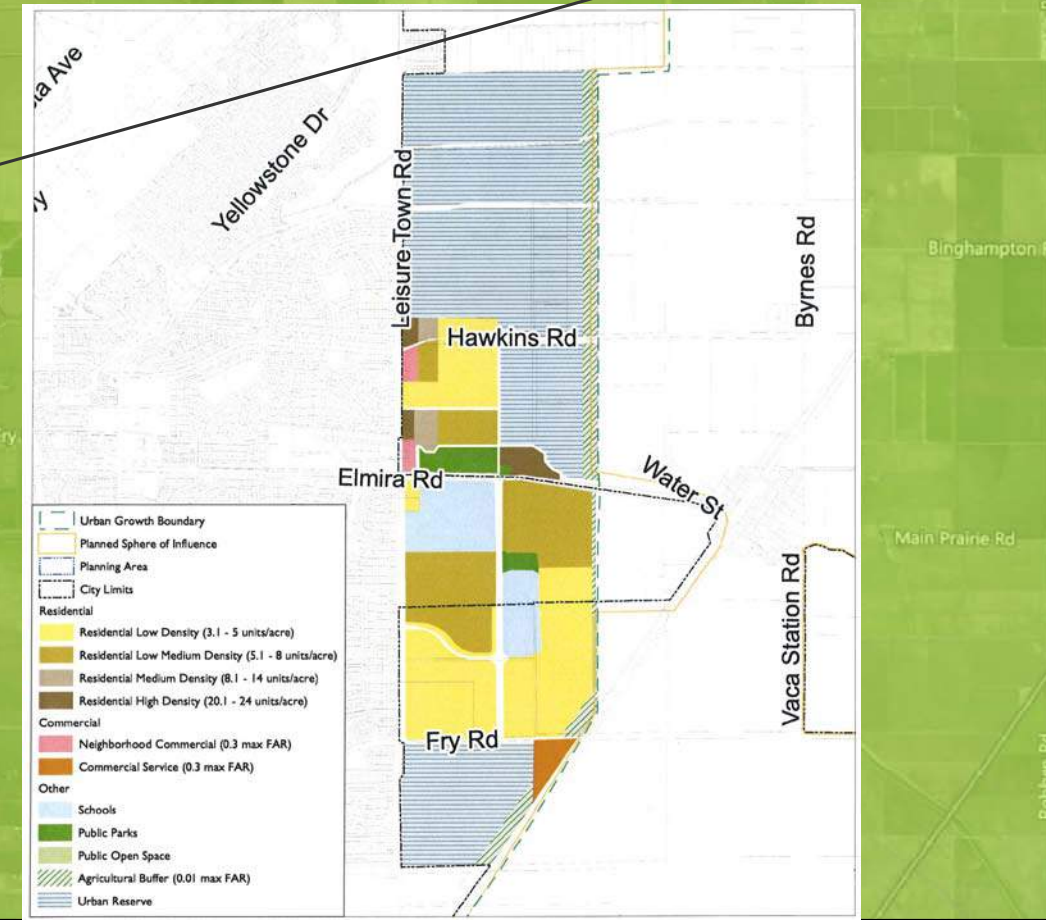
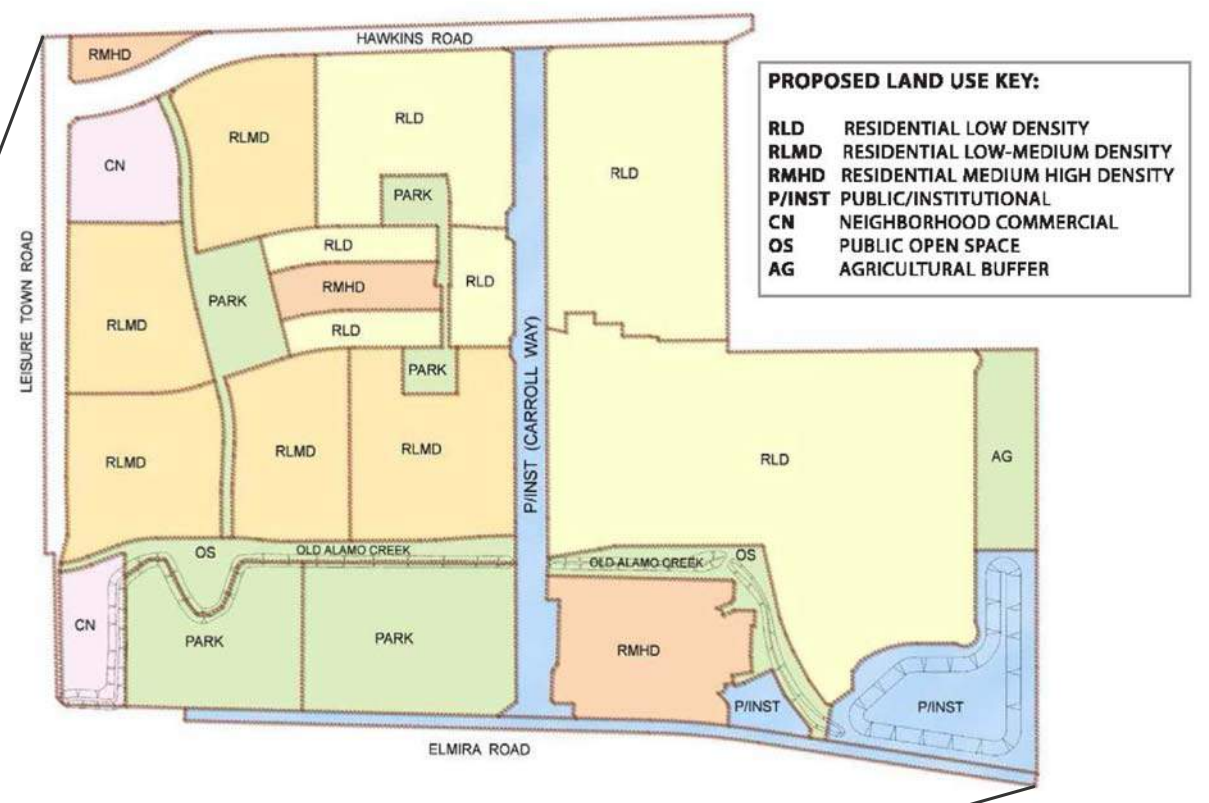
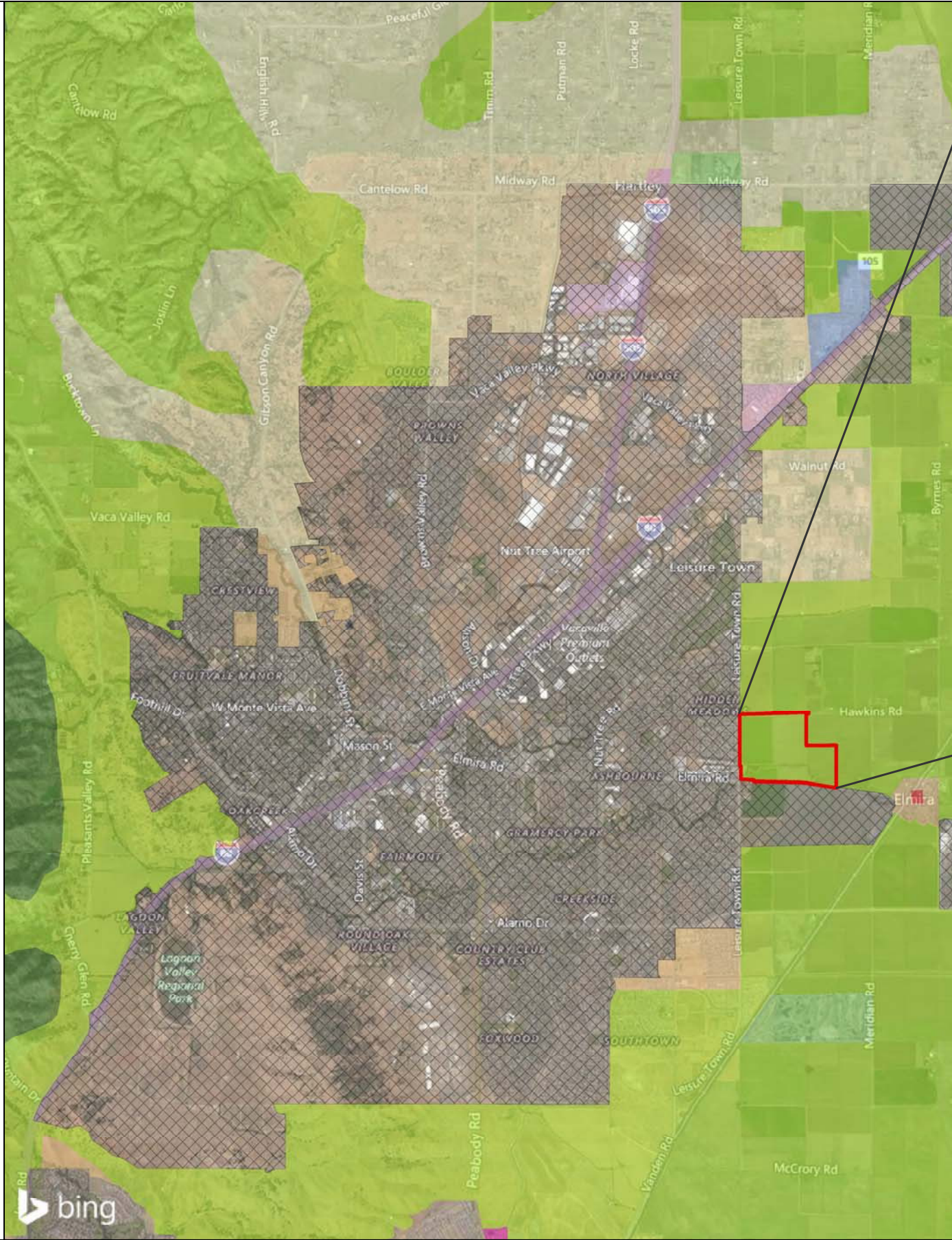
The Farm at Alamo Creek Specific Plan EIR

FIGURE 3-2
Project Location

PUB: 137212017 - LOS SAVED BY 03/10/2017 - PUB: 7 - PROJECTS/03/10/2017/MA/DOC/DOCUMENT/ENTER/03/10/2017 - Project Location.mxd

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- Project Boundary
- Solano County General Plan Land Use Designations**
- Natural Resources Designations**
 - Water Bodies and Courses
 - Parks and Recreation
 - Marsh
- Agricultural Designations**
 - Watershed
 - Agriculture
- Public Designations**
 - Public
- Residential Designations**
 - Rural Residential
 - Traditional Community - Residential
- Commercial Designations**
 - Neighborhood Commercial
 - Business and Administrative Office
 - Commercial Recreation
 - Service Commercial
 - Commercial Office
 - Commercial Service - Light Industrial
 - Community Commercial
 - Highway Commercial
- Industrial Designations**
 - General Industrial
 - Water Dependent Industrial
 - Limited Industrial
- Special Purpose Area**
 - Incorporated Area



SOURCE: Bing Maps (Accessed 2017); Solano County GIS



The Farm at Alamo Creek Specific Plan EIR

FIGURE 3-3
Existing and Proposed Land Use

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Travis Air Force Base Land Use Compatibility

A small portion of the project site is located within the Travis Air Force Base Land Use Compatibility Plan (LUCP). The LUCP establishes policies for noise, safety and airspace protection for uses near the airport. The project site is located in Compatibility Zone D, which only places a limitation on the height of structures within this zone and establishes procedures for the evaluation of potential wildlife attracting uses within close proximity to the base facility (City of Vacaville 2015, Figure LU-5). A Wildlife Hazards Assessment has been prepared for the project and is included in Appendix D.

Land Ownership

There are four entities that own land within the boundaries of the specific plan, as listed below in Table 3-1.

Table 3-1 Property Owners

Assessor Parcel Number	Owner	Approximate Acreage
0138-010-010, 020	Robert and Debra Papin	3.7
Portion of 0138-010-030, 050	Vacaville S2 Investors LLC	189.1
NA	City/County Rights of Way	7.3
NA	Solano Irrigation District	10.4
Total		210.5

Source: The Farm at Alamo Creek Specific Plan, September 2017

3.2 PROJECT OBJECTIVES

CEQA requires an EIR to include a statement of objectives for the project, including the underlying purpose of the project. These objectives help the lead agency determine the alternatives to evaluate in the EIR (CEQA Guidelines, Section 15124, subd. (a)). The following is a list of objectives for the proposed project:

- Provide for the orderly, well planned, and balanced development of future projects in the East of Leisure Town Road Growth Area, including the comprehensive planning of property between Leisure Town Road and the City's Urban Growth Boundary.
- Support the City's General Plan policies, including the encouragement of range of residential densities and types.
- Support improvements to Leisure Town Road (Jepson Parkway), including planning and funding for development of frontage roadway features and landscaping.

- Provide public benefits such as multi-use trails, dedicated open space and recreational areas, and pedestrian and bike connectivity to enhance the City's existing recreational opportunities.
- Support a unique city-wide recreational opportunity through a "Play-4-All" park.
- Create a community that centers on a farm-to-table "place-making" theme and supports neighborhood amenities that would potentially include a club house and pool.
- Provide infrastructure and services that meet City standards and are sized in accordance with the City's infrastructure master plans and integrated with existing and planned facilities and connections.
- Create livable residential neighborhoods through the use of high quality building materials and design standards and through high quality pedestrian and bike facilities within the project.
- Support the implementation of sustainability features to encourage efficient use of the project site through building and landscape designs.
- Provide housing at a scale and density appropriate to the project site and sufficient to support the creation of public amenities including the "Play-4-All" park, open space, and a community park.
- Develop a project that is capable of attracting commercially reasonable financing.

3.3 PROPOSED PROJECT

The Farm at Alamo Creek Specific Plan includes a mix of residential uses with a total of 768 single-family attached and detached residences on 129 acres with an average density of 3.6 dwelling units/acre (du/ac), 26.6 acres in five parks, 5.1 miles of trails, 13.4 acres of open space and agricultural buffer, and 7.4 acres of neighborhood commercial (CN), as shown on Figure 3-4, Land Use Plan. In addition, the proposed project includes a 9.6-acre detention pond. The eastern portion of the site currently designated UR would be prohibited from undertaking urban development grading or construction activities until five years after the date the City approved the 2015 General Plan (July 28, 2015).

A copy of the Farm at Alamo Creek Specific Plan is included on the City's website: www.cityofvacaville.com.

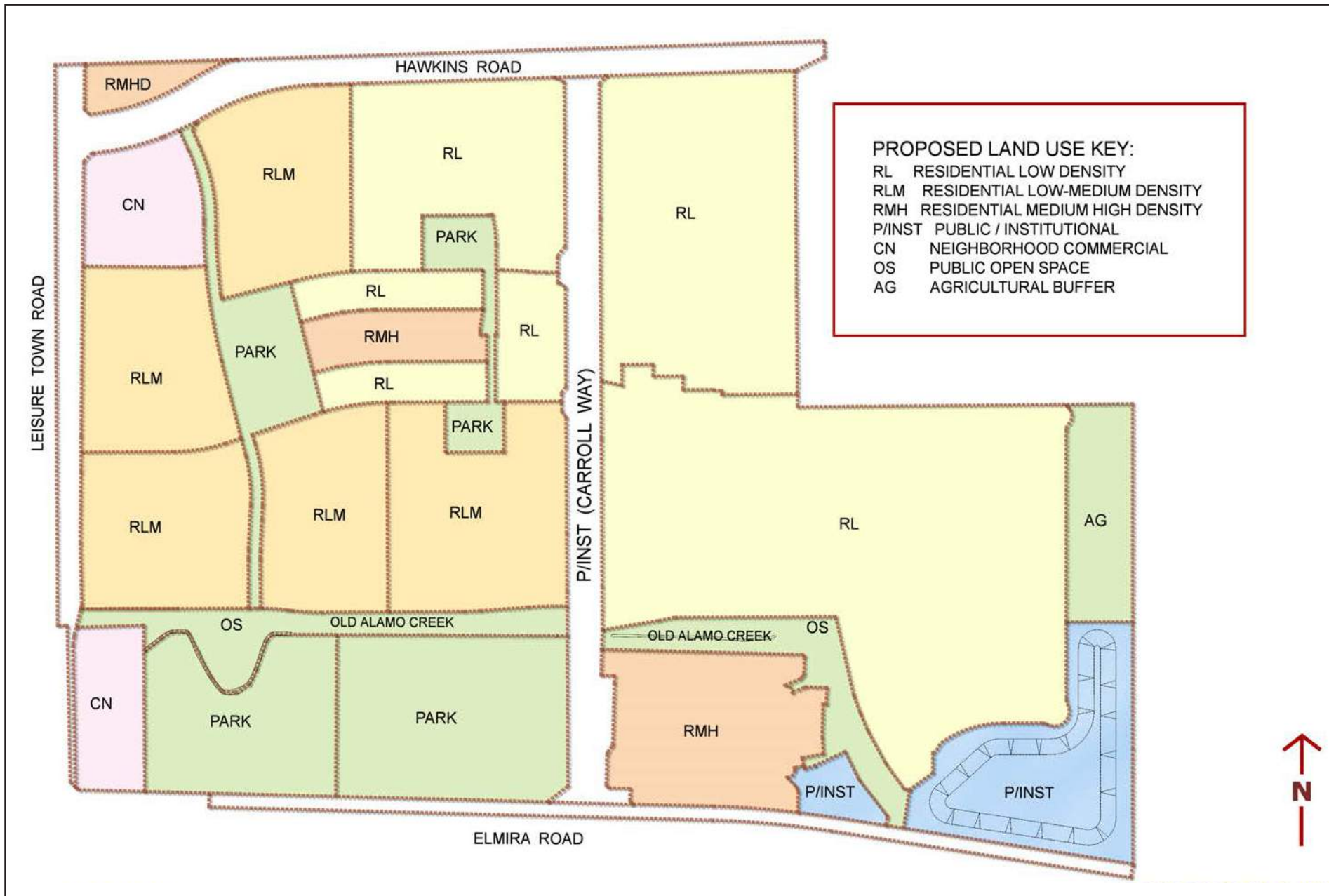


Figure 3-4
Proposed Land Use Plan Designations

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Table 3-2 provides a breakdown of all the proposed land uses by area. Figure 3-4 provides a legend to the areas listed in the table.

**Table 3-2
The Farm at Alamo Creek Land Use Summary**

General Plan Land Use Designation	Proposed Zoning	Acres¹	Residential Units¹	Average Density (du/ac)¹
<i>Area 1</i>				
Residential Low Density (RLD)	RL-6	10.8	48	4.4
<i>Area 2</i>				
Residential Low-Medium Density (RLMD)	RLM-3.6	8.0	51	6.4
<i>Area 3</i>				
Neighborhood Commercial (CN)	CN	4.2		
<i>Area 4 through 7</i>				
Residential Low-Medium Density (RLMD)	RLM-3.6	7.6	44	5.8
Residential Low-Medium Density (RLMD)	RLM-4.5	8.3	47	5.7
Residential Low-Medium Density (RLMD)	RLM-4.5	7.5	39	5.2
Residential Low-Medium Density (RLMD)	RLM-3.6	10.2	69	6.8
<i>Area 8</i>				
Residential Low Density (RLD)	RL-5	6.9	34	4.9
<i>Area 9/10</i>				
Residential Medium High Density (RMHD)	RMH	2.8	40	14.3
Residential Medium High Density (RMHD)	RMH	8.8	124	14.1
<i>Area 11</i>				
Public/Institutional (P/INST)	CF	1.2		
<i>Area 12</i>				
Neighborhood Commercial (CN)	CN	3.2		
<i>Area 13</i>				
Residential Medium High Density (RMHD)	RMH	1.4	20	14.3
<i>Area 14/15</i>				
Park (P)	P	4.7		
Park (P)	P	2.5		

**Table 3-2
The Farm at Alamo Creek Land Use Summary**

General Plan Land Use Designation	Proposed Zoning	Acres¹	Residential Units¹	Average Density (du/ac)¹
<i>Area 16</i>				
Public Open Space (OS)	OS	4.7		
<i>Area 17/18</i>				
Park (P)	P	8.2		
Park (P)	P	11.2		
<i>Area 19</i>				
Public Open Space (OS)	OS	4.4		
<i>Area 20/21</i>				
Public/Institutional (P/INST)	CF	9.6		
Public/Institutional (P/INST)	CF	3.8		
<i>Area 22/23</i>				
Community Facilities (CF)	CF	11.4		
Community Facilities (CF)	CF	8.2		
<i>Area 24/25</i>				
Residential Low Density (RLD)	RL-5	18.2	90	4.9
Residential Low Density (RLD)	RL-6	38.5	162	4.2
<i>Area 26</i>				
Agricultural Buffer	AG	4.3		
Total		210.5	768	3.6

Notes:

¹ All acreage and unit counts are preliminary in nature and may be subject to change.

Source: The Farm at Alamo Creek Specific Plan, February 2018.

A more detailed description of the various land uses within The Farm at Alamo Creek Specific Plan is described below.

Residential Uses

The proposed project includes a total of approximately 129 acres designated for residential uses that would support up to 768 residential units. The residential breakdown includes 33% moderate density, 24% high density attached units, and 43% would be comprised of a variety of low density, single-family residential. Based on the number of residential units the project would accommodate a total of approximately 2,104 residents.¹

¹ Based on the City's persons per household (pph) of 2.74 (City of Vacaville 2015).

The project would provide a variety of distinct housing types interconnected by tree-lined walkable streets and open spaces. Diverse streetscapes are the defining characteristic of the proposed neighborhoods. Individual residences would be designed by the builder and would be subject to City review and approval. The individual builders would select the architectural style based on the appropriate massing (e.g., some styles are clearly more appropriate for a single-story residence versus a two-story residence). The building massing would be designed appropriate for the architectural style. The design of the commercial centers would also be subject to review and approval by the Planning Commission.

Certain neighborhoods would benefit from a greater number of architectural styles and elevations per floor plan, whereas others may require a more cohesive palette. This selective architectural style criteria is designed to enhance the diverse nature of the streetscape. The home plans would have distinct building footprints with regard to placement and relationship of the garage, front door, and building mass. Higher density products (for example at the center of the community) would be designed as a “village” concept, exhibiting less variety in their architectural style. In this case, the diverse streetscape is achieved through building color and exterior building material changes and the use of massing and articulation.

Each neighborhood is designed to have a distinct architectural theme. The theme would be incorporated throughout the neighborhood including, but not limited to, housing architectural elements, entrance monuments, and landscaping. Home designs would integrate principles of universal design, sustainability, and visibility. Roof design and articulation would be compatible with the architectural design of the home and may include enhanced architectural composition roofing materials such as concrete or Spanish tiles.

In general, avoiding repetition of identical floor plans or architectural styles is important to create a sense that a neighborhood has been built over time. The continuation of style-specific architectural elements from the front façade around to the side and rear of the building creates an authentic architectural statement. Blank, unadorned building walls or “faces” would not be permitted. Unique entry and garage configurations are encouraged to give the effect of creating “two fronts” to a home and to address both streets.

Residences would be designed to have designated active and passive side yards. For example, the active side of a home would be identified as having more and larger windows and usable outdoor space. The passive side would have fewer, smaller, and often higher windows to promote privacy for the adjacent neighbor’s active side. This creates a functional relationship between homes and helps create an enhanced living environment.

Reducing garage dominance on the streetscape and bringing living space closer to the street creates street scenes that are inviting and safe. Using design techniques that enhance a home’s

architectural style and relegating the garage to a less visible position promotes a more pedestrian oriented neighborhood.

Please see the City's website (www.cityofvacaville.com) for more specifics on the proposed architectural styles, building colors, and building materials.

Neighborhood Commercial

There are two neighborhood commercial sites within the Specific Plan, as shown on Figure 3-4. Both neighborhood commercial sites are located adjacent to Leisure Town Road. One site includes 4.2 acres and is located on the southeast corner of Leisure Town Road at the realigned portion of Hawkins Road. The other site includes 3.2 acres and is located on the northeast corner of Leisure Town Road at Elmira Road. Possible uses include neighborhood retail and small restaurants. As noted above, the design of the commercial centers would be subject to review and approval of the City's Planning Commission.

Parks, Trails, and Open Space

There are approximately 45.1 acres of parks, trails and public open space proposed, as shown on Figure 3-5. A description of parks, trails and open space is provided below.

Parks

A total of five parks for approximately 26.6 acres are proposed throughout the project site (see Figure 3-4). The parks include a neighborhood park that would include a private clubhouse/pool facility for all residents, two small neighborhood parks totaling 2.5 acres, an 8.2 acre public "Play-4-All" Park designed for children of all abilities and disabilities, and an 11.2-acre community park with two soccer fields and a baseball diamond.

Trails

A series of trails are proposed throughout the project, as shown on Figure 3-5. Trails include a 10-foot-wide multi-use concrete trail for walking and biking, a 5-foot-wide concrete trail for walking, and a 4-foot-wide decomposed granite trail for jogging. The 10-foot-wide multi-use trails are proposed adjacent to collector streets and along key residential streets, along Old Alamo creek, and around the proposed detention basin. The 4-foot-wide decomposed granite jogging trail is adjacent to the multi-use trail in most locations, and the 5-foot-wide paved walking trail is adjacent to the north side of Old Alamo creek, as shown on Figure 3-5. Two pedestrian bridges would span Old Alamo Creek.



- 1 RL 6 - 48 UNITS
- 2 RLM 3.6 - 51 UNITS
- 3 CN
- 4 RLM 3.6 - 44 UNITS
- 5 RLM 4.5 - 47 UNITS
- 6 RLM 4.5 - 39 UNITS
- 7 RLM 3.6 - 69 UNITS
- 8 RL 5 - 34 UNITS
- 9 RMH - 40 UNITS
- 10 RMH - 124 UNITS
- 11 CF - CITY WELL SITE
- 12 CN
- 13 RMH - 20 UNITS
- 14 PARK
- 15 PARKS
- 16 OPEN SPACE
- 17 PARK (PLAY 4 ALL PARK)
- 18 PARK
- 19 OPEN SPACE
- 20 CF - DETENTION BASIN
- 21 CF
- 22 CF
- 23 CF
- 24 RL 5 - 90 UNITS
- 25 RL 6 - 162 UNITS
- 26 OPEN SPACE



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In addition, the project would include a detention basin that would also function as a year-round pond in the southeastern corner of the project site that would provide stormwater detention during the wet winter months. A trail would surround the pond connecting to the pedestrian trail adjacent to Old Alamo Creek. Landscaping would be provided around the pond to screen the pond and minimize attractiveness to water fowl. In addition, a low three to four-foot-high tubular fence would surround the pond.

Open Space

The project includes 13.4 acres in public open space along Old Alamo Creek and the agricultural buffer proposed along the eastern boundary of the plan area north of the detention basin.

Circulation System

The Specific Plan includes a transportation network to serve vehicles, pedestrians, bicyclists, and access to transit, as shown in Figure 3-6. The transportation network would tie into the City's existing roadway network including connections to Leisure Town Road and Hawkins Road to the west and north, and Elmira Road to the south. The on-site roadway network would consist of a minor arterial (Carroll Way) and residential streets, as shown on Figure 3-6. All on-site roads would include multi-use sidewalks to accommodate pedestrians and bicyclists. Bicycle racks would be provided at the Neighborhood Commercial Centers and at key locations along the creek. A series of traffic circles would be installed at key locations along Carroll Way and along some of the residential streets to serve as traffic calming devices as well as improving the streetscape.

The project includes improving the right-of-way adjacent to the project site which includes Leisure Town Road, Hawkins Road and Elmira Road. The project would construct 20-feet of pavement of Leisure Town Road between Hawkins Road and Elmira Road. This would also include constructing curb, gutter, and a 10-foot wide sidewalk and 4-foot wide jogging trail along the roadway frontage and installing landscaping, per the Jepson Parkway Plan. Hawkins Road would be realigned along the northern boundary of the project site to line up with Ulati Drive to form a four-way intersection and the southern portion of the road between Leisure Town Road and Carroll Way would be widened to provide a minimum of 32 feet of pavement. In addition, along the project frontage the project would construct curb, gutter, and a 10-foot wide sidewalk along with a 4-foot wide jogging trail. The project would also widen the north side of Elmira Road along the project frontage and would include an additional lane of pavement, curb, gutter, and a 10-foot wide sidewalk and a 4-foot wide jogging path.

At this time the project site is not served by transit, but the project would install a bus turnout along Leisure Town Road. The timing of future service would be determined by the Department of Public Works based on a review of sufficient route demand.

The various roadway types are described below.

Minor Arterial

Carroll Way is designated as a 2-lane minor arterial that traverses the middle of the project site north to south, as shown on Figure 3-6, connecting Elmira Road and Hawkins Road. A 30 to 35-foot wide landscape area including a 4-foot wide jogging path and a 10-foot wide Class 1 bike trail is provided on both sides of the roadway, including curb and gutter improvements.

Residential Streets

The project identifies three streets as “Enhanced Residential Streets”. For these streets, roadway widths would vary from 34 feet to 39 feet. For portions of all of these streets, on one side, there would include a 4-foot wide jogging trail alongside a 10-foot wide multi-use trail, as shown on Figure 3-6.

The three enhanced residential streets in the project site are: Camino Beltran, Camino Hacienda and Camino Arroyo. Camino Betran is an east-west street at the mid-point of the project that connects Leisure Town Road with Camino Hacienda and Carroll Way. Camino Arroyo is also an east-west street connecting Leisure Town Road with Camino Hacienda and Carroll Way. Camino Hacienda a key north-south street that connects Camino Arroyo with Camino Beltran and Hawkins Road. The remaining streets would all be standard City residential streets with sidewalks except the residential streets would all have parkway strips, also known as separated sidewalks with a 6-foot-wide landscaped area to enhance the streetscape. This area would be planted with trees and turf and would be maintained by the adjacent property owner or the homeowners association.

Public Infrastructure and Services

Water and sewer services as well as all other City services would be provided once the site is annexed to the City. The boundaries of several special districts within the County that currently serve the site would need to be changed and services provided by the Solano Irrigation District, County Lighting Service Area, Vacaville Fire Protection District, Vacaville Elmira Cemetery District, and the Solano Resource Conservation District reorganized if the project is approved and the site annexed to the City.



SOURCE: SWA (2018)

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The Farm at Alamo Creek Specific Plan EIR

Figure 3-6
Vehicular Circulation System

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The proposed project would include new water, sewer, and storm drain infrastructure on site to serve the commercial and residential development designed in compliance with City specifications. Currently there are no water, sewer, or storm drain facilities within the project site, only an irrigation canal. The project's on-site water, sewer, and storm drain lines are proposed to be located within the road/driveway rights-of-way within the project site.

The project's Homeowners Association (HOA) and/or Lighting and Landscape District would maintain the clubhouse/pool, two mini-parks, landscaping surrounding the detention basin area, lights provided in the parks, along roadways and in other public spaces as well as landscaping along the trails, medians and parkway strips.. Park maintenance of the public parks would be provided through a Park Maintenance District and/or the City's Parks and Recreation Department.

Water Supply

Existing 18-inch potable water lines are located in Leisure Town Road and Elmira Road that the project would tie into to provide a looped system. The project would tie into the City's water system in three locations along Leisure Town Road and two locations along Elmira Road. The project would install 12-inch water mains in Hawkins Road, Carroll Way, and within several other streets within the project site. An 8-inch water line would be installed in every other residential street with multiple loops created. Residential units and the neighborhood commercial areas would be served by the 8-inch and 12-inch water lines

The non-potable or irrigation supply for public areas would include a series of 6-inch and 8-inch water lines be located within Elmira Road, Hawkins Road, Carroll Way, Camino Beltran and a couple of other key streets. This system is expected to interconnect with Brighton Landing to the south via a crossing at Elmira Road. Until recycled water is available, the project's irrigation water will be provided by the City's potable water system. In addition, the project would be dedicating an approximately 1.2-acre site for a new City water well in Area 11.

Sewer

Existing trunk sewer lines are located along Elmira Road, Leisure Town Road and Hawkins Road. Sewer from the project would be conveyed to the new, combined Alamo/Fry trunk line / CSP-S trunk line. The DIF 54A project would increase the capacity in this line, and it is anticipated to be constructed prior to completion of the proposed project. In addition, the City has plans to upsize and reroute the sewer line in Leisure Town Road across the frontage of the property (known as DIF-38). These improvements would increase the capacity of the line and would reroute the line through the project site.

With this project, the project applicant would install a new 42 to 48-inch sewer main within Carroll Way that would receive flows from the future Northeast Area trunk sewer north of the project and convey flows to the new junction structure that would be constructed in Elmira Road which would then convey flows east to the Easterly Wastewater Treatment Plant.

An 18-inch sewer line would be installed to serve Phase 1 of the project. Once the 42 to 48-inch sewer line is constructed in Carroll Way this 18-inch line would be taken out of service. The project would install 8, 10 and 12-inch sewer lines within all roadways to service the commercial area and residences.

Storm Drainage and Stormwater Quality

All storm water runoff from the project would be collected in storm drain pipes and conveyed to the proposed detention basin located in the southeast corner of the project site designed to manage peak flows. The detention basin would cause the solids captured in the storm drain runoff to settle prior to discharge into Old Alamo Creek. The detention basin would be approximately 15 feet deep, include a fountain to aerate the water, and would create a year-round pond. Low flows and the first flush of stormwater flows would exit the basin via a small pipe into Old Alamo Creek just before it enters and crosses the southwest portion of the project site (Papin property) to the east. The higher flows would be detained in the basin and would exit via a large standpipe which would be connected to a large pipe in Elmira Road. This larger pipe would divert the higher flows around the Papin property ultimately draining into Old Alamo Creek at the bridge culvert that crosses the road.

The project would construct a series of storm drain pipes ranging in size from 15-inches up to 54-inches to serve stormwater runoff.

As required by the Regional Water Quality Control Board the proposed project would prepare a Stormwater Pollution Prevention Plan (SWPPP) that addresses water quality along with identifying Best Management Practices (BMPs) designed to implement and maintain procedures outlined in the SWPPP. Sediment and other particulates would be controlled using the detention basin as a volume based water quality device.

Solid Waste Disposal

Most residents and businesses in the City of Vacaville are served by Recology Vacaville Solano for solid waste collection and disposal. Recyclable material generated by the project would be taken to the Recology Vallejo facility located in Vallejo. Unrecyclable solid waste is taken to the Hay Road Landfill located in unincorporated Solano County.

Police and Fire Services

The project site would be served by the Vacaville Police Department once annexed to the City, from the main police station located in downtown Vacaville and the recently completed fire station in the Southtown project (Station 75, Vanden and Cogburn Circle).

The proposed project has been designed to include an 85-foot-wide defensible fire protection zone from the eastern boundary of the site to reduce the risk from potential wildland fires. During each phase of project construction, 85-foot wide fire breaks would be provided along the boundary of developed and undeveloped lands. An Emergency Access and Evacuation Plan would also be prepared for each phase of development and roads would be sized to adequately accommodate fire trucks.

Schools

The proposed project site is located within the Vacaville Unified School District. The school district is currently preparing a master plan to address school needs in the area east of Leisure Town Road. There are two school sites located to the south of the project site, within the Brighton Landing Specific Plan (elementary school) and a middle school site located in the Roberts' Ranch Specific Plan area.

Landscaping and Exterior Improvements

The proposed project includes a number of public features including landscaped parks, trails, a natural park setting adjacent to Old Alamo Creek, and a parklike setting surrounding the detention basin. The project is proposing to clear out the understory and remove any unhealthy or dead trees located adjacent to Old Alamo Creek, but proposes to retain all of the mature, healthy trees. The specific plan includes a detailed description of design standards and guidelines for these features and is available for review on the City's website: www.cityofvacaville.com/. In addition, the proposed traffic circles would provide areas for decorative planting and built elements to create an area of visual interest.

Landscaping

Landscaping would be water efficient and drought tolerant and would conform to the City's Water Efficient Landscape Regulations. All landscape areas would use sub-surface irrigation, low-flow nozzles, and emitters and be equipped with weather sensitive irrigation controllers. Large expanses of turf and fast growing trees and shrubs are discouraged. Plants would be climate adapted, such as herbaceous shrubs, succulents, and ornamental grasses, and would be grouped according to hydrozones, characterized by similar water needs and sun exposure. Trees are proposed along all roadways and within the adjacent parkways.

Walls/Fences

In general, perimeter walls and fences are to be minimized to the greatest extent possible. Traditionally, arterial roadways (such as Leisure Town Road) would include a masonry sound wall to visually shield the homes from the road as well as providing for noise attenuation. To the extent feasible the project minimizes constructing the traditional 8-foot-high masonry walls. For example, along Leisure Town Road there would be a four to six-foot high raised earthen berm with a split rail open style fence on top with fruit or nut trees planted on top of the berm. This would create a rural feel for the project while still visually screening the homes along with providing some noise attenuation. Along Carroll Way, homes would front on the street with driveways that allow side entry garages eliminating the need for walls and/or fencing. Along Hawkins Road and along the residential portion of Elmira Road there would likely be a traditional 8-foot-high split face masonry wall. An 8-foot-high masonry wall would be included along the southern boundary of the northern commercial site which directly abuts residential units. The split rail fencing along the eastern boundary of the project site would likely be 3-feet-high with the material to be determined. To reduce their visual prominence, walls and fences would be used in combination with trees, vines, shrubs, and hedges. Walls and fences would generally consist of a ‘family’ of elements, similar in style and materials, used in a consistent manner throughout the neighborhood. Fencing would be designed to be natural-appearing and durable, compatible with neighborhood character and reflective of the agricultural theme of the neighborhood.

Lighting

Lighting would be designed to minimize light levels for any given application and to direct the lighting onto the high use areas or objects to be lit. All outdoor site lighting fixtures shall be bi-level LED, which would reduce the demand for electricity. Low-level, pedestrian scale fixtures (i.e., bollards) would be used to the degree possible. High efficiency light fixtures would be downward focused and directed to where light is needed to avoid excessive glare and to reduce impacts on the night sky and open space. Lighting would be designed to differentiate use areas, emphasize neighborhood amenities, provide continuity along street corridors and promote the safety of residents and users. Ornamental, pedestrian scale pole lights no taller than 20-feet are proposed for local street lighting, with optics and shields that direct the light to the ground. All lighting would conform to the City’s lighting standards.

Lighting would be provided at intersections and areas of pedestrian activity and building entries and would generally be minimized elsewhere. No lighting would blink, flash, or be of unusual high intensity or brightness. All street lights would be equipped with cut-off shields to minimize visibility from adjacent areas of the community and public use areas. Parking lot lights would be no higher than necessary to provide efficient lighting of the area and would not exceed 28 feet, including the base.

Landscape lighting would generally be limited to important landscape areas, entry and sign features, public parks or pedestrian use areas. Light fixtures would generally be hidden from direct view and the light source would be shielded from view at night.

Off-street trail systems and pedestrian shortcuts would use low level lighting sources such as lighted bollards or other comparable solutions.

The Play-4-All park and Community Park would not include stadium style lights, but would include 20-foot tall pole lights with shields that direct the light downward to prevent any spillover.

Natural Gas, Electricity, Cable, and Telephone

The project also includes natural gas, electrical, cable television, and telephone to serve the project site. Gas and electric would be provided by PG&E. Telephone service would be provided by SBC and cable services would be provided by Comcast. All new utilities would be installed underground, per the City's Municipal Code and the existing overhead PG&E lines would be installed underground, if feasible.

Sustainable Project Features

The proposed project includes a variety of sustainable features including the following:

- Residences would comply with the 2017 California Building Code for Energy Efficiency.
- Walking paths throughout the community would be provided to connect all elements of the project site. Every residence would be located within 300 feet of a park, open space area, or trail.
- An Agricultural Buffer would be provided on the east end of the project site to separate the residential community from the agricultural operations.
- Three types of trails would be provided for biking, walking and jogging: 10-foot-wide concrete multi-use trail for biking and walking, decomposed granite jogging trail, and a dedicated walking trail along Old Alamo Creek.
- Landscape palette emphasizes native, drought tolerant plant species.
- Use of biofiltration-swales and vegetated swales in medians and other public spaces to pre-treat stormwater before entering the stormwater system.
- The development pattern is designed to provide connectivity between neighborhoods and project amenities. In addition, the orientation of the streets in a north-south and east-west direction enhancing the opportunities for roof solar panels.
- The commercial centers and parks would provide bike racks.

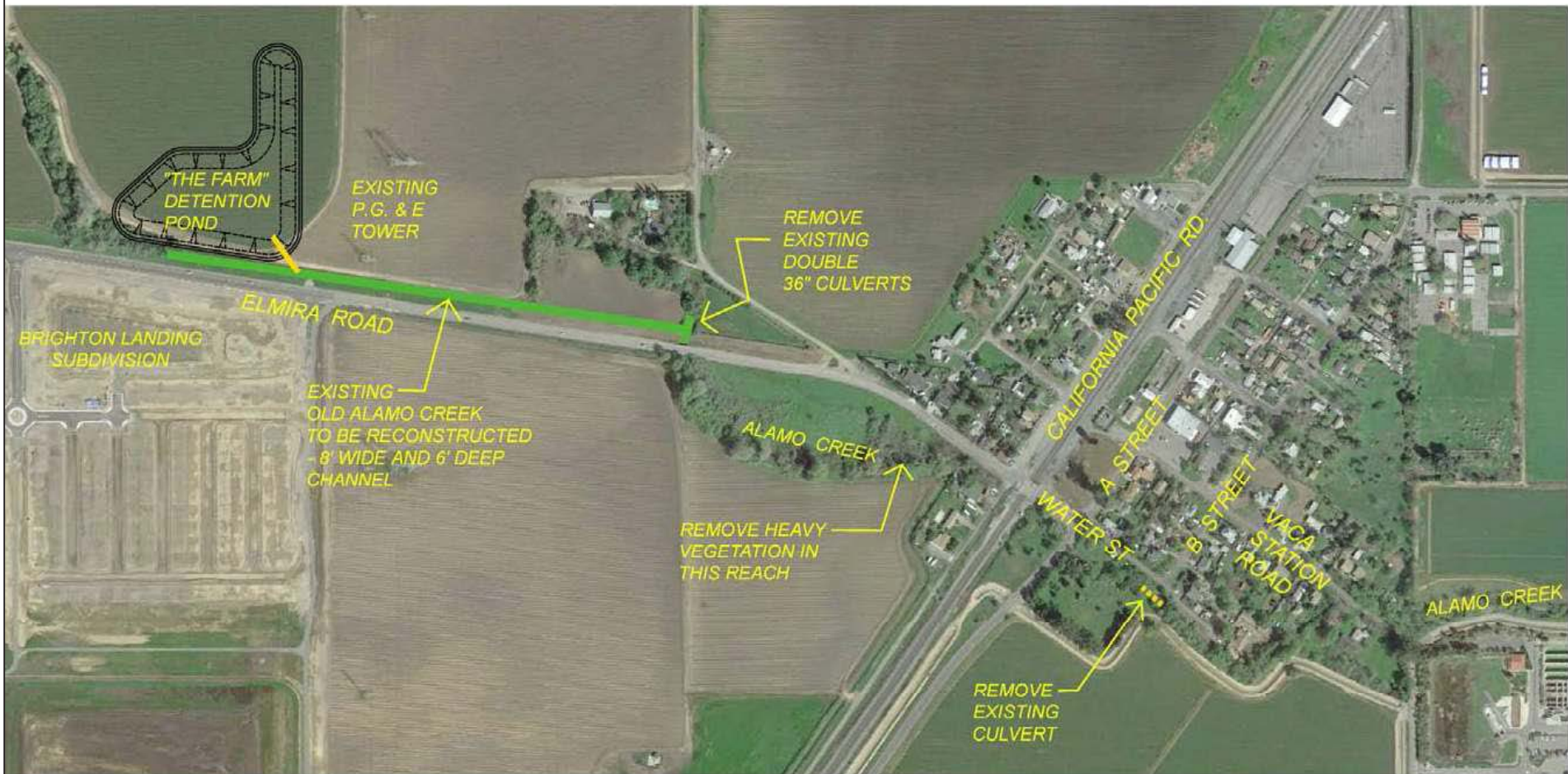
- All streets would be designed with parkway strips that would include trees for shading of streets and sidewalks.

Off-Site Improvements

To improve downstream drainage the project includes some off-site improvements that include reconstructing a short segment of Old Alamo Creek east of the detention basin by widening the channel to 8-feet and increasing the depth to 6-feet and constructing a two-foot high earthen berm around the exterior of the property located immediately adjacent to the eastern boundary of the project site, east of the power lines (Figure 3-7). This improvement would allow flood waters associated with a large storm events to pond, which would help prevent downstream flooding in the Town of Elmira. This parcel of land would continue to be used for agriculture. Other improvements include removing existing culverts and clearing out vegetation to open up the channel. It is anticipated that these improvements would reduce existing downstream flooding in the Town of Elmira.

Construction Details, Phasing, and Timeline

If approved, project construction is anticipated to commence in late summer/early fall 2018. The project is proposed to be developed in five phases, as shown on the illustrative phasing plan included as Figure 3-8. For each phase of construction site clearing, grading, and trenching for utilities would begin first followed by construction of the roadways, residences, and commercial areas. The project would be built-out consistent with market demands over an estimated five years. This plan is also subject to City revision over time. Grading would balance the soils on site and would not require the export or import of soils. Construction staging and parking for construction workers would be provided on-site.



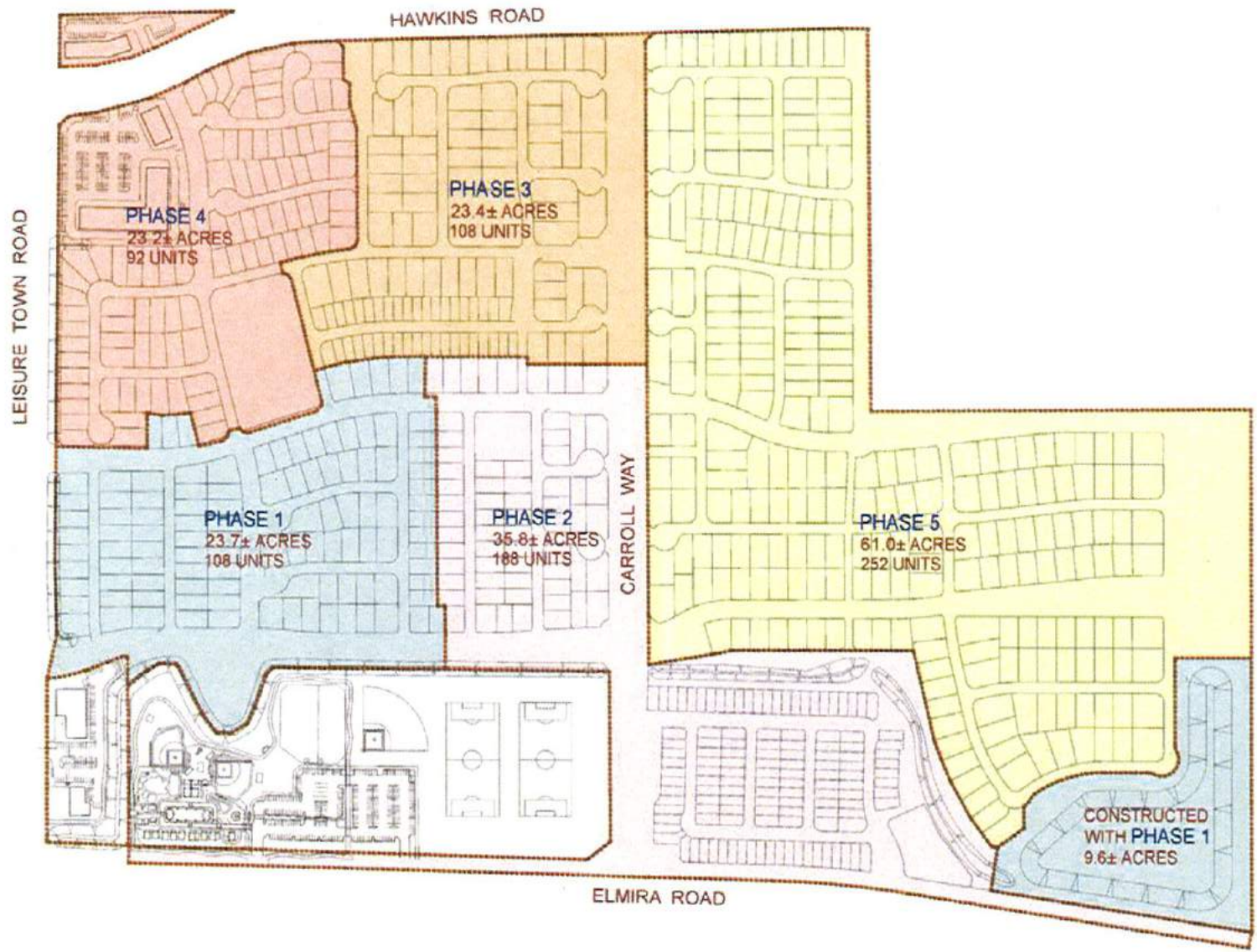
SOURCE: SWA (2018)

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The Farm at Alamo Creek Specific Plan EIR

Figure 3-7
Off-Site Improvements

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3.4 DISCRETIONARY ACTIONS AND USE OF THIS EIR

As part of the approval process, the City of Vacaville City Council would be required to exercise their independent review and discretion in determining whether to certify the EIR as adequate under CEQA and approve the project. The project approvals required from the City for this project include the following:

- Adopt The Farm at Alamo Creek Specific Plan;
- (Pre) Zone the project site, including approval for annexation;
- General Plan Amendment;
- Tentative subdivision map creating the subdivision of land;
- Adopt the Development Agreement; and
- Planned Development, Park Design Review approval, and subsequent residential design review approvals for the project.

Responsible and Trustee Agencies

The EIR prepared for the proposed project would be used by responsible agencies and trustee agencies that may have some approval authority over the proposed project (i.e., to issue a permit). The project applicant would obtain all permits, as required by law. The following agencies have been identified as having potential discretionary authority over approval of certain project elements, or alternatively, may serve in a ministerial capacity:

- California Department of Fish and Wildlife;
- Central Valley Regional Water Quality Control Board;
- Solano County Local Area Formation Commission;
- Yolo-Solano Air Quality Management District;
- Solano County Airport Land Use Commission;
- Solano County; and
- Solano Irrigation District.

3.5 REFERENCES

City of Vacaville. 2015. *City of Vacaville General Plan*. Adopted August 11, 2015. Resolution 2015-074.

Solano County. 2008. *Solano County General Plan*. Adopted August 5, 2008. Accessed September 14, 2016. http://www.co.solano.ca.us/depts/rm/planning/general_plan.asp.

SWA and Phillippi Engineering, Inc., 2018. *The Farm at Alamo Creek Specific Plan*. February 2018

CHAPTER 4 ENVIRONMENTAL ANALYSIS

4.0 INTRODUCTION

Scope of the EIR Analysis

This chapter of the Draft Environmental Impact Report (EIR) discusses the environmental and regulatory setting, impacts, and mitigation measures for each of the following technical issue areas (Sections 4.1 through 4.7):

- 4.1 Air Quality
- 4.2 Biological Resources
- 4.3 Cultural Resources
- 4.4 Hydrology, Drainage, and Water Quality
- 4.5 Land Use and Planning
- 4.6 Public Utilities
- 4.7 Transportation and Circulation.

Environmental Setting

According to subdivision (a) of Section 15125 of the California Environmental Quality Act (CEQA) Guidelines, an EIR must include a description of the existing physical environmental conditions in the vicinity of the project as they exist at the time when the Notice of Preparation (NOP) is published. This “environmental setting” will normally constitute the “baseline condition” against which project-related impacts are compared. Therefore, the baseline conditions for this EIR, unless noted otherwise, are based on conditions that existed in June 2017, when the NOP was published. The CEQA Guidelines recognize that the data for establishing an environmental baseline cannot be rigid. Because physical environmental conditions may vary over a range of time, the use of environmental baselines that differ from the date of the NOP is reasonable and appropriate in certain circumstances when doing so results in a more accurate or conservative environmental analysis.

Section Format

Each section begins with a description of the project’s **environmental setting** and **regulatory setting** as it pertains to a particular issue.

The regulatory setting provides a summary of applicable federal, state, and local regulations, plans, policies, and laws that are relevant to each issue area. The regulatory setting description in each section is followed by a discussion of project-level **impacts**. The project-specific impacts discussion is followed by an analysis of the **cumulative impacts** of the

project. This section addresses what the project's incremental contribution to cumulatively significant impacts would be and identifies mitigation measures if required. The impact portion of each section includes an impact table or box, prefaced by a number for ease of identification that includes an impact statement followed by a list of applicable policies or regulations. An explanation of each impact and an analysis of its significance follow each impact statement. All **mitigation measures** are identified at the end of each impact discussion. The degree to which the identified mitigation measure(s) would reduce the impact is also described. Compliance with applicable laws, policies, and City regulations is assumed and will be identified in the impact analysis. In many cases, compliance with applicable laws, policies, or regulations would reduce the significance of an impact.

An example of an impact statement is shown below.

4.2-1: Implementation of the proposed project may result in substantial adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. This would be a potentially significant impact.

A discussion of potential impacts of the proposed project is presented in paragraph form. The project-specific impacts associated with construction and operation of the project are evaluated and compared to the threshold of significance for the particular impact. The analysis discusses the applicable local, state, and federal laws and regulations that would reduce impacts, and assumes that the project would comply with applicable laws, ordinances, and regulations, and that the project applicant would obtain all necessary permits and comply with all required conditions of those permits. In many instances, the actions that are necessary to reduce a project impact are already required by existing laws or requirements. The impact analysis concludes with a determination of the impact's significance in **bold type** (e.g., **significant impact/significant and unavoidable impact/potentially significant impact/less-than-significant impact/results in no impact**).

Mitigation Measures

Following each impact analysis is a discussion of the applicable mitigation measures identified to reduce the significance of an impact, if required.

In Chapter 4, this section includes a statement indicating whether the mitigation measure will reduce the impact to a less-than-significant level. A discussion of how the mitigation would reduce the impact is included before the mitigation measure.

Mitigation measures, if applicable, are numbered and presented in the following format.

BIO-1: Statement of what, if any, mitigation measures are required.

Note that CEQA Guidelines, Section 15370, defines mitigation as:

- Avoiding the impact altogether by not taking a certain action or parts of an action;
- Minimizing impacts by limiting the degree of magnitude of the action and its implementation;
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
- Compensating for the impact by replacing or providing substitute resources or environments.

In addition, provided there is a “reasonable plan for mitigation” and contributions are “sufficiently tied to the actual mitigation” of the project’s impacts, a commitment to contribute a fair share to such a program discharges an agency’s mitigation duty under CEQA (*Save Our Peninsula Com. v. Monterey County Bd. of Supervisors*, (2001) 87 Cal.App.4th 99, 141); see also CEQA Guidelines, §15130, subd. (a)(3) ([recognizing that a project’s contribution to a cumulative impact may be less than cumulatively considerable where “the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact”]). See also *Anderson First Coalition v. City of Anderson*, (2005) 130 Cal.App.4th 1173).

Cumulative Analysis

An analysis of cumulative impacts follows the evaluation of project impacts under existing conditions in each section in Chapter 4. As defined in CEQA Guidelines, Section 15355, cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project together with other past, present, and reasonably foreseeable projects causing related impacts. An introductory statement that defines the cumulative analysis methodology and the cumulative context being analyzed for respective sections (e.g., buildout of the City’s General Plan, development within the Sacramento Valley Air Basin) is included under the “Cumulative Analysis” discussion. In some instances, a project-specific impact may be considered less than significant, but would be considered potentially significant in combination with other development within the surrounding area. Or, in some instances, a potentially significant impact could result on a project level, but would not result in a cumulatively considerable impact. The cumulative impacts analysis is presented in the same format as the impacts section, shown above.

Terminology Used in the EIR

This Draft EIR uses the following terminology to describe environmental effects of the proposed project:

- **Standards of Significance:** A set of criteria used by the lead agency to determine at what level or “threshold” an impact would be considered significant. Standards of significance used in this EIR include those set forth in CEQA Guidelines Section 15065 (Mandatory Findings of Significance) and those derived from questions set forth in Appendix G to the CEQA Guidelines; criteria based on regulatory standards of local, state, and federal agencies; and criteria based on goals and policies identified in the City of Vacaville General Plan. In fashioning criteria based on these sources, City staff have also relied on their own professional judgment and experience in some instances. In determining the level of significance, the analysis assumes that the proposed project would comply with relevant federal, state, and local regulations and ordinances.
- **Less-than-Significant Impact:** A project impact is considered less than significant when it does not reach the standard of significance, indicating that there would be no substantial change in the environment. No mitigation is required for less-than-significant impacts.
- **Potentially Significant Impact:** A potentially significant impact is an environmental effect that could cause a substantial adverse change in the environment; however, additional information is needed regarding the extent of the impact to make the determination of significance. For CEQA purposes, a potentially significant impact is treated as if it were a significant impact.
- **Significant Impact:** A project impact is considered significant if it results in a substantial adverse change in the physical conditions of the environment. Significant impacts are identified by the evaluation of project effects in the context of specified significance criteria. When available, potentially feasible mitigation measures and/or project alternatives are identified to reduce these effects to the environment.
- **Significant and Unavoidable Impact:** A project impact is considered significant and unavoidable if it results in a substantial adverse change in the physical conditions of the environment and there are no potentially feasible mitigation measures and/or project alternatives available to reduce these effects to less than significant.
- **Cumulative Impacts:** According to CEQA, “cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts” (CEQA Guidelines, Section 15355). CEQA requires that cumulative impacts be discussed when the “project’s incremental effect is cumulatively considerable” (CEQA Guidelines, §15130 (a)).

4.1 AIR QUALITY

4.1.1 Introduction

This section describes the project's impacts on air quality and the project's contribution to regional air quality emissions, identifies associated regulatory requirements, and evaluates potential impacts and identifies mitigation measures required (if any) associated with construction and operation of The Farm at Alamo Creek Specific Plan project (proposed project).

A number of comments regarding air quality were received from the Yolo-Solano Air Quality Management District (YSAQMD) in response to the Notice of Preparation (NOP), which included recommendations for the air quality assessment approach to include the quantification of project generated construction and operational emissions. Of particular concern are diesel powered equipment which produces nitrogen dioxide (NO_x) emissions which is a precursor to ozone (O₃) and fugitive dust generated from site preparation and earthmoving activities. In addition, the District requested the EIR include an assessment of potential toxic air contaminants (TACs) and odor exposure and impacts, if relevant. All of the air quality concerns raised during the NOP process are addressed in this section. A copy of the NOP and comment letters received are included in Appendix A. The air quality model outputs are included in Appendix C.

The background information and impact analysis presented in this section is based on proposed project plans, the California Emissions Estimator Model (CalEEMod) (used to estimate project emissions), the *City of Vacaville General Plan* (City of Vacaville 2015a) and *City of Vacaville General Plan and Energy and Conservation Action Strategy Final EIR* (City of Vacaville 2014), and the *YSAQMD Handbook for Assessing and Mitigating Air Quality Impacts* (YSAQMD 2007). A copy of The Farm at Alamo Creek Specific Plan is available on the City's website at <http://www.ci.vacaville.ca.us>.

4.1.2 Environmental Setting

Ambient air quality is generally affected by climatological conditions, the topography of the air basin, the type and amounts of pollutants emitted, and, for some pollutants, sunlight. The proposed project site is located the within Sacramento Valley Air Basin (SVAB). Topographical and climatic factors in the SVAB create the potential for high concentrations of regional and local air pollutants. This section describes relevant characteristics of the air basin, types of air pollutants, health effects, and existing air quality levels.

The SVAB includes Sacramento, Shasta, Tehama, Butte, Glenn, Colusa, Sutter, Yuba, Yolo, and portions of Solano and Placer counties. The SVAB extends from south of Sacramento to north of Redding and is bounded on the west by the Coast Ranges and on the north and east by the Cascade Range and Sierra Nevada. The San Joaquin Valley Air Basin is located to the south.

Climate and Topography

Hot dry summers and mild rainy winters characterize the Mediterranean climate of the valley. During the year the temperature may range from 20 to 115 degrees Fahrenheit (°F) with summer highs usually in the 90s and winter lows occasionally below freezing. The high average summer temperatures, combined with very low relative humidity, produces hot, dry summers that contribute to ozone (O₃) buildup. Average annual rainfall is about 20 inches with snowfall being very rare. The prevailing winds are moderate in strength and vary from moist clean breezes from the south to dry land flows from the north.

Weather patterns throughout the SVAB are affected by geography. Mountain ranges tend to buffer the basin from the marine weather systems that originate over the Pacific. However, the Carquinez Strait creates a breach in the Coast Range on the west of this basin, which exposes the midsection of the SVAB to marine weather. This marine influence moderates climatic extremes, such as the cooling that sea breezes provide in summer evenings. These breezes also help to move pollutants out of the valley. During about half of the days from July to September, however, a phenomenon called the “Schultz Eddy” prevents this from occurring. Instead of allowing for the prevailing wind patterns to move north carrying the pollutants out of the valley, the Schultz Eddy causes the wind pattern to circle back south. This effect exacerbates the pollution levels in the area and increases the likelihood of violating federal or state standards. The effect normally dissipates around noon when the delta sea breeze arrives.

The mountains surrounding the valley can also contribute to elevated pollutant concentrations during periods of surface or elevated surface inversions. These inversions are most common in late summer and fall. Surface inversions are formed when the air close to the surface cools more rapidly than the warm layer of air above it. Elevated inversions occur when a layer of cool air is suspended between warm air layers above and below it. Both situations result in air stagnation. Air pollutants accumulate under and within inversions, subjecting people in the region to elevated pollution levels and associated health concerns. The surface concentrations of pollutants are highest when these conditions are combined with smoke from agricultural burning or when temperature inversions trap cool air, fog, and pollutants near the ground.

Pollutants and Effects

Criteria Air Pollutants

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The federal and state standards have been set, with an adequate margin of safety, at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Pollutants of concern

include O₃, nitrogen dioxide (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), particulate matter with an aerodynamic diameter equal to or less than 10 microns (PM₁₀), particulate matter with an aerodynamic diameter equal to or less than 2.5 microns (PM_{2.5}), and lead. These pollutants, as well as TACs, are discussed in the following text.¹ In California, sulfates, vinyl chloride, hydrogen sulfide, and visibility-reducing particles are also regulated as criteria air pollutants.

Ozone. O₃ is a strong-smelling, pale blue, reactive, toxic chemical gas consisting of three oxygen atoms. It is a secondary pollutant formed in the atmosphere by a photochemical process involving the sun's energy and O₃ precursors. These precursors are mainly oxides of nitrogen (NO_x) and reactive organic gases (ROG, also termed volatile organic compounds [VOCs]). The maximum effects of precursor emissions on O₃ concentrations usually occur several hours after they are emitted and many miles from the source. Meteorology and terrain play major roles in O₃ formation, and ideal conditions occur during summer and early autumn on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. O₃ exists in the upper atmosphere O₃ layer (stratospheric ozone) and at the Earth's surface in the troposphere (ozone).² The O₃ that the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) regulate as a criteria air pollutant is produced close to the ground level, where people live, exercise, and breathe. Ground-level O₃ is a harmful air pollutant that causes numerous adverse health effects and is thus considered "bad" O₃. Stratospheric, or "good," O₃ occurs naturally in the upper atmosphere, where it reduces the amount of ultraviolet light (i.e., solar radiation) entering the Earth's atmosphere. Without the protection of the beneficial stratospheric O₃ layer, plant and animal life would be seriously harmed.

O₃ in the troposphere causes numerous adverse health effects; short-term exposures (lasting for a few hours) can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes (EPA 2013). These health problems are particularly acute in sensitive receptors such as the sick, the elderly, and young children.

Nitrogen Dioxide. NO₂ is a brownish, highly reactive gas that is present in all urban atmospheres. The major mechanism for the formation of NO₂ in the atmosphere is the oxidation of the primary air pollutant nitric oxide, which is a colorless, odorless gas. NO_x plays a major role, together with ROG, in the atmospheric reactions that produce O₃. NO_x is formed from fuel combustion under high temperature or pressure. In addition, NO_x is an important precursor to acid rain and may affect both terrestrial and aquatic ecosystems. The two major emissions sources are transportation and stationary fuel combustion sources such as electric utility and industrial boilers.

¹ The descriptions of each of the criteria air pollutants and associated health effects are based on the EPA's Criteria Air Pollutants (EPA 2016) and the CARB Glossary of Air Pollutant Terms (CARB 2016a).

² The troposphere is the layer of the Earth's atmosphere nearest to the surface of the Earth. The troposphere extends outward about 5 miles at the poles and about 10 miles at the equator.

NO₂ can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections (EPA 2016).

Carbon Monoxide. CO is a colorless, odorless gas formed by the incomplete combustion of hydrocarbon, or fossil fuels. CO is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas, automobile exhaust accounts for the majority of CO emissions. CO is a nonreactive air pollutant that dissipates relatively quickly; therefore, ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions—primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, which is a typical situation at dusk in urban areas from November to February. The highest levels of CO typically occur during the colder months of the year, when inversion conditions are more frequent.

In terms of adverse health effects, CO competes with oxygen, often replacing it in the blood, reducing the blood's ability to transport oxygen to vital organs. The results of excess CO exposure can include dizziness, fatigue, and impairment of central nervous system functions (EPA 2016).

Sulfur Dioxide. SO₂ is a colorless, pungent gas formed primarily from incomplete combustion of sulfur-containing fossil fuels. The main sources of SO₂ are coal and oil used in power plants and industries; as such, the highest levels of SO₂ are generally found near large industrial complexes. In recent years, SO₂ concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO₂ and limits on the sulfur content of fuels.

SO₂ is an irritant gas that attacks the throat and lungs and can cause acute respiratory symptoms and diminished ventilator function in children. When combined with particulate matter, SO₂ can injure lung tissue and reduce visibility and the level of sunlight. SO₂ can also yellow plant leaves and erode iron and steel (EPA 2016).

Particulate Matter. Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. PM_{2.5} and PM₁₀ represent fractions of particulate matter. Coarse particulate matter (PM₁₀) consists of particulate matter that is 10 microns or less in diameter and is about 1/7 the thickness of a human hair. Major sources of PM₁₀ include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood-burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical

reactions. Fine particulate matter (PM_{2.5}) consists of particulate matter that is 2.5 microns or less in diameter and is roughly 1/28 the diameter of a human hair. PM_{2.5} results from fuel combustion (e.g., from motor vehicles and power generation and industrial facilities), residential fireplaces, and woodstoves. In addition, PM_{2.5} can be formed in the atmosphere from gases such as sulfur oxides (SO_x), NO_x, and ROG.

PM_{2.5} and PM₁₀ pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. PM_{2.5} and PM₁₀ can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances such as lead, sulfates, and nitrates can cause lung damage directly or be absorbed into the blood stream, causing damage elsewhere in the body. Additionally, these substances can transport adsorbed gases such as chlorides or ammonium into the lungs, also causing injury. Whereas PM₁₀ tends to collect in the upper portion of the respiratory system, PM_{2.5} is so tiny that it can penetrate deeper into the lungs and damage lung tissue. Suspended particulates also damage and discolor surfaces on which they settle and produce haze and reduce regional visibility.

People with influenza, people with chronic respiratory and cardiovascular diseases, and the elderly may suffer worsening illness and premature death as a result of breathing particulate matter. People with bronchitis can expect aggravated symptoms from breathing in particulate matter. Children may experience a decline in lung function due to breathing in PM₁₀ and PM_{2.5} (EPA 2009).

Lead. Lead in the atmosphere occurs as particulate matter. Sources of lead include leaded gasoline; the manufacturing of batteries, paints, ink, ceramics, and ammunition; and secondary lead smelters. Prior to 1978, mobile emissions were the primary source of atmospheric lead. Between 1978 and 1987, the phase out of leaded gasoline reduced the overall inventory of airborne lead by nearly 95%. With the phase out of leaded gasoline, secondary lead smelters, battery recycling, and manufacturing facilities are becoming lead-emissions sources of greater concern.

Prolonged exposure to atmospheric lead poses a serious threat to human health. Health effects associated with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level lead exposures during infancy and childhood. Such exposures are associated with decrements in neurobehavioral performance, including intelligence quotient performance, psychomotor performance, reaction time, and growth. Children are highly susceptible to the effects of lead (EPA 2016).

Reactive Organic Gases. Hydrocarbons are organic gases that are formed from hydrogen and carbon and sometimes other elements. Hydrocarbons that contribute to formation of O₃ are

referred to and regulated as ROG. Combustion engine exhaust, oil refineries, and fossil-fueled power plants are the sources of hydrocarbons. Other sources of hydrocarbons include evaporation from petroleum fuels, solvents, dry cleaning solutions, and paint.

The primary health effects of ROG result from the formation of O₃ and its related health effects. High levels of ROG in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. Carcinogenic forms of hydrocarbons, such as benzene, are considered TACs. There are no separate health standards for ROG as a group (CARB 2016a).

Non-Criteria Air Pollutants

Toxic Air Contaminants. In addition to the criteria pollutants described above, TACs are also a category of environmental concern. TACs are airborne substances that are capable of causing adverse human health effects. Adverse health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and noncarcinogenic effects. Noncarcinogenic effects typically affect one or more target organ systems and may be experienced on either short-term (acute) or long-term (chronic) exposure to a given TAC. TACs include both organic and inorganic chemical substances. The primary TAC that would be emitted during construction activities would be diesel particulate matter, which is emitted from diesel-fueled vehicles and equipment.

Sacramento Valley Air Basin Attainment Designation

Pursuant to the 1990 federal Clean Air Act amendments, the U.S. Environmental Protection Agency (EPA) classifies air basins (or portions thereof) as “attainment” or “nonattainment” for each criteria air pollutant, based on whether the National Ambient Air Quality Standards (NAAQS) have been achieved. Generally, if the recorded concentrations of a pollutant are lower than the standard, the area is classified as “attainment” for that pollutant. If an area exceeds the standard, the area is classified as “nonattainment” for that pollutant. If there is not enough data available to determine whether the standard is exceeded in an area, the area is designated as “unclassified” or “unclassifiable.” The designation of “unclassifiable/attainment” means that the area meets the standard or is expected to meet the standard despite a lack of monitoring data. Areas that achieve the standards after a nonattainment designation are re-designated as maintenance areas and must have approved Maintenance Plans to ensure continued attainment of the standards. The California Clean Air Act, like its federal counterpart, called for the designation of areas as “attainment” or “nonattainment,” but based on California Ambient Air Quality Standards (CAAQS) rather than the NAAQS. Table 4.1-1 depicts the current attainment status of the proposed project site with respect to the NAAQS and CAAQS.

**Table 4.1-1
Sacramento Valley Air Basin Attainment Classification**

Pollutant	Designation/Classification	
	Federal Standards	State Standards
Ozone (O ₃) – 1 hour	No Federal Standard	Nonattainment
Ozone (O ₃) – 8 hour	Severe Nonattainment	Nonattainment
Nitrogen Dioxide (NO ₂)	Unclassifiable/Attainment	Attainment
Carbon Monoxide (CO)	Unclassifiable/Attainment	Attainment
Sulfur Dioxide (SO ₂)	Not Designated ^a	Attainment
Coarse Particulate Matter (PM ₁₀)	Unclassifiable/Attainment	Nonattainment
Fine Particulate Matter (PM _{2.5})	Moderate Nonattainment	Attainment
Lead (Pb)	Unclassifiable/Attainment	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility-Reducing Particles	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	No designation

Sources: EPA 2017a (federal); CARB 2016b (state).

^a CARB has identified lead and vinyl chloride as TACs with no threshold level of exposure for adverse health effects determined.

In summary, the SVAB is designated as a nonattainment area for federal and state O₃ standards, as well as the federal PM_{2.5} and state PM₁₀ standards. The SVAB is designated as an attainment area for federal and state CO standards, federal and state NO₂ standards, and federal and state SO₂ standards (CARB 2016b; EPA 2017a).

Local Ambient Air Quality

CARB, air districts, and other agencies monitor ambient air quality at approximately 250 air quality monitoring stations across the state. The proposed project site's local ambient air quality is monitored by the YSAQMD. Air quality monitoring stations usually measure pollutant concentrations 10 feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations. The most recent background ambient air quality data from 2014 to 2016 are presented in Table 4.1-2. The Ulatis Drive monitoring station, located at 2012 Ulatis Drive, Vacaville, California 95687, is the nearest air quality monitoring station to the project site, located approximately 0.9 mile to the west. The data collected at this station are considered representative of the air quality experienced in the project vicinity. Air quality data for O₃ from the Ulatis Drive monitoring station are provided in Table 4.1-2. PM₁₀ data from the station located at 650 Merchant Street, Vacaville, California 95688 (approximately 3.3 miles west of the project site), PM_{2.5} data from the station located at 41929 E Gibson Road, Woodland, California 95776 (approximately 23 miles northeast from the project

site), NO₂ data from the station located at Campbell Road, Davis, California 95616 (approximately 15 miles northeast of the project site), NO₂, and CO data from the station located at 304 Tuolumne Street, Vallejo, California 94590 (approximately 24 miles southwest of the project site) are also provided in Table 4.1-2. The number of days exceeding the ambient air quality standards is also shown in Table 4.1-2.

**Table 4.1-2
Local Ambient Air Quality Data**

Concentration or Exceedances	Ambient Air Quality Standard	2014	2015	2016
<i>Ozone (O₃) (Vacaville Ulatis Drive Monitoring Station)</i>				
Maximum 1-hour concentration (ppm)	0.09 ppm (state)	0.089	0.085	0.092
<i>Number of days exceeding state standard (days)</i>		<i>0</i>	<i>0</i>	<i>0</i>
Maximum 8-hour concentration (ppm)	0.070 ppm (state)	0.072	0.071	0.073
	0.070 ppm (federal)	0.072	0.070	0.072
<i>Number of days exceeding state standard (days)</i>		<i>1</i>	<i>1</i>	<i>1</i>
<i>Number of days exceeding federal standard (days)</i>		<i>1</i>	<i>0</i>	<i>1</i>
<i>Nitrogen Dioxide (NO₂) (UC Davis Campbell Street Monitoring Station)</i>				
Maximum 1-hour concentration (ppm)	0.18 ppm (state)	0.410	0.310	0.380
	0.100 ppm (federal)	0.418	0.310	0.382
<i>Number of days exceeding state standard (days)</i>		<i>0</i>	<i>0</i>	<i>0</i>
<i>Number of days exceeding federal standard (days)</i>		<i>0</i>	<i>0</i>	<i>0</i>
Annual concentration (ppm)	0.030 ppm (state)	0.005	0.005	ND
	0.053 ppm (federal)	0.006	0.006	0.006
<i>Carbon Monoxide (CO) (Vallejo Tuolumne Street Monitoring Station)</i>				
Maximum 1-hour concentration (ppm)	20 ppm (state)	—	—	—
	35 ppm (federal)	2.5	2.4	2.1
<i>Number of days exceeding state standard (days)</i>		<i>—</i>	<i>—</i>	<i>—</i>
<i>Number of days exceeding federal standard (days)</i>		<i>0</i>	<i>0</i>	<i>0</i>
Maximum 8-hour concentration (ppm)	9.0 ppm (state)	—	—	—
	9 ppm (federal)	2.1	1.9	1.8
<i>Number of days exceeding state standard (days)</i>		<i>—</i>	<i>—</i>	<i>—</i>
<i>Number of days exceeding federal standard (days)</i>		<i>0</i>	<i>0</i>	<i>0</i>

**Table 4.1-2
Local Ambient Air Quality Data**

Concentration or Exceedances	Ambient Air Quality Standard	2014	2015	2016
<i>Coarse Particulate Matter (PM₁₀) (Vacaville Merchant Street Monitoring Station)</i>				
Maximum 24-hour concentration (µg/m ³)	50 µg/m ³ (state)	29.8	42.5	24.7
	150 µg/m ³ (federal)	28.5	41.7	24.9
Number of days exceeding state standard (days) ^a		0.0 (0)	0.0 (ND)	0.0 (ND)
Number of days exceeding federal standard (days) ^a		0.0 (0)	0.0 (0)	0.0 (0)
Annual concentration (µg/m ³)	20 µg/m ³ (state)	11.4	ND	ND
<i>Fine Particulate Matter (PM_{2.5}) (Woodland E. Gibson Road Monitoring Station)</i>				
Maximum 24-hour concentration (µg/m ³)	35 µg/m ³ (federal)	14.6	29.4	16.4
Number of days exceeding federal standard (days) ^a		0.0 (0)	0.0 (0)	0.0 (0)
Annual concentration (µg/m ³)	12 µg/m ³ (state)	14.6	29.4	16.4
	12.0 µg/m ³ (federal)	ND	7.6	6.4

Sources: CARB 2017; EPA 2017b.

Notes: — = not available; µg/m³ = micrograms per cubic meter; ND = insufficient data available to determine the value; ppm = parts per million
Data taken from CARB iADAM (<http://www.arb.ca.gov/adam>) and EPA AirData (<http://www.epa.gov/airdata/>) represent the highest concentrations experienced over a given year.

Exceedances of federal and state standards are only shown for O₃ and particulate matter. Daily exceedances for particulate matter are estimated days because PM₁₀ and PM_{2.5} are not monitored daily. All other criteria pollutants did not exceed federal or state standards during the years shown. There is no federal standard for 1-hour ozone, annual PM₁₀, or 24-hour SO₂, nor is there a state 24-hour standard for PM_{2.5}.

^a Measurements of PM₁₀ and PM_{2.5} are usually collected every 6 days and every 1 to 3 days, respectively. Number of days exceeding the standards is a mathematical estimate of the number of days concentrations would have been greater than the level of the standard had each day been monitored. The numbers in parentheses are the measured number of samples that exceeded the standard.

Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. People most likely to be affected by air pollution include children, the elderly, athletes, and people with cardiovascular and chronic respiratory diseases. Facilities and structures where these air pollution-sensitive people live or spend considerable amounts of time are known as sensitive receptors. Land uses where air pollution-sensitive individuals are most likely to spend time include schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities (sensitive sites or sensitive land uses) (CARB 2005). Adjacent sensitive receptors to the proposed project include residential development directly west of the project site across Leisure Town Road. The Brighton Landing Specific Plan area which is located directly south of the project site across Elmira Road is currently under construction but could be occupied if this

project is approved and construction begins in 2018. In addition, the proposed project would result in the development of residences, which would be considered sensitive receptors as the project phases are built out.

4.1.3 Regulatory Setting

Federal Regulations

Criteria Air Pollutants

The federal Clean Air Act, passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The EPA is responsible for implementing most aspects of the Clean Air Act, including setting NAAQS for major air pollutants; setting hazardous air pollutant (HAP) standards; approving state attainment plans; setting motor vehicle emission standards; issuing stationary source emission standards and permits; and establishing acid rain control measures, stratospheric O₃ protection measures, and enforcement provisions. Under the Clean Air Act, NAAQS are established for the following criteria pollutants: O₃, CO, NO₂, SO₂, PM₁₀, PM_{2.5}, and lead.

The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The NAAQS (other than for O₃, NO₂, SO₂, PM₁₀, PM_{2.5}, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. NAAQS for O₃, NO₂, SO₂, PM₁₀, and PM_{2.5} are based on statistical calculations over 1- to 3-year periods, depending on the pollutant. The Clean Air Act requires the EPA to reassess the NAAQS at least every 5 years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States with areas that exceed the NAAQS must prepare a state implementation plan that demonstrates how those areas will attain the standards within mandated time frames.

Hazardous Air Pollutants

The 1977 federal Clean Air Act amendments required the EPA to identify National Emission Standards for Hazardous Air Pollutants (HAPs) to protect public health and welfare. HAPs include certain volatile organic chemicals, pesticides, herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals. Under the 1990 federal Clean Air Act Amendments, which expanded the control program for HAPs, 189 substances and chemical families were identified as HAPs.

State Regulations

Criteria Air Pollutants

The federal Clean Air Act delegates the regulation of air pollution control and the enforcement of the NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to CARB, with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels. CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for ensuring implementation of the California Clean Air Act of 1988, responding to the federal Clean Air Act, and regulating emissions from motor vehicles and consumer products.

CARB has established CAAQS, which are generally more restrictive than the NAAQS. The CAAQS describe adverse conditions; that is, pollution levels must be below these standards before a basin can attain the standard. Air quality is considered “in attainment” if pollutant levels are continuously below the CAAQS and violate the standards no more than once each year. The CAAQS for O₃, CO, SO₂ (1-hour and 24-hour), NO₂, PM₁₀, and PM_{2.5} and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. The NAAQS and CAAQS are presented in Table 4.1-3.

**Table 4.1-3
Ambient Air Quality Standards**

Pollutant	Averaging Time	California Standards ^a	National Standards ^b	
		Concentration ^c	Primary ^{c,d}	Secondary ^{c,e}
O ₃	1 hour	0.09 ppm (180 µg/m ³)	—	Same as Primary Standard ^f
	8 hours	0.070 ppm (137 µg/m ³)	0.070 ppm (137 µg/m ³) ^f	
NO ₂ ^g	1 hour	0.18 ppm (339 µg/m ³)	0.100 ppm (188 µg/m ³)	Same as Primary Standard
	Annual Arithmetic Mean	0.030 ppm (57 µg/m ³)	0.053 ppm (100 µg/m ³)	
CO	1 hour	20 ppm (23 mg/m ³)	35 ppm (40 mg/m ³)	None
	8 hours	9.0 ppm (10 mg/m ³)	9 ppm (10 mg/m ³)	
SO ₂ ^h	1 hour	0.25 ppm (655 µg/m ³)	0.075 ppm (196 µg/m ³)	—
	3 hours	—	—	0.5 ppm (1,300 µg/m ³)
	24 hours	0.04 ppm (105 µg/m ³)	0.14 ppm (for certain areas) ^g	—

**Table 4.1-3
Ambient Air Quality Standards**

Pollutant	Averaging Time	California Standards ^a	National Standards ^b	
		Concentration ^c	Primary ^{c,d}	Secondary ^{c,e}
	Annual	—	0.030 ppm (for certain areas) ^g	—
PM ₁₀ ⁱ	24 hours	50 µg/m ³	150 µg/m ³	Same as Primary Standard
	Annual Arithmetic Mean	20 µg/m ³	—	
PM _{2.5} ⁱ	24 hours	—	35 µg/m ³	Same as Primary Standard
	Annual Arithmetic Mean	12 µg/m ³	12.0 µg/m ³	15.0 µg/m ³
Lead ^{j,k}	30-day Average	1.5 µg/m ³	—	—
	Calendar Quarter	—	1.5 µg/m ³ (for certain areas) ^k	Same as Primary Standard
	Rolling 3-Month Average	—	0.15 µg/m ³	
Hydrogen sulfide	1 hour	0.03 ppm (42 µg/m ³)	—	—
Vinyl chloride ^j	24 hours	0.01 ppm (26 µg/m ³)	—	—
Sulfates	24- hours	25 µg/m ³	—	—
Visibility reducing particles	8 hour (10:00 a.m. to 6:00 p.m. PST)	Insufficient amount to produce an extinction coefficient of 0.23 per kilometer due to the number of particles when the relative humidity is less than 70%	—	—

Source: CARB 2016c.

Notes: µg/m³ = micrograms per cubic meter; CO = carbon monoxide; mg/m³ = milligrams per cubic meter; NO₂ = nitrogen dioxide; O₃ = ozone; PM₁₀ = particulate matter with an aerodynamic diameter less than or equal to 10 microns; PM_{2.5} = particulate matter with an aerodynamic diameter less than or equal to 2.5 microns; ppm = parts per million by volume; SO₂ = sulfur dioxide

^a California standards for O₃, CO, SO₂ (1-hour and 24-hour), NO₂, suspended particulate matter (PM₁₀, PM_{2.5}), and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

^b National standards (other than O₃, NO₂, SO₂, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once per year. The O₃ standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM₁₀, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than 1. For PM_{2.5}, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

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

- ^d National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.
- ^e National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
- ^f On October 1, 2015, the EPA Administrator signed the notice for the final rule to revise the primary and secondary NAAQS for O₃. The EPA is revising the levels of both standards from 0.075 ppm to 0.070 ppm and retaining their indicators (O₃), forms (fourth-highest daily maximum, averaged across 3 consecutive years) and averaging times (8 hours). The EPA is in the process of submitting the rule for publication in the Federal Register. The final rule will be effective 60 days after the date of publication in the Federal Register. The lowered national 8-hour standards are reflected in the table.
- ^g To attain the national 1-hour standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 parts per billion (ppb). Note that the national 1-hour standard is in units of ppb. California standards are in units of ppm. To directly compare the national 1-hour standard to the California standards, the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
- ^h On June 2, 2010, a new 1-hour SO₂ standard was established, and the existing 24-hour and annual primary standards were revoked. To attain the national 1-hour standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO₂ national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated nonattainment of the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
- ⁱ On December 14, 2012, the national annual PM_{2.5} primary standard was lowered from 15 µg/m³ to 12.0 µg/m³. The existing national 24-hour PM_{2.5} standards (primary and secondary) were retained at 35 µg/m³, as was the annual secondary standard of 15 µg/m³. The existing 24-hour PM₁₀ standards (primary and secondary) of 150 µg/m³ were also retained. The form of the annual primary and secondary standards is the annual mean averaged over 3 years.
- ^j CARB has identified lead and vinyl chloride as TACs with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
- ^k The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 µg/m³ as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

Toxic Air Contaminants

The state Air Toxics Program was established in 1983 under AB 1807 (Tanner). The California TAC list identifies more than 700 pollutants, of which carcinogenic and noncarcinogenic toxicity criteria have been established for a subset of these pollutants pursuant to the California Health and Safety Code. In accordance with AB 2728, the state list includes the (federal) HAPs. The Air Toxics “Hot Spots” Information and Assessment Act of 1987 (AB 2588) seeks to identify and evaluate risk from air toxics sources; however, AB 2588 does not regulate air toxics emissions. TAC emissions from individual facilities are quantified and prioritized. “High-priority” facilities are required to perform a health risk assessment, and if specific thresholds are exceeded, are required to communicate the results to the public in the form of notices and public meetings.

In 2000, CARB approved a comprehensive Diesel Risk Reduction Plan to reduce emissions of diesel particulate matter (DPM) from both new and existing diesel-fueled vehicles and engines (CARB 2000). The regulation is anticipated to result in an 80% decrease in statewide diesel health risk in 2020 compared with the diesel risk in 2000. Additional regulations apply to new trucks and diesel fuel, including the On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation, the On-Road Heavy Duty (New) Vehicle Program, the In-Use Off-Road Diesel Vehicle Regulation, and the New Off-Road Compression-Ignition (Diesel) Engines and Equipment program. All of these regulations and programs have timetables by which manufacturers must comply and existing operators must upgrade their diesel powered equipment. Several Airborne Toxic Control Measures (ATCMs) that reduce diesel emissions

include In-Use Off-Road Diesel-Fueled Fleets (13 CCR 2449 et seq.) and In-Use On-Road Diesel-Fueled Vehicles (13 CCR 2025).

Despite these reduction efforts, the CARB recommends that proximity to sources of DPM emissions be considered in the siting of new sensitive land uses. In April 2005, the CARB published the *Air Quality and Land Use Handbook: a Community Health Perspective*. This handbook is intended to give guidance to local governments in the siting of sensitive land uses near sources of air pollution. Recent studies have shown that public exposure to air pollution can be substantially elevated near freeways and certain other facilities such as ports, rail yards and distribution centers. Specifically, the document focuses on risks from emissions of DPM, a known carcinogen, and establishes recommended siting distances of sensitive receptors. The CARB notes that these recommendations are advisory and should not be interpreted as defined “buffer zones,” and that local agencies must balance other considerations, including transportation needs, the benefits of urban infill, community economic development priorities, and other quality of life issues. With careful evaluation of exposure, health risks, and affirmative steps to reduce risk where necessary the CARB’s position is that infill development, mixed use, higher density, transit-oriented development, and other concepts that benefit regional air quality can be compatible with protecting the health of individuals at the neighborhood level (CARB 2005).

Local Regulations

Yolo-Solano Air Quality Management District

The YSAQMD is the primary local agency responsible for protecting human health and property from the harmful effects of air pollution for all of Yolo County and northeastern Solano County. The YSAQMD develops rules and regulations for stationary sources and equipment, prepares emissions inventory and air quality management planning documents, and conducts source testing and inspections. The YSAQMD’s air quality management plans include control measures and strategies to be implemented to attain state and federal ambient air quality standards within the jurisdiction. The YSAQMD then implements these control measures as regulations to control or reduce criteria pollutant emissions from stationary sources or equipment. Applicable YSAQMD attainment plans include:

- ***Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan (2013 SIP Revisions)***: The 8-Hour Ozone Attainment and Reasonable Further Program Plan (2013 Ozone Plan) describes measures to be implemented by the air districts in the Sacramento Federal Nonattainment Area (SFNA) to achieve the 1997 O₃ NAAQS. The 2013 Ozone Plan shows that the region continues to meet federal progress requirements and demonstrates that the region will meet the 1997 O₃ NAAQS by 2018. The 2013 Ozone Plan updates the emissions inventory, provides photochemical modeling results, updates the reasonable further progress and attainment

demonstrations, revises adoption dates for control measures, and sets new motor vehicle emission budgets for transportation conformity purposes. The 2013 Ozone Plan also includes a VMT offset demonstration that showed the emissions reduction from transportation control measures are sufficient to offset the emissions increase due to VMT growth (YSAQMD et al. 2013a).

- ***PM_{2.5} Implementation/Maintenance Plan and Redesignation Request for Sacramento PM_{2.5} Nonattainment Area:*** On May 9, 2012, CARB submitted a request that EPA find the Sacramento region in attainment for the 2006 24-hour PM_{2.5} NAAQS. On August 14, 2013, the EPA officially determined that the SFNA had attained the 24-hour PM_{2.5} NAAQS by the attainment deadline. On October 24, 2013, the YSAQMD, Sacramento Metropolitan Air Quality Management District, El Dorado County Air Quality Management District, and the Placer County Air Pollution Control District approved the PM_{2.5} maintenance plan and request for redesignation for the 2006 PM_{2.5} NAAQS (YSAQMD et al. 2013b) to meet the EPA redesignation requirements.
- ***Triennial Assessment and Plan Update:*** This plan is intended to comply with the requirements of the California Clean Air Act as related to bringing the region into compliance with the CAAQS for O₃. The YSAQMD has prepared several triennial progress reports that build upon the 1992 Triennial Plan. The *Triennial Assessment and Plan Update* (YSAQMD 2013) is the most recent report. The triennial progress report describes historical trends in air quality, includes updated emissions inventories, and identifies feasible control measures the YSAQMD will study or adopt over the triennial period. The YSAQMD has also published a *Draft Triennial Assessment and Plan Update* (YSAQMD 2016), which has not yet been adopted.

In addition, the YSAQMD has several rules that relate to the proposed project, which are summarized below.

- **Rule 2.3 – Ringelmann Chart:** Prohibits individuals from discharging into the atmosphere from any source of emissions whatsoever any air contaminant whose opacity exceeds certain specified limits.
- **Rule 2.5 – Nuisance:** To protect the public health, Rule 2.5 prohibits any person from discharging such quantities of air contaminants that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public.
- **Rule 2.14 – Architectural Coatings:** Sets ROG content limits for coatings that are supplied, sold, offered for sale, applied, solicited for application, or manufactured for use within the YSAQMD.
- **Rule 2.28 – Cutback and Emulsified Asphalts:** Asphalt paving operations that may be associated with implementation of the project would be subject to Rule 2.28. This rule

applies to the manufacture, storage, and use of cutback asphalt and emulsified asphalt for paving and maintenance operations.

- **Rule 2.40 – Wood Burning Appliances:** This rule establishes which types of wood burning appliances can be sold, supplied, and installed in new or existing development.
- **Rule 3.1 – General Permit Requirements:** Requires any project that includes the use of certain equipment capable of releasing emissions to the atmosphere to obtain an Authority to Construct and Permit to Operate from the YSAQMD.

The YSAQMD issued its *Handbook for Assessing and Mitigating Air Quality Impacts* (YSAQMD 2007) to assist lead agencies in determining when potential air quality impacts would be considered significant under CEQA. The analysis herein uses this YSAQMD guidance document to determine the proposed project's significance with respect to air pollutant emissions.

City of Vacaville General Plan

As discussed in the City of Vacaville General Plan, policies pertaining to improving air quality applicable to the project are listed below (City of Vacaville 2015):

- Policy COS-P12.3** Encourage project designs that protect and improve air quality and minimize direct and indirect air pollutant emissions by including components that reduce vehicle trips and promote energy efficiency.
- Policy COS-P12.4** Require that development projects implement best management practices (BMPs) to reduce air pollutant emissions associated with the construction and operation of the project.
- Policy COS-P12.5** Require dust control measures as a condition of approval for subdivision maps, site plans, and all grading permits.
- Policy COS-P12.6** Consistent with the YSAQMD's standards, require that any fireplaces in new and significantly renovated residential projects, or commercial projects are pellet-fueled heaters, EPA Phase II-certified wood burning heaters, or gas fireplaces.
- Policy COS-P12.10** Encourage the use of roadway materials that minimize particulate emissions.

4.1.4 Impacts

Methods of Analysis

Project-related air quality impacts fall into two categories: short-term impacts due to construction and long-term impacts due to project operation. First, during project construction (short-term), the proposed project would result in an increase in emissions primarily due to off-

road construction equipment, on-road vehicles, architectural coating and asphalt off-gassing, and fugitive dust from earth moving. Under project operation (long-term), the proposed project would result in an increase in emissions due to motor vehicle trips and on-site stationary sources such as certain commercial uses. Other sources include minor area sources such as landscaping and use of consumer products.

The proposed project's short-term construction-related and long-term operational emissions were estimated using the CalEEMod software (version 2016.3.2), a statewide model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify air quality emissions from a variety of development projects. The model applies inherent default values for various land uses, including trip generation rates based on the Institute of Transportation Engineers Trip Generation Manual, vehicle mix, trip length, average speed, etc. However, where project-specific data was available, such data were input into the model (e.g., construction phases, timing, equipment, and estimated daily project trips).

Construction Assumptions

For the purposes of modeling construction, it was generally assumed that heavy construction equipment would be operating at the site for approximately 8 hours per day, 5 days per week (22 days per month), during project construction. The equipment fleet is based on CalEEMod default assumptions for specific pieces of equipment to be utilized during each construction subphase, except for the inclusion of a trencher for grading phases which would account for utility work. Default construction worker, vendor trips, haul truck trips, and trip lengths as provided in CalEEMod were utilized. It was assumed all soil during grading activities would be balanced on-site and no soil import or export would be required. Notably, CalEEMod assume multiple-passes for grading equipment for each phase of project construction. The total acres graded in CalEEMod is based on the equipment list and days of a grading phase according to the anticipated maximum number of acres a given piece of equipment can pass over in an 8-hour workday (i.e., 0.5-acre for crawler tractors, 0.5-acre for graders, 0.5-acre for rubber tired dozers, and 1-acre for scrapers). The total graded areas estimated for each phase are as follows: 220 acres for Phase 1; 223 acres for Phase 2; 220 acres for Phase 3; 218 acres for Phase 4; 275 acres for Phase 5; 10 acres for the Play-4-All Park; 10 acres for the Community Park; and 113 acres for Off-site Improvements. Specific CalEEMod assumptions for each model scenario, including quantity of equipment, are provided in Appendix C.

It is anticipated that construction of the proposed project would occur in 8 phases over a period of six-years, from approximately April 2018 through December 2023. While CalEEMod assumes that construction subphases (i.e., grading, building construction, paving, and architectural coatings) do not overlap, the project applicant has provided an estimated construction schedule. The analysis contained herein is based on the following schedule assumptions provided in Table 4.1-4.

**Table 4.1-4
Estimated Construction Schedule**

Activity	Start Date	End Date	Total Construction Days
<i>Phase 1</i>			
Building Construction	2018/04/01	2019/06/30	325
Grading/Trenching	2018/07/01	2018/10/31	88
Paving	2018/11/01	2019/06/30	172
Architectural Coatings	2019/04/01	2019/12/30	196
<i>Play-4-All Park</i>			
Grading	2018/07/01	2018/12/31	131
Building Construction	2018/07/01	2018/10/31	88
Architectural Coatings	2018/08/01	2018/10/31	66
Paving	2018/08/31	2018/10/31	44
<i>Phase 2</i>			
Grading/Trenching	2019/07/01	2019/10/31	89
Paving	2019/11/01	2020/06/30	174
Building Construction	2020/04/01	2020/12/30	196
Architectural Coatings	2020/04/01	2020/12/30	196
<i>Off-Site Improvements</i>			
Demolition	2019/07/01	2019/07/26	20
Grading	2019/07/27	2019/09/30	46
<i>Phase 3</i>			
Grading/Trenching	2020/07/01	2020/10/31	88
Paving	2020/11/01	2021/06/30	173
Building Construction	2021/04/01	2021/12/30	196
Architectural Coatings	2021/04/01	2021/12/30	196
<i>Phase 4</i>			
Grading/Trenching	2021/07/01	2021/10/31	87
Paving	2021/11/01	2022/06/30	174
Building Construction	2022/04/01	2022/12/30	196
Architectural Coatings	2022/04/01	2022/12/30	196
<i>Community Park</i>			
Grading	2021/07/01	2021/10/31	87
Building Construction	2021/08/01	2021/10/31	65
Paving	2021/08/01	2021/10/31	65
Architectural Coatings	2021/08/01	2021/10/31	65
<i>Phase 5</i>			
Grading/Trenching	2022/07/01	2022/10/31	87
Paving	2022/11/01	2023/06/30	174
Building Construction	2023/04/01	2023/12/30	195

**Table 4.1-4
Estimated Construction Schedule**

Activity	Start Date	End Date	Total Construction Days
Architectural Coatings	2023/04/01	2023/12/30	195

Source: See Appendix C for detailed results.

Notes: Types of activities under each phase are based on the CalEEMod defaults and the land uses proposed. Total duration of construction is from June 2018 through May 2028 (10 years), with the duration of each phase of construction apportioned based on the number of residential dwelling units to be developed in the phase (based on the tentative map for the proposed project).

Operational Assumptions

To quantify emissions associated with project operation, default trip generation rates and trip lengths included in CalEEMod for each analyzed land use for the project were adjusted to match the overall weekday daily trips (10,635 trips) and the total average daily vehicle miles traveled (VMT) length data (10.1 miles per trip) provided by the traffic consultant, Prism Engineering. Notably, the proposed project includes a mix of uses including residential and commercial, the traffic analysis calculated that the proposed project would include a total of 1,002 internal trips for the neighborhood commercial and regional park, and 1,032 pass-by trips for neighborhood commercial uses. CalEEMod default data, including temperature, trip characteristics, variable start information, emissions factors, and trip distances (other than for C-C trip lengths) were conservatively used for the model inputs. Project-related traffic was assumed to include a mixture of vehicles in accordance with the model outputs for the traffic analysis. Emission factors representing the vehicle mix and emissions for 2024 (the first full year of project operation) were used to estimate emissions associated with full buildout of the proposed project. The traffic consultant did not account for a reduction in internal vehicle trips based on the pedestrian and bicycle amenities provided because it is difficult to quantify the reduction in trips assuming people would walk or ride their bicycles to go to the park, for example. No accounting for any internal trip reduction provides a more conservative analysis.

Default values provided by CalEEMod were used for the VOC content of architectural coatings for maintenance in accordance with YSAQMD Rule 2.14 (Architectural Coatings), which requires the VOC content in paint of 100 grams of VOC per liter of coating for non-flat coatings for residential uses and 150 grams of VOC per liter of coating for non-flat coatings for nonresidential uses.

The estimation of operational energy emissions was based on CalEEMod land use defaults and total area (i.e., square footage) of the proposed project. Annual natural gas (non-hearth) and electricity emissions were estimated in CalEEMod using the emissions factors for Pacific Gas and Electric (PG&E) as a conservative estimate and adjusted to account for 33% renewable portfolio standard by 2020. In addition, the CalEEMod default values for energy consumption for each land use were applied for the project analysis, which account for 2016 Title 24 standards. Title 24 of the California Code of Regulations serves to enhance and regulate

California's building standards. Buildings constructed in accordance with the 2016 standards require that nonresidential and residential buildings constructed in accordance with the 2016 standards would use 5% and 28% less energy, respectively, for lighting, heating, cooling, ventilation, and water heating than the 2013 standards (CEC 2015).

Issues Addressed in the Modified Initial Study

Development of the project site was evaluated in the City's General Plan EIR and is generally consistent with the City's General Plan and the population and employment growth assumptions incorporated in the Sacramento Regional 8-Hour Ozone Attainment Plan and Reasonable Further Progress Plan. Because the project was considered in the General Plan and development was assumed it would not conflict with or obstruct implementation of the applicable air quality plan. This is addressed in the Modified Initial Study included in Appendix B. The proposed project would also not create objectionable odors affecting a substantial number of people. Types of land use developments that pose potential odor problems include wastewater treatment plants, refineries, landfills, composting facilities, and transfer stations. Although the proposed project would be located approximately 0.8-mile to the east of the Easterly Waste Water Treatment Plant no odor complaints have been received for the WWTP within the last 3 years (YSAQMD 2016b); therefore, the proposed project would not be located in an area where existing odors are a concern. The proposed project would also not introduce a new source of odors. Therefore, impacts related to odors would be less than significant and are addressed in the Modified Initial Study.

Thresholds of Significance

Consistent with Appendix G of the CEQA Guidelines, the City's General Plan, and professional judgment, a significant impact would occur if development of the proposed project would do any of the following:

- Violate any air quality standard or contribute substantially to an existing or projected air quality violation. The YSAQMD further defines the thresholds of significance as follows:
 - Generation of ROG or NO_x emissions for construction or operations in excess of 10 tons per year; or
 - Generation of PM₁₀ emissions for construction or operations in excess of 80 pounds per day.
 - The YSAQMD does not have a board adopted threshold for PM_{2.5} emissions, the YSAQMD recommends using an adopted PM_{2.5} threshold from another jurisdiction in the nonattainment area (Jones 2016). As such, the Sacramento Metropolitan Air Quality Management District (SMAQMD) threshold of 82 pounds per day of PM_{2.5} emissions has been applied to this analysis during construction and operations.

- 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 O₃ precursors). The YSAQMD further defines the threshold of significance as follows:
 - Emissions would be considered cumulatively considerable if they are individually significant;
 - CO impacts are also cumulatively considerable when an exceedance of CO air quality standards results from project CO emissions combined with and CO emissions from other planned projects.
- Expose sensitive receptors to substantial pollutant concentrations.

Impacts and Mitigation Measures

4.1-1: Construction of the proposed project could result in emissions of ROG, NO_x, or PM_{10/2.5} at levels that could substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions. This would be a potentially significant impact.

Construction of the proposed project would result in a temporary increase in air pollutants to the local air shed caused by soil disturbance, fugitive dust emissions, and combustion pollutants from on-site construction equipment, as well as from off-site trucks hauling building materials and from construction workers travelling to and from the site. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation and, for dust, the prevailing weather conditions. Therefore, an increment of day-to-day variability exists. In the absence of mitigation, construction activities may result in significant quantities of dust, especially during site clearing and grading and as a result, local visibility and PM₁₀ and PM_{2.5} concentrations may occur on a temporary and intermittent basis. In addition, fugitive dust generated by construction would include not only include PM₁₀ and PM_{2.5} but also larger particles, which would fall out of the atmosphere within several hundred feet of the site and could result in nuisance-type impacts.

Pollutant emissions associated with construction activity, specifically ROG, NO_x, PM₁₀, and PM_{2.5} emissions from off-road equipment, fugitive dust, on-road worker vehicle emissions, and vendor delivery trips were quantified using CalEEMod. Predicted unmitigated daily and annual construction emissions for each phase of project development are presented in Table 4.1-5 and compared to the applicable YSAQMD threshold.

**Table 4.1-5
Estimated Daily and Annual Construction Emissions**

Year	ROG	NO_x	PM₁₀	PM_{2.5}
<i>Daily Emissions (Pounds Per Day)</i>				
2018	18.66	179.80	27.90	16.23
2019	23.74	115.04	23.11	12.14
2020	24.82	84.90	15.53	7.91
2021	25.57	139.37	25.31	13.86
2022	24.90	71.23	15.79	7.25
2023	34.82	36.25	5.16	2.26
<i>Maximum Daily</i>	34.82	179.80	27.90	16.23
<i>Pollutant Threshold</i>	NA	NA	80	82
Threshold Exceeded?	NA	NA	No	No
<i>Annual Emissions (Tons Per Year)</i>				
2018	0.90	8.85	1.42	0.83
2019	2.08	7.69	0.92	0.63
2020	2.28	6.63	0.98	0.52
2021	1.92	8.14	1.28	0.71
2022	2.32	5.63	0.97	0.46
2023	3.34	3.20	0.47	0.20
<i>Maximum Annual</i>	3.34	8.85	1.42	0.83
<i>Pollutant Threshold</i>	10	10	NA	NA
Threshold Exceeded?	No	No	NA	NA

Source: See Appendix C for detailed results.

Notes: Construction emissions were modeled with CalEEMod and do not reflect any mitigation measures.

The maximum daily emissions of ROG, PM₁₀ and PM_{2.5} are estimated to occur during the summer season while maximum daily NO_x emissions are estimated to occur during the winter season. The CalEEMod daily emissions were summed together for years in which the overlap of phases would occur, the annual emissions for the phases were summed together (since some construction activities would occur in the same year). YSAQMD has adopted annual construction thresholds for ROG and NO_x, as well as a daily threshold for PM₁₀. Therefore, because no significance thresholds exist for daily emissions of ROG and NO_x and annual emissions of PM₁₀ and PM_{2.5}, 'NA' has been inserted under these pollutants.

The SMAQMD threshold for daily PM_{2.5} emissions was also applied to this analysis.

ROG = reactive organic gases; NA = not applicable; NO_x = oxides of nitrogen; PM₁₀ = coarse particulate matter; PM_{2.5} = fine particulate matter

As shown in Table 4.1-5, daily construction emissions of PM₁₀ and PM_{2.5} and annual emissions of ROG and NO_x would not exceed the YSAQMD applicable significance thresholds during any construction year. In addition, air pollutant emissions are projected to be reduced in future years based on the required phase-in of higher tier engines that would meet lower emission standards. EPA has adopted multiple tiers of emission standards in which higher tier engines would reduce diesel exhaust emissions compared with older equipment by integrating engine and fuel controls. However, there could still be nuisance issues from localized fugitive dust and this could be considered a **potentially significant impact**.

Mitigation Measures

The YSAQMD recommends implementation of Best Management Practices (BMPs) during construction, even for projects that do not exceed the PM₁₀ threshold. Implementation of BMPS specified in Mitigation Measure AQ-1a during construction would ensure that emissions of fugitive dust would be minimized as recommended by the YSAQMD and that the impact would be less than significant. Compliance with statewide airborne toxic control measures (ATCMs), including limitation of engine idling, included in Mitigation Measure AQ-1b would ensure that diesel exhaust would be minimized and the impact would be reduced to less than significant.

AQ-1a The project applicant shall implement Best Management Practices and shall submit a construction dust control plan for the project prior to receiving a grading permit that includes the following conditions:

- During grading and other earthmoving activities, water all active construction sites at least twice daily. Frequency shall be based on the type of operation, soil, and wind exposure.
- Ensure haul trucks maintain at least 2 feet of freeboard.
- Cover all trucks hauling dirt, sand, or loose materials.
- Apply non-toxic binders (e.g., latex acrylic copolymer) to exposed areas after cut and fill operations and hydroseed area.
- Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days).
- Plant vegetative ground cover in disturbed areas as soon as possible.
- Cover inactive storage piles.
- All construction equipment vehicle tires shall be inspected and washed as necessary to be cleaned free of dirt prior to entering paved public roadways.
- Sweep streets if visible soil material is carried out from the construction site.
- Treat project accesses to a distance of 100 feet from the paved road with either a 6-inch layer of gravel, or a 6- to 12-inch layer of wood chips or mulch to prevent track-out to public roadways.
- No vehicle shall exceed 15 miles per hour on unpaved areas within the construction site, with the exception that vehicles may travel up to 25 miles per hour on stabilized unpaved roads as long as speeds do not create visible dust emissions. Visible speed limit signs shall be posted at the construction site entrances.

AQ-1b All off-road heavy-duty equipment and on-road heavy-duty trucks shall be properly maintained with the engines tuned to the engine manufacturer's specifications, and shall comply with the In-Use Off-Road Diesel-Fueled Fleets Regulation and the In-Use On-Road Diesel-Fueled Vehicles Regulation, respectively. This includes limits on idling of all construction equipment and heavy-duty on-road trucks to 5-minutes or less, except as permitted by the California Air Resources Board.

4.1-2: Operation of the proposed project would result in emissions of ROG, NO_x, or PM_{10/2.5} at levels that could substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions. This would be a significant and unavoidable impact.

Following the completion of construction activities, the proposed project would generate criteria pollutant emissions from vehicular traffic, area sources (consumer products, architectural coatings, landscaping equipment), and energy sources (natural gas appliances, space and water heating). The emissions associated with on-road mobile sources include running and starting vehicles that create exhaust emissions, evaporative emissions, brake and tire wear, and fugitive dust entrainment.

Area sources include gasoline-powered landscape maintenance equipment, consumer products, and architectural coatings for the maintenance of buildings. Emissions from energy sources include natural gas combustion for appliances and space and water heating.

CalEEMod was used to estimate unmitigated daily and annual emissions of ROG, NO_x, PM₁₀, and PM_{2.5} from the operational sources, with emissions depicted in Table 4.1-6.

**Table 4.1-6
Estimated Daily and Annual Operational Emissions - Unmitigated**

Source	ROG	NO _x	PM ₁₀	PM _{2.5}
<i>Daily Emissions (Pounds Per Day)</i>				
<i>Project Buildout - Summer</i>				
Area	35.54	6.48	0.82	0.82
Energy	0.61	5.20	0.42	0.42
Mobile	37.23	215.02	112.56	30.85
Total Summer	73.38	226.70	113.80	32.09
<i>Project Buildout – Winter</i>				
Area	35.54	6.48	0.82	0.82
Energy	0.61	5.20	0.42	0.42
Mobile	29.31	222.04	112.56	30.86

**Table 4.1-6
Estimated Daily and Annual Operational Emissions - Unmitigated**

Source	ROG	NO_x	PM₁₀	PM_{2.5}
Total Winter	65.46	233.72	113.80	32.10
<i>Maximum Daily</i>	73.38	226.70	113.80	32.10
<i>Pollutant Threshold</i>	NA	NA	80	82
Threshold Exceeded?	NA	NA	Yes	No
<i>Annual Emissions (Tons Per Year)</i>				
Area	6.21	0.30	0.05	0.05
Energy	0.11	0.95	0.08	0.08
Mobile	3.46	24.82	13.32	3.66
<i>Maximum Annual</i>	9.78	26.07	13.45	3.79
<i>Pollutant Threshold</i>	10	10	NA	NA
Threshold Exceeded?	No	Yes	NA	NA

Source: See Appendix C for detailed results.

Notes: Emissions were modeled with CalEEMod and are based on the "Mitigated" CalEEMod outputs including 20% indoor and outdoor water conservation per CalGreen and 75% waste diversion pursuant to AB 341 even though compliance with these standards would not be considered actual mitigation. YSAQMD has adopted annual thresholds for ROG and NO_x, as well as a daily threshold for PM₁₀.

The SMAQMD threshold for daily PM_{2.5} emissions was also applied to this analysis. Because no significance thresholds exist for daily emissions of ROG and NO_x and annual emissions of PM₁₀ and PM_{2.5}, 'NA' has been inserted under these pollutants.

ROG = reactive organic gases; NO_x = oxides of nitrogen; PM₁₀ = coarse particulate matter; PM_{2.5} = fine particulate matter

As shown in Table 4.1-6, ROG and PM_{2.5} emissions would be less than the applied thresholds on a daily basis, whereas PM₁₀ emissions would substantially exceed the YSAQMD thresholds of significance on a daily basis and NO_x emissions would be exceeded on an annual basis. The proposed project would install a bus turnout along Leisure Town Road which would provide bus service to area residents as an alternative to driving. In addition, the proposed project would develop a system of pedestrian and bicycle trails throughout the project site, which would include the construction of two pedestrian bridges spanning Old Alamo Creek. Trails and sidewalks are planned to be integrated in the project design to provide safe and accessible routes for residents to travel within the community including to park facilities, open spaces, and commercial uses. Trees would also be planted along all pedestrian walkways to provide shade to encourage residents to walk and ride their bicycles. These measures would help reduce vehicle trips and overall vehicle miles traveled (VMT), however, because it is difficult to quantify a specific reduction in trips the model assumes a more conservative analysis. Thus, buildout of the proposed project would have a **potentially significant impact** on regional air quality.

Mitigation Measures

To address emissions of ROG, NO_x and PM₁₀, mitigation measure AQ-2 requires a variety of other measures including those that would further help reduce vehicle trips or encourage the use of electric vehicles. Compliance with these additional measures would not reduce daily

PM₁₀ emissions or emissions of NO_x below the YSAQMD threshold, as shown in Table 4.1-7; therefore, the impact would remain significant and unavoidable.

**Table 4.1-7
Estimated Daily and Annual Operational Emissions - Mitigated**

Source	ROG	NO _x	PM ₁₀	PM _{2.5}
<i>Daily Emissions (Pounds Per Day)</i>				
<i>Project Buildout - Summer</i>				
Area	35.54	6.48	0.82	0.82
Energy	0.61	5.20	0.42	0.42
Mobile	36.63	211.29	106.94	29.32
Total Summer	72.78	222.97	108.18	30.56
<i>Project Buildout – Winter</i>				
Area	35.54	6.48	0.82	0.82
Energy	0.61	5.20	0.42	0.42
Mobile	28.73	217.83	106.94	29.32
Total Winter	64.88	229.51	108.18	30.56
<i>Maximum Daily</i>	<i>70.62</i>	<i>214.17</i>	<i>87.70</i>	<i>24.96</i>
<i>Pollutant Threshold</i>	<i>NA</i>	<i>NA</i>	<i>80</i>	<i>82</i>
Threshold Exceeded?	NA	NA	Yes	No
<i>Annual Emissions (Tons Per Year)</i>				
Area	6.21	0.30	0.05	0.05
Energy	0.11	0.95	0.08	0.08
Mobile	3.39	24.33	12.65	3.48
<i>Maximum Annual</i>	<i>9.71</i>	<i>25.58</i>	<i>12.78</i>	<i>3.61</i>
<i>Pollutant Threshold</i>	<i>10</i>	<i>10</i>	<i>NA</i>	<i>NA</i>
Threshold Exceeded?	No	Yes	NA	NA

Source: See Appendix C for detailed results.

Notes: Emissions were modeled with CalEEMod and are based on the “Mitigated” CalEEMod outputs including 20% indoor and outdoor water conservation per CalGreen and 75% waste diversion pursuant to AB 341 even though compliance with these standards would not be considered actual mitigation. Additionally, Improve Pedestrian Network – Project Site and Connecting Off-Site” and “Provide Traffic Calming Measures – 50% Roadways and 50% Intersections” were selected in the model to account for Mitigation Measure 4.1-2. YSAQMD has adopted annual thresholds for ROG and NO_x, as well as a daily threshold for PM₁₀. The SMAQMD threshold for daily PM_{2.5} emissions was also applied to this analysis. Because no significance thresholds exist for daily emissions of ROG and NO_x and annual emissions of PM₁₀ and PM_{2.5}, ‘NA’ has been inserted under these pollutants.

ROG = reactive organic gases; NO_x = oxides of nitrogen; PM₁₀ = coarse particulate matter; PM_{2.5} = fine particulate matter

AQ-2 Operational Emission Reduction Measures. The project applicant shall incorporate the following measures to reduce emissions associated with vehicle trip generation and area sources from the proposed project:

- Equip all residential garages, as well as parking lots at parks, with infrastructure to install electric vehicle charging outlets and equipment.

- Where feasible, provide sidewalks and/or paths, connected to adjacent land uses, transit stops, and the existing community-wide trail network.
- The Farm at Alamo Creek Specific Plan shall be modified to include bicycle parking standards as follows:
 - For residential development, one, sheltered, secure bicycle parking space per dwelling unit shall be required. Garages, storage sheds, utility rooms, or similar areas that can be secured from unauthorized access and are sheltered from sun and rain would satisfy this requirement without the addition of special improvements or racks. Additional convenience bicycle parking may be provided with exterior racks but does not count toward the sheltered bicycle parking requirement.
 - New parking areas created to serve nonresidential uses (neighborhood commercial uses) shall provide one bicycle parking space for every 20 vehicle parking spaces, with a minimum of four bicycle spaces.
- All wood burning devices shall be prohibited in residential units. Only natural gas fueled hearths shall be permitted.
- During the Design Review process for each home design application, the City shall confirm compliance with measures incorporated into the City's Energy & Conservation Action Strategy (ECAS), through use of a checklist identifying the residential design measures feasible for residential structures.

ROG and NO_x are precursors to O₃, for which the SVAB is designated as nonattainment with respect to the NAAQS and CAAQS. Thus, existing O₃ levels in the SVAB are at unhealthy levels during certain periods. The health effects associated with O₃ are generally associated with reduced lung function. The contribution of ROG and NO_x to regional ambient O₃ concentrations is the result of complex photochemistry. The increases in O₃ concentrations in the SVAB due to O₃ precursor emissions tend to be found downwind from the source location to allow time for the photochemical reactions to occur. However, the potential for exacerbating excessive O₃ concentrations would also depend on the time of year that the precursor emissions would occur because exceedances of the O₃ AAQS tend to occur in the summer and early fall on warm, windless, sunny days. Given these various factors, it is difficult to predict the magnitude of health effects from the proposed project's exceedance of significance criteria for regional ROG and NO_x emissions. The increase in emissions associated with the project represents a fraction of total regional emissions (71 new pounds per day ROG and 214 pounds per day NO_x compared to 8 tons per day ROG and 12 tons per day NO_x in the Solano County portion of the SVAB in 2012) (CARB 2014). Table 4.1-2 shows that the most stringent applicable O₃ standards have been exceeded at the Ulatis Drive monitoring station in Vacaville between 2014 and 2016. The project's ROG and NO_x increases could contribute to air quality violations in the SVAB

region by contributing to more days of O₃ exceedance or result in Air Quality Index value levels that are unhealthy for sensitive groups and other populations.

4.1-3: The proposed project would not result in CO concentrations that exceed the 1-hour state ambient air quality standard (i.e., 20.0 ppm) or the 8-hour state ambient standard (i.e., 9.0 ppm). This would be a less-than-significant impact.

Motor vehicles are the primary source of CO in the SVAB. The YSAQMD *Handbook for Assessing and Mitigating Air Quality Impacts* (YSAQMD 2007) provides screening criteria to determine whether air quality modeling to evaluate CO concentrations is necessary. In regards to screening for CO impacts, if either the following criteria is true of any intersection affected by project traffic, then the project would have the potential to create a violation of the CO standard:

- A traffic study for the project indicates that the peak-hour Level of Service (LOS) on one or more streets or at one or more intersections in the project vicinity will be reduced to an unacceptable LOS (typically LOS E or F); or
- A traffic study for the project indicates that the project will substantially worsen an already existing peak-hour LOS F on one or more streets or at one or more intersections in the project vicinity. “Substantially worsen” includes situations where delay would increase by 10 seconds or more when project-generated traffic is included.

Based on the traffic analysis prepared for the project, the proposed project would pass the above screening criteria. Therefore, the proposed project would not generate traffic volumes that necessitate CO modeling. Therefore, the project would not generate traffic volumes that could cause CO hotspots at local intersections and would not adversely affect sensitive receptors. This impact would be **less than significant**.

Mitigation Measures

None required.

4.1-4: The proposed project would not result in the exposure of sensitive receptors to substantial pollutant concentrations. This would be a less-than-significant impact.

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. Adjacent sensitive receptors to the proposed site include residential development directly west across Leisure Town Road and the the Brighton Landing Specific Plan area which is located directly south of the project site across Elmira Road is currently under construction but could include occupied residences if this project is approved and construction begins in 2018. In addition, the project would result in the development and siting of new sensitive residential receptors in the area.

TACs are defined as substances that may cause or contribute to an increase in deaths or in serious illness, or which may pose a present or potential hazard to human health. Health effects from carcinogenic air toxics are usually described in terms of cancer risk. The YSAQMD recommends an incremental cancer risk threshold of 10 in 1 million for stationary sources. YSAQMD does not have a recommended threshold for mobile source emissions. “Incremental cancer risk” is the net increased likelihood that a person continuously exposed to concentrations of TACs resulting from a project over a 9-, 30-, and 70-year exposure period would contract cancer based on the use of standard Office of Environmental Health Hazard Assessment (OEHHA) risk-assessment methodology (OEHHA 2015). In addition, some TACs have non-carcinogenic effects. The YSAQMD recommends a Hazard Index of 1 or more for acute (short-term) and chronic (long-term) effects.³ TACs that would potentially be emitted during construction activities associated with project development would be DPM.

During project construction, DPM emissions would be emitted from heavy-duty construction equipment and heavy-duty trucks. Heavy-duty construction equipment and diesel trucks are subject to CARB ATCMs (described in the Environmental Setting) to reduce DPM emissions. According to the OEHHA, health risk assessments, which determine the exposure of sensitive receptors to toxic emissions, should be based on a 30-year exposure period for the maximally exposed individual resident; however, such assessments should be limited to the period/duration of activities associated with the project. Since the proposed project involves phased construction activities in several areas across the site, the project would not require the extensive use of heavy-duty construction equipment or diesel trucks in any one location over the duration of development, which would limit the exposure of any proximate individual sensitive receptor to TACs. In addition, due to the relatively short period of exposure at any individual sensitive receptor (less than six years) and minimal particulate emissions generated on-site, TACs generated during construction would not be expected to result in concentrations that could cause significant health risks.

In regards to project operation, the proposed project does not include stationary sources that would emit air pollutants or TACs, such as commercial uses that could generate emissions, large boilers, emergency generators, or manufacturing facilities or result in a substantial increase in diesel vehicles (i.e., delivery trucks). Project operations would not result in TAC generation from on-site sources during long-term operations and would not result in the creation of a significant health risk at nearby sensitive receptors.

In regards to land use compatibility of locating new sensitive receptors in the area, the Yolo-Solano *Handbook for Assessing and Mitigating Air Quality Impacts* identifies screening distances

³ Non-cancer adverse health risks are measured against a hazard index, which is defined as the ratio of the predicted incremental exposure concentrations of the various non-carcinogens from the project to published reference exposure levels that can cause adverse health effects.

for the siting of new sensitive receptors, consistent with the CARB guidelines as previously discussed. The proposed project would not locate sensitive uses within the following distances:

- Within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day;
- Within 1,000 feet of a major service and maintenance rail yard;
- Immediately downwind of ports (in the most heavily impacted zones) and petroleum refineries;
- Within 300 feet of any dry cleaning operation (for operations with two or more machines, provide 500 feet); or
- Within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater).

Leisure Town Road, Elmira Road, and Hawkins Road bound the project site to the north, south, and west; however, none of these roadways have traffic at volumes of 50,000 or more vehicles per day as discussed in the s traffic analysis (Appendix I). The nearest residential uses proposed as part of the project are located approximately 0.5-mile from the Union Pacific rail line. The closest railyards are located in Richmond (37 miles away) and Roseville (40 miles away). There are no ports, refineries, dry cleaning operations or large gas stations located in the vicinity of the proposed project. There are no known sources of existing TACs proximate to the site that would result in land use compatibility impacts for new sensitive receptors (residences). The City evaluates these conditions for land use compatibility and has adopted land use planning criteria for setbacks to protect sensitive receptors from existing agricultural operations, for example, or other land uses that might affect future residents of the project. These criteria are evaluated through the development review process.

In summary, the potential to expose existing and proposed sensitive receptors to substantial levels of TACs during short-term construction and long-term project operation would be a **less-than-significant impact**.

Mitigation Measures

None required.

4.1.5 Cumulative Impacts

The cumulative context of an air pollutant is dependent on the specific pollutant being considered. O₃ precursors are a regional pollutant; therefore, the cumulative context would be existing and future development within the entire SVAB. This means that O₃ precursors generated in one location do not necessarily have O₃ impacts in that area. Instead, precursors from across the region can combine in the upper atmosphere and be transported by winds to

various portions of the SVAB. Consequently, all O₃ precursors generated throughout the SVAB are part of the cumulative context.

The geographic scope of the area for the project's cumulative analysis includes the City of Vacaville and surrounding areas within the SFNA for O₃. The SFNA includes the counties of Sacramento, Yolo, Solano (partial), Sutter (partial), Placer (except Lake Tahoe Air Basin), and El Dorado (except Lake Tahoe Air Basin). The YSAQMD establishes emissions thresholds for regional emissions for projects within its jurisdiction.

4.1-5 The proposed project would result in a cumulatively considerable net increase of any criteria pollutant for which the project area is in non-attainment under an applicable federal or state ambient air quality standard (including the release of emissions that exceed quantitative thresholds for ozone precursors). This would be a significant and unavoidable impact.

According to the YSAQMD *Handbook for Assessing and Mitigating Air Quality Impacts*, projects that would individually exceed the YSAQMD thresholds (annual ROG and NO_x thresholds, or daily PM₁₀ thresholds) would also be considered cumulatively considerable and significant. As discussed in Impact 4.1-1, the proposed project's construction emissions of ROG, NO_x, PM₁₀, and PM_{2.5} would not be considerable; therefore, the project's contribution to an existing cumulative impact would be less than significant. However, as discussed in Impact 4.1-2, the proposed project's unmitigated NO_x and PM₁₀ emissions would exceed the applicable YSAQMD thresholds. In addition as discussed in Impact 4.1-2, with implementation of Mitigation Measure AQ-2, emissions of NO_x and PM₁₀ would be reduced; however, the YSAQMD's thresholds would still be exceeded. Therefore, the proposed project's emissions of O₃ precursors would be considerable and the project's contribution to the cumulative impact would be considerable resulting in a **significant contribution**.

Mitigation Measures

There is no mitigation available with currently feasible technology to reduce the cumulative regional air quality impact the project's emissions of O₃ precursors to a less-than-significant level. Therefore, the impact would remain significant and unavoidable.

AQ-3 Implement Mitigation Measure AQ-2.

4.1.6 References

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YSAQMD (Yolo-Solano Air Quality Management District). 2007. *Handbook for Assessing and Mitigating Air Quality Impacts*. Adopted July 11, 2007.

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4.2 BIOLOGICAL RESOURCES

4.2.1 Introduction

This section evaluates the potential effects on biological resources associated with construction and operation of The Farm at Alamo Creek Specific Plan project (proposed project). This section describes the biological resources present within the project site; identifies special-status plant and wildlife species known to occur or potentially occur within the project site; outlines applicable federal, state, and regional regulations pertaining to protection of plant and wildlife species; and identifies potential project-specific and cumulative impacts on biological resources and measures to minimize these impacts. This section also addresses potential impacts to biological resources associated with proposed off-site improvements.

No comments were received that raised concerns regarding biological resources in response to the Notice of Preparation (NOP). A copy of the NOP and comments received is included in Appendix A.

Resources referenced to prepare this section include the Aquatic Resources Delineation Report prepared by Madrone Ecological Consulting (Madrone 2017a), Biological Resources Assessment (Madrone 2017b), Special-Status Plant Survey Report (Madrone 2017c), and the Valley Elderberry Longhorn Beetle Habitat Survey Report (Madrone 2017d). In addition, the City of Vacaville General Plan (City of Vacaville 2015), and Solano County General Plan (Solano County 2008) are also referenced. Copies of the biological reports are included in Appendix D.

4.2.2 Environmental Setting

This section describes the existing conditions in the project site and identifies resources that could be affected by implementation of the proposed project.

Existing Site Conditions and Habitat

Solano County is located within the Bay Area/Delta bioregion of California. This bioregion is one of the most populated in California, encompassing the San Francisco Bay area and the Sacramento-San Joaquin River Delta. The project site is located within the western valley geography of the bioregion, just east of the Central Coast Mountain range that descends into the San Francisco Bay area.

Most of the site is under active agricultural cultivation and crops grown on the site currently include alfalfa (*Medicago sativa*) and clover. A riparian corridor dominated by Valley oak trees (*Quercus lobata*) borders both sides of Old Alamo Creek, which bisects the southern portion of the site. A Solano Irrigation District (SID) right-of-way is used to convey irrigation water through portions of an earth-lined and concrete-lined irrigation canal that borders the site on

the west and north and traverses the middle of the property from north to south. A narrow strip of regularly-mowed non-native annual grassland occurs along the southern edge of a large portion of the project site, just north of Elmira Road. A small moderately wetted area runs between Old Alamo Creek and an existing storm drain drop inlet within this annual grassland strip. A roadside ditch is present along the northern border of the project site, just south of Hawkins Road. This roadside ditch collects runoff from Hawkins Road, and conveys it east through a series of off-site ditches into Ulatis Creek.

A residential property is present in the southwestern corner of the project site; this area has a number of buildings, mature Valley oak trees, and ornamental vegetation, but is otherwise mostly gravel. Although this residential property is included within the boundary of the proposed Specific Plan this parcel is not included within the project's proposed tentative map. It is anticipated this parcel would be developed at a later date. Ruderal vegetation occurs in small patches, scattered throughout the project site, mostly on field edges, adjacent to portions of the irrigation canal, or between the riparian corridor surrounding Old Alamo Creek and existing roadways.

Surrounding lands to the north, east and south are largely agricultural with scattered rural residences. Properties to the west are developed with single-family residential uses and land to the south is under construction as part of the Brighton Landing Specific Plan project.

Off-site improvements would be located on land to the east of the project boundary along a short segment of Old Alamo Creek east of the detention basin, removing existing culverts and clearing out vegetation to open up the channel located further to the east of the project site.

Vegetation Communities

The discussion that follows includes the project site and areas slated for off-site improvements.

Non-Native Annual Grassland

A narrow strip of non-native annual grassland occurs on the southern portion of the site adjacent to Elmira Road. This strip of land is dominated by common annual grassland species, such as soft brome (*Bromus hordeaceus*), ripgut brome (*B. diandrus*), perennial ryegrass (*Festuca perennis*), and wild oats (*Avena fatua*). Non-grassland species that include flowering plants or forbs observed intermittently in this area include yellow star-thistle (*Centaurea solstitialis*), prickly wild lettuce (*Lactuca serriola*), and wild radish (*Raphanus sativus*). In the areas where more water is present other plant species, including slender wheatgrass (*Elymus trachycaulus*), sorghum (*Sorghum halepense*), prickly sowthistle (*Helminthotheca echioides*), Bermuda grass (*Cynodon dactylon*), alkali mallow (*Malvella leprosa*), curly dock (*Rumex crispus*), spring vetch (*Vicia sativa*), and chicory (*Cichorium intybus*) are present.

Valley Oak Riparian Woodland

A well-developed Valley oak riparian woodland occurs along both sides of Old Alamo Creek for most of its length through the project site. Dominant tree species include Valley oak, Fremont's cottonwood (*Populus fremontii*), black willow (*Salix gooddingii*), red willow (*S. laevigata*), English walnut (*Juglans regia*), and black walnut (*Juglans hindsii*). Dominant shrubs in the understory include Himalayan blackberry (*Rubus armeniacus*), wild rose (*Rosa californica*), and sandbar willow (*Salix exigua*). Santa Barbara sedge (*Carex barbarae*) beds occupy large areas in the understory of this community, in between the Himalayan blackberry and the wild rose. The dense cover of these species leaves very little remaining space in the understory for other herbaceous vegetation. Other plant species observed relatively frequently in this community include cultivated almond (*Prunus dulcis*), olive (*Olea europaea*), blue elderberry (*Sambucus nigra* ssp. *cerulea*), tree of heaven (*Ailanthus altissima*), California bay laurel (*Umbellularia californica*), and eucalyptus (*Eucalyptus* species).

The portion of Old Alamo Creek south of Elmira Road supports a much more dense Valley oak riparian woodland than the area north of Elmira Road. Although the large, overstory trees are consistent with the description above, the channel itself has been rendered virtually inaccessible due to an extremely tall, dense thicket of Himalayan blackberry, and in areas along the northern edge of the creek, a dense sandbar willow thicket.

Ruderal

Ruderal vegetation occurs in small patches throughout the project site. This community is composed largely of non-native forbs, but some grasses are also present. Plant species commonly observed in this community within the project site include wild radish, velvet leaf (*Abutilon theophrasti*), tomatillo (*Physalis philadelphica*), lambs quarters (*Chenopodium album*), bull mallow (*Malva nicaeensis*), prickly sow thistle, sorghum, wild oats, winter vetch (*Vicia villosa*), jungle rice (*Echinochloa colona*), chickweed (*Stellaria media*), henbi (*Lamium amplexicaule*), alkali mallow, sweet fennel (*Foeniculum vulgare*), and poison hemlock (*Conium maculatum*).

Hydrology

A delineation of aquatic resources within the project site and associated off-site areas was conducted by Madrone Ecological Consulting, LLC (Madrone) in October 2017 (see Appendix D). The project site is located in both the *Alamo Creek Watershed* (HUC 180201630504) and the *Lower Ulatis Creek Watershed* (HUC 180201630505) (USGS 1978). Madrone delineated a total of 6.70 acres of aquatic resources within the project site, as shown in Table 4.2-1. The Aquatic Resources Delineation Report concluded that all irrigation canals, ditches and roadside ditches within the project site were constructed in uplands, and that Old Alamo Creek is the only natural aquatic resource identified on the project site (Madrone 2017a).

Table 4.2-1
Aquatic Resources within the Project Site

Resource Type	Acreage
Irrigation Canal	2.426
Irrigation Ditch	0.154
Roadside Ditch	0.124
Old Alamo Creek	3.992
Total	6.696

Source: Appendix D

Old Alamo Creek is an intermittent drainage that runs through the southern portion of the project site, and is bordered on both sides by a well-developed Valley oak woodland. The channel is surrounded by herbaceous vegetation in the central portion of the project site, and is almost entirely obscured by Himalayan blackberry in the eastern portion of the project site. Although some deeper portions of the creek appear to pond water perennially in stagnant pools, much of the creek through the project site dries out during the summer.

Several irrigation canals crisscross the project site and convey irrigation water from SID's Putah South Canal to agricultural fields both on-site and off-site. Portions of these canals are concrete-lined, while other portions are well-maintained dirt-lined canals. As such, there is little to no vegetation within or on the banks of these features.

In addition to irrigation canals there are also irrigation ditches in the southern portion of the project site that drain irrigation water from the existing agricultural fields into Old Alamo Creek. These features are much smaller than the irrigation canals, and although they are unvegetated within the channel, the banks are densely vegetated with weedy facultative species such as curly dock, sorghum, and prickly cocklebur.

A roadside ditch is present along the northern border of the project site, just south of Hawkins Road. This roadside ditch collects runoff from Hawkins Road, and conveys it east through a series of off-site ditches into Ulatis Creek. This feature is primarily unvegetated due to ditch maintenance, but some ruderal vegetation has become established in portions. Plant species observed in and adjacent to this feature include pigweed amaranth (*Amaranthus albus*), wild radish, tall nutsedge, dallisgrass, and wild carrot (*Daucus carota*).

Topography and Soils

The topography of the project site is generally flat. The elevation of the project site ranges from 94 feet above mean sea level (amsl) in the southwestern corner of the project site to

approximately 80 feet amsl at the eastern end, along Old Alamo Creek. The project site slopes very slightly from west to east.

According to the Natural Resources Conservation Service (NRCS) Soil Survey Database (NRCS 2017), there are five soil types within the project site, as shown on Figure 4.2-1. Each of these soil types are described in further detail below (Madrone 2017b).

- Brentwood clay loam, 0%–2% slopes (BrA) – This soil is well-drained, associated with alluvial fans, and derived from sedimentary rock. The erosion hazard is slight and runoff is very slow. Included in this unit are small areas of Yolo silty clay loam and Rincon clay loam.
- Capay silty clay loam (Ca) - This soil is moderately well drained and created from sedimentary rocks and is located on basin rims. Included in this map unit are small areas of Yolo silty clay loam, Rincon clay loam, and Brentwood clay loam.
- Rincon clay loam, 0%–2% slopes (RoA) - This soil is well-drained, associated with alluvial fans, and derived from sedimentary rock that is formed in alluvium. The erosion hazard is slight and runoff is slow. Included in this unit are small areas of Brentwood clay loam and Capay silty clay loam.
- Yolo loam (Yo) – This soil is well-drained, associated with alluvial fans, and is derived from sedimentary rock that is formed in alluvium. Runoff is slow.
- Yolo loam, clay substratum (Yr) – This soil is very deep and well-drained and is found in fine loamy alluvium derived from sedimentary formations. It has a high shrink-swell capacity, slow to medium runoff, and moderate permeability.

Wildlife Corridors and Habitat Linkages

Wildlife corridors are linear features that connect large areas or patches of natural open space and provide avenues for the migration of animals. Habitat linkages are small areas or patches of land that join larger blocks of habitat and help reduce the adverse effects of habitat fragmentation; they may be continuous habitat or discrete habitat islands that essentially function as ‘stepping stones’ for wildlife dispersal.

Wildlife corridors in the vicinity of the project site include the Pacific Flyway, a common route of bird migration that extends along the west coast of North America from Alaska to South America, and from the Eastern Pacific to the Great Basin. Depending on the crops being cultivated on the project site’s agricultural lands, the project site could serve as a resting and foraging area for migratory birds using the Pacific Flyway. The project site is surrounded by active agricultural lands, residential development, and paved roads. Thus, the project site itself does not provide suitable components of a wildlife corridor for terrestrial species.

Critical Habitat

The California Department of Fish and Wildlife (CDFW) designated critical habitat for Contra Costa Goldfields, Delta Smelt, Vernal Pool Fairy Shrimp, and Vernal Pool Tadpole Shrimp within 5 miles of the project site (Madrone 2017b). However, none of these critical habitat areas are located within or directly adjacent to the project site. Habitat for these various species, including essential habitat elements of critical habitat, does not occur within the project site.

Aircraft Hazards

A Wildlife Hazards Analysis (WHA) for the proposed project assessed the project's potential to attract increased quantities of birds or different species of birds that could potentially result in strike hazards to aircraft (Appendix D - Dudek 2017). Approximately 56 acres of the southeastern portion of the project site falls within the Outer Perimeter of the Travis AFB Land Use Compatibility Plan (LUCP); therefore, wildlife attractants on the project site could result in potential hazards to aircraft. Consistency with the LUCP is addressed in Section 4.5, Land Use and Planning.

Special-Status Plant and Wildlife Species

This environmental impact report (EIR) defines special-status plant and animal species as those species that fall into one or more of the following categories:

- Officially listed or proposed for listing under the state and/or federal Endangered Species Acts.
- State or federal candidate for possible listing.
- Species meeting the criteria for listing, even if not currently included on any list, as described in Section 15380 of the California Environmental Quality Act (CEQA) Guidelines.
- Protected under the Federal Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act.
- Species considered by the CDFW to be a "Species of Special Concern."

The potential occurrence of special-status plant and animal species on the project site was initially evaluated by developing a list of special-status species that are known to or have the potential to occur in the project vicinity. This list was primarily derived from a review of the California Natural Diversity Database (CNDDDB 2017), USFS Information for Planning and Conservation (IPac) query of the project area (USFWS 2017a), California Native Plant Society (CNPS) Rare and Endangered Plant Inventory (CNPS 2017), and the Western Bat Working Group (WBWG) Species Matrix (WBWG 2017).



SOURCE: Madrone Ecological Consulting (2017)

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Figure 4.2-1
Soils Map

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Only those species with the potential to occur within the project site based on available habitat, species, geographic or elevation range, or soils are shown in Table 4.2-2 and in Figures 4.2-2 and 4.2-3. For a complete list of species identified during the literature and database review, please refer to Appendix D.

**Table 4.2-2
Species with the Potential to Occur within the Project Site**

Species Name (Scientific Common)	Status (Federal/ State/Other)	Habitat Requirements	Potential to Occur
<i>Plants</i>			
<i>Downingia pusilla</i> Dwarf downingia	None/None/2B.2	Vernal pools and other depressional seasonal wetlands.	Low. The mesic area in the southern portion of the project area represents extremely marginal habitat for this species.
<i>Lasthenia conjugens</i> Contra Costa goldfields	FE/None/1B.1	Vernal pools or other seasonal wetlands.	Low. The mesic area in the southern portion of the project area represents extremely marginal habitat for this species.
<i>Navarretia leucocephala</i> <i>ssp. bakeri</i> Baker's navarretia	None/None/1B.1	This annual herb grows in vernal pools and mesic areas in cismontane woodland, lower montane coniferous forest, meadows and seeps, and valley and foothill grasslands.	Low. The mesic area in the southern portion of the project area represents extremely marginal habitat for this species.
<i>Plagiobothrys hystriculus</i> Bearded popcorn-flower	None/None/1B.1	Vernal pools or other seasonal wetlands.	Low. The mesic area in the southern portion of the project area represents extremely marginal habitat for this species.
<i>Invertebrates</i>			
<i>Desmocerus californicus dimorphus</i> Valley elderberry longhorn beetle	FT/None/None	Dependent upon elderberry plant as primary host species.	Low. Several elderberry shrubs are present within the project area; however, no exit holes indicative of this species have been observed on any of the shrubs, and this species has not been documented within the immediate vicinity of the project area.
<i>Reptiles</i>			
<i>Emys marmorata</i> Western pond turtle	None/CSC/None	Ponds, rivers, streams, wetlands, and irrigation ditches with associated marsh habitat.	High. Alamo Creek provides habitat for this species.
<i>Birds</i>			
<i>Agelaius tricolor</i> Tricolored blackbird	None/CC/CSC	Colonial nester in cattails, bulrush, blackberries, and other thorny vegetation within a few miles of foraging habitat. Foraging habitat is grasslands and agricultural fields with abundant insect prey.	Low. Blackberry thickets along Old Alamo Creek provide marginal nesting habitat, and adjacent fields provide foraging habitat.

**Table 4.2-2
Species with the Potential to Occur within the Project Site**

Species Name (Scientific Common)	Status (Federal/ State/Other)	Habitat Requirements	Potential to Occur
<i>Aquila chrysaetos</i> Golden eagle	None/CFP/None	Forages in open areas including grasslands, savannahs, deserts, and early successional stages of shrub and forest communities. Nests in large trees and cliffs.	Low. The project area lacks breeding habitat, but the agricultural fields provide marginal foraging habitat.
<i>Asio flammeus</i> Short-eared owl	None/CSC/None	Typically found in open areas with few trees such as grasslands, prairies, dunes, meadows, and croplands.	High. The agricultural fields provide winter foraging habitat.
<i>Athene cunicularia</i> Burrowing owl	None/CSC/None	Nests in abandoned ground squirrel burrows, rubble/debris piles, abandoned tires, and culverts pipes associated with open grassland habitats.	High. Although few ground squirrel burrows were observed, those that are present provide habitat, and debris scattered throughout the project area could provide artificial burrows. The agricultural fields provide foraging habitat.
<i>Buteo regalis</i> Ferruginous hawk	None/CSC/None	A wintering species in California. Forages in open areas such as grasslands and fields for ground squirrels as well as other small mammals, birds, lizards, snakes, and rabbits.	High. The agricultural fields provide winter foraging habitat.
<i>Buteo swainsoni</i> Swainson's hawk	None/CT/None	Nests in large trees, preferably in riparian areas. Forages in fields, cropland, irrigated pasture, and grassland near large riparian corridors.	Present. Species was observed foraging within the project area. The trees throughout the project area (but especially along Alamo Creek) provide nesting habitat, and the agricultural fields and annual grassland provide foraging habitat.
<i>Charadrius montanus</i> Mountain plover	None/CSC/None	Species nests/breeds in the Great Basin and migrates to California in the winter. It prefers grasslands and farmlands where it forages for insects.	High. The agricultural fields provide winter foraging habitat.
<i>Circus cyaneus</i> Northern harrier	None/CSC/None	Nests in emergent wetland/marsh, open grasslands, or savannah habitats. Forages in open areas such as marshes, agricultural fields, and grasslands.	Present. Species was observed foraging within the project area. The agricultural fields and annual grassland within the project area provide nesting and foraging habitat.
<i>Elanus leucurus</i> White-tailed kite	None/CFP/None	Open grasslands, fields, and meadows are used for foraging. Isolated trees in close proximity to foraging habitat are used for perching and nesting.	High. The trees throughout the project area provide nesting habitat, and the agricultural fields and annual grassland provide foraging habitat.

**Table 4.2-2
Species with the Potential to Occur within the Project Site**

Species Name (Scientific Common)	Status (Federal/ State/Other)	Habitat Requirements	Potential to Occur
<i>Lanius ludovicianus</i> Loggerhead shrike	None/CSC/None	Occurs in open areas with sparse trees, shrubs, and other perches.	High. Habitats throughout the project area could support this species.
<i>Mammals</i>			
<i>Antrozous pallidus</i> Pallid bat	None/CSC/WBVG H	Day and night roosts include crevices in rocky outcrops and cliffs, caves, mines, trees (e.g., basal hollows of coast redwoods and giant sequoias, bole cavities of oaks, exfoliating Ponderosa pine and valley oak bark, deciduous trees in riparian areas, and fruit trees in orchards), and various human structures such as bridges (especially wooden and concrete girder designs), barns, porches, bat boxes, and human-occupied as well as vacant buildings (WBVG 2017).	High. Roosting habitat for this species is present in tree hollows and under exfoliating bark on trees throughout the site, but especially in the riparian corridor.
<i>Lasionycteris noctivagans</i> Silver-haired bat	None/None/WBVG H	Roosts in abandoned woodpecker holes, under bark, and occasionally in rock crevices. It forages in open wooded areas near water features.	High. Roosting habitat for this species is present in tree hollows and under exfoliating bark on trees throughout the site.
<i>Lasiurus blossevillii</i> Western red bat	None/CSC/WBVG H	Require large leaf trees such as cottonwoods, willows, and fruit/nut trees for daytime roosts. Often associated with wooded habitats that are protected from above and open below. Often found in association with riparian corridors. Require open space for foraging.	High. Roosting habitat for this species is present in tree hollows and under exfoliating bark on trees throughout the site, but especially in the riparian corridor.
<i>Lasiurus cinereus</i> Hoary bat	None/None/WBVG M	Roosts primarily in foliage of both coniferous and deciduous trees at the edges of clearings (WBVG 2017).	High. Trees within the riparian area provide roosting habitat for this species.

Source: Madrone 2017b

Status Codes:

CC- CDFW Candidate for Listing

CFP - CDFW Fully Protected

CRPR - California Rare Plant Rank

CRPR 1A: Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere

CRPR 1B: Plants Rare, Threatened, or Endangered in California and Elsewhere

CRPR 2A: Plants Presumed Extirpated in California, But More Common Elsewhere

CRPR 2B: Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere

CRPR 3: Plants About Which More Information is Needed - A Review List

.1 Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)

.2 Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

.3 Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)"

CSC - CDFW Species of Concern
CT - CDFW Threatened
FE- Federally Endangered
FT- Federally Threatened
WBWG M – Western Bat Working Group Medium Threat Rank
WBWG H- Western Bat Working Group High Threat Rank

Special-Status Plants

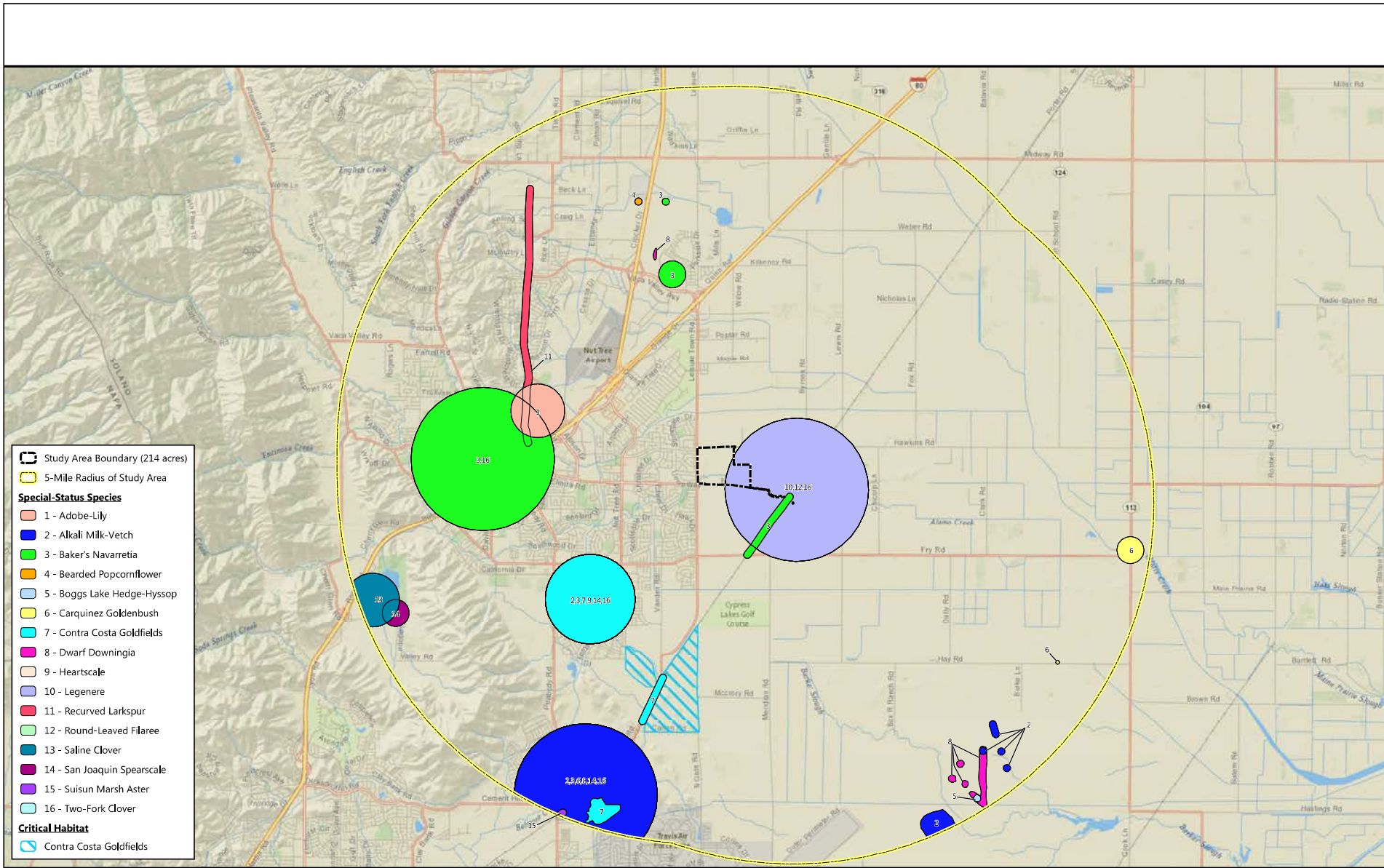
Protocol-level plant surveys for special-status plant species were conducted by Madrone on May 12, July 6, August 17, and October 19, 2017. No special-status plant species were observed during the protocol-level plant surveys of the project site (Madrone 2017c). Off-site areas associated with the proposed project were also evaluated and determined to lack habitat for any special-status plant species. Please see Appendix D for more details regarding the findings of the plant surveys conducted.

Special-Status Wildlife

Field surveys for the suitability of habitats on-site to support special-status wildlife species were conducted by Madrone on November 16, 2016, July 6, 2017, August 17, 2017, and October 19, 2017. These included protocol-level surveys for valley elderberry longhorn beetle. A discussion of special-status wildlife species that have the potential to occur on the project site is included below, along with whether the species was observed during field surveys. Please see Appendix D for more details regarding the findings of the field surveys conducted.

Valley Elderberry Longhorn Beetle

The Valley elderberry longhorn beetle (VELB) is listed as threatened pursuant to the federal Endangered Species Act. The historic range of this beetle is limited to moist Valley oak woodlands along margins of rivers and streams in the lower Sacramento and lower San Joaquin Valleys (USFWS 1984). At the time of its listing, the beetle was known from fewer than 10 localities in Merced, Sacramento, and Yolo counties (USFWS 1980). Its current distribution is patchy throughout California's Central Valley and associated foothills (USFWS 1999).



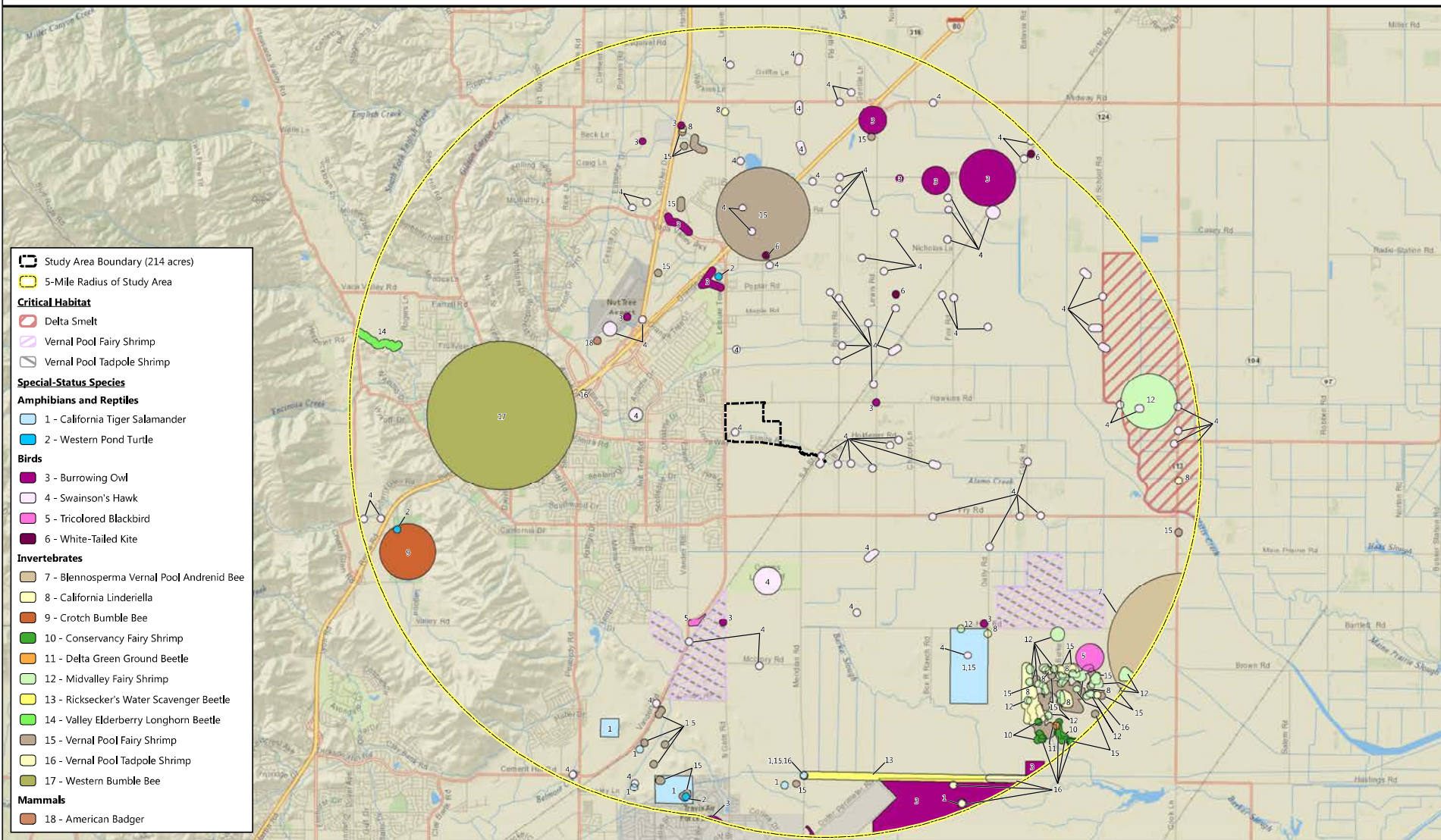
SOURCE: Madrone Ecological Consulting (2017)

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Figure 4.2-2
 CNDDDB Occurrences of Plant Species and Critical Habitat

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SOURCE: Madrone Ecological Consulting (2017)

Figure 4.2-3
 CNDB Occurrences of Wildlife Species and Critical Habitat

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The VELB is completely dependent on its host plant, elderberry (*Sambucus species*), which occurs in riparian and other woodland communities in California's Central Valley and the associated foothills (USFWS 1999). Female beetles lay their eggs in crevices on the stems or on the leaves of living elderberry plants. When the eggs hatch, larvae bore into stems with a diameter of one inch or more. The larval stages last for one to two years. The fifth instar larvae create emergence holes in the stems and then plug the holes and remain in the stems through pupation (Talley 2003). Adults emerge through the emergence holes from late March through June. The short-lived adult beetles forage on leaves and flowers of elderberry shrubs.

Surveys for VELB habitat were conducted by Madrone in accordance with the survey protocol outlined in the *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (USFWS 1999) and the recently-issued *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* (USFWS 2017). Eighteen elderberry shrubs with stems one inch in diameter or greater were found within the Valley oak riparian woodland along Old Alamo Creek, as shown on Figure 4.2-4. These shrubs represent potential habitat for VELB; however, no exit holes were observed on any of the shrubs, which indicates that they are not currently being utilized by the VELB. No VELB were observed during the survey (Appendix D - Madrone 2017d). This species has not been recorded as occurring on the project site (CNDDDB 2017).

Western Pond Turtle (*Emys marmorata*)

The western pond turtle is not federally or state listed, but is a CDFW species of special concern. Its favored habitats include streams, large rivers and canals with slow-moving water, aquatic vegetation, and open basking sites (Jennings and Hayes 1994). Although the turtles must live near water, they can tolerate drought by burrowing into the muddy beds of dried drainages. This species breeds from mid to late spring in adjacent open grasslands or sandy banks (Jennings and Hayes 1994). Old Alamo Creek throughout the project area provides habitat for western pond turtle. No western pond turtles were observed during the surveys (Madrone 2017b), and this species has not been recorded as occurring on the project site (CNDDDB 2017).

Golden Eagle (*Aquila chrysaetos*)

The golden eagle is not federally or state listed, but is a CDFW species of special concern and a fully protected species. It is also protected under the Bald and Golden Eagle Protection Act. It is a very large solitary raptor which forages in large, expansive open grasslands and savannahs, and nests on cliff ledges or in large, lone trees in rolling to mountainous terrain (Shuford and Gardali 2008). The agricultural fields and non-native annual grasslands within the project site are considered foraging habitat for this species. No golden eagles were observed during the

surveys (Madrone 2017b) and this species has not been recorded as occurring on the project site (CNDDDB 2017).

Swainson's Hawk (*Buteo swainsoni*)

Swainson's hawk is a raptor species that is not federally listed, but is listed as threatened by CDFW. Breeding pairs typically nest in tall trees associated with riparian corridors, and forage in grassland, irrigated pasture, and cropland with a high density of rodents (Shuford and Gardali 2008). The Central Valley populations breed and nest in the late spring through early summer before migrating to Central and South America for the winter (Shuford and Gardali 2008). Trees throughout the project site provide nesting habitat for Swainson's hawk, and the agricultural fields and non-native annual grasslands are foraging habitat. Swainson's hawk were observed foraging within the project area during the field surveys, and a Swainson's hawk nest was reported in 2001 in a clump of eucalyptus trees along the north edge of Old Alamo Creek within the project site (CNDDDB Occurrence #1926) (CNDDDB 2017).

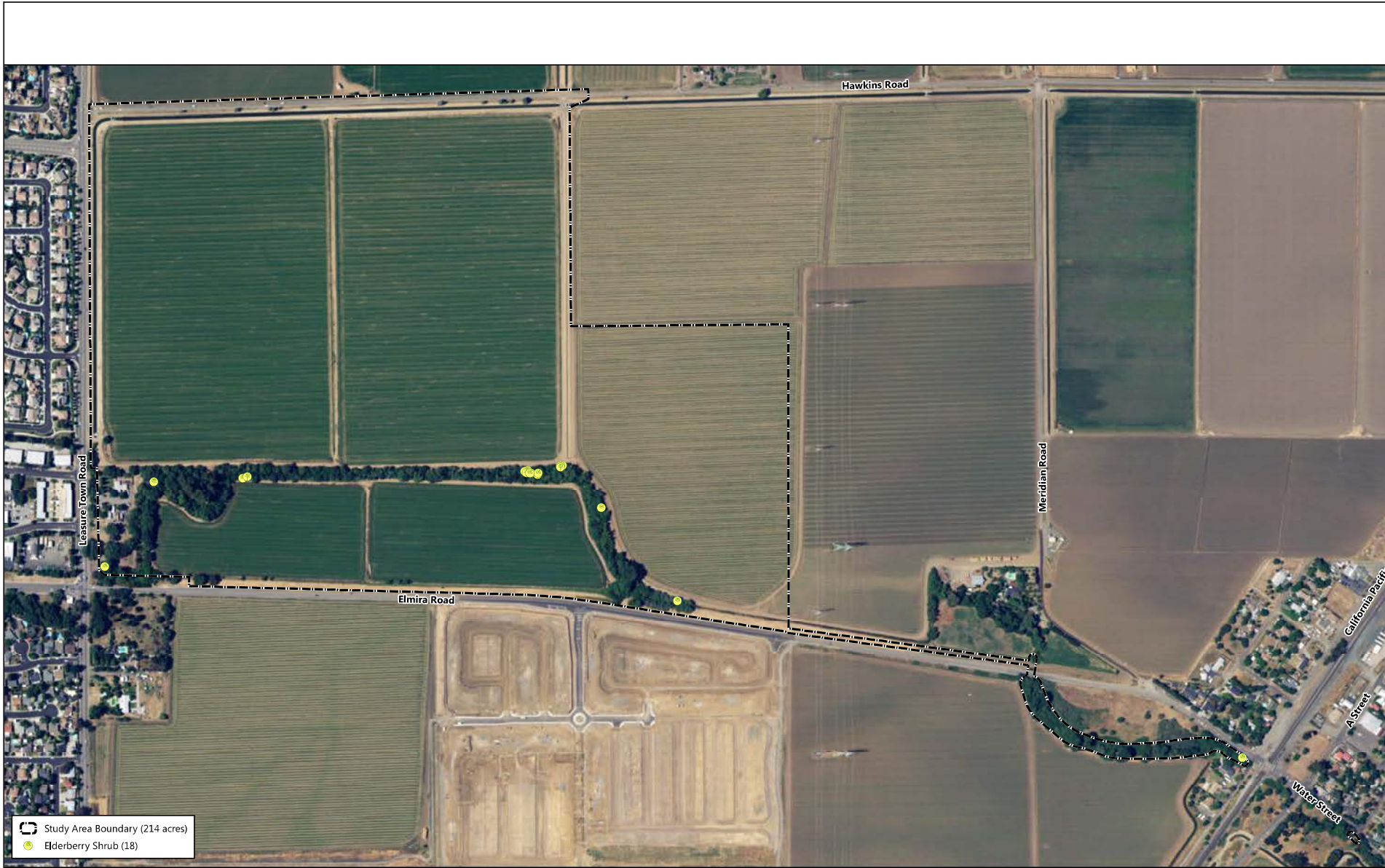
Northern Harrier (*Circus cyaneus*)



The northern harrier is not listed pursuant to either the California or federal Endangered Species Acts; however, it is considered a species of special concern by the CDFW. This species is known to nest within the Central Valley, along the Pacific Coast, and in northeastern California (Shuford and Gardali 2008). The northern harrier is a ground nesting species, and typically nests in emergent wetland/marsh, open grasslands, or savannah habitats. Foraging occurs within a variety of open habitats such as marshes, agricultural fields, and grasslands (Shuford and Gardali 2008). The agricultural fields and non-native annual grassland within the project site provide nesting and foraging habitat for this species. Northern harriers were observed on the site during the surveys (Madrone 2017b).

White-Tailed Kite (*Elanus leucurus*)

White-tailed kite is not federally or state listed, but is a CDFW fully protected species. This species is a yearlong resident in the Central Valley and is primarily found in or near foraging areas such as open grasslands, meadows, farmlands, savannahs, and emergent wetlands (Shuford and Gardali 2008). White-tailed kites typically nest from March through June in trees within riparian, oak woodland, and savannah habitats of the Central Valley and Coast Range (Shuford and Gardali 2008).

Trees throughout the project site are nesting habitat for white-tailed kite, and the agricultural fields and non-native annual grasslands are foraging habitat. No white-tailed kites were observed during the surveys (Madrone 2017b).



 Study Area Boundary (214 acres)
 Elderberry Shrub (18)

SOURCE: Madrone Ecological Consulting (2017)

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Figure 4.2-4
Elderberry Shrub Location Map

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Burrowing Owl (*Athene cunicularia*)

Burrowing owl is not listed pursuant to either the California or federal Endangered Species Acts; however, it is designated as a species of special concern by the CDFW. They typically inhabit dry open rolling hills, grasslands, desert floors, and open bare ground with gullies and arroyos. This species typically uses burrows created by fossorial mammals, most notably the California ground squirrel, but may also use man-made structures such as culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement (CDFG 1995). The breeding season extends from February 1 through August 31 (CBOC 1993, CDFG 1995). California ground squirrel (*Otospermophilus beecheyi*) burrows are not common in the project site, but a few are present, and are of sufficient size to provide suitable burrows for burrowing owl. In addition, occasional debris piles scattered throughout the project site represent marginal nesting habitat. The agricultural fields and non-native annual grasslands within the project area provide foraging habitat. No burrowing owls were observed during the surveys (Madrone 2017b), and this species has not been recorded as occurring on the project site (CNDDDB 2017).

Loggerhead Shrike (*Lanius ludovicianus*)

The loggerhead shrike is not listed and protected pursuant to either the California or federal Endangered Species Acts; but is a CDFW species of special concern. Loggerhead shrikes nest in small trees and shrubs in woodland and savannah vegetation communities, and forage in open habitats throughout California (Shuford and Gardali 2008). The nesting season ranges from March through June. Trees throughout the project site are nesting habitat for loggerhead shrike, and the agricultural fields and non-native annual grassland are foraging habitat. No loggerhead shrikes were observed during the surveys (Madrone 2017b) and this species has not been recorded as occurring on the project site (CNDDDB 2017).

Tricolored Blackbird (*Agelaius tricolor*)

Tricolored blackbirds are not federally listed, but are candidates for listing as endangered under the California endangered species act¹. In addition, tricolored blackbird is listed by CDFW as a species of special concern. They are colonial nesters preferring to nest in dense stands of cattails, bulrush, or blackberry thickets associated with perennial water (Shuford and Gardali 2008). Blackberry brambles in the understory of the Valley oak riparian woodland represent marginal nesting habitat for tricolored blackbirds. The agricultural fields and non-native annual grassland are foraging habitat. No tricolored blackbirds were observed during the surveys (Madrone 2017b) and this species has not been recorded as occurring on the project site (CNDDDB 2017).

¹ Under the CESA, a candidate species is accorded the same protections as a listed species as long as it remains a candidate.

Common Raptor Species

Common raptors and their nests are protected by Section 3503.5 of the California Fish and Game Code and by the Federal Migratory Bird Treaty Act. These raptor species include red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*B. lineatus*), American kestrel (*Falco sparverius*), and great horned owl (*Bubo virginianus*), among others. In general, raptor nesting occurs from late February/early March through late July/early August, depending upon the species and various environmental conditions. Potential nesting habitat for these species is present in the trees throughout the project site. Common raptors observed during the surveys include red-tailed hawk, red-shouldered hawk, American kestrel, barn owl (*Tyto alba*), and great horned owl (Madrone 2017b).

Winter-Foraging Birds

A number of special-status birds have the potential to utilize the annual grasslands throughout the project site for winter foraging. These birds include ferruginous hawk (*Buteo regalis*), golden eagle (*Aquila chrysaetos*), short-eared owl (*Asio otus*), and mountain plover (*Charadrius montanus*).

Pallid Bat (*Antrozous pallidus*)

Pallid bat is not federally or state listed, but is considered a CDFW species of special concern, and is classified by the Western Bat Working Group (WBWG) as a High priority species. It favors roosting sites in crevices in rock outcrops, caves, abandoned mines, hollow trees, and human-made structures such as barns, attics, and sheds (WBWG 2017). Roosting habitat for this species is present in tree hollows and under exfoliating bark on trees throughout the project site. No pallid bats were observed during the surveys (Madrone 2017b) and this species has not been recorded as occurring on the project site (CNDDDB 2017).

Silver-Haired Bat (*Lasionycteris noctivagans*)

Silver-haired bat is not federally or state listed, but is classified by the WBWG as a Medium priority species. Primarily considered a coastal and montane forest species, the silver-haired bat occurs in drier environments during winter and seasonal migrations (WBWG 2017). It roosts in abandoned woodpecker holes, under bark, and occasionally in rock crevices. Roosting habitat for this species is present in tree hollows and under exfoliating bark on trees throughout the project site. No silver-haired bats were observed during the surveys (Madrone 2017b) and this species has not been recorded as occurring on the project site (CNDDDB 2017).

Western Red Bat (*Lasiurus blossevillii*)

Western red bat is not federally or state listed, but is considered a CDFW species of special concern, and is classified by the WBWG as a High priority species. Western red bat is typically solitary, roosting primarily in the foliage of trees or shrubs (WBWG 2017). Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. Trees throughout the project site are roosting habitat for western red bat. No western red bats were observed during the surveys (Madrone 2017b) and this species has not been recorded as occurring on the project site (CNDDDB 2017).

Hoary Bat (*Lasiurus cinereus*)

The hoary bat is not federally or state listed, but is classified by the WBWG as a Medium priority species. It is considered to be one of the most widespread of all American bats with a range extending from Canada to central Chile and Argentina as well as Hawaii (WBWG 2017). Hoary bats prefer older large leaf trees, such as cottonwoods, willows, and fruit or nut trees for daytime roosts. The hoary bat is considered a forest/woodland species, and in California they are often associated with undisturbed riparian or stream corridors (WBWG 2017).

Trees within the Valley oak riparian woodland are roosting habitat for hoary bat. No hoary bats were observed during the surveys (Madrone 2017b) and this species has not been recorded as occurring on the project site (CNDDDB 2017).

4.2.3 Regulatory Setting

Federal Regulations

Federal Endangered Species Act

The federal Endangered Species Act (FESA) (16 U.S.C. 1533) gives joint authority to list a species as threatened or endangered to the Secretary of the Interior (represented by the USFWS) and the Secretary of Commerce (represented by the National Marine Fisheries Service (NMFS)). FESA prohibits the “take” of endangered or threatened fish, wildlife, or plant species or adverse modifications to critical habitat, in areas under federal jurisdiction. Under the Act “take” is defined as to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” The USFWS and NMFS have interpreted the definition of “harm” to include significant habitat modification that could result in the take of a species.

Either an incidental take permit under Section 10(a) or an incidental take statement under Section 7 is required if an activity would result in the take of a federally listed species. Section 7

applies when a project includes federal funding or approvals, which do not apply to the proposed project. Section 7 requires the reviewing agency to determine whether any federally listed species, or species proposed for listing, may be present on the project site and if the project is likely to affect the species. Additionally, the reviewing agency must determine if a proposed project is likely to jeopardize the existence of a listed species or a proposed listed species, or result in destruction or adverse modification of proposed or designated critical habitat for such species. FESA requires the federal government to designate “critical habitat” for any listed species, which is defined as specific areas within the geographical area occupied by the species at the time of listing if they contain physical or biological features essential to the species conservation, and those features that may require special management considerations or protection. Additionally, it includes specific areas outside the geographical area occupied by the species if the regulatory agency determines that the area itself is essential for conservation.

USFWS and/or NMFS must authorize projects where a federally listed species is present and likely to be affected by an existing or proposed project. Generally, terrestrial and freshwater fish species are under the jurisdiction of USFWS, while marine and anadromous fish species are under the jurisdiction of NMFS. Project authorization may involve a letter of concurrence that the project is not likely to adversely affect a listed species, or a Biological Opinion that describes what measures must be undertaken to minimize the likelihood of an incidental take. Projects determined by USFWS and NMFS to jeopardize the continued existence of a species cannot be approved under a Biological Opinion. Take that is incidental to the lawful operation of a project is permitted under Section 10(a) through approval of a habitat conservation plan (HCP), where a federal agency is not authorizing, funding, or carrying out the project.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Act prohibits anyone from taking, possessing, or transporting a bald eagle (*Haliaeetus leucocephalus*) or golden eagle (*Aquila chrysaetos*), or the parts, nests, or eggs of such birds without prior authorization. This includes inactive nests as well as active nests. “Take” under this act means to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, or disturb. Activities that directly or indirectly lead to take are prohibited without a permit from the USFWS.

Federal Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (16 U.S.C. 703 et seq.) regulates and prohibits taking, killing, possessing, harming, or trading in migratory birds. The Act addresses whole birds, parts of birds, and bird nests and eggs. In the United States, the USFWS enforces this international treaty for the conservation and management of bird species that migrate through one or more countries.

Clean Water Act

The objective of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of waters of the United States (as defined in the Code of Federal Regulations: 33 CFR 328.3[a]). Section 401 of the Act (33 U.S.C. 1341) prohibits the discharge of any pollutant into waters of the United States. Project applicants for a federal license or permit to conduct activities including, but not limited to, the creation or operation of facilities, which may result in discharge into waters of the United States, must obtain certification that the project would not violate applicable effluent limitations and water quality standards. Section 404 of the Act (33 U.S.C. 1344) requires a federal license or permit from the U.S. Army Corps of Engineers prior to the discharge of dredge or fill material into waters of the United States, unless activity is exempt from Section 404 permit requirements. Permit applicants must demonstrate that they have attempted to avoid or minimize impacts on the resource; however, if no further minimization of impacts is possible, the applicant is required to mitigate remaining impacts on all federally regulated waters of the United States. In California, the State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards are responsible for the protection of water quality.

State Regulations

California Endangered Species Act

The California Endangered Species Act (CESA) and Section 2081 of the California Department of Fish and Game Code identifies measures to ensure state-listed species and their habitats are conserved, protected, restored, and enhanced. The Act requires permits from the CDFW for activities that could result in the take of a state-listed threatened or endangered species. "Take" is defined as to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill (Fish and Game Code Section 86). Section 2080 of the Fish and Game Code prohibits the take of state-listed plants and animals unless otherwise permitted under Sections 2080.1, 2081, and 2835. Section 20814(b) affords CDFW the authority to issue permits for incidental take for otherwise lawful activities. To authorize an incidental take, the impacts of the take must be minimized and fully mitigated. Issuance of incidental take permits may not jeopardize the continued existence of a state-listed species. For species listed as threatened or endangered under FESA, CDFW may rely on a federal incidental take statement or permit to authorize an incidental take under CESA.

The California Fish and Game Commission maintains a list of threatened and endangered species (Fish and Game Code Section 2070). The California Fish and Game Commission maintains two additional lists: a Candidate species list, which identifies species under review for addition to either the endangered or threatened species list, and a Species of Special Concern

list, which serves as a watch list based on limited distribution, declining populations, diminishing habitat, or unusual scientific, recreational, or educational value.

California Fully Protected Species and Species of Special Concern

The classification of “fully protected” was the CDFW’s initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. California Fish and Game Code sections (fish at Section 5515, amphibians and reptiles at Section 5050, birds at Section 3511, and mammals at Section 4700) dealing with “fully protected” species state that these species may not be taken or possessed at any time, and no provisions in this code or any other law shall be construed to authorize permits for the take of fully protected species.

Species of Special Concern are broadly defined as animals not listed under the FESA or CESA, but which are nonetheless of concern to the CDFW because they are declining at a rate that could result in listing, or they historically occurred in low numbers and known threats to their persistence currently exist. CDFW intends that species with this designation be given special consideration by agencies, land managers, consulting biologists, and others.

California Fish and Game Code Section 3503

Birds of prey are protected in California under the Fish and Game Code Section 3503.5 (1992). Under Section 3503.5, it is “unlawful to take, possess, or destroy any birds in the order Falconiformes (diurnal birds of prey) or Strigiformes (owls) or to take, possess, or destroy any nest or egg of any bird except as otherwise provided by this code or any regulation adopted pursuant thereto.” The CDFW considers disturbance during breeding season that results in the incidental loss of fertile eggs or nestlings or otherwise leads to nest abandonment a “taking”.

California Native Plant Protection Act

The California Native Plant Protection Act (California Fish and Game Code Sections 1900–1913) and the Natural Communities Conservation Planning Act provide guidance on the preservation of plant resources. Vascular plants that have no designated status or protection under state or federal endangered species legislation, but are listed as rare or endangered by the CNPS, are defined as follows:

1. California Rare Plant Rank (CRPR) 1A: Plants presumed extirpated in California and either rare or extinct elsewhere
2. CRPR 1B: Plants rare, threatened, or endangered in California and elsewhere
3. CRPR 2A: Plants presumed extirpated in California, but common elsewhere
4. CRPR 2B: Plants rare, threatened, or endangered in California, but more common elsewhere

5. CRPR: Plants about which more information is needed – a review list
6. CRPR 4: Plants of limited distribution – a watch list

Generally, plants with CRPR 1A, 1B, 2A or 2B, and 3 are considered to meet the criteria for endangered, threatened, or rare species as outlined by Section 15380 of the CEQA Guidelines. Additionally, plants listed as CRPR 1A, 1B, or 2 also meet the definition of Section 1901, Chapter 10 (Native Plant Protection Act) and Sections 2062 and 2067 (CESA) of the California Fish and Game Code.

California Fish and Game Code Sections 1600–1616

Under Sections 1600–1616 of the California Fish and Game Code, CDFW regulates activities that would substantially alter the flow, bed, channel, or bank of streams and lakes. Such activities require a 1602 Lake and Streambed Alteration Agreement from CDFW. The California Code of Regulations defines a stream as “a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation” (14 CCR 1.72). The term “stream” includes rivers, creeks, ephemeral streams, dry washes, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife. Removal of riparian vegetation also requires a Section 1602 Lake and Stream Alteration Agreement from CDFW.

State Water Resources Control Board

The SWRCB administers Section 401 of the Clean Water Act, which requires that an applicant for a Section 404 permit first obtain a certification, or waiver thereof, that the project will not violate applicable state water quality standards. The SWRCB delegates authority to either grant certification or waive the requirement for certification to nine regional boards, including, in Solano County the Central Valley Regional Water Quality Control Board. The SWRCB protects all waters of the state, but has special responsibility for isolated wetlands and headwaters. These water bodies have high resources value but are vulnerable to filling and may lack regulation by other programs. Projects that require a U.S. Army Corps of Engineers permit, or fall under other federal jurisdiction, and have the potential to impact waters of the state are required to comply with the terms of the Water Quality Certification Program. If a proposed project does not require a federal license or permit, but does involve activities that may result in a discharge of harmful substances to waters of the state, the water boards have the option to regulate such activities under the Porter-Cologne Act authority in the form of Waste Discharge Requirements (WDR) or Certification of Waste Discharge Requirements.

California Environmental Quality Act

Although federal and state statutes protect threatened and endangered species, Section 15380(b) of the CEQA Guidelines provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after definitions in FESA and the section of the California Fish and Wildlife Code dealing with rare or endangered plants and animals. CEQA Guidelines Section 15380(b) requires public agencies to determine whether projects would result in significant effects on species not listed by either the USFWS or CDFW (i.e., candidate species). Thus, CEQA provides an agency with the ability to protect a species from a project's potential impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

Local Regulations

City of Vacaville General Plan

The City of Vacaville General Plan Conservation and Open Space Element provides guidance for new development and focuses on the protection of natural areas, including riparian corridors, which provide habitat and cover for wildlife and vegetation. The City provides specific protection for biological resources, as described in the following policies (City of Vacaville 2015).

- Policy COS-P1.5** Require new development proposals to provide baseline assessments prepared by qualified biologists. The assessment shall contain sufficient detail to characterize the resources on, and adjacent to, the development site. The assessment shall also identify the presence of important and sensitive resources, such as wetlands, riparian habitats, and rare, threatened, or endangered species affected by the development.
- Policy COS-P1.6** Require that new development minimize the disturbance of natural habitats and vegetation. Require revegetation of disturbed natural habitat areas with native or non-invasive naturalized species.
- Policy COS-P1.7** Encourage new development to incorporate native vegetation into landscape plans.
- Policy COS-P1.8** Prohibit the use of invasive, non-native species, as identified by the State or County Department of Agriculture or other authoritative sources, in landscaping on public property or in common areas in private developments.

- Policy COS-P1.9** Require that new development include provisions to protect and preserve wetland habitats that meet one of the following conditions:
- The wetlands contribute to the habitat quality and value of reserve/preserve lands established or expected to be established in perpetuity for conservation purposes.
 - The wetlands are contiguous to riparian or stream corridors, or other permanently protected lands.
 - The wetlands are located within or contiguous to other high value natural areas.
- Policy COS-P1.10** Where avoidance of wetlands is not practicable or does not contribute to long-term conservation of the resources, require new development to provide for off-site mitigation that results in no net loss of wetland acreage and functional value within the watersheds draining to the Delta or Suisun Marsh.
- Policy COS-P1.12** Until the Solano Habitat Conservation Plan (HCP) is adopted, comply with all of the Avoidance, Minimization, and Mitigation Measures listed in the Draft Solano HCP (see Appendix A for a list of the Avoidance and Minimization Measures that are applicable to Vacaville). In addition, require that development projects provide copies of required permits, or verifiable statements that permits are not required, from the California Department of Fish and Wildlife (2081 Individual Take Permit) and US Fish and Wildlife Service (Section 7 Take Authorization) prior to receiving grading permits or other approvals that would permit land disturbing activities and conversion of habitats or impacts to protected species. In cases where environmental review indicates that such permits may not be required, the Community Development Director may establish time limits of not less than 45 days from the submission of an adequate request for concurrence response from an agency. If the agency has not responded, or requested a time extension of no more than 90 days to complete their assessment, within the established time frame, applicable grading permits or other authorizations may be provided, subject to other City requirements and review. However, the City's issuance of grading permits or other authorizations does not absolve the applicant's obligations to comply with all other State and federal laws and regulations.

City of Vacaville Municipal Code

The City of Vacaville's Tree Preservation Ordinance is included in Chapter 14.09.131 of the City's Municipal Code. The ordinance states that "[f]or the purposes of this chapter, tree means any live woody plant having one or more well defined perennial stems with an aggregate circumference of 31 inches or more, when measured at 4-1/2 feet above ground level." Per the Tree Ordinance, "[p]rior to cutting down, removing, or destroying one or more trees on any property in the City, the property owner or the owner's authorized representative shall submit an application for a tree removal permit." The project site is located within the planned City's Sphere of Influence and would be annexed by the City upon the finalization and approval of The Farm at Alamo Creek Specific Plan.

Draft Solano Multispecies Habitat Conservation Plan (Final Administrative Draft, 2012)

The Solano Multispecies Habitat Conservation Plan: Final Administrative Draft (Solano HCP) is being prepared to establish a framework for complying with state and federal endangered species regulations while accommodating future urban growth, development of infrastructure, and ongoing operations and maintenance activities associated with flood control, irrigation facilities, and other public infrastructure (Solano County Water Agency 2012). The purpose of the Solano HCP is to reduce conflicts between listed species and economic development, agriculture, and other land use activities to promote conservation of biological diversity and, to the maximum extent practicable, contribute to the recovery of plant and animal species addressed in the Solano HCP. The latest draft of the Solano HCP was prepared in 2012, and until it is adopted, the recommendations and requirements are preliminary (Solano County Water Agency 2012).

The project site is currently within irrigated agricultural lands and is also within Zone 1 – Urban Development of the administrative draft Solano HCP. Zone 1 includes all ground or habitat-disturbing projects and activities needed to accommodate urban growth including the construction and maintenance of public and private facilities, consistent with local general plans and local, state, and federal laws. This category includes, but is not limited to, the construction, maintenance, and operation of new commercial, residential, institutional, and industrial uses and associated infrastructure and facilities (i.e., roads, utilities, stormwater control measures, parks, golf courses) (Solano County Water Agency 2012).

4.2.4 Impacts

Methods of Analysis

CEQA requires that projects analyze the potential impacts on special-status plant and animal species, as well as on sensitive habitats, wildlife corridors, and waters of the United States.

Impacts on wildlife species that are not considered special-status under CEQA are generally not considered significant unless impacts are associated with the species' migration routes or movements, or the species are considered locally important. In the area surrounding the project site, other common species (e.g., skunk, raccoon, and possum) would not be considered special-status species; however, impacts on their movements and migration routes would be considered significant under CEQA. Regardless of status, all nesting native bird species are protected from harm under the state Fish and Game Code and the federal MBTA.

The following sources were reviewed in the process of evaluating potential project impacts including The Farm at Alamo Creek Specific Plan (City of Vacaville 2017 available on the City's website at <http://www.ci.vacaville.ca.us/government/community-development/advanced-planning/major-development-projects/the-farm-at-alamo-creek>); the Aquatic Resources Delineation Report prepared by Madrone Ecological Consulting (Madrone 2017a), Biological Resources Assessment (Madrone 2017b), the Special-Status Plant Survey Report (Madrone 2017c), and the Valley Elderberry Longhorn Beetle Habitat Survey Report (Madrone 2017d). A Wildlife Hazards Analysis for The Farm at Alamo Creek (Dudek 2017), the City of Vacaville General Plan (City of Vacaville 2015), and Solano County General Plan (Solano County 2008), and relevant Federal, State, and local regulations and plans as they relate to sensitive biological resources. Copies of the biological reports listed above are included in Appendix D to this EIR.

The impact analysis includes potential impacts to areas east of the project site slated for off-site improvements.

Thresholds of Significance

Consistent with Appendix G of the CEQA Guidelines, the City's General Plan, and professional judgment, a significant impact would occur if development of the proposed project would do any of the following:

- Result in 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 (including the current Draft of the Solano HCP), policies, regulations, or by the CDFW or USFWS.
- Result in a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS.
- Result in a substantial adverse effect on federally regulated wetlands or waters as defined by Section 404 of the Clean Water Act and/or State protected wetlands as defined by the Porter-Cologne Water Quality Control Act through direct removal, filling, hydrological interruption, or other means.

- 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.
- Conflict with any applicable land use plans, policies, regulations, or ordinances, of an agency with jurisdiction over the project, adopted for the purpose of protecting biological resources or avoiding and mitigating impacts to biological resources.

Direct impacts refer to the permanent loss of on-site habitat and the plant and wildlife species that it contains. For this EIR, all biological resources within the direct permanent impact area are assumed to be 100 percent lost.

Indirect impacts refer to off-site and on-site “edge effects” that are short-term (i.e., not permanent) and result from project construction or long-term (i.e., permanent) due to the design of the project and the effects it may have to adjacent resources. Examples of “edge effects” include dust, noise, and general human presence that may temporarily disrupt species and habitat vitality and construction-related soil erosion and runoff.

Impacts and Mitigation Measures

4.2-1: Implementation of the proposed project may result in substantial adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. This would be a potentially significant impact.

Special-Status Plants

The project site provides marginal habitat for special-status plants including Dwarf downingia (*Downingia pusilla*), Contra Costa goldfields (*Lasthenia conjugens*), Baker’s navarretia (*Navarretia leucocephala* ssp. *bakeri*); and Bearded popcorn flower (*Plagiobothrys hystriculus*), because the habitat on-site is highly disturbed due to agricultural uses and these species were not observed during the site survey. The site surveys were conducted during the blooming season when these special-status plants would be evident and identifiable (Madrone 2017c). Thus, it is not likely these plant species occur on the project site and any impacts to special-status plant species anticipated to occur as a result of the proposed project would be **less than significant**.

Special-Status Wildlife

The project site and the area proposed for off-site improvements provide potential foraging and nesting habitat for numerous invertebrates, reptiles, birds, and mammals. Numerous Valley elderberry shrubs are present on the site that provide habitat for the VELB, though surveys did not indicate VELB were present. Irrigation canals, ditches and Old Alamo Creek within the

project site provide moderate habitat for western pond turtle (*Emys marmorata*). Trees on site provide roosting habitat for several bat species common to the area. The remainder of the site provides nesting and foraging habitat for burrowing owl, as well as foraging habitat for Swainson's hawk, Northern harrier, white-tailed kite, loggerhead shrike, and tricolored blackbird. The site also provided potential winter foraging habitat for short-eared owl, ferruginous hawk, and mountain plover. Potential impacts to these species and their habitat are discussed below.

Invertebrates

Valley Elderberry Longhorn Beetle

As discussed in section 4.2.2, the project site includes elderberry bushes but there is no evidence of use by VELB.

Construction and operation of the project could result in indirect impacts to potential VELB habitat through dust generation, runoff, and light pollution. The primary mechanism for impact to VELB, if present, would be vegetation clearing along Old Alamo Creek during construction or operation of the project. The project applicant proposes to clear the understory in that area, which could result in removal of or damage to elderberry shrubs. If those shrubs are occupied by VELB or have historically been occupied by VELB, removal of or damage to elderberry shrubs with stems greater than 1-inch diameter would be a **potentially significant impact**.

Reptiles

Western Pond Turtle

Old Alamo Creek throughout the study area, including off-site, provides habitat for western pond turtle, although none have been recorded on the site (Madrone 2017b). None of the aquatic habitat for western pond turtle would be removed or converted by the project; however, thinning of riparian vegetation within the portion of Old Alamo Creek south of Elmira Road could damage turtle nests or injure or kill individual turtles, if they were present. Other ongoing stream maintenance could remove basking sites such as logs or other debris. Increased human presence could result in direct disturbance of individual animals resulting in injury or death. Human habitation of the project area could also increase the likelihood for presence of invasive non-native red-eared sliders, which are often released by pet owners. Impacts to western pond turtle area **potentially significant impact**.

Birds

Burrowing Owl

No burrowing owls were observed during the site surveys, but the project site provides nesting and foraging habitat for this species. Construction activities such as grading and operation of

heavy equipment could result in the abandonment or failure of active burrows either through direct destruction of burrows or through indirect effects from noise and vibration associated with construction equipment. This is a **potentially significant impact**.

The 210.5-acre project site currently provides foraging habitat for this species and would be converted to other land uses, thereby reducing the available foraging habitat for burrowing owl. As noted previously, approximately 13.4 acres of the project site would be left in open space that provides nesting and foraging opportunities for this species; however, the removal of the remaining approximately 197 acres of available nesting and foraging habitat constitutes a **potentially significant impact** to this species.

Swainson's Hawk

As noted in Section 4.2.2, the project site provides nesting habitat in the trees along Old Alamo Creek, both within the project site and off-site, and foraging habitat within non-native annual grassland and agricultural fields. A Swainson's hawk was observed foraging within the project area during the field surveys. In addition, a Swainson's hawk nest was reported in 2001 in a clump of eucalyptus trees along the north edge of Old Alamo Creek within the project area (CNDDDB Occurrence #1926) (CNDDDB 2017).

The proposed project would result in the conversion of approximately 200 acres of agricultural land to residential development. The project would retain all the mature trees along Old Alamo Creek within the project site and off-site and would only remove trees that are dead or in poor health. However, the agricultural buffer located north of the detention basin would be the only area left in open space that provides foraging habitat for raptors. Additionally, noise, light, and other activities associated with construction could result in nest failure if active nests are present within 0.5 mile of the project site at the time of construction, and ongoing light, noise and disturbance from occupancy of the site could discourage future nesting on the site. The removal of foraging habitat for the project is considered a **potentially significant impact**.

Tricolored Blackbirds, Northern Harrier, White-Tailed Kite and Loggerhead Shrike

Although there is no nesting habitat for northern harrier, white-tailed kite, or loggerhead shrike within the project site, the project's agricultural lands provide foraging habitat for these species. Blackberry brambles in the understory of the Valley oak riparian woodland are marginal nesting habitat for tricolored blackbirds. The agricultural fields and non-native annual grassland are foraging habitat for tricolored blackbird. Additionally, noise, light, and other activities associated with construction could result in nest failure if active nests are present within 0.5 mile of the project site at the time of construction. The removal of approximately 200 acres of available foraging habitat for these four species is considered a **potentially significant impact**.

Mammals

Pallid Bat, Silver-Haired Bat, Western Red Bat, and Hoary Bat

The project site provides roosting habitat for bats in tree hollows, under exfoliating bark on trees, abandoned woodpecker holes and in the foliage of trees and shrubs within the woodland areas along Old Alamo Creek. Project removal of dead or diseased trees along Old Alamo Creek, both within the project site and off-site, could remove roosting habitat. Foraging habitat for bats on the project site include open wooded areas near stream or riparian corridors like Old Alamo Creek. Although this habitat would not be removed by the project, construction activities could disturb these species if they are present on the site, especially if night construction were to occur. This is a **potentially significant impact**.

Mitigation Measures

The following mitigation measures would reduce the potential for impacts on special-status species by ensuring the species are identified and protected during project construction activities and any impacted nesting or foraging habitat for Swainson's hawk or burrowing owl are replaced and preserved in perpetuity to ensure the survival of the species. Compliance with these mitigation measures would reduce project impacts to less than significant.

VELB

BIO-1a All elderberry shrubs (which are defined as those with stems greater than 1 inch in diameter) shall be avoided completely during project construction. Prior to commencing construction activities, a qualified biologist shall flag each elderberry shrub and using construction fencing shall establish a buffer of at least 20 feet around the shrub. The following avoidance and minimization measures shall be implemented for all work within 165 feet of a shrub:

- All areas to be avoided during construction activities shall be fenced and/or flagged as close to construction limits as feasible.
- Activities that could damage or kill an elderberry shrub (e.g., trenching, paving, etc.) shall not occur within 20 feet from the drip-line of any elderberry shrub.
- A qualified biologist shall provide training for all contractors, work crews, and any on-site personnel on the status of the VELB, its host plant and habitat, the need to avoid damaging the elderberry shrubs, and the possible penalties for noncompliance.
- A qualified biologist shall monitor the work area at project appropriate intervals to assure that all avoidance and minimization measures are implemented.

- As much as feasible, all activities within 165 feet of an elderberry shrub shall be conducted between August and February.
- Elderberry shrubs shall not be touched or trimmed.
- Herbicides shall not be used within the drip-line of the shrub and insecticides shall not be used within 100 feet of an elderberry shrub.
- Mechanical weed removal within the drip-line of the shrub shall be limited to the season when adults are not active (August - February) and shall avoid damaging the elderberry.

If either a 20-foot diameter avoidance area around any elderberry shrub is found later to not be feasible or an elderberry shrub must be removed to accommodate construction, then the applicant shall notify the City and implement additional mitigation measures required by the City designed to reduce impacts to a less-than-significant level and based on the *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* (USFWS 2017b) after consultation with USFWS.

Western Pond Turtle

BIO-1b Prior to commencing any vegetation clean up and removal along Old Alamo Creek, including any work in the creek downstream of the project site as part of the project's off-site improvements, a qualified biologist shall conduct a western pond turtle survey of the creek and any adjacent riparian areas where work shall occur within 48 hours prior to construction. If no western pond turtles or nests are found, no further mitigation is necessary. The impenetrable vegetation in and around the portion of Old Alamo Creek south of Elmira Road renders access to this area quite limited, and the results of any survey of this area may be inconclusive. Therefore, if the biologist cannot conduct a comprehensive survey, a biological monitor shall be present during vegetation thinning along this stretch of Old Alamo Creek. If a western pond turtle is observed within the proposed impact area, a qualified biologist shall relocate the individual to another portion of the creek outside of the proposed impact area prior to construction. If a western pond turtle nest is observed within the proposed impact area, the nest shall be fenced off and avoided if possible. If avoidance is not possible, the project applicant and the biologist shall consult with City staff to determine appropriate mitigation.

Burrowing Owl

BIO-1c Mitigation Measures BIO-1c through BIO-1d are consistent with Avoidance and Minimization Measures BO 1, BO 3, and BO 4 in Section 6.4.9 of the Solano

HCP (Solano County Water Agency 2012) and recommendations detailed in the *Staff Report on Burrowing Owl Mitigation* (CDFW 2012).

- a. Within 14 days prior to the anticipated start of construction, a qualified biologist shall conduct preconstruction surveys within the project site to identify burrowing owls or their nesting areas. This survey shall follow survey protocols outlined in the most current draft of the Solano HCP and as developed by the Burrowing Owl Consortium (Solano County Water Agency 2012; CDFW 2012). If no active burrows or burrowing owls are observed, no further mitigation is required. If a lapse in construction of 15 days or longer occurs during the nesting season, additional preconstruction surveys shall be repeated before work may resume.
- b. If burrowing owls or active burrows are identified within the project site during the preconstruction surveys, the following measures shall be implemented:
 1. During the non-breeding season for burrowing owls (September 1 through January 31), exclusion zones shall be established around any active burrows identified during the preconstruction survey. The exclusion zone shall be no less than 160 feet in radius centered on the active burrow. With approval from the City after consultation with CDFW, burrowing owls shall be passively evicted and relocated from the burrows using one-way doors. The one-way doors shall be left in place for a minimum of 48 hours and shall be monitored daily to ensure proper function. Upon the end of the 48-hour period, the burrows shall be excavated with the use of hand tools and refilled to discourage reoccupation.
 2. During the breeding season (February 1 through August 31), a qualified biologist familiar with the biology and behavior of this species shall establish exclusion zones of at least 250 feet in radius centered on any active burrow identified during the preconstruction survey. No construction activities shall occur within the exclusion zone as long as the burrow is active and young are present. Once the breeding season is over and young have fledged, passive relocation of active burrows may proceed as described in measure b.1, above.
 3. The buffer widths may be reduced with the following measures:
 - A site specific analysis, reviewed and approved by City after consultation with CDFW, shall be prepared that documents and describes how the nesting or wintering owls would not be adversely affected by construction activities;
 - Monitoring shall occur by a qualified biologist for a minimum of 10 consecutive days following initiation of construction indicating that the owls do not exhibit adverse reactions to construction activities;

- Burrows are not in danger of collapse due to equipment traffic; and
- Monitoring is continued at least once a week through the nesting/wintering cycle at the site and no change in behavior by owls is observed; biological monitoring reports shall be submitted to CDFW.

BIO-1d Mitigation for the permanent loss of burrowing owl foraging habitat for urban development or other permanent facilities shall be provided at a 1:1 land/area ratio. The irrigated agriculture preserve mitigation provided for Swainson's hawk Mitigation BIO-1f, below, may satisfy the requirements for BIO-1d, provided the following additional measures are implemented on the Swainson's hawk irrigated agriculture mitigation lands.

- No more than 20 percent of the mitigation area may support tree and shrub canopy or tall, dense grass cover.
- Burrowing owl habitat mitigation areas shall be subject to deed restrictions that would limit future urban development.
- A Habitat Maintenance Plan shall be prepared and implemented to ensure open space lands within the project site (if habitat remains) and the irrigated agriculture mitigation lands are maintained, to the extent feasible, to be compatible with burrowing owl use.
- Adequate funding shall be provided to manage the owl mitigation area in perpetuity.

Swainson's Hawk

BIO-1e This Mitigation Measure is consistent with Avoidance and Minimization Measures SH-1 through SH-5 in the Solano HCP (Solano County Water Agency 2012).

- a. If construction occurs during the nesting season for Swainson's hawk (March 1 through August 31), a qualified biologist shall conduct preconstruction surveys no more than 15 days prior to construction to identify nesting Swainson's hawk within 0.25 mile of the project site. If a lapse in project-related construction activities of 15 days or longer occurs, additional preconstruction surveys shall be conducted prior to reinitiating work.
- b. If an active Swainson's hawk nest is identified within 0.25 mile of the project site, an exclusion buffer shall be established in consultation with the biologist and CDFW. No construction work such as grading, earthmoving, or any operation of construction equipment shall occur within the buffer zone except as provided below in mitigation measure BIO-5 and in consultation with CDFW. Construction

may commence normally in the buffer zone if the nest becomes inactive (e.g., the young have fully fledged), as determined by the qualified biologist.

BIO-1f The project applicant shall mitigate for the loss of Swainson's hawk irrigated foraging habitat by preserving a minimum of 1:1 land/area ratio of similar habitat. The final acreage for mitigation calculations shall be determined based on final design of the open space areas within the project site. The preservation of the mitigation area shall be accomplished through purchase of credits from a bank approved by the CDFW to provide such credits, such as the Elsie Gridley Mitigation Bank or the Burke Ranch Conservation Bank (CDFW 2016) or through preservation of irrigated agricultural lands protected in perpetuity by a conservation easement or City approved in-lieu fee program established to preserve irrigated agricultural lands protected in perpetuity by a conservation easement at a minimum of 1:1 land/area ratio. Such an easement or fee program shall include provisions that provide for agricultural uses that are compatible with Swainson's hawk foraging needs. Agricultural foraging habitats shall consist of alfalfa, tomatoes, other annual vegetable row crops, and grain. The mitigation area shall not include crop types and land uses incompatible with Swainson's hawk foraging. The following additional restrictions and prohibited uses, at a minimum, shall also be noted as forbidden within the conservation easement:

- Commercial feedlots, which are defined as any open or enclosed area where domestic livestock are grouped together for intensive feeding purposes.
- Horticultural specialties, including sod, nursery stock, ornamental shrubs, ornamental trees, Christmas trees, or flowers.
- Commercial greenhouses or plant nurseries.
- Commercial aquaculture of aquatic plants, animals, and their byproducts.
- Planting orchards or vineyards for the production of fruits, nuts, or berries except in designated farmstead areas.
- Cultivation of perennial vegetable crops such as artichokes and asparagus, as well as annual crops such as cotton or rice.
- Construction, reconstruction, or placement of any building, billboard or sign, antennas, towers, and facilities for generation of electrical power, or any other structure or improvement of any kind, except as may be specifically permitted in site-specific management plan. Acreage occupied by any such existing facilities may not be counted toward mitigation requirements.

The City shall consult with CDFW prior to approving the site, conservation easement, and conservation easement holder.

Tricolored Blackbird, Northern Harrier, White-Tailed Kite, and Loggerhead Shrike

BIO-1g Mitigation for the permanent loss of foraging habitat for northern harrier, white-tailed kite, loggerhead shrike, and tricolored blackbird from project urban development or other permanent facilities shall be provided at a 1:1 land/area ratio. The irrigated agriculture preserve mitigation provided for Swainson's hawk Mitigation BIO-1f, above, may satisfy the requirements for BIO-1g, provided the following additional measure is implemented on the Swainson's hawk irrigated agriculture mitigation lands.

- A Habitat Maintenance Plan shall be prepared and implemented to insure open space lands within the project site (if habitat remains) and the irrigated agriculture mitigation lands are maintained, to the extent feasible, to be compatible with use by tricolored blackbird, northern harrier, white-tailed kite, and loggerhead shrike.

Bats

BIO-1h Pre-construction roosting bat surveys shall be conducted by a qualified bat biologist within 14 days prior to any tree removal or construction activities along Old Alamo Creek that occurs during the breeding season (April through August). If pre-construction surveys indicate that no roosts of special-status bats are present, or that roosts are inactive or potential habitat is unoccupied, no further mitigation is required. If roosting bats are found, exclusionary measures approved by the City shall be installed by a qualified bat biologist. Once the bats have been excluded, tree removal may occur. If these actions do not result in exclusion, a qualified biologist in possession of an applicable California Department of Fish and Wildlife Memorandum of Understanding shall consult with CDFW to determine appropriate relocation methods.

4.2-2: Implementation of the proposed project could result in a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS. There would be a potentially significant impact.

Riparian habitat present within the project site includes the Valley Oak riparian woodland area adjacent to Old Alamo Creek and off-site along Old Alamo Creek. A well-developed Valley oak (*Quercus lobata*) riparian woodland occurs along both sides of Old Alamo Creek for most of its length through the project site. Within the project site, this community is relatively diverse. Dominant tree species include Valley oak, Fremont's cottonwood (*Populus fremontii*), black

willow (*Salix gooddingii*), red willow (*S. laevigata*), English walnut (*Juglans regia*), and black walnut (*Juglans hindsii*). Dominant shrubs in the understory include Himalayan blackberry (*Rubus armeniacus*), wild rose (*Rosa californica*), and sandbar willow (*Salix exigua*). Santa Barbara sedge (*Carex barbarae*) beds occupy large areas in the understory of this community, in between the Himalayan blackberry and the wild rose (Madrone 2017b).

The portion of Old Alamo Creek east of the project site supports a more dense Valley oak riparian woodland. Although the large, over-story trees are consistent with the description above, the channel itself has been rendered virtually inaccessible due to an extremely tall, dense thicket of Himalayan blackberry, and in areas along the northern edge of the creek, a dense sandbar willow thicket.

In addition, there are agricultural ditches and canals within the project site that are regularly maintained and vegetation is largely absent. Due to the highly disturbed nature of the project site, and the current agricultural usage, no riparian habitat or other sensitive natural communities occurs adjacent to these ditches or canals within the project site.

The project would increase impervious surfaces and stormwater drainage to Old Alamo Creek. If stormwater contains substantial levels of contaminants from vehicle leaks, pesticides, fertilizers, and other chemicals associated with a residential development, it could degrade water quality within Old Alamo Creek and impact the riparian community that exists there. However, the design of the project would route all stormwater to the detention basin, which would allow sediments to settle out and biodegradation of at least some of the contaminants would occur.

The project proposes to remove the understory and any unhealthy or dead trees located within the riparian woodland adjacent to Old Alamo Creek, although the project applicant has not proposed methods for doing this, the EIR assumes that heavy equipment would need to access the areas along Old Alamo Creek. Any heavy equipment usage in this area could adversely affect the riparian community through direct damage to trees and other riparian vegetation, as well as indirectly through soil compaction, erosion, and leaks of petroleum compounds. This vegetation removal activity would result in a **potentially significant impact**.

Mitigation Measures

BIO-2a The following Best Management Practices shall be implemented during all site preparation and construction activity within the project site, especially in those areas adjacent to Old Alamo Creek to control pollutant sources associated with the handling and storage of construction materials and equipment, as well as waste management and disposal.

- a. Construction raw materials (e.g., dry materials such as concrete mix, paints, petroleum products) shall be stored in designated areas that are located at

least 100 feet away from the top of bank of Old Alamo Creek and are surrounded by earthen berms or other barriers, if necessary. Construction employees working on the site shall be trained in proper materials handling practices to ensure that, to the maximum extent practicable, construction materials are properly stored.

- b. Year-round, install temporary barriers around soil stockpile perimeters to prevent contact with stormwater when required. Temporary barriers can be berms, dikes, silt fences, straw bales, or sandbag barriers. During the rainy season (generally December to April), cover inactive soil stockpiles or protect them with soil stabilization at all times. During the non-rainy season, cover inactive soil stockpiles or protect them with linear barriers prior to rain events.
- c. Whenever possible, wash out concrete trucks off site in City designated areas. If the trucks are washed on site, contain the wash water in a temporary pit adjacent to the construction activity where waste concrete can harden for later removal, no nearer than 100 feet from the top of bank of Old Alamo Creek. Place sign at the designated washout locations and instruct drivers of the washout locations. Avoid washing fresh concrete from the trucks, unless the runoff is drained to a berm or level area, at least 100 feet away from the top of bank of Old Alamo Creek.
- d. Collect non-hazardous waste construction materials (e.g., wood, paper, plastic, cleared trees and shrubs, scrap metal, rubber, glass) and deposit in covered dumpsters at a designated waste storage area on-site at least 100 feet away from the top of bank of Old Alamo Creek. Recyclable construction materials shall be stored separately for recycling.
- e. Hazardous materials shall be stored in portable metal sheds with secondary containment. The quantities of these materials stored on-site shall reflect the quantities needed for site construction. Avoid over-application of fertilizers, herbicides, and pesticides. Do not mix hazardous waste with other waste produced on site. Contract with a Certified Waste Collection contractor to collect hazardous wastes for disposal at an approved hazardous waste facility.
- f. Waste oil and other equipment maintenance waste shall be properly disposed of in compliance with federal, State and local laws, regulations and ordinances.

BIO-2b To protect the existing trees along Old Alamo Creek from damage associated with construction activities and to avoid soil compaction in the root zone, the project applicant shall do the following:

- No vehicles, construction equipment, mobile offices, or materials shall be parked, stored or located within the driplines of any oak trees.
- Install 4-foot tall, orange, synthetic mesh fencing outside the dripline of all trees greater than 6" dbh (diameter at breast height), or 10" dbh aggregate for multi-trunked trees. If site constraints do not allow for protection of a tree's entire dripline, fence off as much of the dripline as possible.
- If work or traffic must proceed within the driplines, one of the following techniques shall be followed: (1) place 6-12 inches of mulch in the work or traffic area; (2) place at least 4 inches of mulch in the work or traffic area and then place sheets of ¾ inch plywood or 4x4 inch lumber; or (3) place 4 – 6 inches of gravel with geotextile fabric beneath.
- Soil surface removal greater than one foot shall not occur within the driplines of oak trees. No cuts shall occur within five feet of their trunks.
- If roots are encountered during soil excavation, they shall be carefully pruned rather than left torn or crushed. Roots greater than 1 inch in diameter must always be pruned, and finer roots shall ideally also be pruned. Cut roots as far away from the trunk as possible. Use loppers, a handsaw, or a small chain saw to make a clear vertical cut. Leave adjacent root bark intact.
- To the extent feasible, earthen fill greater than one foot deep shall not be placed within the driplines of oak trees, and no fill shall be placed within five feet of their trunks.
- No paving shall be permitted in the vicinity of oak trees.
- Underground utility line trenching shall not be placed within the driplines of oak trees. If it is absolutely necessary to install underground utilities within the driplines of preserved oak trees, the trench shall either be bored or drilled but not within five feet of the trunk.

4.2-3: Implementation of the proposed project may result in placement of fill into potential jurisdictional waters of the U.S and State. This would be a potentially significant impact.

A total of approximately 6.70 acres of aquatic resources have been mapped and delineated within the project site (Madrone 2017a). This includes 2.4 acres in an irrigation canal, 3.9 acres

of Old Alamo Creek, 0.154 acre of an irrigation ditch, and 0.124 acre in a roadside ditch. The project proposes to remove the irrigation canals that convey water from SID's Putah South Canal to agricultural fields both on-site and off-site. Portions of these canals are concrete-lined, while other portions are well-maintained dirt-lined canals. Old Alamo Creek is an intermittent drainage that runs through the southern portion of the project site, and is bordered on both sides by a well-developed Valley oak woodland. Irrigation ditches in the southern portion of the site appears to drain irrigation water from the southern agricultural fields into Old Alamo Creek. These features are much smaller than the irrigation canals, and although they are unvegetated within the channel, the banks are densely vegetated. A roadside ditch is present along the northern boundary of the project site, just south of Hawkins Road. The roadside ditch collects runoff from Hawkins Road, and conveys it east through a series of off-site ditches into Ulatis Creek. This feature is primarily unvegetated due to ditch maintenance.

An Aquatic Resource Delineation has been prepared for the project (see Appendix D). While the delineation notes that the irrigation canals, irrigation ditches and the roadside ditch within the project site were constructed in uplands and may not be subject to U.S. Army Corps of Engineers (USACOE) jurisdiction, the USACOE will make the final jurisdictional determination. Construction activities associated with removing these features may be exempt from permitting under Section 404(f)(1) of the Clean Water Act. However, permits may still be required by the Regional Water Quality Control Board or the CDFW. Conversion of these aquatic features to a developed environment would constitute a **potentially significant impact** to potential waters of the U.S. and State.

Mitigation Measures

The following mitigation measure would reduce potential impacts to less than significant by requiring the loss of waters of the U.S. and State be replaced at a 1:1 ratio.

- BIO-3** To mitigate for the loss of potentially jurisdictional waters of the United States and/or waters of the State, the project applicant shall create, preserve, or restore jurisdictional waters to the extent required under the Clean Water Act or Waste Discharge Requirements (WDRs), as applicable. If Section 404, 401, or WDR authorizations are required, mitigation acreage requirements shall be determined in consultation with the U.S. Army Corps of Engineers, and the Regional Water Quality Control Board.

In addition, if construction activities will impact CDFW jurisdictional resources, the applicant shall obtain, and comply with, a Lake and Streambed Alteration Agreement from CDFW.

4.2-4: Implementation of the proposed project may interfere 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. There would be a less-than-significant impact.

As noted in the Section 4.2.2, wildlife corridors are linear features that connect large areas or patches of natural open space and provide avenues for the migration of animals. Habitat linkages are small areas or patches of land that join larger blocks of habitat and help reduce the adverse effects of habitat fragmentation; they may be continuous habitat or discrete habitat islands that essentially function as 'stepping stones' for wildlife dispersal.

The agricultural lands that comprise the project site, in conjunction with existing residential development to the west and land under construction to the south for future residential, reduces the site's suitability as a wildlife movement corridor. The on-site canals and irrigation ditches that bisect the project site do not provide migratory habitat for fish species. The project site is within the Pacific Flyway. The site does not contain open water habitat that would support waterfowl, but the site does include potential foraging habitat for waterfowl and could be used as a stopover point for non-waterfowl migratory bird species. However, ample similar agricultural lands are available in the project vicinity and the Sacramento-San Joaquin River Delta provides many thousands of acres of habitat for migrating birds. Therefore, the conversion of approximately 200 acres of agricultural lands of marginal value to migrating birds would constitute a **less-than-significant impact** to the movement of resident or migratory fish or wildlife species.

Mitigation Measures

None required.

4.2-5: Implementation of the proposed project could conflict with applicable land use plans, policies, regulations, or ordinances, of an agency with jurisdiction over the project, including the Solano County Water Agency's draft HCP adopted for the purpose of protecting biological resources or avoiding and mitigating impacts to biological resources. This would be a potentially significant impact.

The Farm at Alamo Creek Specific Plan has been designed to be consistent with the City's General Plan (City of Vacaville 2015). Although the Solano HCP is still in draft form and has not yet been finalized or adopted, the City's General Plan mandates that the measures covered in the most current draft of the Solano HCP shall be used (City of Vacaville 2015). Thus, the draft Solano HCP is treated in this EIR as an accepted plan for the purposes of analyzing and mitigating potential impacts. Conversion of approximately 200 acres of irrigated agricultural lands to a developed environment would not be compatible with the draft Solano

HCP goal for conservation of such lands for foraging and nesting habitat for covered species. Based on a review of Figure 4-27 in the preliminary Draft HCP, the project site is located within potential reserve areas for Swainson's hawk. These areas were mapped by the HCP as high quality, irrigated and non-irrigated agricultural lands and adjacent grasslands that are within the known nesting distribution in the County. Based on a review of Figure 4-22 of the preliminary Draft HCP, the project site is also within areas designated as an Irrigated Agriculture Conservation Area, which in general is a target area for conservation for both Swainson's hawk and burrowing owl due to their similar habitat requirements. Therefore, the conversion of this land would be considered a **potentially significant impact** due to conflicts with the preliminary Draft Solano HCP.

Mitigation Measures

Mitigation Measure BIO-1d and BIO-1f requires the loss of burrowing owl foraging habitat and Swainson's hawk foraging habitat be replaced at a 1:1 ratio, consistent with the Draft HCP. Compliance with these mitigation measures would ensure consistency with the Draft HCP and would reduce the impact to less than significant.

BIO-4 Implement Mitigation Measures BIO-1d and BIO-1f.

4.2.5 Cumulative Impacts

When considered independently, impacts from an individual project may not be significant; however, the combined effects of several projects may be significant when considered collectively. Cumulative impacts associated with The Farm at Alamo Creek Specific Plan have been analyzed in a Vacaville-centered regional context with other past, current and reasonably foreseeable development projects. The City of Vacaville is currently managing several development projects within several miles of the proposed project. These include the Brighton Landing Specific Plan Project located immediately south of the project site (City of Vacaville 2012), the Vanden Meadows Specific Plan Project (City of Vacaville 2013), Roberts' Ranch Specific Plan (City of Vacaville 2016), and the Jepson Parkway Project (Caltrans 2011). Potential cumulative impacts to biological resources from cumulatively considered regional projects are discussed below.

4.2-6: The proposed project could contribute to cumulative impacts to special-status species in the region due to removal of foraging and breeding habitat. This would be a less-than-significant contribution.

The proposed project would result in the conversion of approximately 200 acres of foraging habitat for Swainson's hawk, burrowing owl, bats, and other raptors. In conjunction with other past, current and reasonably foreseeable urban development projects in the City of Vacaville and surrounding municipalities, a large amount of historic foraging and nesting habitat for

special-status raptors, bats and birds has been removed from the region. The Solano HCP anticipated conversion of approximately 14,000 acres of current habitat over the next 30 years, including agricultural lands to urban uses and loss of wetlands (Solano County Water Agency 2012). This is considered a significant cumulative impact.

Development of the project site was considered in the HCP and the City's General Plan EIR. The City's General Plan includes Policy COS-P1.1 and Action COS-A1.1, which supports implementing the HCP, thereby reducing the proposed General Plan's contribution to the cumulative impacts of the loss/conversion of habitats for future development within the city and the county. The General Plan EIR identified impacts associated with the loss and conversion of habitat as less than significant.

Development of The Farm at Alamo Creek Specific Plan area was contemplated as future development within the HCP and the City's General Plan and evaluated in the General Plan EIR. Additionally, implementation of the proposed mitigation measures for this project and other development projects in the region would result in preservation or restoration of similar habitat in perpetuity. Thus, the project's contribution to the existing cumulative impact would be considerable resulting in a **significant impact**.

Mitigation Measures

Compliance with Mitigation Measures BIO-1c, BIO-1d, BIO-1e, and BIO-1f would ensure impacts to the loss of foraging and breeding habitat for special-status species would be reduced to less than significant.

BIO-5 Implement Mitigation Measures BIO-1c, BIO-1d, BIO-1e, and BIO-1f.

4.2.6 References

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4.3 CULTURAL AND PALEONTOLOGICAL RESOURCES

4.3.1 Introduction

This section evaluates the potential effects on cultural resources associated with development and operation of The Farm at Alamo Creek Specific Plan project (proposed project). The potential for prehistoric and historical resources to be damaged as a result of development of the proposed project is described and applicable federal, state, and regional regulations pertaining to the protection of cultural resources are identified and potential project-specific and cumulative impacts on cultural resources are evaluated and measures included to minimize or avoid potential impacts.

No comments were received that raised concerns regarding cultural resources in response to the Notice of Preparation (NOP). A copy of the NOP and comments received in response to the NOP is included in Appendix A.

Resources referenced to prepare this section include the Cultural Resources Inventory and Evaluation Report for The Farm at Alamo Creek prepared by ECORP Consulting, Inc. (October 2017) and the City of Vacaville General Plan (City of Vacaville 2015). A copy of the Cultural Resources Inventory and Evaluation Report is included in Appendix E.

4.3.2 Environmental Setting

This section describes the historical and cultural background of the region provided by the Cultural Resources Inventory and Evaluation Report, the existing conditions on the project site (including the off-site areas slated for improvements), and identifies the resources that could be affected by implementation of the proposed project.

Regional Prehistory Background

The Sacramento Valley may have been inhabited by humans as early as 10,000 years ago or before present (BP) time. The archaeological remains from this period are rare but have been found in and around the Central Valley, although none have been identified in Solano County (City of Vacaville 2012). The archaeological records indicate that between approximately 10,000 and 8,000 BP, a predominantly hunting economy existed, characterized by archaeological sites containing numerous projectile points and butchered large animal bones. Animals that were hunted probably consisted mostly of large species still alive today. Bones of extinct species have been found, but cannot definitely be associated with human artifacts. Although small animal bones and plant grinding tools are rarely found within archaeological sites of this period, small game and floral foods were probably exploited on a limited basis. A lack of deep cultural

deposits from this period suggests that groups included only small numbers of individuals who did not often stay in one place for extended periods (Wallace 1978).

Around 8,000 BP, there was a shift in focus from hunting towards a greater reliance on plant resources. Archaeological evidence of this trend consists of a much greater number of milling tools (e.g., metates and manos) for processing seeds and other vegetable matter. This period, which extended until around 5,000 BP, is sometimes referred to as the Millingstone Horizon (Wallace 1978). Projectile points are found in archaeological sites from this period, but they are far fewer in number than from sites dating to before 8,000 BP.

In sites dating to after about 5,000 BP, archaeological evidence indicates that reliance on both plant gathering and hunting continued as in the previous period, with more specialized adaptation to particular environments. Mortars and pestles were added to metates and manos for grinding seeds and other vegetable material. Flaked-stone tools became more refined and specialized, and bone tools were more common. During this period, new peoples from the Great Basin began entering southern California. These immigrants, who spoke a language of the Uto-Aztecan linguistic stock, seem to have displaced or absorbed the earlier population of Hokan-speaking peoples. During this period, known as the Late Horizon, population densities were higher than before and settlement became concentrated in villages and communities along the coast and interior valleys (Erlandson 1994; McCawley 1996). Regional subcultures also started to develop, each with its own geographical territory and language or dialect (Kroeber 1925; McCawley 1996; Moratto 1984). These were most likely the basis for the groups encountered by the first Europeans during the eighteenth century (Wallace 1978). Despite the regional differences, many material culture traits were shared among groups, indicating a great deal of interaction (Erlandson 1994). The introduction of the bow and arrow into the region sometime around 2,000 BP is indicated by the presence of small projectile points (Wallace 1978; Moratto 1984).

Ethnography

The ethnography, the study of individual peoples and cultures, of the region shows that prior to the arrival of Euro-Americans, indigenous groups speaking more than 100 different languages and occupying a variety of ecological settings inhabited California. Kroeber (1925, 1936), and others (i.e., Murdock 1960; Driver 1961), recognized the uniqueness of California's indigenous groups and classified them as belonging to the California culture area. Kroeber (1925) further subdivided California into four subculture areas: Northwestern, Northeastern, Southern, and Central.

When the first European explorers entered the regions between 1772 and 1821, an estimated 100,000 people, about 1/3 of the state's native population, lived in the Central Valley (Moratto 1984:171). At least seven distinct languages of Penutian stock were spoken among these populations: Wintu, Nomlaki, Konkow, River Patwin, Nisenan, Miwok, and Yokuts. Common

linguistic roots and similar cultural and technological characteristics indicate that these groups shared a long history of interaction (Rosenthal et al. 2007).

Ethnographically, the project area is in the central portion of the territory occupied by the Penutian speaking Hill Patwin. The Patwin territory included both the River Patwin and Hill Patwin and extended from the southern portion of the Sacramento River Valley to the west of the river, from the town of Princeton south to San Pablo and Suisun bays. As a language, Patwin (meaning “people”) is part of the Wintu linguistic family which has three main groups: Southern or Patwin; Central, of Glenn and Tehama counties; and the Northern, of the upper Sacramento, lower Pit, and the upper Trinity drainages (Johnson 1978). The Hill Patwin territory includes the lower hills of the eastern Coast Range mountain slope (Long, Indian, Bear, Capay, Cortina, and Napa Valley). Between there and the foothills, the grassy plains were largely unsettled, used mainly as a foraging ground by both valley and hill groups (Johnson 1978). Patwin pre-contact population numbers are not precise, but Kroeber (1932) estimates 12,500 for the Wintu, Nomlaki, and Patwin groups. These numbers reflect groups prior to the 1833 malaria epidemic.

Politically, the Patwin were divided into “tribelets,” made up of a primary village and a series of outlying hamlets, presided over by a more-or-less hereditary chief. Villages typically included family dwellings, acorn granaries, a sweathouse, and a dance house, owned by the chief. The chief had unrestricted power and presided over economic and ceremonial decisions (Johnson 1978).

The earliest historical accounts of the Project Area begin with Spanish mission registers of baptisms, marriages, and deaths of Indians. By 1800, Native Americans were taken from the Patwin settlement of Aguastos in the south-central area, and from other villages, by emissaries of Mission Dolores. In addition, missions San Jose and Sonoma actively proselytized the southern Patwin. Between the 1830s and 1840s, both Mexicans and Americans rapidly overtook the Patwin territory under the authority of the Mexican government (Johnson 1978).

The Spanish arrived on the central California coast in 1769, and by 1776 had been explored by José Canizares. In 1808, Gabriel Moraga crossed into the territory, and in 1813 a major battle was fought between the Miwok and the Spaniards near the mouth of the Cosumnes River. In 1833, an epidemic most likely to be malaria, raged through the Sacramento Valley, killing an estimated 75 percent of the native population. The discovery of gold in 1848 at Sutter’s Mill, near the Nisenan village of Colluma (now Coloma) on the South Fork of the American River, drew thousands of miners into the area, and led to widespread killing and the virtual destruction of traditional Native American cultures. Remnants of inhabited semi-permanent villages of the Patwin have been found in the hills around Vacaville. Dozens of prehistoric archaeological resources in the Vacaville area, including habitation sites, burial sites, and isolated tools have been identified (City of Vacaville 2015).

History

The project area is located just east of the Los Putos land grant (originally called Lihuaytos) which includes what is now Vacaville. The Lihuaytos land grant was issued by the Mexican governor of Alta California in 1843 to Juan Manuel Vaca and Juan Felipe Peña (Aviña 1976:98). Vaca and Peña came from New Mexico and settled along Putah Creek, north of what is now Vacaville. Their Lihuaytos land grant overlapped with the Rio de los Putos land grant along Putah Creek given to Francisco Guerrero y Palomares of Tepic, Mexico, in 1842. The Rio de los Putos land grant was purchased by William Wolfskill of Los Angeles the same year. Wolfskill's land grant had oak trees along Putah Creek while the Vaca and Peña grant was described as a "barren waste." Vaca and Peña grazed their cattle along Putah Creek and eventually took over use of the Rio de los Putos land grant forcing out the cattle of John Wolfskill, William Wolfskill's brother. The Wolfskills filed a suit to recover their land with the Mexican governor who ruled in favor of the Wolfskills (Bowen 2000a).

Lansing Mizner laid out the town of Vacaville and surveyed it into lots. He filed the plat of the town with the County on December 13, 1851 (Bowen 2000b). The town plat showed two plazas, a block for schools, a block reserved for a church, and a block for a cemetery (Bowen 2000c). Vacaville was connected by a spur to the California Pacific/Southern Pacific Railroad main line from the Bay Area to Sacramento at Elmira in 1869 (Robertson 1998). During the mid to late 19th century, livestock and wheat production were the principal economic products in the county and by the 1890s fruit production was the primary economic product. The town of Vacaville was formally incorporated in 1892 (City of Vacaville 2015).

Fires destroyed most of downtown Vacaville in 1887. An earthquake destroyed it again in 1892. Three years later, another fire destroyed businesses and Chinese dwellings in Vacaville in 1895 (Martin 2007).

The adjacent Town of Elmira started as a one-room depot in 1868 on the California Pacific Railroad (became part of the Southern Pacific Railroad in 1889) line from the Bay area to Sacramento (Robertson 1998). The depot was located near today's Elmira and was named Vaca Station. The Northern Railway Company built a spur from Vaca Station (later Elmira) to Vacaville in 1869 which became known as the Vaca Valley Railroad. Vaca Station was on the California Pacific line from the Bay Area to Sacramento. The Northern Railway extended its line from Vacaville to Madison in 1877 and Rumsey in 1888 (Robertson 1998). The town that developed around Vaca Station was named Elmira in 1871. It was named for Elmira, New York, after the birthplace of Jerome Banks, a prominent lawyer in town (Bowen 2001). The town was platted in 1868 on 40 acres of land. It was known as a fruit growing community, with a diverse variety of fruit orchards. By 1878, the town had a population of about 500 (Thompson and West 1880).

Records Search

A records search was completed at the Northwest Information Center (NWIC) of the California Historical Resources Information Center (CHRIS) at California State University-Sonoma on June 8, 2017 (NWIC search #16-1971). The purpose of the records search was to determine the extent of previous surveys within a 0.5-mile radius of the project location, and whether previously documented prehistoric or historic archaeological sites, architectural resources, or traditional cultural properties exist within this area. The nearest listed landmark is #534: the Vaca-Pena Adobe in Vacaville (plaque located 4.5 miles southwest of the project area).

Ten previous cultural resource surveys were conducted within 0.5 of a mile of the project site that indicate the presence of prehistoric sites, including lithic scatters and habitation sites, and historical sites, including agricultural drainage features, buildings, railroads, and railroad related features, listed in Table 4.3-1. Only a small portion of the project area (the right-of-way along Hawkins Road) has been previously surveyed for cultural resources (Appendix E). Six previously recorded resources were identified within 0.5 mile of the project site. One resource, the Vaca Valley Railroad Route, runs along and within the southern boundary of the project area. These resources are detailed below in Table 4.3-2.

Additional sources reviewed include the Historic Property Data File for Solano County (OHP 2012); the National Register Information System website (National Park Service [NPS] 2017); Office of Historic Preservation, California Historical Landmarks website (OHP 2017); California Historical Landmarks (OHP 1996 and updates); California Points of Historical Interest (OHP 1992 and updates); Directory of Properties in the Historical Resources Inventory (1999); Caltrans Local Bridge Survey (Caltrans 2016); Caltrans State Bridge Survey (Caltrans 2015); and Historic Spots in California (Kyle 2002); and a review of historic maps. The Native American Heritage Commission (NAHC) was contacted to perform a Sacred Lands File search to determine whether or not Sacred Lands have been recorded by California Native American tribes within the project area. The search failed to indicate the presence of Native American cultural resources in the project area (Appendix E).

**Table 4.3-1
Previous Cultural Studies Within 0.5 Mile of the Project Site**

Report ID	Year	Author	Title	Includes Portions of the Project Area?
S-15164	1981	Chaves, David	Vacaville Southeast Sector Environmental Impact Report	No

**Table 4.3-1
Previous Cultural Studies Within 0.5 Mile of the Project Site**

Report ID	Year	Author	Title	Includes Portions of the Project Area?
S-20257	1997	Wickstrom, Brian	Cultural Resource Survey for the Easterly Wastewater Treatment Plant Expansion, Solano County, California	No
S-22736	2000	Jones and Stokes	Final Cultural Resources Inventory Report for the Williams Communications, Inc. Fiber Optic Cable system Installation Project, Point Area to Sacramento, California	No
S-22817	2000	Far Western Archaeological Research Group, Inc.	Cultural Resources Survey for the Level (3) Communications Long haul Fiber Optics Project Segment WS01: Sacramento to Oakland	No
S-23471	1998	Archeo-Tec	Cultural Resources Evaluation of the Hawkins Property, An approximately 32 acre parcel of land located within the City of Vacaville, Solano County, California	No
S-33061	2006	SWCA Environmental Consultants	Cultural Resources Final Report of Monitoring and Findings for the Qwest Network Construction Project, State of California	No
S-34833	2008	Peak & Associates, Inc.	Cultural Resources Assessment of the Brighton Landing Project Area, Solano County, California	No
S-37992	2010	Negrone, Sally	Field Office Report of Cultural Resources Ground Survey Findings	No
S-39243	2012	Peak & Associates, Inc.	Archaeological Survey Report, Vacaville-Dixon Bike Route Phase 5 Project, Hawkins Road, Solano County, California	Yes
S-44980	2012	LSA Associates, Inc.	Cultural Resources Study for the Brighton Landing Project, Vacaville, Solano County, California	No

Source: Appendix E

**Table 4.3-2
Previously Recorded Resources Within 0.5 Mile of the Project Site**

Primary Number	Recorder/Year	Age/Period	Within Project Area	Description
419	B. Wickstrom 1997	Prehistoric	No	Obsidian flake isolate

**Table 4.3-2
Previously Recorded Resources Within 0.5 Mile of the Project Site**

Primary Number	Recorder/Year	Age/Period	Within Project Area	Description
546	J. Nelson 1999	Historic	No	Elmira Water Tower
549	J. Nelson 1999; P. Woltz 2013	Historic	No	Southern Pacific Railroad
745	M. Bowen 2002	Historic	No	Single family property located at 579 Leisure Town Road
1025	Dr. Scott Crull 2014	Historic	Yes	Vaca Valley Railroad Route
1026	Dr. Scott Crull 2014	Historic	No	Elmira Depot

Source: Appendix E

As a result of previous investigations by other firms, one railroad grade segment was recorded within the project area and it was relocated.

P-48-1025: Vaca Valley Railroad Grade

The Vaca Valley Railroad grade is located along the north side of Elmira Road and enters the southwestern portion of the project area. The track ran from Elmira to Vacaville from 1869 to 1877, after which the route was renamed the Vaca Valley & Clear Lake Railroad and which reached Rumsey by 1888. The railroad was operated until 1992 by the Southern Pacific Railroad and the tracks were removed in 1995. A railroad grade without tracks or ties is visible on the north side of Elmira Road. According to the site record, the rails were laid on wooden ties lying on the bare ground and no ballast rocks were used.

Archaeological Survey

An intensive pedestrian level survey of the project area was conducted by ECORP on June 13, 14, 15 and October 5, 2017. The survey included examination of ground surfaces for prehistoric artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools, ceramics, fire-affected rock), soil discoloration that might indicate the presence of a cultural midden, soil depressions, features indicative of the current or former presence of structures or buildings (e.g., standing exterior walls, post holes, foundations) and historic artifacts (e.g., metal, glass, ceramics, building materials). Ground disturbances such as burrows, cut banks, and drainages were also visually inspected for exposed subsurface materials.

The pedestrian level survey discovered two previously unidentified historic-period resources within the project area: FAC-001, a segment of the historic-period Byrnes Canal; and FAC-004,

an historic period garage and foundation (described further below). No prehistoric sites were discovered during the survey. The project site is located within disturbed and undeveloped agricultural lands. The majority of the property consisted of alfalfa or bare agricultural fields with 50 to 90 percent surface visibility. It was apparent that the surface has been modified as a result of years of agricultural production. The project area contains dirt access roads, segments of Byrnes Canal, old Alamo Creek, and agricultural fields. The site was easily accessible and completely surveyed using parallel transects oriented in an east-west direction and spaced 15 to 20 meters apart, with the exception of the off-site blackberry removal area with overgrown vegetation located along and within Alamo Creek. All areas that were accessible along the creek banks were walked. However, large thick groves of blackberry bushes and densely overgrown vegetation were avoided.

FAC-001: Historic-aged Byrnes Canal

Byrnes Canal runs along the western and northern project boundary; an off-shoot runs north/south through the project site. The canal is visible on the 1968 aerials. The canal connects to the Putah South Canal to the west of the project area. The project proposes to use underground pipes to carry the water currently in the canals.

The canal is a typically constructed open irrigation canal, filled from a diversion weir with outlet gates at the southwest and northwest corners that have the appearance of more modern construction. The canal is fed by underground pipes connected to the Putah South Canal to the west. The canal is concrete-lined, 20 feet across at the top, and appears to be v-shaped with steep slopes and a flat, broad berm that was likely cut with modern machinery. The canal surrounds the west, north, and eastern boundaries of the project and is 6,294 feet (1.19 miles) in total length, with a weir at both the southwest end and northwest corners, a culvert and overcrossing at the northeast corner, and a control gate at the southeast end.

FC-004: Historic-Period Garage

This Ranch-style garage is located within the residential lot within the southwestern corner of the project area. No building information was found as a result of the APN search, and exhaustive archival research revealed no previously unknown additional property or owner information. The 1968 aerials may reveal a structure at the location of the garage, but the tree canopy obscures the area.

A concrete foundation pad is located west of the garage and could have been the location of the original residence on the property (no longer extant), which may have been the same age as the garage. The current residence was built in the 1990s and is located to the north of the garage. The concrete is set, rather than poured, and does not contain temper or aggregate. This may indicate that it is more recent than the garage.

Paleontological Background

Paleontological resources include fossil remains, as well as fossil localities and rock or soil formations that have produced fossil material. Fossils are the remains or traces of prehistoric animals and plants. Fossils are important scientific and educational resources because of their use in: (1) documenting the presence and evolutionary history of particular groups of now extinct organisms, (2) reconstructing the environments in which these organisms lived, and (3) determining the relative ages of the strata in which they occur and of the geologic events that resulted in the deposition of the sediments that formed these strata and in their subsequent deformation.

The City lies within a transition zone between the Sacramento Valley to the east and the Coast Range to the west and is comprised of a variety of rock types dating from various geologic periods. Certain formations in these rock types may contain fossils that are paleontologically significant (City of Vacaville 2015). The project site is underlain by Holocene and Pliocene Alluvium soils (Solano County 2008, Figure 4.7-1). Holocene alluvial deposits generally contain vertebrate and invertebrate fossils of extant modern taxa, which are generally not considered paleontologically significant. Pleistocene alluvial deposits generally contain fossils from the Rancholabrean land mammal age from which many taxa are now extinct and these deposits are considered highly sensitive for paleontological resources (Solano County 2008). However, according to a study completed for the CPV Vaca Station project, the project site does not contain any rock formations and is not located in an area of the County known to contain paleontological resources (CPV Vacaville LLC 2008, Figure 5.8-1).

4.3.3 Regulatory Setting

Cultural resources are defined as buildings, sites, structures, or objects each of which may have historical, architectural, archaeological, cultural, and/or scientific importance. Several laws and regulations at the state level govern archaeological and historic resources deemed to have scientific, historic, or cultural value. The pertinent regulatory framework, as it applies to the proposed project, is summarized below.

Federal Regulations

National Historical Preservation Act

The National Historic Preservation Act of 1996 established the National Register of Historic Places (NRHP) as the official federal list of cultural resources that have been nominated by state offices for their historical significance at the local, state, or national level. Properties listed or eligible for listing in the NRHP must meet certain criteria for historical significance and possess integrity of form, location, and setting. Under Section 106, federal agencies are

required to consider the effects of their actions, or those they fund or permit, on properties that are listed or may be eligible for listing. The regulations in 36 CFR 60.4 describe the criteria to evaluate cultural resources for inclusion in the NRHP. Properties may be listed in the NRHP if they possess integrity of location, design, setting, materials, workmanship, feeling, and association. No historic properties, buildings or resources eligible for listing in the NRHP are known to exist on the project site.

The Department of the Interior has set for Standards and Guidelines for Archaeology and Historic Preservation. These standards and guidelines are not regulatory and do not set or interpret agency policy. A project that follows the standards and guidelines generally shall be considered mitigated to a less-than-significant level, according to Section 15064.5(b)(3) of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.).

State Regulations

California Register of Historical Resources

The California Register of Historical Resources (CRHR) is established through California Public Resources Code (PRC) Section 5042.1. Any identified cultural resources must therefore be evaluated against the CRHR criteria. The criteria for listing resources on the CRHR were expressly developed to be in accordance with previously established criteria developed for listing in the NRHP. In order to be determined eligible for listing in the CRHR, a property must be significant at the local, state, or national level under one or more of the following four significance criteria:

1. It is associated with events or patterns of events that have made a significant contribution to the broad patterns of the history and cultural heritage of California and the United States.
2. It is associated with the lives of persons important to the nation or to California's past.
3. It 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 value.
4. It has yielded, or may be likely to yield, information important to prehistory or history of the state and the nation.

In addition to meeting one or more of the above criteria, a significant property must also retain integrity. Properties eligible for listing in the CRHR must retain enough of their historic character to convey the reason(s) for their significance. Integrity is judged in relation to location, design, setting, materials, workmanship, feeling, and association. Properties listed or formally

designated as eligible for listing in the NRHP are automatically listed in the CRHR, as are the state landmarks and points of interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

No historic properties or resources eligible for listing in the CRHR are known to exist on the project site.

California Environmental Quality Act

CEQA requires public agencies to consider the effects of their actions on both “historical resources” and “unique archaeological resources.” Pursuant to PRC Section 21084.1, a “project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.” PRC 21083.2 requires agencies to determine whether proposed projects would have effects on “unique archaeological resources.”

“Historical resource” is a term of art with a defined statutory meaning (see PRC 21084.1 and CEQA Guidelines, Sections 15064.5(a) and 15064.5(b)). The term embraces any resource listed in or determined to be eligible for listing in the CRHR. The CRHR includes resources listed in or formally determined eligible for listing in the NRHP, as well as some California State Landmarks and Points of Historical Interest.

Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the CRHR and are presumed to be “historical resources” for purposes of CEQA unless a preponderance of evidence indicates otherwise (PRC 5024.1 and 14 CCR 4850). Unless a resource listed in a survey has been demolished or has lost substantial integrity, or there is a preponderance of evidence indicating that it is otherwise not eligible for listing, a lead agency should consider the resource potentially eligible for the CRHR.

In addition to assessing whether historical resources potentially impacted by a proposed project are listed or have been identified in a survey process, lead agencies have a responsibility to evaluate them against the CRHR criteria prior to making a finding as to a proposed project’s impacts to historical resources (PRC 21084.1 and CEQA Guidelines, Section 15064.5(a)(3)). In general, a historical resource, under this approach, is defined as any object, building, structure, site, area, place, record, or manuscript that:

- A. Is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, education, social, political, or cultural annals of California; and

B. Meets any of the following criteria:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with the lives of persons important in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. Has yielded, or may be likely to yield, information important in prehistory or history (CEQA Guidelines, Section 15064.5(a)(3)).

These factors are known as "Criteria 1, 2, 3, and 4" and parallel Criteria A, B, C, and D under the National Historic Preservation Act. The fact that a resource is not listed or determined to be eligible for listing does not preclude a lead agency from determining that it may be a historical resource (PRC 21084.1 and CEQA Guidelines, Section 15064.5(a)(4)).

CEQA also distinguishes between two classes of archaeological resources: archaeological sites that meet the definition of a historical resource, as described above, and "unique archaeological resources." Under CEQA, an archaeological resource is considered "unique" if it:

- Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information;
- Has a special or particular quality such as being the oldest of its type or the best available example of its type; or
- Is directly associated with a scientifically recognized important prehistoric or historic event or person (PRC 21083.2(g)).

CEQA states that if a proposed project would result in an impact that might cause a substantial adverse change in the significance of a historical resource, then an EIR must be prepared and mitigation measures and alternatives must be considered. A "substantial adverse change" in the significance of a historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired (CEQA Guidelines Section 15064.5(b)(1)).

The CEQA Guidelines (Section 15064.5(c)) also provide specific guidance on the treatment of archaeological resources, depending on whether they meet the definition of a historical resource or a unique archaeological resource. If the site meets the definition of a unique archaeological resource, it must be treated in accordance with the provisions of PRC 21083.2.

CEQA Guidelines, Section 15064.5(e), requires that excavation activities be stopped whenever human remains are uncovered and that the county coroner be called in to assess the remains. If the county coroner determines that the remains are those of Native Americans, the Native American Heritage Commission must be contacted within 24 hours. At that time, the lead agency must consult with the appropriate Native Americans, if any, as identified in a timely manner by the Native American Heritage Commission. Section 15064.5 of the CEQA Guidelines directs the lead agency (or applicant), under certain circumstances, to develop an agreement with the Native Americans for the treatment and disposition of the remains.

Senate Bill 18

Senate Bill 18 (SB 18; Government Code sections 65352.3, 65352.4) requires that, prior to the adoption or amendment of a general plan proposed on or after March 1, 2005, a city or county must consult with Native American tribes with respect to the possible preservation of, or the mitigation of impacts to, specified Native American places, features, and objects located within that jurisdiction.

On February 2, 2018, the City sent letters to the Yocha Dehe Winton Nation and to the Cortina Indian Rancheria of Wintun Indians requesting consultation on the proposed specific plan.

Assembly Bill 52

Assembly Bill 52 (AB 52) went into effect July 1, 2015, and requires lead agencies to consult with all California Native American tribes that have requested formal consultation at the onset of a project, or when a NOP is released. AB 52 also establishes a new class of resources to be evaluated – Tribal Cultural Resources.

The City sent letters to those tribes requesting consultation in early December 2017. A letter dated December 12, 2017 from the Yocha Dehe Winton Nation was received by the City of January 12, 2018. The letter requests a site visit to the project area and also a consultation meeting. The initial consultation meeting and site visit was scheduled for January 30, 2018. Unfortunately, no one from the Yocha Dehe Winton Nation was present at the meeting. The City has rescheduled the meeting to February 21, 2018.

Health and Safety Code Section 7050.5

Health and Safety Code section 7050.5 requires that if human remains are discovered in any place other than a dedicated cemetery, no further disturbance or excavation of the site or nearby area reasonably suspected to contain human remains shall occur until the County coroner has examined the remains. PRC Section 5097.98 also outlines the process to be followed in the event that remains are discovered. If the coroner determines or has reason to

believe the remains are those of a Native American, the coroner must contact the California Native American Heritage Commission (NAHC) within 24 hours. The NAHC will notify the Most Likely Descendant. With the permission of the landowner, the Most Likely Descendant may inspect the site of discovery. The inspection must be completed within 48 hours of notification of the Most Likely Descendant by the NAHC. The Most Likely Descendant may recommend means of treating or disposing of, with appropriate dignity, the human remains and items associated with Native Americans.

Paleontological Resources

Consideration of paleontological resources is required by CEQA. Other state requirements for paleontological resource management are found in PRC Chapter 1.7, Section 5097.5, Archaeological, Paleontological, and Historical Sites. This statute specifies that state agencies may undertake surveys, excavations, or other operations as necessary on state lands to preserve or record paleontological resources. This statute does not apply to the proposed project because none of the property includes public lands.

No state or local agencies have specific jurisdiction over paleontological resources. No state or local agency requires a paleontological collecting permit to allow for the recovery of fossil remains discovered as a result of construction-related earth moving on state or private land in a project site.

Local Regulations

Vacaville General Plan

The City of Vacaville General Plan Conservation and Open Space (COS) Element provides guidance for new development and focuses on the protection and enhancement of historic, archaeological, and paleontological resources. The following policies from the City's COS Element are applicable to the proposed project:

Policy COS P6.2 Require that a records search of California Historical Resources Information System be conducted and reviewed by a cultural resources professional for proposed development areas to determine whether the site contains known prehistoric or historical cultural resources and the potential for as-yet-undiscovered cultural resources.

Policy COS P6.3 Require that areas found to contain significant historic or prehistoric artifacts be examined by a qualified consulting archaeologist or historian for appropriate protection and preservation.

- Policy COS P6.4** Require that if cultural resources, including archaeological or paleontological resources, are uncovered during grading or other on-site excavation activities, construction shall stop until appropriate mitigation is implemented.
- Policy COS P6.5** Require that any archaeological or paleontological resources on a development project site be either preserved in their sites or adequately documented as a condition of removal. When a development project has sufficient flexibility, avoidance and preservation of the resource shall be the primary mitigation measure, unless the City identifies superior mitigation. If resources are documented, coordinate with descendants and/or stakeholder groups, as warranted.
- Policy COS P6.6** Treat human remains discovered during implementation of public and private projects within the city with respect and dignity.

4.3.4 Impacts

Methods of Analysis

A formal records search was conducted for the project site by ECORP through the NWIC (see Appendix E). In addition, research consisted of a literature search of the following databases: NAHC Sacred Lands File, NRHP, OHP, ADOE, and OHP HPD. In addition, historical maps were reviewed and an archaeological survey of the project area was conducted. This research was used to identify locations of other resources that may exist or have existed within the project area, including the off-site areas proposed for improvements. The records search prepared for the proposed project included a 0.5-mile radius around the project site.

Issues Addressed in the Modified Initial Study

As discussed in the Modified Initial Study (see Appendix B), the project site does not contain any rock formations and is not located in an area of the City designated as sensitive for paleontological resources. The Modified Initial Study determined that with implementation of General Plan policies and compliance with federal and state regulations regarding paleontological resource this impact would be less than significant. Therefore, it is not evaluated further in this EIR.

Thresholds of Significance

Consistent with Appendix G of the CEQA Guidelines, the County's General Plan, and professional judgment, a significant impact would occur if development of the proposed project would do any of the following:

- Cause a substantial adverse change in the significance of an archaeological or historical resource pursuant to CEQA Guidelines Section 15064.5;
- Disturb any human remains, including those interred outside of formal cemeteries; or
- Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:
 - a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k).

Impacts and Mitigation Measures

4.3-1: Implementation of the proposed project may cause a substantial adverse change in the significance of an archaeological resource. This would be a potentially significant impact.

As discussed in the Environmental Setting (Section 4.3-2) above, the formal records search prepared for the project did not identify any recorded prehistoric or archaeological resources on the project site or in the off-site areas. Previous cultural resource studies have identified one prehistoric and five historic resources within 0.5-mile of the project site, with one previous study that included a portion of the project site. The cultural resource study conducted in 1997 by B. Wickstrom identified obsidian flake isolate that is believed to be associated with Native American occupation in the vicinity of the project area (see Appendix E). The project site's topographic suitability, proximity to Old Alamo Creek, and the results of the previous cultural studies suggest there is some potential for project construction to encounter yet-identified subsurface archaeological resources.

The City's General Plan contains policies to reduce impacts to cultural resources. For example, General Plan Policy COS P6.2 requires that a records search be conducted for proposed development areas to determine whether the site contains known prehistoric or historical cultural resources and the potential for as-yet-undiscovered cultural resources. A records search was conducted for the project in compliance with this policy and the results are

summarized in the Environmental Setting, above, and in Appendix E. In addition, General Plan Policy COS P6.4 requires in the event grading or excavation reveals cultural resources, including archaeological or paleontological resources, construction activities must stop immediately and implementation of appropriate mitigation occur. General Plan Policy COS P6.5 requires preservation or adequate documentation of archaeological or paleontological resources and identifies avoidance and preservation as the primary mitigation measure when previously unidentified subsurface resources are discovered on a project site. This measure also requires consultation with appropriate organizations and individuals (i.e., Native American descendants and/or stakeholder groups) as warranted if any resources are present on the project site. Compliance with these policies would help to minimize potential impacts to any unknown archaeological or paleontological resources.

Since ground-disturbing activities associated with construction of the proposed project have the potential to encounter or disturb previously unidentified subsurface archaeological resources, this impact would be considered **potentially significant**.

Mitigation Measures

Implementation of Mitigation Measure CUL-1 would require the project applicant comply with General Plan Policies COS P6.4 and COS P6.5, which require work to stop if any resources are unearthed during construction and avoidance or preservation be considered as the primary mitigation measure. Mitigation measure CUL-1 includes specific procedures in the event of an inadvertent discovery of a resource during project construction. The procedures require work to stop in the event a resource is discovered, consultation be initiated with an archaeologist to determine the appropriate course of action, and Native American representatives be consulted for their input and concerns. Compliance with these measures would ensure that the project's potential impacts to previously unidentified subsurface resources are mitigated to a less-than-significant level.

- CUL-1** If deposits of prehistoric or historical archaeological materials are encountered during construction activities, all work within 25 feet of the discovery shall be redirected until an archaeologist is contracted to assess the finds, consult with agencies and descendant communities (as appropriate), and make recommendations for the treatment of the discovery. If preservation in place is not feasible, an archaeologist that meets the secretary of the interior standards shall evaluate the deposit for its eligibility for listing in the California Register of Historical Resources. If the deposit is not eligible, mitigation is not necessary. If the deposit is eligible, mitigation shall include excavation of the archaeological deposit in accordance with a data recovery plan (see *CEQA Guidelines* Section 15126.4(b)(3)(C)). The City of Vacaville shall ensure that descendant

communities are consulted for their input and concerns during the development and implementation of any mitigation plan.

Upon completion of the evaluation and/or mitigation, the report shall be submitted to the City of Vacaville, the applicant, the Northwest Information Center at Sonoma State University, and descendant communities.

4.3-2: Implementation of the proposed project may cause a substantial adverse change in the significance of an historical resource. This would be a less-than-significant impact.

The records search performed for the project area indicated a prior survey conducted in 2014, identified a segment of the Vaca Valley railroad route (P-48-001025 - Vaca Valley Railroad segment) that runs along and within the southern boundary of the project site as being potentially eligible as a historic resource. In addition, two previously unknown resources (FAC-001 Byrnes Canal and FAC-004 Historic-Period Garage) were identified as part of the pedestrian survey conducted within the project area. All of these resources were evaluated by ECORP to determine eligibility under the CRHP and the NRHP (see Appendix E). Based on the analysis, none of these resources meet the eligibility requirements under the CRHR or the NRHP; therefore, it was determined these resources are not considered historic resources for the purposes of CEQA. No other potential historical resources were identified within the project area, including the off-site areas. Therefore, potential impacts would be considered **less than significant**.

4.3-3: Implementation of the proposed project may disturb human remains, including those interred outside of formal cemeteries. This would be a potentially significant impact.

No human remains documented in association with archaeological resources have been previously recorded within the project area or surrounding half mile records search area. The surrounding area has been used both historically and during prehistoric times by Native American inhabitants. Evidence of this past Native American use is provided by the presence of an isolated obsidian flake that was identified within a half mile radius of the project area (see Appendix E). No archaeological deposits were identified within the project area during the intensive pedestrian survey. Additionally, a search of the NAHC Sacred Lands File failed to identify any Native American cultural resources in the area (see Appendix E).

The City's General Plan contains policies regarding the accidental discovery of human remains during construction of a project. Specifically, General Plan Policy COS P6.4 requires work stop immediately in the event cultural resources or human remains are uncovered during grading or other on-site excavation activities until appropriate mitigation is implemented. Additionally, General

Plan Policy COS P6.6 requires that human remains discovered during implementation of public and private projects be treated with respect and dignity. The project is also required to comply with Health and Safety Code Section 7050.5, which states no further disturbance or excavation of the site or nearby areas is allowed if human remains are discovered until the remains have been examined by the County coroner. Compliance with General Plan policies and Health and Safety Code Section 7050.5 would help reduce the potential impact to human remains.

However, since ground-disturbing construction activities on the project site have the potential to uncover and potentially impact previously unrecorded human remains, this impact would be considered **potentially significant**.

Mitigation Measures

Implementation of Mitigation Measure CUL-2 would require the project applicant to stop construction work on the project site consistent with General Plan Policies COS P6.4 and COS P6.6 and initiate consultation with the City's Community Development Department, County Coroner, and an archaeologist that meets the secretary of the interior standards to determine the appropriate course of action in the event human remains are unearthed. Compliance with these measures would ensure that the project's potential impacts to previously unrecorded human remains are mitigated to a less-than-significant level.

- CUL-2** In the event that human remains are encountered, the on-site construction foreman shall stop all work within 25 feet of the discovery and shall immediately contact the City's Community Development Department and the County Coroner. At the same time, an archaeologist that meets the secretary of the interior standards shall be contacted to assess the situation and consult with agencies, as appropriate. On-site construction workers shall not collect or move any human remains and associated materials. If the human remains are of Native American origin, the coroner must notify the Native American Heritage Commission within 24 hours of this identification. The Native American Heritage Commission shall identify a Most Likely Descendant to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods. Upon completion of the assessment, the archaeologist shall prepare a report documenting the methods and results, and provide recommendations for the treatment of the human remains and any associated cultural materials, as appropriate, and in coordination with the recommendations of the Most Likely Descendant. The report shall be submitted to the City of Vacaville Community Development Department and the Northwest Information Center, and descendant communities.

4.3-4: Implementation of the proposed project may cause a substantial adverse change in the significance of a known Tribal Cultural Resource. This would be a potentially significant impact.

The City of Vacaville has sent notification of the proposed project to all California Native American Tribal representatives that have requested project notifications from the City pursuant to AB 52 and that are on file with the NAHC as being traditionally or culturally affiliated with the geographic area. The City sent a letter to the Yocha Dehe Wintun Nation on November 28, 2017, inquiring if the tribe would like to consult to discuss the project and the potential to impact any tribal cultural resources (TCRs). A project with an effect that may cause a substantial adverse change in the significance of a TCR is a project that may have a significant effect on the environment (Pub. Resources Code, § 21084.2.). Under AB 52 a TCR must have tangible, geographically defined properties that can be impacted by project implementation.

The Yocha Dehe Wintun Nation Tribal Secretary responded on December 12, 2017 indicating their interest in seeing the site. In response, the City sent a letter on January 23, 2018 inviting the group to an initial consultation meeting and site visit scheduled for January 31, 2018. The meeting was held at City Hall, but no one from the Yocha Dehe Wintun Nation attended the meeting. The City has rescheduled the meeting to February 21, 2018 and no one from the Yocha Dehe Wintun Nation attended. The Wintun Nation has not indicated if the project site has the potential to contain any TCRs.

Government to government consultation initiated by the City, acting in good faith and after a reasonable effort, has not resulted in the identification of a TCR within or near the project area. At this time, no known geographically-defined TCRs were identified within, or in the immediate vicinity of, the project area through consultation. However, because the City has not been able to meet with the Yocha Dehe Wintun Nation there is the potential the project site may contain TCRs; therefore, the impact is considered **potentially significant**.

Mitigation Measures

Implementation of Mitigation Measure CUL-3 would require the project applicant to stop construction work and consult with the City's Community Development Department to determine the appropriate course of action in the event a TCR is unearthed. Compliance with this measure would ensure that the project's potential to impact to previously unknown TCRs are mitigated to a less-than-significant level.

CUL-3 While no tribal cultural resources (TCRs) have been identified that may be affected by the project, the following approach for the inadvertent discovery of TCRs has been prepared to ensure there are no impacts to unanticipated resources.

- Should a potential TCR be inadvertently encountered, construction activities near the encounter shall be temporarily halted and the City's

Community Development Department notified. The City shall immediately notify the Yocha Dehe Wintun Nation to evaluate the resource. If the unanticipated resource is archaeological in nature, appropriate management requirements shall be implemented as outlined in Mitigation Measure CUL-1. If the City determines that the potential resource appears to be a tribal cultural resource (as defined by PRC Section 21074), the Yocha Dehe Wintun Nation shall be provided a reasonable period of time to conduct a site visit and make recommendations regarding future ground disturbance activities, as well as the treatment and disposition of any discovered tribal cultural resources. Depending on the nature of the potential resource and Tribal recommendations, review by a qualified archaeologist may be required. Implementation of proposed recommendations shall be made based on the determination of the City that the approach is reasonable and feasible. All activities shall be conducted in accordance with regulatory requirements.

4.3.5 Cumulative Impacts

The cumulative impact analysis for cultural resources does not rely on a list of specific pending or reasonably foreseeable development proposals in the general vicinity of the project.

The geographic scope or cumulative context for evaluation of potential cumulative impacts on cultural resources is Solano County, which includes the cities of Vacaville, Fairfield, Suisun City, Vallejo, Dixon, Benicia and Rio Vista. While project specific impact analysis for cultural resources necessarily includes separate analyses for historical, archaeological and paleontological resources and human remains, the cumulative analysis combines these resources into a single, non-renewable resource base and considers the additive effect of project-specific impacts to significant regional impacts on cultural resources.

4.3-5: The proposed project could contribute to cumulative impacts to historical, archaeological, tribal cultural resources and paleontological resources in the area. This would be a potentially significant impact.

Archaeological evidence suggests that Solano County has been inhabited between 10,000 and 6,000 years BP. Background research has identified a number of historical archaeological sites, prehistoric archaeological sites, and historic buildings and structures throughout the city and county. Urban development throughout the County has likely impacted a number of known and unknown historic, prehistoric and paleontological sites. It is reasonable to assume that present and future development would continue to have an impact on known and unknown cultural, historical, archaeological, and paleontological resources in the County. All significant (eligible or

potentially eligible) cultural resources as well as human remains are unique and non-renewable resources, all adverse effects or impacts erode a dwindling resource base. For example, the loss of any one archaeological site affects all others in a region because these resources are best understood in the context of the entirety of the cultural system of which they are a part. Proper planning and appropriate mitigation can help to capture and preserve knowledge of such resources and can provide opportunities for increasing our understanding of the past environmental conditions and cultures by recording data about sites discovered and preserving artifacts found. Federal, state, and local laws are also in place, as discussed above, that protect these resources in most instances. However, the cumulative loss of cultural, historic, archaeological, and paleontological resources from present and future development within the County would be considered a potentially significant cumulative impact.

The project site does not contain any known archaeological, CRHR or NRHP-eligible historic built-environment, TCRs, or paleontological resources. However, the site could contain unknown subsurface resources that construction could adversely affect. The project's contribution to the cumulative loss of cultural resources, although small could be **potentially significant**.

Mitigation Measures

Implementation of Mitigation Measure CUL-1 and CUL-2 would require the project applicant to stop construction work on the project site and initiate consultation with the City's Community Development Department, County Coroner, and an archaeologist that meets the secretary of the interior standards to determine the appropriate course of action in the event unknown resources are unearthed. Compliance with these measures as well as the Health and Safety Code Section 7050.5 would ensure the project's contribution to the existing cumulative impact is not considerable and less than significant.

CUL-4 Implement Mitigation Measures CUL-1, CUL-2, and CUL-3.

4.3.6 References

City of Vacaville. 2015. *City of Vacaville General Plan*. Adopted August 11, 2015.

CPV Vacaville LLC. 2008. *Application for Certification CPV Vaca Station*. November 19, 2008. Available at http://www.energy.ca.gov/sitingcases/vacastation/documents/applicant/afc/Volume_I/

ECORP. 2017. *Cultural Resources Inventory and Evaluation Report The Farm at Alamo Creek*. ECORP. October 2017.

Solano County. 2008. *Solano County 2008 Draft General Plan Environmental Impact Report*. Draft. SCH no. 2007122069. April 18, 2008. <http://www.co.solano.ca.us/civicax/filebank/blobdload.aspx?BlobID=15179>.

4.4 HYDROLOGY AND WATER QUALITY

4.4.1 Introduction

This section describes potential hydrologic effects related to drainage and water quality associated with development of The Farm at Alamo Creek Specific Plan project (proposed project).

One comment letter was received from the Central Valley Regional Water Quality Control Board (CVRWQCB) that reiterated the need for the project applicant to comply with the general NPDES/WDR permits applicable to the site. General permits applicable to the proposed project are discussed in Section 4.4.3, Regulatory Setting and Section 4.4.4, Impact Analysis. In addition, the County of Solano submitted a comment letter requesting that drainage impacts on the surrounding road system in the County be addressed in this EIR. A copy of the NOP and letters received in response to the NOP are included in Appendix A.

Information to prepare this section is derived primarily from a technical memorandum that addresses the hydrology and water quality for the proposed project prepared by West Yost Associates (Appendix F), and is supplemented by information from the City of Vacaville General Plan (City of Vacaville 2015) and City of Vacaville General Plan and Energy Conservation Action Strategy Environmental Impact Report (General Plan EIR) (City of Vacaville 2013).

4.4.2 Environmental Setting

Hydrology and Watersheds

The project site is located in the Old Alamo Creek watershed (Figure 4.4-1). Old Alamo Creek is a modified water body that was formerly the downstream portion of Alamo Creek. Alamo Creek originates on the eastern slopes of Mount Vaca and then flows through the City before joining Ulatis Creek roughly six miles downstream (east) of the project site. Ulatis Creek continues flowing to the east and southeast and ultimately drains to the Sacramento River via Cache Slough. Old Alamo Creek is located north of Elmira Road, just south of the project site. During the 1960s, several features of the lower Ulatis Creek watershed were modified to protect local agricultural lands from damaging floods, which had historically occurred along several of the major creeks in the area, including Alamo Creek. One of the modifications involved the redirection of flows from Alamo Creek into a new channel along a more southerly alignment. The new channel became known as New Alamo Creek, and the existing channel downstream of the redirection point became known as Old Alamo Creek.

As a result of the modifications to Alamo Creek, the drainage area to the current Old Alamo Creek was reduced to a localized section of eastern Vacaville plus additional unincorporated areas to the east. The portion of the Old Alamo Creek watershed upstream of

the unincorporated Town of Elmira is shown in Figure 4.4-1. The tributary area draining to the creek from this area is approximately 990 acres.

Based on historical maps, it appears that a larger area north of the creek drained towards the creek prior to agricultural and grading operations in this area. Following agricultural development, drainage in the area north of Old Alamo Creek was directed towards Ulatis Creek further to the north. The project applicant is proposing to direct stormwater from the project site into Old Alamo Creek adding approximately 160-acres to the tributary area that drains to the creek, and reflecting historic drainage patterns.

There is a Solano Irrigation District (SID) right-of-way that borders the site on the west and north and traverses the middle of the property from north to south that is used to convey irrigation water through earth-lined ditches.

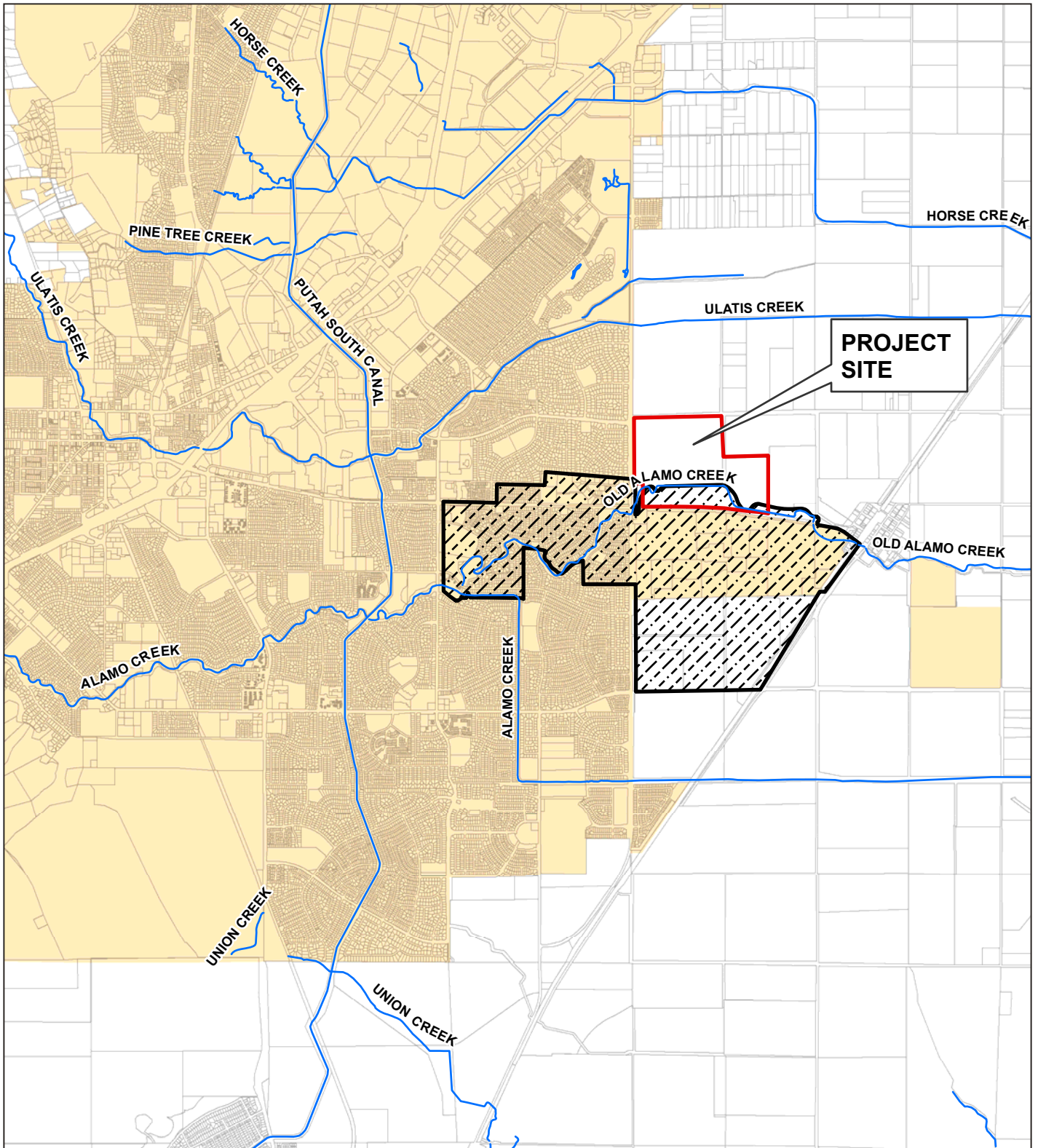
Topography and Soils

The project site is relatively flat with uniform west to east slopes ranging from 0.2% to 0.3%. Soil data from the Natural Resource Conservation Service indicates the predominant soils include Yolo loam, Brentwood clay loam, Rincon clay loam, and Capay silty clay loam. These soils are generally considered to have moderate potential for erosion and fall within Hydrologic Soil Groups B and C, indicating that the infiltration capacities range from moderate (Group B) to low (Group C) (Appendix F).

Drainage and Stormwater Runoff

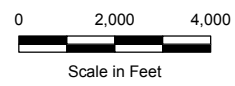
Currently, runoff from the project site occurs as sheet flow traveling from west to east and then northerly in roadside ditches. A majority of the project site drains northeasterly across the site as sheet flow where it is intercepted by two ditches flowing northerly towards Hawkins Road. The Hawkins Road roadside ditches convey runoff easterly to the Union Pacific Railroad (UPRR) embankment where it ponds and eventually infiltrates into the soil. Only that portion of the project site within the tributary area to Old Alamo Creek at Elmira actually drains to Old Alamo Creek under existing conditions.

Old Alamo Creek is currently in an un-maintained state and does not have the capacity to convey 100-year flows under existing conditions. In addition to the project draining to Old Alamo Creek, two other development projects to the south, Brighton Landing and Roberts' Ranch will also drain to the creek via the Frost Canal along the UPRR tracks. Stormwater runoff from these projects will drain to the City's existing detention pond located east of the Roberts' Ranch site that is designed to pump water into Old Alamo Creek in a manner that avoids increases in the peak flow rate within the creek (Appendix F).



PROJECT SITE

- Creek/Drain
- The Farm at Old Alamo Creek
- Portion of Old Alamo Creek Watershed
- Vacaville Parcels
- Vacaville City Limits



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Surface Water Quality

The ultimate receiving water for storm flows from the project site and Old Alamo Creek is the Sacramento River. Beneficial uses and water quality objectives are established in the *Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley: Sacramento River Basin and San Joaquin River Basin* (CVRWQCB 2016). Beneficial uses for the Sacramento River include providing water supply for agriculture, recreation, and industrial uses, in addition to freshwater habitat, spawning grounds and wildlife habitat (CVRWQCB 2016). Ambient water quality in the Sacramento River is influenced by numerous natural and artificial surfaces including soil erosion, treated discharges from wastewater plants, stormwater runoff, agricultural runoff, recreation activities, and mining activities (Appendix F). The Sacramento River is listed as “impaired” under Section 303(d) of the Clean Water Act (CWA) for chlordane, DDT, dieldrin, mercury, PCBs, and unknown toxicity (SWRCB 2012).

Urban Stormwater Quality

Water quality within the watershed is influenced by surrounding land uses and urban runoff varies due to factors such as differences in rainfall intensity, geographic features, vehicle traffic and percentage of impervious surfaces (City of Vacaville 2013). The project site is undeveloped and previous land uses include agriculture, which elevates the potential to contribute pollutants such as sediment, pesticides, and fertilizers within stormwater runoff. The Phase I Environmental Site Assessment conducted for the project site sampled the soils for organochlorine pesticides, arsenic, Title 22 metals, and polychlorinated biphenyls (PCBs). Chemicals of potential concern were copper, zinc, and aroclor 1260, a PCB. All values were found to be well below either the limits of detection or not considered a hazard to human health (Harris & Lee 2007).

100-Year Floodplain

According to the FEMA Flood Insurance Rate Map (Panel 06095C0281E, May 4, 2009), the 100-year floodplain mapped on site is limited to within the Old Alamo Creek corridor and does not extend beyond the creek corridor to the agricultural fields. Flooding has been identified downstream (east) of the project site along the Frost Canal and the UPRR tracks. However, based on incorporation of previous hydrologic modeling and detailed topographic data from 2008 into an updated HEC-RAS model, flows begin to spill out of the creek corridor and spread out onto agricultural land east and north of where Old Alamo Creek bends to the south to parallel the northern side of Elmira Road (Appendix F). This is due to diminished capacity of Old Alamo Creek from both excess vegetation/debris, and the historical encroachment of agricultural fields into the creek corridor east of the project site.

4.4.3 Regulatory Setting

Federal Regulations

Clean Water Act

The CWA (33 U.S.C. 1251 et seq.), as amended by the Water Quality Act of 1987, is the major legislation governing water quality. The main objective of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” Important sections of the act are as follows:

CWA Section 303 requires states to adopt water quality standards for all surface waters of the United States. Water quality standards are defined as consisting of two elements: (1) designated beneficial uses of the water body and (2) criteria that protect the designated uses. States are also required to develop a list of impaired water bodies that do not meet water quality standards and objectives and establish a Total Maximum Daily Load (TMDL) for each pollutant/stressor. A TMDL defines how much of a specific pollutant/stressor a given water body can tolerate and still meet relevant water quality standards. In California, the EPA has designated the State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCBs) with the authority to identify beneficial uses and adopt applicable water quality objectives.

CWA Section 304(a) requires that the U.S. Environmental Protection Agency (U.S. EPA) publish advisory water quality criteria based on the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from pollutants in water. If multiple beneficial uses exist for a water body, water quality standards must protect the most sensitive use.

CWA Section 401 (Water Quality Certification) requires an applicant for any federal permit that proposes an activity which may result in discharge to waters of the United States, obtain certification from the state that the discharge will comply with all provisions of the act.

CWA Section 404 establishes a permit program for the discharge of dredge and fill material into waters of the United States, which is jointly administered by the U.S. Army Corps of Engineers and the EPA. Refer to Section 4.2, Biological Resources, Impact 4.2-3 for a discussion of jurisdictional waters.

Numerous agencies have responsibilities for administration and enforcement of the CWA. At the federal level this includes the EPA, the U.S. Army Corps of Engineers, the Bureau of Reclamation, and the major federal land management agencies such as the U.S. Forest Service and the Bureau of Land Management. At the state level, with the exception of tribal lands, the

California EPA and its sub-agencies, including the SWRCB, have been delegated primary responsibility for administering and enforcing the CWA in California.

Federal Antidegradation Policy

The federal antidegradation policy is designed to protect water quality and water resources. The policy directs states to adopt a statewide policy that includes the following primary provisions: (1) existing instream uses and the water quality necessary to protect those uses shall be maintained and protected; (2) where existing water quality is better than necessary to support fishing and swimming conditions, that quality shall be maintained and protected unless the state finds that allowing lower water quality is necessary for important local economic or social development; and (3) where high-quality waters constitute an outstanding national resource, such as waters of national and state parks, wildlife refuges, and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

National Pollution Discharge Elimination System

CWA Section 402 establishes the National Pollutant Discharge Elimination System (NPDES), which is a permitting system for the discharge of pollutants into waters of the United States. The permit program is administered by the SWRCB and the nine RWQCBs, who have programs that implement individual and general permits related to construction activities, stormwater quality runoff, and various types of non-stormwater discharges. Large communities with the potential to cause larger impacts to receiving waters are issued permits with requirements specific to that community. The SWRCB elected to adopt a statewide general permit (Water Quality Order No. 2003-0005-DWQ) for Small Municipal Separate Storm Sewer System (MS4) operators in small communities. Cities permitted under the general MS4 permit are required to develop and implement a Stormwater Management Plan (SWMP) outlining measures to reduce the discharge of pollutants to the maximum extent practicable. MS4 permits are described in more detail under State Regulations and the City's adopted SWMP is described further under Local Regulations.

State Regulations

Porter-Cologne Water Quality Control Act

The Porter–Cologne Act (codified in the California Water Code, Section 13000 et seq.) is the primary water quality control law for California. Whereas the CWA applies to all waters of the United States, the Porter–Cologne Act applies to waters of the state, which includes isolated wetlands and groundwater in addition to federal waters. Under the Act, that State must adopt water quality policies, plans, and objectives that protect the State's waters for the use and

enjoyment of the people. The act is implemented by the SWRCB and the nine RWQCBs, who are required to adopt and periodically update water quality control plans (Basin Plans). Basin Plans are the regional water quality control plan that detail beneficial uses, water quality objectives, and implementation programs as required under the CWA and the Porter-Cologne Act. The act requires a “Report of Waste Discharge” for any discharge of waste (liquid, solid, or otherwise) to land or surface waters that may impair a beneficial use of surface or groundwater of the state. Waste Discharge Requirements (WDRs) are required and are issued exclusively under state law. WDRs typically require many of the same best management practices (BMPs) and pollution control technologies as required by NPDES-derived permits.

Basin Planning

The primary enforcement authority for the Porter-Cologne Act and portions of the CWA has been given to the SWRCB and its nine RWQCBs. The SWRCB provides state-level coordination of the water quality control program by establishing statewide policies and plans for implementation of state and federal regulations. Each of the nine RWQCBs are responsible for adopting and implementing Basin Plans that recognize the unique characteristics of each region with regard to natural water quality, actual and potential beneficial uses, and water quality problems. The CVRWQCB is responsible for the protection of the beneficial uses of waters draining to the Sacramento–San Joaquin Delta. The project site is located within the Old Alamo Creek watershed. Runoff from the project site occurs as sheet flow flowing from west to east and then northerly in roadside ditches. Other roadside ditches convey runoff to and under the Union Pacific Railroad (UPRR). Old Alamo Creek connects to Ulatis Creek approximately six miles downstream (east) of the project site. Ulatis Creek flows east and southeast ultimately draining to the Sacramento River via Cache Slough (Appendix F).

The *Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley: Sacramento River Basin and San Joaquin River Basin* designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan (California Water Code Sections 13240–13247) (CVRWQCB 2016). The most water quality-sensitive beneficial uses applicable to the Sacramento–San Joaquin Delta include REC-1 (Water Contact Recreation), WARM (Warm Freshwater Habitat), COLD (Cold Freshwater Habitat), WILD (Wildlife Habitat), and migration and spawning (MIGR and SPWN).

State Nondegradation Policy

In 1968, as required under the federal antidegradation policy described previously, the SWRCB adopted a nondegradation policy aimed at maintaining high water quality in California. The nondegradation policy states that the disposal of wastes into state waters shall be regulated to

achieve the highest water quality consistent with maximum benefit to the people of the state and to promote the peace, health, safety, and welfare of the people of the state. The policy includes a provision stating that when existing water quality is better than required under the water quality control plan, such quality would be maintained until it can be demonstrated that a change would be consistent with maximum public benefit. Additionally, the policy requires any waste producing activities which would discharge into high-quality waters be required to meet discharge requirements ensuring that pollution or nuisance would not occur and that the highest water quality for maximum public benefit would be maintained.

Regional Water Quality Control Board (Central Valley Region)

NPDES Construction General Permit (Order No. 2009-0009 DWQ, as amended)

For stormwater discharges associated with construction activity in the State of California, the SWRCB has adopted the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) to avoid and minimize water quality impacts attributable to such activities. Construction General Permits regulate stormwater flows from construction activities that disturb one acre or more of land and construction on smaller sites that are part of a larger project. The permit requires preparation of and implementation of a Stormwater Pollution Prevention Plan (SWPPP), which includes Best Management Practices (BMPs) designed to reduce potential impacts to surface water quality through construction and operation of the project. The Construction General Permit requires routine inspection of all BMPs to monitor effectiveness of the SWPPP. The project applicant must submit a Notice of Intent (NOI) to the SWRCB to be covered by a NPDES permit and prepare the SWPPP prior to the beginning of construction. Since the proposed project would disturb more than one acre of land, the project would require coverage under the Construction General Permit.

The City's standard conditions of approval requires development project applicants to prepare and submit a SWPPP for review by the City Engineer in conjunction with the submittal of the Improvement Plans, Grading Plans, and Final Map.

Municipal Stormwater Permit (CVRWQCB Order 2013-0001-DWQ, as amended)

For discharges from municipal storm sewer systems, the CVRWQCB has adopted revisions to the City's 2003 NPDES Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems (Small MS4 Permit) in February 2013. The Small MS4 Permit is designed to avoid and minimize water quality impacts attributable to discharge from the stormwater drainage systems owned and/or operated by the co-permittees, which includes the City of Vacaville. This permit regulates stormwater runoff by requiring implementation of BMPs to reduce pollutants in runoff to the maximum extent practicable to protect water quality. The provisions of the Phase II General Permit are implemented in the City through Municipal Code

Chapter 14.26, Urban Storm Water Quality Management and Discharge Control, which is described in more detail under Local Regulations.

The City's standard conditions of approval require development project applicants to demonstrate to the City Engineer and Director of Public Works that the proposed development meets the requirements of the MS4/Phase 2 storm water general permit and corresponding design standards.

Local Regulations

City of Vacaville Storm Drainage Master Plan

The City's Storm Drainage Master Plan (SDMP), first adopted in 1996 and last updated in 2001, evaluates existing storm drain systems and identifies existing deficiencies and required improvements. The SDMP's main focus is identifying improvements required to provide 100-year level flood protection to areas of the City proposed for new development while maintaining the current level of protection in already developed areas of the City. Improvement projects to resolve current deficiencies in the system are outlined in the SDMP and development impact fees were determined in order to ensure future development does not impact storm drainage for existing development within the City.

City of Vacaville Stormwater Management Plan

The City has developed a Stormwater Management Plan (SWMP) in compliance with the NPDES General Permit, which aims to reduce the discharge of pollutants to stormwater to the maximum extent practicable and protect water quality. The SWMP describes pollutant sources and outlines a strategy for how to control pollutants in local stormwater runoff including BMPs designed to address the six minimum measures: Public Education and Outreach, Public Involvement and Participation Program, Illicit Discharge Detection and Elimination, Construction Site Stormwater Runoff Control Programs, Post-Construction Stormwater Management In New and Redevelopment Program, and Pollution Prevention and Good Housekeeping for Municipal Operations (City of Vacaville 2003).

City of Vacaville Standard Specifications and Standards Drawings

The City of Vacaville Standard Specifications and Standard Drawings includes Design Standards and Construction Standards for storm drain systems (City of Vacaville 2006, 2007). The Design Standards outline procedures for determining the appropriate design for storm drain facilities including hydrologic design and adequate sizing. Additionally, the Design Standards indicate that storm drain system improvements shall be designed to prevent a net change in runoff resulting from new development and that BMPs be implemented to comply with the

NPDES permit (City of Vacaville 2006). The Construction Standards include requirements for allowable pipe materials, pipe installation, final cleaning, and inspection (City of Vacaville 2007).

City of Vacaville General Plan

The City of Vacaville General Plan (City of Vacaville 2015a) Safety Element and Open Space and Conservation Element include several goals and policies relating to hydrology and water quality. The following goals and policies are applicable to the proposed project:

Flood Protection

- Goal SAF-2** Collect, convey, store, and dispose of stormwater in ways that provide an appropriate level of protection against flooding, account for existing and future development, and address applicable environmental concerns.

- Policy SAF-P2.5** Maintain open areas needed to retain stormwater and prevent flooding of urban or agricultural land.

- Goal SAF-3** Provide effective storm drainage facilities for development projects.

- Policy SAF-P3.1** Evaluate the storm drainage needs for each project; this evaluation should account for projected runoff volumes and flow rates once the drainage area is fully developed. In the Alamo Creek watershed upstream of Peabody Road (including Alamo, Laguna, and Encinosa creeks), require post-development 10-year and 100-year peak flows to be reduced to 90 percent of predevelopment levels. In the remainder of Vacaville, for development involving new connections to creeks, peak flows shall not exceed predevelopment levels for 10- and 100-year storm events.

- Policy SAF-P3.2** Continue to require development impact fees to fund necessary storm drainage improvements, including drainage detention basins.

- Policy SAF-P3.3** Require a Storm Drainage Master Plan to be prepared for new development projects to ensure new development adequately provides for on-site drainage facilities necessary to protect the new development from potential flood hazards and ensure that potential off-site impacts are fully mitigated.

- Policy SAF-P3.4** Require that new development designate storm drainage easements or routes when tentative maps or specific plans are approved.

- Goal SAF-4** Protect people and property from flood risk.

- Policy SAF-P4.1** Prohibit development within mapped flood-prone areas unless mitigation of flood risk is assured.
- Policy SAF-P4.2** Require that the lowest floor of any new construction or substantial improvement be elevated a minimum of 1 foot above the 200-year flood elevation.
- Policy SAF-P4.4** Require that new development mitigate its additional runoff and mitigate removal of any floodplain areas.

Water Resources

- Goal COS-14** Protect the quality and supply of surface water and groundwater resources.
- Policy COS-P14.5** Require the implementation of Best Management Practices (BMPs) to minimize erosion, sedimentation, and water quality degradation resulting from construction or from new impervious surfaces.
- Policy COS-P14.7** Protect groundwater recharge and groundwater quality when considering new development projects.

Vacaville Municipal Code

13.12 Water, 13.14 Control of Backflow and Cross-Connections, 13.20 Water Conservation

These chapters provide guidelines for water service provision and describe standards for connection sizes. In addition, the ordinances implement regulations to protect and maintain the potable water system, reduce water consumption and protect water quality.

Chapter 14.19 Grading Ordinance

The Vacaville Grading Ordinance regulates grading and earth moving activities within the City. Per the Grading Ordinance all grading within the City is subject to the standards contained in the California Building Code. The Grading Ordinance also contains provisions for minimum setbacks, erosion control measures, and dust and debris control measures to reduce sedimentation and runoff during construction (City of Vacaville 2008).

14.26 Urban Stormwater Quality Management and Discharge Control

The Urban Stormwater Quality Management and Discharge Control Ordinance is designed to reduce pollutants in stormwater discharges to the maximum extent practicable in order to protect and enhance water quality. The ordinance prohibits illegal discharges into the storm drain system and authorizes the City to adopt and enforce BMPs for any activity, operation, or

facility that could cause or contribute to pollution or contamination of stormwater, the storm drains or waters of the United States. BMPs for new development are outlined in Section 14.26.030.020 and include post-construction management practices to control the volume, rate, and potential pollutant load of stormwater runoff; maintenance of storm water management facilities; and implementation of a post-construction BMP design plan, which includes a storm water facilities operation and maintenance plan (City of Vacaville 2015b).

4.4.4 Impacts

Methods of Analysis

Hydrology and water quality impacts were evaluated in The Farm at Old Alamo Creek Hydrology and Water Quality Evaluation prepared by West Yost Associates (Appendix F). The Hydrology and Water Quality Evaluation includes drainage modeling of the proposed project and describes the potential for the project to impact hydrology and water quality and also addresses any flooding concerns.

The impact analysis below considers compliance with regulations pertaining to water quality and implementation of the City's standard conditions of approval for subdivisions as part of the proposed project (described in Section 4.4.3). Impact determinations are made based on both the magnitude of project-related change from existing conditions, as well as the effectiveness of compliance with existing regulations and standards in addressing the applicable criteria in Appendix G of the CEQA Guidelines.

Issues Addressed in the Modified Initial Study

As discussed in the Modified Initial Study for the proposed project (Appendix B), potential impacts related to groundwater resources and other flood hazards (e.g., dam/levee failure and inundation by seiche, tsunami or mudflow), and placement of housing within a 100 year flood hazard zone were determined to be less than significant. The Modified Initial Study found these impacts to be less than significant because these impacts are adequately addressed under compliance with General Plan policies, implementation of Energy Conservation Action Strategy (ECAS) policies related to water conservation, and consistency with the California Building Code. Therefore, this EIR focuses on topics related to placing residences within a 100-year flood zone, compliance with water quality standards, changes in the rate and volume of stormwater runoff, and capacity of the City's stormwater drainage system.

Thresholds of Significance

Consistent with Appendix G of the CEQA Guidelines, the City's General Plan, and professional judgment, a significant impact would occur if development of the proposed project would do any of the following:

- Violate any water quality standards or waste discharge requirements, or otherwise substantially degrade water quality.
- 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.
- 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.
- 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.

Impacts and Mitigation Measures

4.4-1: Implementation of the proposed project may violate water quality standards or waste discharge requirements, or otherwise substantially degrade water quality. This would be a less-than-significant impact.

Construction

Construction of the project would result in earth disturbing activities such as site clearing and grading for construction of roads, parking areas, building pads, and park areas. Disturbed areas exposed to rainfall could lead to an increase in erosion and the discharge of sediment to receiving waters resulting in a degradation of water quality. Additional pollutants can be introduced during construction from vehicular use, construction materials, and construction waste products. Pollutants typically present on construction sites include petroleum products and heavy metals from equipment, and products such as paints, solvents, and cleaning agents, which could contain hazardous constituents. Construction activities could result in water quality degradation if runoff entering receiving waters contains pollutants in sufficient quantities to exceed water quality objectives defined in the Basin Plan or TMDLs established under CWA Section 303(d). Impacts from construction-related activities would generally be short term and of limited duration.

Because implementation of the proposed project would collectively require construction activities resulting in a land disturbance of more than 1 acre, the project applicant is required to

obtain coverage under the Construction General Permit (SWRCB Order 2009-0009-DWQ, as amended), which pertains to pollution from grading and project construction. Coverage under the Construction General Permit requires a qualified individual (as defined by the SWRCB) to prepare a SWPPP to address the potential for construction-related activities to contribute to pollutants within the project's receiving waterways. The SWPPP must describe the type, location and function of stormwater BMPs to be implemented, and must demonstrate that the combination of BMPs selected are adequate to meet the discharge prohibitions, effluent standards, and receiving water limitations contained in the Construction General Permit.

The following list includes examples of construction water quality BMPs to prevent or reduce potential erosion control and to control sediment that may be introduced into runoff. These are typically required for most construction sites subject to the Construction General Permit:

- Mulch covering;
- Temporary and permanent seeding;
- Soil stabilizers;
- Temporary vegetation;
- Silt fences and/or fiber rolls installed along limits of work and/or the project construction site;
- Stockpile containment and exposed soil stabilization structures (e.g., visqueen, fiber rolls, gravel bags and/or hydroseed);
- Runoff control devices (e.g., fiber rolls, gravel bag barriers/chevrons, etc.) used during construction phases conducted during the rainy season;
- Wind erosion (dust) controls;
- Tracking controls at the site entrance, including regular street sweeping and tire washes for equipment;
- Establishment of vehicle fueling and maintenance areas and material storage areas that are either covered or are designed to control runoff;
- Proper waste/trash management; and
- Regular inspections and maintenance of BMPs.

These BMPs would be refined and/or added to as necessary by a qualified SWPPP professional to meet the performance standards in the Construction General Permit. The SWPPP must contain a site map(s) which shows the construction site perimeter, existing and proposed buildings, lots, roadways, storm water collection and discharge points, general topography both before and after construction, and drainage patterns across the project.

To obtain coverage under the Construction General Permit, the project applicant must submit to the SWRCB a Notice of Intent and associated permit registration documents, including a SWPPP and site plan, and must obtain a Waste Discharge Identification Number. As a standard condition of approval, the project applicant is also required to provide the SWPPP for review by the City Engineer in conjunction with the submittal of the Improvement Plans, Grading Plans, and Final Map. In addition, all earthwork, grading, trenching, backfilling and compaction operations must be conducted in accordance with the City's Urban Stormwater Quality Management and Discharge Control Ordinance (Chapter 14.26 of the City Code) and the Vacaville Grading Ordinance (Chapter 14.19 of the City Code).

The BMPs required for coverage under the Construction General Permit and the erosion control provisions contained in City ordinances would require measures to prevent construction-related contaminants from reaching impaired surface waters and contributing to water quality impacts within Old Alamo Creek, Ulatis Creek, and/or the Sacramento–San Joaquin Delta. For these reasons, water quality impacts resulting from construction-related activities and ground disturbances would be **less than significant**.

Operation and Maintenance

Implementation of the proposed project would convert the existing agricultural lands to urban uses. The increase in impervious area created by the proposed project, as well as on-site activities and uses, could alter the types and levels of pollutants that could be present in project site runoff associated with project operation. Runoff from building rooftops, walkways, parking lots, and landscaped areas can contain nonpoint source pollutants such as oil, grease, heavy metals, pesticides, herbicides, fertilizers, and sediment. Concentrations of pollutants carried in urban runoff are extremely variable, depending on factors such as the following:

- Volume of runoff reaching the storm drains;
- Time since the last rainfall;
- Relative mix of land uses and densities; and
- Degree to which street cleaning occurs.

Under existing conditions, stormwater that is not infiltrated into the soil moves as sheet flow from west to east and then northerly into roadside ditches. Once construction of the project is complete, all runoff would be conveyed to the on-site detention basin, with any overflow directed into Old Alamo Creek. The Phase I Environmental Site Assessment (see Appendix G) conducted for the project shows that historical records have detectable levels of organochlorine pesticides in a ½-acre portion on the property referred to as the “Open Area” at 3.5 feet beneath the soil surface, but that the levels detected were below Total Threshold Limit Concentrations

and California Human Health Screening Levels (Harris & Lee 2007). The past agricultural uses of the site mean that low levels of residual nutrients/fertilizers may remain within site soils. Given surface soils are exposed over the entire site, stormwater runoff may contain levels of sediment and/or nutrients characteristic of agricultural land uses.

Where roads, driveways, parking lots, residences, and commercial uses are proposed, the surface soils that are now exposed to stormwater runoff would be stripped and replaced with engineered fills that meet geotechnical specifications and would become impervious. The new site configuration would reduce the exposure of soils containing nutrients/fertilizers to stormwater runoff, and would likely reduce the turbidity levels of runoff when compared to the current agricultural use. However, it would also introduce new uses and activities that have the potential to degrade the quality of stormwater runoff. The primary pollutants of concern for a development of this type are associated with uncovered parking areas (e.g., leaking fuel or fluids), landscaping and landscape maintenance (e.g., sediment, improper/excessive use of pesticides, and/or fertilizers/nutrients), and/or improper waste management (e.g., fugitive litter/trash). The release of such pollutants would be localized and periodic in nature, minor in magnitude (especially in comparison to the total volume of stormwater discharges entering regional waterways), and would only occur on an improperly designed and maintained development. Nevertheless, because the cumulative effects of past projects have resulted in substantial water quality problems in the region's major waterways, and because water quality problems are generally cumulative in nature, the City's standard conditions of approval, the Small MS4 Permit, and drainage design standards require developers to design and maintain projects in a manner that reduces pollutant concentrations within stormwater discharges to the maximum extent practicable.

The project applicant has proposed to develop the project in such a way that runoff from the site would ultimately drain to Old Alamo Creek. Drainage improvements would include underground pipe systems that would convey runoff to the planned detention basin adjacent to Old Alamo Creek. The pipe system would be designed for at least a 10-year storm event, with flows in excess of the 10-year storm event being conveyed overland in streets and also directed to the detention basin. The detention basin would attenuate flows while discharging directly to Old Alamo Creek. The on-site detention basin has a capacity of 60 acre-feet (Appendix F). The detention basin would discharge flows from the basin at rates well below the existing peak flow rates and can be configured to provide both stormwater quality treatment and flood control storage for project runoff (Appendix F). To provide stormwater quality treatment, a detention basin must detain stormwater for a period of time—typically between from 24 to 48 hours—to allow particles and the associated pollutants to settle out before being discharged to the downstream receiving waters.

Based on the study prepared by West Yost Associates (Appendix F), the project applicant may use the proposed detention basin as a BMP to provide stormwater quality treatment if it is configured to meet the design requirements of an extended detention basin in accordance with the *California Storm Water Best Management Practices Handbook*, which is referenced by the City's design standards. Extended detention basins reduce pollutants in runoff by allowing particles and associated pollutants to settle. Other viable BMPs include infiltration techniques such as infiltration trenches and infiltration basins. Infiltration type BMPs reduce pollutants by allowing runoff to infiltrate into the underlying soil, which acts to filter out pollutants. Infiltration techniques are most appropriate in areas with highly pervious soils (Hydrologic Soils Types A and B), so the suitability of infiltration techniques at the project would depend on specific soil conditions. Biofiltration BMPs include vegetated swales and buffer strips and bioretention. These types of BMPs reduce pollutants in runoff through filtering by the vegetation and subsoil and infiltration into the underlying soils. Source control BMPs, which prevent pollutants from entering runoff, include directing roof spouts to pervious areas, use of porous pavements, enclosing trash storage areas, and providing signs at storm drain inlets to educate the public to not dispose of other liquids through the storm drain system.

Although specific methods of pollutant reduction in the developed condition have not been finalized, West Yost Associates (Appendix F) indicates the aforementioned BMPs are standard and feasible techniques available to achieve the performance standard mandated under the City's Storm Drain Design Standards, the City's Stormwater Management Plan, and the Small MS4 Permit issued by the SWRCB. In accordance with the City's standard conditions of approval, the City Engineer and Director of Public Works must verify that the proposed project meets the requirements of the City's Storm Drain Design Standards, the City's Stormwater Management Plan, and the Small MS4 Permit issued by the SWRCB prior to approval of the project's Improvement Plans, Grading Plans, and Final Map. Therefore, the long-term impacts of the proposed project on water quality is considered a **less-than-significant impact**.

Mitigation Measures

None required.

4.4-2: Implementation of the proposed project may alter the existing drainage pattern of the site or area in a manner which would result in substantial erosion or siltation on- or off-site. This would be a less-than-significant impact.

The proposed project would convert the existing agricultural lands to residential, commercial, and park land uses. This would increase the impervious surfaces on the site and would significantly alter the existing drainage pattern, which would cause an increase in the peak flows and volumes discharged from the site during storm events. As indicated in Appendix F, without

construction of the detention basin, the proposed development within the watershed could increase the 10-year peak flow from 445 cfs to 560 cfs and the 100-year peak flow from 606 cfs to 713 cfs. The increase in flows could result in substantial erosion or siltation downstream if discharged directly to the downstream receiving water. However, the proposed project includes a 60-acre foot detention basin that would detain storm flows. Flows from the project are to be conveyed into the detention basin via an underground pipe network for storms up to the 10-year event. For larger storms, flows in excess of the pipe system capacity would be conveyed overland in the streets and directed into the detention basin.

According to the hydrologic modeling provided by West Yost Associates, with the detention basin, the 10-year and 100-year peak flows from the watershed would be 300 cfs and 425 cfs, respectively. (Appendix F). As a result, the proposed detention basin would prevent the project from creating a significant impact due to an increase in erosion or siltation downstream. Therefore, the possibility for increased downstream erosion or siltation is considered a **less-than-significant impact**.

Mitigation Measures

None required.

4.4-3: Implementation of the proposed project may substantially alter the existing drainage pattern of the site or area or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. This would be a less-than-significant impact.

Without a detention basin, development of the project would significantly increase the stormwater runoff rates in the watershed. Thus, without a detention basin the 10-year peak flow would increase from 445 cfs to 560 cfs and the 100-year peak flow would increase from 606 cfs to 713 cfs. These flow increases could exacerbate the existing flooding problem downstream of the project site that has been identified by FEMA. However, the project would use the on-site detention basin at the downstream end of the project to detain storm flows and discharge at a rate well below the 10-year peak flow. This is an acceptable approach for addressing the potential impacts of the project on downstream flooding.

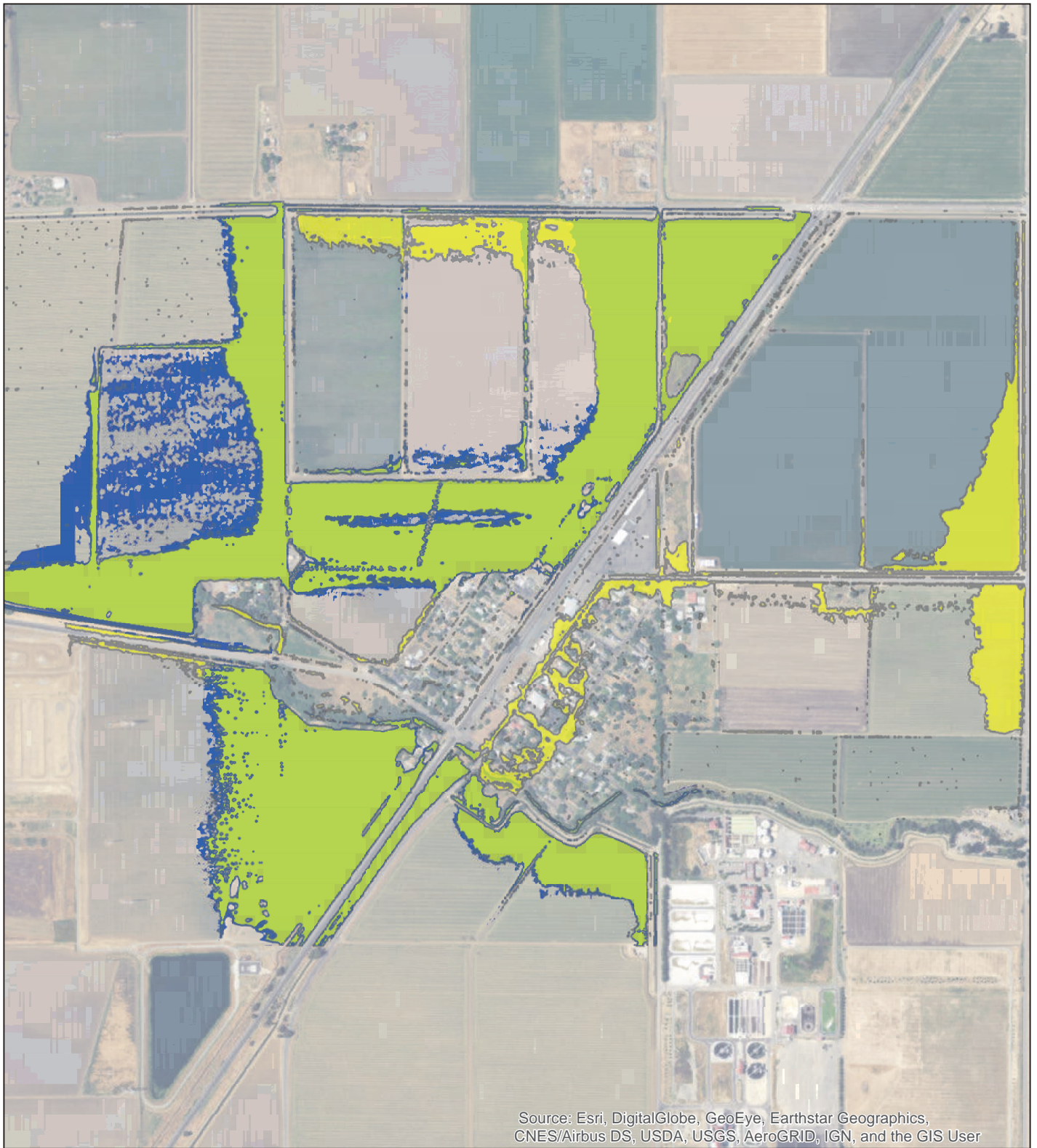
Figure 4.4-2 was developed to compare the existing conditions flooding with the hydrologic model developed to approximate proposed conditions. As shown on Figure 4.4-2, the extent of flooding in the Town of Elmira and downstream of Elmira is eliminated. The flooding west of the UPRR embankment is changed slightly due to the location of the detention basin and where it would release flows when overtopped. However, the depth of flooding is currently about 3-inches in most areas west of the UPRR embankment, and would not increase with the project.

Consistent with the City's Standard Conditions of Approval for storm drainage, the project applicant needed to demonstrate that the project drainage facilities would adequately direct all flows, including overland flows during the 100-year storm, into the detention basin at the improvement plan stage of the project design. Prior to approval of improvement plans, the project applicant is required to have a Storm Drain Master Plan prepared by a registered civil engineer that identifies the specific improvements that would adequately collect and convey stormwater from project site and convey those flows downstream without increasing the area subject to flooding compared to pre-project conditions. The SDMP must provide the necessary calculations to adequately demonstrate that the proposed drainage facilities would convey the design runoff from the project site and adequately mitigate the impacts of increased runoff.

In accordance with the City's Storm Drain Design Standards, the SDMP shall be prepared prior to the approval of the tentative map and shall include, but is not limited to, the following items:

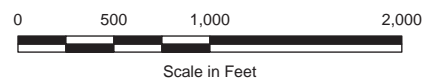
- A topographic map of the drainage shed and adjacent areas, as necessary, to define the study boundary. The map shall show existing and proposed ground elevations (including preliminary building pads), with drainage sub-shed areas in acres, and the layout of the proposed drainage improvements.
- A map showing analysis points, proposed street grades, storm drainage facilities, and overland release paths with required easement locations for overland flow across private property.
- Preliminary pipe sizes with hydraulic grade lines, design flows, inverts, and proposed ground elevations at analysis points. This information shall be provided on the map showing the layout of the proposed drainage facilities.
- Downstream improvements and maintenance activities necessary to convey storm flows such that the area subject to flooding shall not increase with the proposed project.
- Proposed alterations required to avoid any increase in peak flow or areas subject to flooding. An example of such alterations could include the following, or others:
 - Adjustment to grading plans
 - Adjustment to storm drainage system
 - Downstream improvements along the existing conveyance (Old Alamo Creek)

The proposed improvements, including the detention basin and off-site improvements to Old Alamo Creek such as replacing culverts, channel widening, vegetation removal, and constructing a low earthen berm in the agricultural field on the east side of the project site would significantly reduce the amount of flooding downstream in the Town of Elmira and downstream of Elmira. The extent of flooding in the agricultural land north and east of the project site would stay nearly the same.



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User

- Existing Limits
- Proposed Limits
- Existing and Proposed Limits



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Consistent with General Plan policies SAF 3.1, 3.3, 3.4, and 4.4 and consistent with City Standard Conditions of Approval for storm drain improvements, the final design of the project shall be required to adequately direct all flows to the existing detention basin and be prohibited from increasing the area subject to flooding downstream. Because the hydrologic modeling prepared in Appendix F shows the changes in flooding downstream would not be significant, and because the city's standard conditions of approval require preparation of a Storm Drain Master Plan (SDMP) prior to issuance of improvement plans for the project the impact is considered **less than significant**.

Mitigation Measure

None required.

4.4-4: Implementation of the proposed project may create or contribute to runoff water which would exceed the capacity of the existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. This would be a less-than-significant impact.

The proposed project would significantly increase the amount of impervious cover on the project site, which would cause a significant increase in runoff rates compared to existing rates. The project would tie into an on-site detention basin that would help mitigate for potential increases in flows and would also provide stormwater quality treatment. On-site runoff from the project would be conveyed to the detention basin via an underground pipe network that would be constructed in accordance with the City's Standard Specifications and Drawings. The pipes would be sized to convey peak flows from a 10-year storm in accordance with City standards. Flows from storms larger than the 10-year event must be safely conveyed overland in the streets to the detention basin. City standards require the flow from the 100-year storm water surface elevation to be no more than 0.5 feet above the centerline elevation of a road and must be at least one foot below building pads.

Detailed pipe sizing calculations and overland release calculations are not included in the project drainage report and the adequacy of the proposed on-site systems could not be evaluated. However, as discussed above under Impact 4.4-3 the final design of the project to adequately direct all flows to the existing detention basin does not allow for any project-related increase in the area subject to flooding downstream. The project applicant is required to demonstrate that the project drainage facilities would adequately direct all flows, including overland flows during the 100-year storm, into the detention basin at the improvement plan stage of project design. Prior to approval of improvement plans, the project applicant is required to have a Storm Drain Master Plan prepared that identifies the specific improvements that would adequately collect and convey stormwater from project site and convey those flows

downstream without increasing the area subject to flooding compared to pre-project conditions. The SDMP must provide the necessary calculations to adequately demonstrate that the proposed drainage facilities would convey the design runoff from the project site and adequately mitigate the impacts of increased runoff.

Therefore, based on compliance with the City's requirements the possibility for the proposed on-site stormwater system to be exceeded by a storm event is considered a **less-than-significant impact**.

Mitigation Measures

None required.

4.4.5 Cumulative Impacts

The geographic scope of cumulative effects on hydrology and water quality is the Old Alamo Creek watershed.

4.4-5: The proposed project, in addition to other projects in the watershed, could result in the generation of polluted runoff that could violate water quality standards or waste discharge requirements for receiving waters. This would be a less-than-significant impact.

Cumulative impacts from development of the project were analyzed in the City's General Plan Update EIR. Policies adopted in the General Plan address the evaluation of development to ensure adequate drainage facilities, the requirement for impact fees to fund storm drain improvements, and provision of storm drain master plans to guide development approvals (SAF P3.1, P3.3, P3.4), and ensure evaluation of drainage patterns, of flood risks, and of the facilities needed to protect water quality and maintain drainage systems (Policies SAF-P4.1 – 4.5). The proposed project and other potential cumulative projects in the vicinity of the project site, including growth resulting from build-out of the City's General Plan, would be required to comply with the NPDES General Permit for Discharges of Storm Water Discharge Associated with Construction Activities issued by the State Water Resources Control Board. This permit requires projects to implement measures to prevent impacts, individual and cumulative, to water quality during construction. In addition, projects would also be required to comply with the City's NPDES stormwater permit from the CVRWQCB and their Stormwater Management Plan which prevent impacts to water quality after construction of a project. An important project in the cumulative scenario includes improvements to Old Alamo Creek that are planned to alleviate some of the flooding downstream, primarily in the Town of Elmira. This includes construction of a new 8-foot wide and 6-foot deep channel along Elmira Road west of Elmira and east of the project, removal of double-wide culverts, removal of heavy vegetation and replacement of a culvert with a bridge, and constructing a low earthen berm on the adjacent agricultural land to

the east which would help retain flows from large storm events to further reduce downstream flooding. Collectively, these improvements would allow peak flows in Old Alamo Creek to flow more freely and alleviate the extent and severity of flood events.

As discussed in the impact analysis above, the on-site detention basin has been designed to address flood control and water quality considerations for the project, and similarly an adequately-sized detention basin has been designed by the City to accommodate stormwater flows from the Roberts' Ranch and Brighton Landing projects, both of which are also within the Old Alamo Creek watershed. Therefore, the potential for cumulative impacts to flooding water quality is less than significant.

The proposed project and other potential projects that could contribute to cumulative impacts would also be subject to local, state, and federal regulations designed to minimize individual and cumulative impacts related to stormwater runoff rates and flooding. Compliance with applicable regulations, along with implementation of the General Plan policies cited would reduce the potential cumulative impacts to a **less-than-significant level**.

Mitigation Measures

None required.

4.4.6 References

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- West Yost Associates. 2017. *The Farm at Alamo Creek Hydrology and Water Quality Evaluation*. Prepared for the City of Vacaville. December 1, 2017.

4.5 LAND USE AND PLANNING

4.5.1 Introduction

This section describes the existing and proposed land use designations and zoning for The Farm at Alamo Creek Specific Plan project (proposed project) and evaluates the potential effects on general land use compatibility and consistency with the City of Vacaville General Plan (City of Vacaville 2015) goals and policies and other relevant planning documents including the Travis Air Force Base Land Use Compatibility Plan.

Comments received in response to the Notice of Preparation (NOP) pertaining to land use included a comment letter from the Solano Local Agency Formation Commission (LAFCO) stating that Solano LAFCO will be a responsible agency for the project and the boundaries of several special districts will need to be changed and reorganization of services provided by the Solano Irrigation District, County Lighting Service Area, Vacaville Fire Protection District, Vacaville Elmira Cemetery District, and the Solano Resource Conservation District would be required. Solano LAFCO also notes that mitigation needs to be included to address the loss of any prime agricultural land. Potential impacts to the loss of agricultural land are addressed in the Modified Initial Study included in Appendix B. The Solano County Department of Resource Management reiterates that the portion of Hawkins Road within the project boundary will need to be annexed into the City. This element of the project is included in Chapter 3, Project Description. A copy of the NOP and comment letters received in response to the NOP are included in Appendix A.

Information referenced to prepare this section is based on the City of Vacaville General Plan Land Use Element (City of Vacaville 2015), City of Vacaville General Plan and Energy Conservation Strategy Draft EIR (City of Vacaville 2013), Travis Air Force Base Land Use Compatibility Plan (Solano County 2002), Wildlife Hazards Analysis (Appendix D), Solano County General Plan (Solano County 2008), Solano County Chapter 28 Zoning Ordinance (Solano County 2015) and the City's Title 14.09 Zoning Ordinance (adopted in 1996; amended in 1998).

4.5.2 Environmental Setting

This section describes the existing conditions in the project area and the built environment and also identifies the site's current and proposed zoning and General Plan land use designations.

Existing Site Conditions and Planning Designations

The project site is located in northern Solano County generally adjacent to the southeastern corner of the City of Vacaville, approximately four miles from downtown Vacaville. The site is located in unincorporated Solano County within the City's proposed Sphere of Influence (SOI) in an area that

straddles the City's Urban Growth Boundary (UGB). The approximately 210-acre project site is currently in active agricultural production for row crops, is relatively flat, and does not contain any trees with the exception of mature trees and shrubs adjacent to both sides of Old Alamo Creek. Old Alamo Creek bisects the southern portion of the site. There is an existing PG&E easement east of the site for 500 kV and 230 kV overhead transmission lines that are part of the statewide electrical system. In addition there is a Solano Irrigation District (SID) irrigation canal that traverses the center of the project site along with irrigation ditches adjacent to the northern project boundary, parallel to Hawkins Road. There is a small parcel of land in the southwest corner of the project site that includes two residences, outbuildings and a number of mature trees. This parcel is included within the boundaries of the proposed Specific Plan, but is not included within the project's Tentative Map. This is the only development on the project site.

The project site is bounded by Hawkins Road to the north, Leisure Town Road to the west, Elmira Road and the approved Brighton Landing Specific Plan to the south, and undeveloped land to the east (see Figures 3-1 and 3-2 in Chapter 3, Project Description).

The Travis Air Force Base Airport Land Use Compatibility Plan (LUCP) establishes policies for noise, safety and airspace protection for uses near the airport. The project site is located in within the LUCP in Compatibility Zone D, which only places a limitation on the height of structures within this zone and establishes procedures for the evaluation of potential wildlife attracting uses within close proximity to the base facility.

The Solano County General Plan designates the project site for agriculture and the site is zoned A-40, Exclusive Agriculture 40 acres (Solano County 2008, 2015). The western portion of the project site (approximately 150 acres) is designated as a future Specific Plan in the City's General Plan and also designated as part of the East of Leisure Town Road Growth Area (City of Vacaville 2015). The City's Land Use Designation figure (City of Vacaville 2015, Figure LU-6) designates the project site Residential Low Density (RL - 3.1-5 units/acre), Residential Low-Medium Density (RLM - 5.1-8.0 units/acre), Residential Medium Density (RM - 8.1-14 units/acre), Residential High Density (RH - 20.1-24 units/acre), Commercial Neighborhood (CN), Urban Reserve (UR), Agricultural Buffer, and Public Park (PK). The project site does not currently include City zoning because it is located outside of the City limits. The project applicant is requesting a General Plan Amendment to remove the UR designation in the eastern portion of the site and designate that area Residential Low Density, consistent with what was evaluated in the General Plan EIR and with the City's recently amended General Plan policies. The project applicant is also requesting the site be pre-zoned Residential Low Density (RL-5 & RL-6), Residential Low Medium Density (RLM-3.6 & RLM-4.5), Residential Medium-High Density (RMH), Neighborhood Commercial (CN), Community Facilities (CF), Open Space (OS), and Park (P), with an Agricultural Buffer overlay zone over the 4.3 acres along the publicly owned lands along the eastern boundary of the project site. Figure 4.5-1 shows the existing and

proposed land use designations for the project site, and Figure 4.5-2 shows the proposed zoning for the project site. As part of this project the City is proposing to annex the entire project site into the City limits.

Surrounding Land Uses

Surrounding land uses include existing residential development and a small area of light industrial uses to the west across Leisure Town Road, the approved Brighton Landing Specific Plan under construction to the south, undeveloped land in agricultural use to the north across Hawkins Road, and undeveloped land currently in agricultural use to the east.

Land surrounding the project area has General Plan designations and zoning from the City and Solano County and includes a mix of agriculture, residential and public uses. Land to the west of the site has a City land use designation of Residential Low Density and is zoned RL-6. Land south of the project site, in the Brighton Landing Specific Plan, includes land use designations of Residential Low Density, Residential Low-Medium Density, Schools and Public Parks and is zoned CF, RLM-3.6, and RL-6. Lands north and east of the project site within the unincorporated County and the City's planned SOI and the City's adopted UGB, has a City General Plan land use designation but is not zoned. Land north of Hawkins Road is designated in the City's General Plan as part of the East of Leisure Town Road Future Specific Plan. This land is designated as UR. Land east of the project site is outside the City limits in the unincorporated County has a County land use designation of Agriculture and is zoned A-40.

General Plan Land Use Designation Descriptions

The discussion below provides a brief overview of the County and City's General Plan land use designations for the project site, the County's zoning for the project site, and the proposed City zoning for the project site.

Solano County General Plan

The Solano County General Plan designates the project site Agriculture (see Figure 4.5-3). This designation provides area for agricultural uses and allows for secondary uses that support the economic viability of agriculture. These areas are protected from intrusion by non-agricultural uses and other uses not directly supporting the viability of agricultural uses (Solano County 2008, p LU-19).

City of Vacaville General Plan

The City of Vacaville General Plan designates the project site with a mix of land uses described as follows:

RLD - Residential Low Density (3.1-5 units/acre): Properties with the RLD designation are intended for single-family residential uses on lots ranging from 5,000 to 10,000 square feet (sf). The base density for RLD neighborhoods is 3.1 units per gross acre with a maximum potential density of 5 units per gross acre.

RLM - Residential Low-Medium Density (5.1-8 units/acre): This designation provides for single-family, duplex and cluster housings on lots ranging from 3,600 to 4,500 sf. Clustered development on sites measuring at least 10 acres in size are also permitted under this designation. The base density for RLM neighborhoods is 5.1 units per gross acre with a maximum potential density of 8 units per gross acre.

RMHD - Residential Medium-High Density (14.1 – 20 units/acre): This designation provides opportunities for higher density multi-family residential uses, including attached or detached townhomes, condominiums, and apartments, subject to appropriate standards. The base density is 14.1 units per gross acre, and the maximum potential density is 20 units per gross acre.

Neighborhood Commercial: This designation provides for small sites for neighborhood commercial centers, generally anchored by a grocery store with convenience uses serving the immediate area. New Neighborhood Commercial sites must be between 4 and 10 acres in size.

Public Parks: This designation includes existing and proposed public park sites. Parks are also addressed in the Parks and Recreation Element.

Agricultural Buffer: This designation is used to identify lands that border urban development and intensive or irrigated agriculture. The primary use for this designation is to provide a buffer between urban development and agricultural uses adjacent to the eastern boundary of the project site. Proposed uses in these buffer lands include passive open space uses such as pedestrian and bicycle trails or public infrastructure improvements.

Urban Reserve: This designation is applied to relatively large, contiguous, and undeveloped geographic areas where comprehensive planning must occur prior to urbanization. The purpose of assigning the Urban Reserve designation, rather than specific land use designations in the East of Leisure Town Road Growth Area, is to demonstrate that the City eventually expects urban development in these areas, while also allowing flexibility in planning for these uses in the future. This designation has been applied to approximately 60 acres located in the eastern portion of the project site.

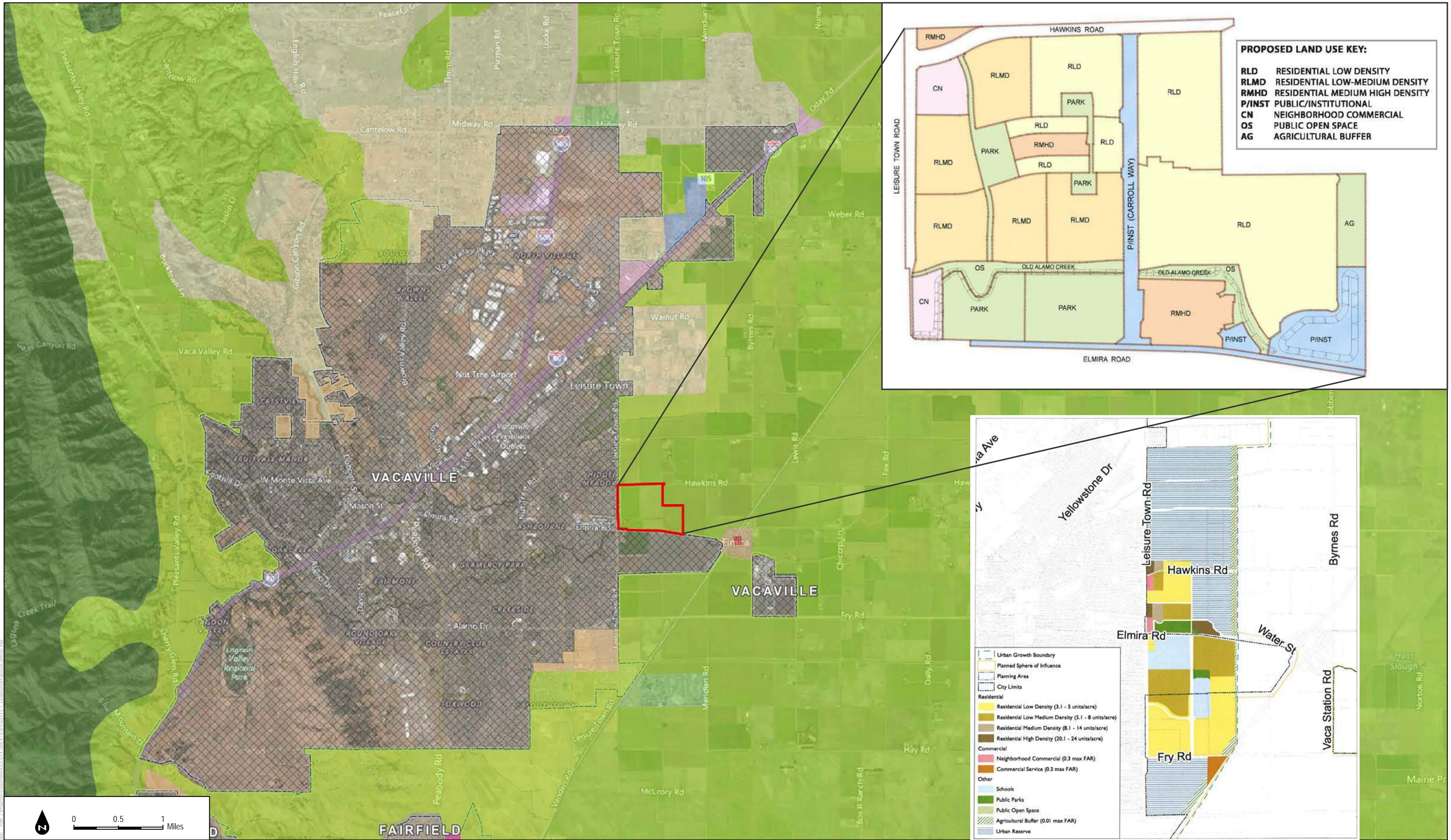


FIGURE 4.5-1

Existing and Proposed Land Use Designations for the Project Site

0 0.5 1 Miles

SOURCE: Bing Maps (Accessed 2017); Solano County GIS

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The Farm at Alamo Creek Specific Plan EIR

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SOURCE: SWA (2018)



Figure 4.5-2
Proposed Project Site Zoning

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Municipal Code – Zoning Descriptions

Solano County

Exclusive Agriculture 40 acres (A-40): This zoning district is intended to provide for agricultural land uses and to preserve vitality of agricultural operations through allowing agricultural-related support uses, excluding incompatible uses and protecting viability of the family farm. Allowable uses within this zoning district include, but are not limited to, agricultural sensory structures, cultivated and irrigated farming, non-irrigated and non-cultivated farming, grazing or pasture livestock, nursery with public sales and small wineries (Solano County 2015, Table 28.21A).

City of Vacaville Municipal Code

The City of Vacaville Municipal Code, Title 14 Land Use and Development Code, Division 14.09 Zoning is designed to protect and promote the public health, safety, and general welfare of the citizens of Vacaville and provides the purpose, permitted and conditional uses, and any special district provisions for the City's various zoning districts.

Residential Low Density (RL-5 and RL-6): Properties zoned RL are intended to provide detached single-family residential development in densities of 3.1 to 5.0 units per gross acre with a lot range of 5,000 to 10,000 sf. Properties with an RL-5 designation would have a minimum lot size of 5,000 sf and properties with RL-6 designation would have a minimum lot size of 6,000 sf. At least 25% of units with a RL-5 designation must be designed in an alternative configuration and dispersed proportionally throughout the project. Alternative configuration of units is encouraged within the RL-6 district. Alternative configuration is defined in Chapter 14.09.074.090 of the Vacaville Zoning Code as a design that varies substantially from the typical single-family architecture style where the attached garage that fronts on the street is the dominant feature of the dwelling.

Residential Low Medium Density (RLM-3.6 and RLM-4.5): Properties zoned RLM are intended to provide detached single-family residential development in densities of 5.1 to 8.0 units per gross acre. Properties with an RLM-3.6 designation would have a minimum lot size of 3,600 sf and properties with an RLM-4.5 designation would have a minimum lot size of 4,500 sf. Alternative configuration is required in at least 50% of units within the RLM-4.5 district and 100% of units within the RLM-3.6 district.

Residential Medium High Density (RMH): The RMH district provides for medium to high density multi-family housing such as attached townhouses, condominiums, and apartments. The allowed density ranges from 14.1 to 20.0 units per gross acre. This district is designed to reserve appropriately located areas for medium high density, multi-family residential

development; to ensure a mix of housing types to meet the diverse needs of the citizens of Vacaville; and to allow for the establishment of other appropriate uses which are determined to be compatible with the intent of the district.

Neighborhood Commercial (CN): The CN district allows for uses which generally provide goods and services in small retail centers intended to accommodate a neighborhood area. New NC sites must be between 4 and 10 acres in size. The CN district is established to allow for the establishment of commercial retail, office, service, entertainment, and public uses suitable for neighborhood commercial centers; provide sites of adequate size to accommodate smaller retail centers in locations convenient to residential neighborhoods; promote the economic vitality of businesses by ensuring an appropriate mix of uses compatible with surrounding residential areas; and to allow for the establishment of other appropriate uses which are determined to be compatible with the intent of the district.

Public Parks: This district includes existing and proposed public park sites.

Community Facilities (CF): The CF zoning designation provides opportunities for a range of community facilities and large public facilities occupying a minimum site area of 2 acres. Permitted uses in the CF designation include, but are not limited to, detention basins, membership organization facilities, parking lots, recreation uses such as playgrounds and neighborhood parks, and public schools including elementary schools (Chapter 14.09.100.030 of the City's Zoning Code).

Open Space (OS): The OS-Open Space district provides for the preservation of public open space lands such as hillsides, ridgelines, and scenic areas. The OS district also includes areas with limited development potential due to physical characteristics of the land or lack of access.

4.5.3 Regulatory Setting

Federal Regulations

There are no federal plans, policies, regulations or laws applicable to the proposed project.

State Regulations

Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000

The Cortese-Knox-Hertzberg Local Government Reorganizations Act encourages the orderly formation of Local Government Formation Commissions (LAFCOs) and protects agricultural land resources by discouraging urban sprawl and coordinating logically and timed changes in local government boundaries. Solano County LAFCO regulates boundary changes, annexations, and sphere of influence for cities, agencies and special districts within the county

(Solano LAFCO 2015). Solano County LAFCO has discretionary approval over the City's request to annex the project site into the City of Vacaville city limits and is a responsible agency under CEQA. Solano County LAFCO will review reorganization of services currently provided by the Solano Irrigation District, County Lighting Service Area, Vacaville Fire Protection District, Vacaville Elmira Cemetery District, and the Solano Resource Conservation District.

Local Regulations

Solano County General Plan

The Solano County General Plan, adopted on August 5, 2008, is a long-range planning document to guide land use in the unincorporated areas of the County including areas outside the Vacaville City limits but within the City's planned UGB. Currently, the project site and lands immediately north and east are not within the City limits and is governed by the Solano County General Plan.

The following goals and policies from the County's General Plan Land Use Element are applicable to the proposed project.

- Goal LU.G-1** Preserve and protect the current development pattern of distinct and identifiable cities and communities.
- Goal LU.G-2** Encourage a development pattern that first seeks to maintain existing communities, second to develop vacant lands within existing communities presently served by public services, and third to develop lands immediately adjacent to existing communities where services can easily be provided.
- Goal LU.G-4** Encourage land use development patterns and circulation and transportation systems that promote health and wellness and minimize adverse effects on agriculture and natural resources, energy consumption, and air quality.
- Policy LU.P-4** Designate as municipal service areas those areas where future development is to be provided with municipal or urban type uses through city annexation.
- Policy LU.P-18** Require a variety of housing types (affordable and market-rate) near jobs, services, transit, and other alternative-transportation serving locations (e.g., rideshare lots).

Solano County Zoning Ordinance (Chapter 28)

The Solano County Zoning Code was adopted October 6, 2015. The Zoning Ordinance includes the zoning map and regulations governing the use of land and placement of improvements and

buildings within various designations. Regulations include, but are not limited to, property development standards, general site use and regulations, parking standards and procedures for administering the ordinance.

The project site and lands immediately north and east are zoned A-40. This zoning district is intended to provide for agricultural land uses and to preserve vitality of agricultural operations. As part of this project the City is requesting the project site be annexed into the City. The project applicant is also requesting a General Plan amendment and that the project site be pre-zoned, consistent with the City's current land use designations.

Solano County Airport Land Use Commission

The Solano County Airport Land Use Commission (ALUC) guides airport development in the county and governs the areas surrounding airports in order to prevent land use issues related to noise and safety. The ALUC prepares Land Use Compatibility Plans (LUCP) to ensure that cities within the county have policies and regulations in compliance with provisions of the plans.

Travis Air Force Base Airport Land Use Compatibility Plan

Travis Air Force Base is located in the City of Fairfield approximately 5.2 miles south of the project site. The Travis Air Force Base LUCP provides policies and guidance designed to ensure that future land uses surrounding the Air Force Base remain consistent and compatible with the airport facility safety and uses. The project site falls within Land Use Compatibility Zone D in the LUCP. Compatibility Zone D does not limit residential development or other uses, but would require the Solano County ALUC and Federal Aviation Administration review of structures with a proposed height of over 200 feet (Solano County 2002).

Residential and other development is consistent with guidelines presented for Zone D, with some restrictions for building height and wildlife attractants such as open water that may attract waterfowl. Further, a small portion of the project site is within the "outer perimeter" area for bird strike hazard. New or expanded land use involving discretionary review that has the potential to attract the movement of wildlife and cause bird strikes are required to prepare an assessment of hazards from wildlife movement, and the potential for new projects to attract wildlife must be reviewed as part of the environmental review process required by CEQA. A Wildlife Hazards Analysis was prepared for the project (see Appendix D) and is further evaluated below.

City of Vacaville General Plan

The *City of Vacaville General Plan* (General Plan) adopted August 11, 2015, is designed as a long-range planning document for guiding future conservation, enhancement and development in the City. In December 2017 the City Council approved amending the General Plan to revise

Policies LU-P17.1 and LU-P17.4 to include the proposed project. The revised policies are included below. The following goals and policies from the City's General Plan Land Use Element and Conservation and Open Space Element are applicable to the proposed project.

- Goal LU-2** Carefully plan for new development in undeveloped portions of Vacaville.
- Policy LU-P2.1** Require lands outside, but adjacent to, the current City limits to annex into the City of Vacaville as a prerequisite of development. Do not provide city utility services, water, and sanitary sewer to new development outside the City limit (with the exception of sanitary sewer for infill in the Elmira area) unless the City Council with the approval of the Local Agency Formation Commission (LAFCO), approves exceptions in situations where the following three conditions are met:
- The area in question cannot annex into the City immediately, because it is not currently contiguous to the City limit.
 - The property owner signs a recorded, irrevocable agreement to annex the property to the City when such annexation is requested by the City.
 - The development is consistent with this General Plan and is found to meet all appropriate City development standards.
- Policy LU-P2.2** Require that specific plans be prepared for new areas brought into the city for development. Such specific plans must provide a coordinated plan for land use, public facilities, and public services. Prohibit individual, piecemeal developments within these outlying areas.
- Goal LU-3** Coordinate land development with the provision of services and infrastructure.
- Policy LU-P3.4** Do not approve new development unless there is infrastructure in place or planned to support the growth.
- Policy LU-P3.5** Encourage new development to consider transit, pedestrian, and bicycle circulation during the design phase.
- Policy LU-P3.6** Require that new development or new Specific Plan areas be located immediately adjacent to existing development or infrastructure.
- Goal LU-5** Maintain the City's Urban Growth Boundary
- Policy LU-P5.2** Lands East of Leisure Town Road: In conjunction with approval of any new urban development on lands shown as "Area B" on Figure LU-3, which

consists of lands that are inside the Urban Growth Boundary but east of Leisure Town Road and between the Locke Paddon Community areas on the north and New Alamo Creek on the south, the City shall require such development to mitigate its impact on agricultural and open space lands by preserving, to the extent consistent with applicable law, for each acre of land developed, at least 1 acre of land outside the Urban Growth Boundary but within Pleasants Valley, Upper Lagoon Valley, or Vaca Valley, or any other location that is within 1 mile of the Urban Growth Boundary. Alternatively, to the extent consistent with applicable law, such development may pay an equivalent in-lieu fee as determined by the City in consultation with the Solano Land Trust. Lands acquired directly or with fees collected pursuant to this requirement shall first be offered to the Solano Land Trust. Any such fees transferred to the Solano Land Trust may only be used to acquire or protect lands outside of the Urban Growth Boundary but within 1 mile of the Urban Growth Boundary, or within Pleasants Valley, Upper Lagoon Valley, or Vaca Valley. Acquisitions pursuant to this requirement shall be coordinated with the Solano Land Trust.

If for any reason adequate land to meet the conservation goals described in the Vacaville General Plan, and in particular this section, cannot be identified or acquired, the City and the Solano Land Trust, or if the Solano Land Trust declines to participate, the City and another land conservation entity shall meet and confer to identify other areas where conservation acquisitions can occur at a reasonable cost and to satisfy the conservation goals described in this section.

Policy LU-P5.3 Coordination with Future Solano County LAFCO Open Space or Agricultural Land Mitigation Program: If the Solano County Local Agency Formation Commission (LAFCO) adopts an open space or agricultural land mitigation program applicable to the area defined in Policy LU-P5.2, lands defined therein shall be subject only to the requirements of the LAFCO mitigation program, provided that if the requirement described in Policy LU-P5.2 provides greater mitigation than the LAFCO requirement, the incremental difference between the two programs shall be imposed in addition to the LAFCO requirement to the maximum extent permitted by State law. To the extent the LAFCO requirement and this requirement overlap, development shall be subject to only the LAFCO requirement.

Goal LU-6 All development shall pay its own way and not result in a financial burden to existing development or services.

- Policy LU-P6.2** Require that infrastructure and service improvements for future annexation or growth areas do not create an undue burden on existing City infrastructure and services.
- Policy LU-P6.3** Ensure that future annexations are consistent with the overall goals and policies of the General Plan and do not adversely impact the City’s fiscal viability, environmental resources, infrastructure and services, and quality of life.
- Goal LU-11** Preserve and enhance the existing character and sense of place in residential neighborhoods.
- Policy LU-P11.3** Require a Planned Development permit for all residential development meeting one or more of the following criteria, consistent with the adopted Planned Development Regulations (the Planned Development permit process is intended to increase flexibility for these types of development by allowing deviations from typical development standards such as setbacks, building height, landscaping, parking, and design):
- Multi-family projects of ten units or more.
 - Mixed use.
 - A location potentially subject to natural or man-made geologic hazards, including hillside areas.
 - Any project exceeding the maximum density allowed by the land use designation or with 50 units or more.
- Policy LU-P11.5** Prohibit residential neighborhood design that places access to single family lots on arterial streets.
- Policy LU-P11.6** Design residential neighborhoods to avoid placing access to single family lots on collector streets, and limit the number of intersections along collector streets.
- Goal LU-12** Provide high-quality housing in a range of residential densities and types.
- Policy LU-P12.1** Encourage development that broadens the choice of type, size, and affordability of housing in Vacaville.
- Policy LU-P12.2** Provide for transitions between higher-density and lower-density housing.
- Goal LU-13** Promote the development of attractive commercial areas and uses that provide goods and services.

Policy LU-P13.1 Ensure that new commercial development is compatible with the character and scale of existing and planned adjoining land uses.

Policy LU-P13.2 Provide neighborhood and community shopping centers of various sizes and locations to ensure easy access from nearby residential areas to daily commercial and service needs.

Policy LU-P13.3 Locate shopping centers and neighborhood commercial facilities at the intersection of major thoroughfares and, where appropriate, adjacent to multi-family housing and transit.

Policy LU-P13.9 Minimize conflicts between commercial areas and residences by requiring adequate buffers and screening.

Goal LU-17 Provide for orderly, well-planned, and balanced growth in the East of Leisure Town Road Growth Area.

Policy LU-17.1 Limit residential development within the East of Leisure Town Road Growth Area to 2,455 dwelling units with the following general assumptions:

- Brighton Landing Specific Plan Area: 780 dwelling units
- Roberts' Ranch Specific Plan Area (See Figure LU-2): 785 dwelling units
- The Farm at Alamo Creek Specific Plan Area (North of Elmira Road and South of the Hawkins Road prior to realignment, see Figure LU-2): 768 dwelling units (after realignment of Hawkins Road, approximately 20 dwelling units would be located north of Hawkins Road within The Farm at Alamo Creek Specific Plan Area)
- Properties north of the Hawkins Road (prior to realignment): 122 dwelling units

Require a General Plan Amendment for residential development in excess of this amount.

Policy LU-P17.2 The East of Leisure Town Road Growth Area shall include a mixture of housing densities, and attached and detached housing types consistent with the adopted land use diagram.

Policy LU-P17.3 When considering specific plan proposals for development on lands designated Residential High Density in the East of Leisure Town Road Growth Area, ensure that overall development in the East of Leisure Town Road Growth Area is on track to provide at least 13 percent of the total residential units as attached, multi-family units.

Policy LU-P17.4 The Farm at Alamo Creek Specific Plan Area is located north of Elmira Road and south of Hawkins Road (prior to realignment, See Figure LU-2). The eastern approximately 60 acres of this future specific plan area is under the same ownership as most of the western portion, and was inadvertently split by an Urban Reserve designation in the 2015 General Plan. A general plan amendment and specific plan may be considered for this area without being subject to the Urban Reserve conversion processes described in Policy LU-P19.1, Policy LU-P19.4, and Policy LU-P19.5 provided that no subdivision final map is recorded that would create individual residential or urban use lots on the eastern original 60-acre urban reserve portion prior to August 11, 2020. Grading activities and the extension of utilities on or through the 60-acre original urban reserve portion may be permitted prior to August 11, 2020 as required to facilitate the development of adjacent lands already designated for urban uses.

Policy LU-P17.5 Require that specific plans be prepared for development in the East of Leisure Town Road Growth Area to ensure that coordinated plans for land uses, public facilities, and public services are created for such area, and require that these specific plans are consistent with the City's updated infrastructure master plans that account for development in the East of Leisure Town Growth Area.

Policy LU-P17.6 Require that specific plans for the East of Leisure Town Road Growth Area include a diagram showing the distribution of land uses and define permitted land uses, major public facilities (including schools, parks, roads, water, sewer, and drainage facilities), phasing, infrastructure financing mechanisms, interim fire protection measures, and any other elements that may be needed to ensure an orderly development process with minimal adverse impacts to the existing community. The specific plans shall be consistent with the City's master infrastructure plans prepared for the East of Leisure Town Road Growth Area.

Policy LU-P17.9 Require residential specific plans within the East of Leisure Town Road Growth Area to contain a component of housing designed to attract business executives and professionals.

Policy LU-P17.10 Require Specific Plans within the East of Leisure Town Growth Area to provide a wide variety of lot sizes and housing types. Lots located adjacent to the Agricultural Buffer, north of Elmira Road, shall be 10,000 square feet in size.

Policy LU-P17.11 Require specific plans within the East of Leisure Town Road Growth Area to incorporate detention basins, agricultural buffer areas, and public open spaces into the physical amenities designed into the neighborhood. These amenities could include trails, passive open spaces, recreational spaces, or other features designed to create innovative, attractive neighborhood design.

Goal LU-19 Comprehensively plan for future development in the East of Leisure Town Road and Northeast Growth Areas.

Policy LU-P19.1 Require a General Plan amendment to convert lands designated as Urban Reserve to other land use designations. Require all conversions to make the findings identified in an Urban Reserve Ordinance described in Action LU-A19.1, below.

Policy LU-P19.5 Evaluate General Plan amendment requests to convert lands designated as Urban Reserve to other land use designations no more often than every 5 years. Applications to amend the General Plan to convert Urban Reserve lands must be consistent with the City's Municipal Service Review and Comprehensive Annexation Plan.

Goal COS-4 Minimize conflicts between agricultural and urban uses.

Policy COS-P4.1 Within the area east of Leisure Town Road, south of the Locke Paddon Community and north of the railroad tracks, as shown in Figure LU-6 in the Land Use Element, require new development to maintain a 300- to 500-foot wide agricultural buffer along the eastern boundary of all residential development and existing agricultural lands. Require that uses within the agricultural buffer be limited to passive open space uses that are not accessed by a large number of employees or the general public at one time. Permitted uses within the buffer shall be limited as described below:

- Any portion of the buffer located inside the Urban Growth Boundary, adjacent to the Pacific Gas & Electric Company easement, shall contain substantial landscaping to discourage unlawful access onto the agricultural lands, and to lessen the potential impacts of typical agricultural activities on residential uses. Passive recreational uses such as pedestrian and bicycle trails are permitted.
- Uses located outside of the Urban Growth Boundary, within the 385-foot wide Pacific Gas & Electric Company easement, shall be limited to public infrastructure improvements necessary or appropriate to serve or protect

existing and new permitted uses within the Urban Growth Boundary, including but not limited to, alternative energy facilities, stormwater detention basins, water tanks (reservoirs), and sewer and water lines to accommodate buildout of the Vacaville General Plan.

The following goals and policies from the City's Housing Element that address new construction are applicable to the project and are listed below.

- Policy H.1 - G 1** Ensure a supply of housing of differing type, size, and affordability in order to meet Vacaville's housing needs for the current and future residents and workers within the community.
- Policy H.1 - G 4** Ensure the development and availability of housing appropriate for special needs groups including, but not limited to, young adults, young families, seniors, people with physical and developmental disabilities and homeless people.
- Policy H.1 - G 7** Establish development and construction standards that encourage energy conservation in residential areas.

City of Vacaville Zoning Ordinance (Title 14.09)

Zoning regulations for the City are included in Title 14.09 of the City's Land Use and Development Code. The Zoning Ordinance contains zoning maps and regulates land use to protect and promote public health, safety, and general welfare of citizens. Regulations include, but are not limited to, development standards, general site use regulations, regulation for the placement of buildings and structures, regulations for the provision of site improvements such as landscaping and parking, and procedures for administration of the ordinance.

The project site does not currently include City zoning because it is located outside of the City limits. The project applicant is requesting the site be pre-zoned RL-5 & RL-6, RLM-3.6 & RLM-4.5, RMH, OS, P, and CF with an Agricultural Buffer overlay zone over land immediately adjacent to the eastern boundary of the site. These zoning districts would be consistent with General Plan land use designations and planned uses for the project site.

4.5.4 Impacts

Methods of Analysis

Existing land uses in the vicinity of the project site were identified based on a site visit. Planned land uses were identified based on the City's General Plan and information provided by the City and the project applicant. The land use evaluation is based on a qualitative comparison of existing

and proposed uses on the site and their compatibility with existing land uses and planned land uses, as defined in the City's General Plan as well as other applicable local planning documents.

The California Environmental Quality Act (CEQA) Guidelines, Section 15125(d) (found in 14 CCR 15000 et seq.), states that the environmental setting of an EIR must discuss "any inconsistencies between the proposed project and applicable general plans, specific plans, and regional plans." An inconsistency with a general plan or other policy would not necessarily create an environmental impact. In some cases, a general plan policy lays out the standard by which an environmental impact is judged to be significant or less than significant. The determination of project consistency with the City's General Plan must be made by the City Council. The information provided in this section is meant to inform that decision.

The analysis below evaluates the proposed project's consistency with applicable goals and policies contained in the City's General Plan, as well as other relevant planning documents. Physical environmental impacts resulting from development of the project site are discussed in the applicable technical sections in Chapter 4 of this Draft EIR and in the Modified Initial Study contained in Appendix B. CEQA does not treat project consequences relating solely to land use, socioeconomic or population, employment, or housing issues as direct physical impacts to the environment. An EIR may provide information regarding land use, planning, and socioeconomic effects; however, CEQA does not recognize these types of project consequences as typical impacts on the physical environment. The analysis in this section discusses only general land use compatibility and land use policy consistency as opposed to analyzing the physical impacts on the environment that could occur with implementation of the project. This discussion complies with Section 15125(d) of the CEQA Guidelines, as discussed above.

Implementation of the proposed project would result in a change in land use as compared to existing conditions, but would generally be consistent with the City's underlying land use designations to develop the site for residential and neighborhood commercial uses. Changes in land use are regulated by the planning policies adopted by each local governmental jurisdiction in California. Therefore, this change in land use is evaluated in comparison to the planning goals and policies contained in the City's General Plan. General plans provide long-term goals, policies and standards for development, and all development proposals must be generally consistent with the overall land use guidance provided in a general plan. Additional land use controls are applied through the City's zoning, subdivision and grading requirements as well as other City regulations and ordinances. The project's consistency with applicable ordinances, as well as specific land use implications associated with development of the project is discussed in this section. The analyses of consistency with other planning documents (e.g., regional air quality plans) are provided in the applicable technical sections in Chapter 4 of this Draft EIR. This analysis assumes development of the project site would comply with the design criteria set forth in The Farm at Alamo Creek Specific Plan; therefore,

such policies and standards are not specifically identified as mitigation. A copy of the Specific Plan is included on the City's website at www.cityofvacaville.com/.

Impacts Addressed in the Modified Initial Study

As discussed in the Modified Initial Study (Appendix B), the project site is currently undeveloped and in active agricultural use; therefore, development of the proposed project would not divide an established community and this issue is not further addressed. The Draft Solano County Habitat Conservation Plan (Solano HCP) has not yet been adopted. However, the City's General Plan includes policies consistent with the draft Solano HCP and implementation of these policies would ensure that the project is consistent with the Solano HCP when adopted. This is discussed in greater detail in Section 4.2, Biological Resources. Therefore, consistency with an adopted conservation plan or natural community conservation plan is not further addressed.

Thresholds of Significance

Consistent with Appendix G of the CEQA Guidelines, the County's General Plan, and professional judgment, a significant impact would occur if development of the proposed project would do any of the following:

- Conflict with any regional land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

Impacts and Mitigation Measures

4.5-1: Implementation of the proposed project may conflict with a regional land use plan, policy or regulation. This would be a potentially significant impact.

Land Use Plans

The proposed project is subject to a determination of consistency with the Travis Air Force Base LUCP. The project site is identified in the LUCP as within Compatibility Zone D, which triggers ALUC and Federal Aviation Administration review of structures with a proposed height of over 200 feet. The project includes residential development and would not include buildings that exceed 200 feet in height. Compatibility Zone D does not limit residential development or other uses.

The Travis Air Force Base LUCP does not allow land uses within 12,500 feet of the Travis Air Force Base runways that may cause bird strike hazards to aircraft in flight. A small portion of the project site, approximately 56 acres falls within the edge of the outer perimeter of the LUCP, but outside its Bird Strike Hazard Zone. Land uses typically not allowed within either the Bird Strike

Hazard Zone or the outer perimeter include wetlands, agricultural operations, landfills, or golf courses that attract birds. A Wildlife Hazards Analysis (WHA) prepared for the project determined that the proposed project would affect the attractiveness of the site for birds (see Appendix D). The WHA notes that the proposed project's removal of approximately 200 acres of irrigated agricultural activities could reduce attractiveness to foraging birds. The WHA also identified two aspects of the proposed project that could attract birds. These aspects include the recreational fields included as part of the Community Park, which can attract larger grazing birds such as Canada geese and coots, and the 9.6-acre detention basin/pond that would provide open water on a year-round basis, which can attract a range of larger-bodied water birds such as ducks, geese, and swans. Various landscaping trees proposed for the site could attract flocks of smaller and medium-sized birds, but these smaller birds are not a primary concern within the outer perimeter area.

The Community Park would include large ball fields for baseball, football, and soccer games. However, because this is a Community Park that would serve a large area of the City it is anticipated the ball fields would be heavily used which would help minimize or eliminate bird activity. The detention basin could be an attractant to waterfowl which could potentially present hazards to aircraft. The proposed project includes a low three to four-foot high tubular fence that would surround the basin in addition to landscaping, including trees, which would be provided around the basin to help screen the water minimizing the attractiveness to waterfowl. However, there is still the potential the basin could be an attractant to birds and other waterfowl. The project site is currently composed of agricultural operations, which when replaced with the project's proposed land uses would result in an overall net decrease in bird attractants at the site. The detention basin could be considered an attractant for waterfowl and other birds that could result in a potential hazard to aircraft associated with a bird strike and be inconsistent with the Travis Air Force Base LUCP. This impact would be **potentially significant**.

City of Vacaville General Plan Policies

As required under CEQA, this analysis examines the consistency of the proposed project with applicable land use policies in the City's General Plan. Table 4.5-1 lists the General Plan policies related to land use that are applicable to the proposed project along with a determination of the project's consistency with each policy.

The General Plan designates two growth areas, East of Leisure Town Road Growth Area and the Northeast Growth Area, both are within the City's UGB (City of Vacaville 2015a, p. LU-10). The project site is designated as a future Specific Plan in the City's General Plan and is also designated as part of the East of Leisure Town Road Growth Area (City of Vacaville 2015a, Figure LU-2). The General Plan land use diagram (City of Vacaville 2015a, Figure LU-6) designates the site as Residential Low Density (3.1-5 units/acre), Residential Low-Medium

Density (5.1-8.0 units/acre), Agricultural Buffer, and Public Open Space. The proposed project's land uses and development assumptions are consistent with the City's General Plan with the exception of the eastern approximately 60-acre portion of the site designated UR. The General Plan notes that lands designated UR are "applied to relatively large, contiguous, and undeveloped geographic areas where comprehensive planning must occur prior to urbanization. The purpose of assigning the UR designation, rather than specific land use designations in the East of Leisure Town Road Growth Area, is to demonstrate that the City eventually expects urban development in these areas, while also allowing flexibility in planning for these uses in the future."

The General Plan EIR Study Area designated land uses within a slightly larger area than what is shown on the City's adopted Land Use map. The EIR Study Area included the portion of the project site designated UR and evaluated a maximum of 2,340 residential units in the East of Leisure Town Growth Area. The General Plan EIR assumed low density residential uses would be developed in the UR portion of the project site. General Plan Policies LU-17.1 and LU-17.4 contemplate the development of the project site with a total of 768 dwelling units (LU-17.1) and to permit a general plan amendment and specific plan for development of the project site without being subject to the City's Urban Reserve conversion processes described in Policies LU-P19.1, LU-P19.4, and LU-P19.5 (LU-17.4). The General Plan limits development from occurring within lands designated UR for a period of 5 years from when the General Plan was adopted (August 2015). However, Policy LU-17.4 allows grading activities and the extension of utilities to occur prior to August 11, 2020. These policies are included above in the Regulatory Setting above.

As discussed in Table 4.5-1, the project is consistent with applicable General Plan goals and policies and the impact on conflicting with these goals and policies is **less than significant**.

Regulations

Once annexed to the City the project site must be zoned consistent with the General Plan and anticipated uses of the project site. The site is currently located in unincorporated Solano County and has a County zoning designation of A-40. The project applicant is requesting a General Plan Amendment to change the UR designation to RLD and that the site be pre-zoned RL-5/RL-6, RLM-3.6 and 4.5, RMH, OS, P, and CF consistent with the City's underlying land use designations. The RL units would be located in the eastern portion of the site and adjacent to Hawkins Road. The RLM units would be primarily located in the central and western portion of the project site with the RMH units located in the central and southeastern portion of the site.

Lot sizes within the Specific Plan include RMH duet lots and single-family lots which range from 3,600 sf (RLM-3.6) to 6,000 sf (RL-6) and lot sizes range from 2,000 square feet to 10,667 square

feet. Single family residential units are permitted by right within the RL and RLM zoning designations; public playgrounds, parks and neighborhood recreation centers on a site less than 2 acres in size are conditionally permitted.

The Solano County LAFCO would also need to amend the boundaries of several special districts and reorganize services provided by the Solano Irrigation District, County Lighting Service Area, Vacaville Fire Protection District, Vacaville Elmira Cemetery District, and the Solano Resource Conservation District to accommodate the City providing these services.

These zoning designations are consistent with the underlying General Plan land use designations and planned residential and open space uses on the site, with the exception of the portion of the site designated UR. However, the RLD land use designation and RLM zoning for this portion of the site is consistent with the City's updated General Plan policies and intent to develop this area with residential uses. The proposed project has generally been designed to comply with the City's Zoning Ordinance and would not conflict with provisions contained in the Land Use and Development Code. Therefore, the impact would be **less than significant**.

Mitigation Measures

The WHA recommends including some changes to the area around the detention basin in order to reduce its attractiveness to birds. Compliance with Mitigation Measure LU-1 would make the detention basin less attractive to birds and provide a physical and visual deterrent for waterfowl, which would reduce the significance of the impact to less than significant.

- LU-1** The project applicant shall design the detention basin and the area surrounding the basin to minimize attractiveness for waterfowl. This shall include the following:
- The basin shall be configured to reduce the line of sight for birds.
 - The basin shall be designed with a slope of not less than 2:1.
 - A water aerator (fountain) shall be included in the basin.
 - Educational signage shall be included in areas around the basin stating no feeding of birds is allowed.

**Table 4.5-1
General Plan Policy Consistency**

Policy Number	Policy	Consistency
Policy LU-P2.1	<p>Require lands outside, but adjacent to, the current City limits to annex into the City of Vacaville as a prerequisite of development. Do not provide city utility services, water, and sanitary sewer to new development outside the City limit (with the exception of sanitary sewer for infill in the Elmira area) unless the City Council with the approval of the Local Agency Formation Commission (LAFCO), approves exceptions in situations where the following three conditions are met:</p> <ul style="list-style-type: none"> • The area in question cannot annex into the City immediately, because it is not currently contiguous to the City limit. • The property owner signs a recorded, irrevocable agreement to annex the property to the City when such annexation is requested by the City. • The development is consistent with this General Plan and is found to meet all appropriate City development standards. 	<p>Consistent. The project site is within the City’s planned Sphere of Influence and all proposed residential uses are within the City’s UGB. As part of the project, the City is proposing to annex the project site into the City limits. LAFCO will review the City’s request to annex the project site and will evaluate the ability of service providers to serve the site, as part of the annexation evaluation.</p>
Policy LU-P2.2	<p>Require that specific plans be prepared for new areas brought into the city for development. Such specific plans must provide a coordinated plan for land use, public facilities, and public services.</p>	<p>Consistent. The Farm at Alamo Creek Specific Plan has been prepared for the project site. This Specific Plan provides a comprehensive approach that defines the various land uses, public facilities, and public services to</p>

**Table 4.5-1
General Plan Policy Consistency**

Policy Number	Policy	Consistency
	Prohibit individual, piecemeal developments within these outlying areas.	accommodate future development. In addition, the Specific Plan includes design criteria and discusses all required elements of development from utility infrastructure to circulation, and landscaping, which would ensure that development is cohesive and coordinated.
Policy LU-P3.4	Do not approve new development unless there is infrastructure in place or planned to support the growth.	Consistent. The project site is adjacent to existing City infrastructure in Leisure Town Road to the west, Elmira Road and the Brighton Landing Specific Plan area to the south, and Hawkins Road to the north. The project would construct on-site water, sewer and storm drain systems that would connect to the City's existing infrastructure located in adjacent roadways. Infrastructure is in place to support development of the project.
Policy LU-P3.5	Encourage new development to consider transit, pedestrian, and bicycle circulation during the design phase.	Consistent. The Specific Plan includes separated sidewalks throughout the project site, trails along Old Alamo Creek, and a series of multi-use sidewalks that are designed for bikes and pedestrians. In addition, the project includes providing a bus stop along Leisure Town Road.
Policy LU-P3.6	Require that new development or new Specific Plan areas be located immediately adjacent to existing development or infrastructure.	Consistent. The project site is located across Leisure Town Road from existing residential development within the City and is located north of the recently approved Brighton Landing Specific Plan project, which is currently under construction. This area is designated in the General

**Table 4.5-1
General Plan Policy Consistency**

Policy Number	Policy	Consistency
		Plan as part of the East of Leisure Town Growth Area, which was anticipated for development with a mix of residential densities and neighborhood commercial uses.
Policy LU-P5.2	Lands East of Leisure Town Road: In conjunction with approval of any new urban development on lands shown as “Area B” on Figure LU-3, which consists of lands that are inside the Urban Growth Boundary but east of Leisure Town Road and between the Locke Paddon Community areas on the north and New Alamo Creek on the south, the City shall require such development to mitigate its impact on agricultural and open space lands by preserving, to the extent consistent with applicable law, for each acre of land developed, at least 1 acre of land outside the Urban Growth Boundary but within Pleasants Valley, Upper Lagoon Valley, or Vaca Valley, or any other location that is within 1 mile of the Urban Growth Boundary. Alternatively, to the extent consistent with applicable law, such development may pay an equivalent in-lieu fee as determined by the City in consultation with the Solano Land Trust. Lands acquired directly or with fees collected pursuant to this requirement shall first	Consistent. The project will be required to provide agricultural mitigation at a 1:1 ratio through its conditions of approval.

**Table 4.5-1
General Plan Policy Consistency**

Policy Number	Policy	Consistency
	<p>be offered to the Solano Land Trust. Any such fees transferred to the Solano Land Trust may only be used to acquire or protect lands outside of the Urban Growth Boundary but within 1 mile of the Urban Growth Boundary, or within Pleasants Valley, Upper Lagoon Valley, or Vaca Valley. Acquisitions pursuant to this requirement shall be coordinated with the Solano Land Trust.</p> <p>If for any reason adequate land to meet the conservation goals described in the Vacaville General Plan, and in particular this section, cannot be identified or acquired, the City and the Solano Land Trust, or if the Solano Land Trust declines to participate, the City and another land conservation entity shall meet and confer to identify other areas where conservation acquisitions can occur at a reasonable cost and to satisfy the conservation goals described in this section.</p>	
Policy LU-P5.3	<p>Coordination with Future Solano County LAFCO Open Space or Agricultural Land Mitigation Program: If the Solano County Local Agency Formation Commission (LAFCO) adopts an open space or agricultural land mitigation program applicable to the</p>	Consistent. See above.

**Table 4.5-1
General Plan Policy Consistency**

Policy Number	Policy	Consistency
	<p>area defined in Policy LU-P5.2, lands defined therein shall be subject only to the requirements of the LAFCO mitigation program, provided that if the requirement described in Policy LU-P5.2 provides greater mitigation than the LAFCO requirement, the incremental difference between the two programs shall be imposed in addition to the LAFCO requirement to the maximum extent permitted by State law. To the extent the LAFCO requirement and this requirement overlap, development shall be subject to only the LAFCO requirement.</p>	
<p>Policy LU-P5.6</p>	<p>Land Use Restrictions Outside the Urban Growth Boundary: In those areas located outside the Urban Growth Boundary and within the City’s land use jurisdiction, only the following shall be permitted: (1) all uses permitted in the Vacaville General Plan or the Land Use and Development Code on the Submittal Date, or existing on that date, shall continue to be permitted, and in the event any such use is damaged or destroyed by natural disaster, fire, or Act of God, it may be rebuilt and continued; (2) new uses consistent with the General Plan as amended by the Urban Growth Boundary Initiative;</p>	<p>Consistent. The portions of the Farm at Alamo Creek Specific Plan slated for development are located inside of the City’s UGB.</p>

**Table 4.5-1
General Plan Policy Consistency**

Policy Number	Policy	Consistency
	<p>and (3) any infrastructure improvements necessary or appropriate to serve or protect existing uses and new permitted uses within the Urban Growth Boundary, including, but not limited to, construction and/or expansion of public facilities and utilities outside the Urban Growth Boundary that support such development elsewhere, such as stormwater detention basins, water tanks (reservoirs), sewer and water lines, and wastewater treatment plants to accommodate buildout of the Vacaville General Plan.</p>	
Policy LU-P6.2	<p>Require that infrastructure and service improvements for future annexation or growth areas do not create an undue burden on existing City infrastructure and services.</p>	<p>Consistent. The project site is adjacent to existing City infrastructure in Leisure Town Road to the west, Elmira Road and the Brighton Landing Specific Plan area to the south, and Hawkins Road to the north. The project would construct on-site water, sewer and storm drain systems that would connect to the City’s existing infrastructure. The increase in demand for public utilities is addressed in Section 4.6 of this EIR. Based on the analysis the increase in demand for City utilities and services would not create an undue burden on existing City infrastructure and services.</p>

**Table 4.5-1
General Plan Policy Consistency**

Policy Number	Policy	Consistency
Policy LU-P6.3	Ensure that future annexations are consistent with the overall goals and policies of the General Plan and do not adversely impact the City’s fiscal viability, environmental resources, infrastructure and services, and quality of life.	Consistent. The project site is within the City’s sphere of influence and UGB and is requesting to be annexed to the City. The project’s consistency with applicable general plan policies is addressed in this table and impacts to the provision of utilities and biological resources are addressed in the applicable sections of this EIR.
Policy LU-P11.3	<p>Require a Planned Development permit for all residential development meeting one or more of the following criteria, consistent with the adopted Planned Development Regulations (the Planned Development permit process is intended to increase flexibility for these types of development by allowing deviations from typical development standards such as setbacks, building height, landscaping, parking, and design):</p> <ul style="list-style-type: none"> • Multi-family projects of ten units or more. • Mixed use. • A location potentially subject to natural or man-made geologic hazards, including hillside areas. • Any project exceeding the maximum density allowed by the land use designation or with 50 units or more. 	Consistent. The project includes a mix of low and medium-high residential densities, and neighborhood commercial uses which would require the project applicant obtain a Planned Development permit. The Specific Plan shall serve as the Planned Development as part of the project approval, as noted in Chapter 3, Project Description.
Policy LU-P11.5	Prohibit residential neighborhood design that places access to single family lots on arterial streets.	Consistent. The Specific Plan includes a mix of roadways including arterial streets. The main arterial is Carroll Way

**Table 4.5-1
General Plan Policy Consistency**

Policy Number	Policy	Consistency
		that bisects the center of the project site. All residences adjacent to Carroll Way are designed for vehicle access to be from the rear to ensure no driveways front on the arterial.
Policy LU-P11.6	Design residential neighborhoods to avoid placing access to single family lots on collector streets, and limit the number of intersections along collector streets.	Consistent. Access to residences is from neighborhood streets. There is no driveway access onto collector streets included within the Specific Plan and the number of intersections is limited to only a few.
Policy LU-P12.1	Encourage development that broadens the choice of type, size, and affordability of housing in Vacaville.	Consistent. The Farm at Alamo Creek Specific Plan includes a variety of residential uses including Residential Low Density, Residential Low-Medium Density, and Residential Medium-High Density to serve a range of households and economic backgrounds.
Policy LU-P12.2	Provide for transitions between higher-density and lower-density housing.	Consistent. The Specific Plan includes residences that range in size from one and two-story buildings to two and three story duet units. The duet units are located in the central and southern portions of the plan area. The duet units are higher density, but are still consistent with the single-family residences. Therefore, no transition is required to comply with this policy.
Policy LU-P13.1	Ensure that new commercial development is compatible with the character and scale of existing	Consistent. The Farm at Alamo Creek Specific Plan includes two area s designated for Neighborhood

**Table 4.5-1
General Plan Policy Consistency**

Policy Number	Policy	Consistency
	and planned adjoining land uses.	Commercial uses adjacent to Leisure Town Road in the northwest and southwest portion of the site. The commercial development in the northwest portion of the site is at the intersection of Hawkins Road and Leisure Town Road. Residential Low-Medium Density borders the site to the south and is located across the street to the east. The neighborhood commercial uses would be designed consistent with the Specific Plan, which ensures that new development is compatible in scale and character with on-site and off-site land uses.
Policy LU-P13.2	Provide neighborhood and community shopping centers of various sizes and locations to ensure easy access from nearby residential areas to daily commercial and service needs.	Consistent. The Farm at Alamo Creek Specific Plan includes two areas of Neighborhood Commercial uses adjacent to Leisure Town Road. These two Neighborhood Commercial uses would serve both the proposed project as well as the existing residential uses located along the west side of Leisure Town Road. Locating these uses adjacent to Leisure Town Road ensures easy access is provided from existing nearby residential neighborhoods.
Policy LU-P13.3	Locate shopping centers and neighborhood commercial facilities at the intersection of major thoroughfares and, where appropriate, adjacent to multi-family housing and transit.	Consistent. The two areas of Neighborhood Commercial area located at the intersections of Hawkins Road /Leisure Town Road and Elmira Road/Leisure Town Road. The development located at the intersection of Hawkins Road/Leisure Town Road is also adjacent to land

**Table 4.5-1
General Plan Policy Consistency**

Policy Number	Policy	Consistency
		designated for Residential Low-Medium Density.
Policy LU-P13.9	Minimize conflicts between commercial areas and residences by requiring adequate buffers and screening.	Consistent. The two commercial areas are located in the northwest and southwest portion of the plan area, adjacent to Leisure Town Road. Consistent with the City’s development standards, sound walls would be provided along the southern boundary of the commercial area in the northwest corner of the plan area that abuts adjacent residences. A setback and trail is located adjacent to the eastern boundary of the commercial area located in the southwest corner of the plan area to buffer this area from the adjacent play-4-all park.
Policy LU-17.1	<p>Limit residential development within the East of Leisure Town Road Growth Area to 2,455 dwelling units with the following general assumptions:</p> <ul style="list-style-type: none"> • Brighton Landing Specific Plan Area: 780 dwelling units • Roberts’ Ranch Specific Plan Area (See Figure LU-2): 785 dwelling units • The Farm at Alamo Creek Specific Plan Area (North of Elmira Road and South of the Hawkins Road prior to realignment, see Figure LU-2): 768 dwelling units (after realignment of Hawkins 	Consistent. The Farm at Alamo Creek Specific Plan includes 768 single-family attached and detached residences consistent with this policy and the City’s growth projections for this site.

**Table 4.5-1
General Plan Policy Consistency**

Policy Number	Policy	Consistency
	<p>Road, approximately 20 dwelling units would be located north of Hawkins Road within The Farm at Alamo Creek Specific Plan Area)</p> <ul style="list-style-type: none"> • Properties north of the Hawkins Road (prior to realignment): 122 dwelling units <p>Require a General Plan Amendment for residential development in excess of this amount.</p>	
Policy LU-P17.2	The East of Leisure Town Road Growth Area shall include a mixture of housing densities, and attached and detached housing types consistent with the adopted land use diagram.	Consistent. The Specific Plan includes a mixture of Low Density, Low-Medium Density, and Medium-High Density residential uses in attached and detached units. The land uses are consistent with the City’s General Plan land use map in the western portion of the site. Low density residential land uses are proposed in the eastern portion of the site and area consistent with policies LU-P17.1 and 17.4.
Policy LU-P17.3	When considering specific plan proposals for development on lands designated Residential High Density in the East of Leisure Town Road Growth Area, ensure that overall development in the East of Leisure Town Road Growth Area is on track to provide at least 13 percent of the total residential units as attached, multi-family units.	Consistent. The Specific Plan includes 184 attached, multi-family units which accounts for 24% of the total number of units.

**Table 4.5-1
General Plan Policy Consistency**

Policy Number	Policy	Consistency
Policy LU-P17.4	<p>The Farm at Alamo Creek Specific Plan Area is located north of Elmira Road and south of Hawkins Road (prior to realignment, See Figure LU-2). The eastern approximately 60 acres of this future specific plan area is under the same ownership as most of the western portion, and was inadvertently split by an Urban Reserve designation in the 2015 General Plan. A general plan amendment and specific plan may be considered for this area without being subject to the Urban Reserve conversion processes described in Policy LU-P19.1, Policy LU-P19.4, and Policy LU-P19.5 provided that no subdivision final map is recorded that would create individual residential or urban use lots on the eastern original 60-acre urban reserve portion prior to August 11, 2020. Grading activities and the extension of utilities on or through the 60-acre original urban reserve portion may be permitted prior to August 11, 2020 as required to facilitate the development of adjacent lands already designated for urban uses.</p>	<p>Consistent. This policy was recently adopted by the City to clarify the timing of development within the UR area. The proposed project is consistent with this policy. Development on the portion of the site currently designated UR would not occur until 2020. Only grading and installation of utilities would occur on this portion of the project site.</p>
Policy LU-P17.5	<p>Require that specific plans be prepared for development in the East of Leisure Town Road Growth Area to ensure that coordinated plans for</p>	<p>Consistent. The Farm at Alamo Creek Specific Plan has been prepared for proposed development within the East of Leisure Town Road Growth Area. The Specific Plan</p>

**Table 4.5-1
General Plan Policy Consistency**

Policy Number	Policy	Consistency
	<p>land uses, public facilities, and public services are created for such area, and require that these specific plans are consistent with the City’s updated infrastructure master plans that account for development in the East of Leisure Town Growth Area.</p>	<p>includes a combination of residential low density, residential low-medium density, residential medium-high density development, neighborhood commercial, open space and parks. Chapter 8, Public Facilities, of the Specific Plan provides guidelines for the development of infrastructure facilities necessary to serve the project. The project’s infrastructure master plans have been prepared consistent with the City’s infrastructure plans for future development within the East of Leisure Town Road Growth Area.</p>
<p>Policy LU-P17.6</p>	<p>Require that specific plans for the East of Leisure Town Road Growth Area include a diagram showing the distribution of land uses and define permitted land uses, major public facilities (including schools, parks, roads, water, sewer, and drainage facilities), phasing, infrastructure financing mechanisms, interim fire protection measures, and any other elements that may be needed to ensure an orderly development process with minimal adverse impacts to the existing community. The specific plans shall be consistent with the City’s master infrastructure plans prepared for the East of Leisure Town Road Growth Area.</p>	<p>Consistent. The Farm at Alamo Creek Specific Plan includes diagrams showing the distribution of residential uses, commercial and public facilities uses. Additionally, the Specific Plan includes a diagram of the zoning on the project site and lists the permitted and conditionally permitted land uses within each designation. Chapter 8 of the Specific Plan includes a discussion of the public facilities required for the project and guidelines to ensure that development meets City requirements for provision of these services and facilities. The project application also includes a proposed phasing plan indicating how all facilities and services will be provided during buildout of the project.</p>

**Table 4.5-1
General Plan Policy Consistency**

Policy Number	Policy	Consistency
Policy LU-P17.9	Require residential specific plans within the East of Leisure Town Road Growth Area to contain a component of housing designed to attract business executives and professionals.	Consistent. The Specific Plan includes large-lot, low density residential uses in the eastern portion of the site. It is anticipated these homes would be attractive to business executives and other professionals.
Policy LU-P17.10	Require Specific Plans within the East of Leisure Town Growth Area to provide a wide variety of lot sizes and housing types. Lots located adjacent to the Agricultural Buffer, north of Elmira Road, shall be 10,000 square feet in size.	Consistent. The Specific Plan includes a wide variety of residential land uses to allow a wide variety of lot sizes and housing types. The Specific Plan includes low density residential, low-medium density and medium-high density residential uses. In addition, 24% of the total units would be attached multi-family. Lots adjacent to the agricultural buffer in the eastern portion of the site are proposed for residential low density, which would consist of lot sizes up to 10,000 square feet.
Policy LU-P17.11	Require specific plans within the East of Leisure Town Road Growth Area to incorporate detention basins, agricultural buffer areas, and public open spaces into the physical amenities designed into the neighborhood. These amenities could include trails, passive open spaces, recreational spaces, or other features designed to create innovative, attractive neighborhood design.	Consistent. The Farm at Alamo Creek Specific Plan includes an agricultural buffer area along the eastern boundary of the project site, and an on-site detention basin to address stormwater runoff. The project also includes a variety of project amenities including a public all-abilities park, a community park, and trails throughout the project site consistent with this policy.

**Table 4.5-1
General Plan Policy Consistency**

Policy Number	Policy	Consistency
Policy LU-P19.1	Require a General Plan amendment to convert lands designated as Urban Reserve to other land use designations. Require all conversions to make the findings identified in an Urban Reserve Ordinance described in Action LU-A19.1, below.	Consistent. The project applicant has requested a General Plan Amendment to convert the land designated UR to low density residential. Policy LU-17.4 addresses the project's consistency with the Urban Reserve Ordinance.
Policy LU-P19.5	Evaluate General Plan amendment requests to convert lands designated as Urban Reserve to other land use designations no more often than every 5 years. Applications to amend the General Plan to convert Urban Reserve lands must be consistent with the City's Municipal Service Review and Comprehensive Annexation Plan.	Consistent. The project applicant has a General Plan Amendment to convert the land designated UR to low density residential. The City Council has subsequently amended General Plan policies LU P17.1 and 17.4 to specifically include the project.
Policy COS-P4.1	Within the area east of Leisure Town Road, south of the Locke Paddon Community and north of the railroad tracks, as shown in Figure LU-6 in the Land Use Element, require new development to maintain a 300- to 500-foot wide agricultural buffer along the eastern boundary of all residential development and existing agricultural lands. Require that uses within the agricultural buffer be limited to passive open space uses that are not accessed by a large number of employees or the general public at one time. Permitted uses within the buffer shall be limited as	Consistent. The project site is located within the City's UGB. The project includes a 300-foot wide agricultural buffer on the eastern boundary as required by the City to minimize impacts between residential uses and existing agricultural uses. The buffer is located immediately north of the detention basin. The proposed passive recreational uses will not be accessed by a large number of persons at the same time because they do not include features such as playgrounds, amphitheaters or event spaces.

**Table 4.5-1
General Plan Policy Consistency**

Policy Number	Policy	Consistency
	<p>described below:</p> <ul style="list-style-type: none"> • Any portion of the buffer located inside the Urban Growth Boundary, adjacent to the Pacific Gas & Electric Company easement, shall contain substantial landscaping to discourage unlawful access onto the agricultural lands, and to lessen the potential impacts of typical agricultural activities on residential uses. Passive recreational uses such as pedestrian and bicycle trails are permitted. • Uses located outside of the Urban Growth Boundary, within the 385-foot wide Pacific Gas & Electric Company easement, shall be limited to public infrastructure improvements necessary or appropriate to serve or protect existing and new permitted uses within the Urban Growth Boundary, including but not limited to, alternative energy facilities, stormwater detention basins, water tanks (reservoirs), and sewer and water lines to accommodate buildout of the Vacaville General Plan. 	

**Table 4.5-1
General Plan Policy Consistency**

Policy Number	Policy	Consistency
<i>Housing Element</i>		
Policy H.1 - G 1	Ensure a supply of housing of differing type, size, and affordability in order to meet Vacaville's housing needs for the current and future residents and workers within the community.	Consistent. The project provides a range of housing that would include differing types and sizes of homes including medium-high density residential. The Specific Plan is designed to incorporate a variety of housing to serve a wide range of buyers and residents, including families, young professionals, and “empty-nesters”.
Policy H.1 - G 4	Ensure the development and availability of housing appropriate for special needs groups including, but not limited to, young adults, young families, seniors, people with physical and developmental disabilities and homeless people.	Consistent. The project provides a range of housing that would include differing types and sizes of homes. The Specific Plan incorporates recreational amenities (parks, trails and open space) and pedestrian connectivity intended to provide for needs of young families and seniors, and to ensure ease of mobility throughout the community. Housing types on a wide variety of lot sizes are intended to allow for housing available to a variety of housing and economic needs in the City.
Policy H.1- G 7	Establish development and construction standards that encourage energy conservation in residential areas.	Consistent. The project has been designed consistent with Title 24 and the 2017 California Building Code for Energy Efficiency; includes energy-efficient appliances consistent with local and state laws; uses biofiltration-swales and vegetated swales to pre-treat stormwater. The Specific Plan mobility standards establish a network of pedestrian/bike paths that provide connectivity to

**Table 4.5-1
General Plan Policy Consistency**

Policy Number	Policy	Consistency
		destinations within and adjacent to the Plan area. Landscape standards establish planting requirements for shade trees within residential areas, an emphasis on native, drought tolerant species, and building orientation is designed to encourage use of solar access.

4.5.5 Cumulative Impacts

The land use analysis in an EIR does not typically include a discussion of cumulative impacts because the consistency analysis for applicable land use goals and policies and compatibility with existing adjacent uses is not an additive effect.

4.5.6 References

City of Vacaville. 1998. City of Vacaville Land Use and Development Code Title 14.09 “Zoning Ordinance.” Adopted in 1996; last amended in 1998. Accessed October 2017. <http://www.codepublishing.com/CA/Vacaville/>.

City of Vacaville. 2013. *City of Vacaville General Plan and Energy Conservation Action Strategy Draft EIR*. Prepared for the City of Vacaville by Placeworks. October 25, 2013.

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Solano County. 2002. *Travis Air Force Base Land Use Compatibility Plan*. Prepared for Solano County by Shutt Moen Associates. June 13, 2002.

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4.6 PUBLIC UTILITIES

4.6.1 Introduction

This section describes existing public utilities (wastewater, solid waste collection and disposal, and energy resources), that would serve the project site, and identifies anticipated demand for these services resulting from development of The Farm at Alamo Creek Project (proposed project).

A comment letter was received by the Solano Local Agency Formation Commission (Solano LAFCO) in response to the Notice of Preparation (NOP), which expressed concern that fiscal impacts on special districts serving the project area may result in environmental impacts. The Solano LAFCO suggested that any potential impacts to the Solano Irrigation District, County Lighting Service Area, and other agencies should be addressed within the Public Services section of the EIR. All concerns related to wastewater, solid waste collection and disposal, and energy resources are addressed in this section. The Modified Initial Study included in Appendix B addresses impacts to water supplies, fire and police protection, schools, and libraries. A copy of the NOP and comments received is included in Appendix A. Concerns regarding stormwater are addressed in Section 4.4, Hydrology and Water Quality.

Information to prepare this section was obtained from the City of Vacaville General Plan (City of Vacaville 2015a) and City of Vacaville General Plan and Energy Conservation Action Strategy Environmental Impact Report (General Plan EIR) (City of Vacaville 2013a), the 2015 Urban Water Management Plan Update (2015 UWMP) (City of Vacaville 2016a), the City of Vacaville Energy and Conservation Action Strategy (City of Vacaville 2015b), the City of Vacaville Utilities Department (City of Vacaville Utilities Department 2017), and individual service providers.

4.6.2 Environmental Setting

The Environmental Setting describes the existing wastewater¹ systems for the City of Vacaville (City) that serve the project area, as well as information on solid waste collection and disposal and energy supply. Because the increased demand in water supply associated with buildout of the city, which includes the project site, was addressed in the City's General Plan EIR, water supply is not evaluated in this section, but discussed in the Modified Initial Study included in Appendix B.

Water and sewer services would be provided by the City once the site is annexed. The proposed project would include new water, sewer, and storm drain infrastructure on site to serve the commercial and residential development designed in compliance with City specifications. Currently there are no water, sewer, or storm drain facilities within the project site, with the

¹ Sewer and wastewater are terms used interchangeably throughout this analysis.

exception of a Solano Irrigation District (SID) right-of-way that borders the site on the west and north and traverses the middle of the property from north to south used to convey irrigation water through an earthen-lined ditch. The project's on-site water, sewer, and storm drain lines are proposed to be located within the proposed road/driveway rights-of-way within the project site.

The project's Homeowners Association (HOA) and/or Lighting and Landscape District would maintain the clubhouse/pool, two mini-parks, landscaping surrounding the detention basin area, lights provided in the parks, along roadways and in other public spaces as well as landscaping along the trails, medians and parkway strips. Park maintenance of the public parks would be provided through a Park Maintenance District and/or the City's Parks and Recreation Department.

Existing Site

Water Supply

Existing 18-inch potable water mains are located in Leisure Town Road and Elmira Road that the project's on-site water infrastructure would tie into to provide a looped system. The project would tie into the City's water system in three locations along Leisure Town Road and two locations along Elmira Road, as shown on Figure 4.6-1.

Wastewater

Wastewater collection and treatment for most developed areas within the City limits is provided by the City of Vacaville. The project site would be served by the City's wastewater infrastructure if the project is approved and the site annexed into the City. The City's sewer service includes operation and maintenance of gravity sewers, lift stations, force mains, and the Easterly Wastewater Treatment Plant (Easterly WWTP). Existing trunk sewer lines are located along Elmira Road and Leisure Town Road near the project site. There is no sewer infrastructure currently on the project site.

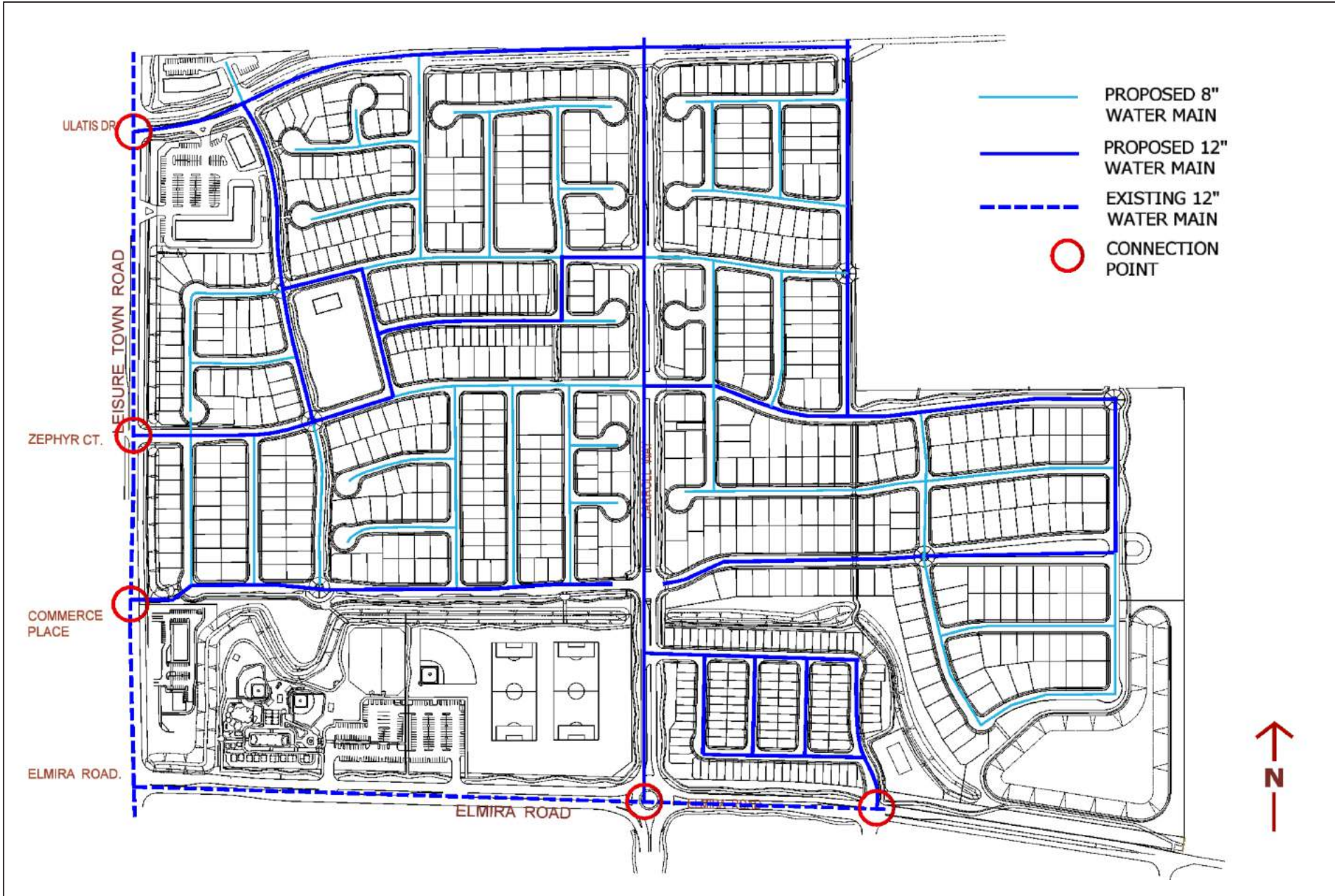


Figure 4.6-1
Water Distribution System

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Easterly Wastewater Treatment Plant

The Easterly WWTP is located east of the City adjacent to the unincorporated town of Elmira. The Easterly WWTP is operated by the City Utilities Department. Treated effluent from the Easterly WWTP flows into Old Alamo Creek. The Easterly WWTP treats an average of 7.5 million gallons per day (mgd) of wastewater and has a design capacity of 15 mgd sanitary base flow (SBF) and peak wet weather flows (PWWF) of 55.2 mgd (City of Vacaville Utilities Department 2017). The Easterly WWTP is permitted under National Pollution Discharge Elimination System (NPDES) permit No. CA0077691. In order to comply with provisions of the NPDES permit, the Easterly WWTP has recently completed treatment upgrades in order to provide tertiary filtration, advanced disinfection, denitrification, elimination of effluent blending, and related improvements (City of Vacaville 2013a). These upgrades do not affect the treatment capacity of the plant.

Project Area Wastewater Infrastructure

Wastewater (or sewer) from the project would be conveyed to the combined Alamo/Fry trunk line / CSP-S trunk line. The DIF 54A project would increase the capacity in this line, and it is anticipated to be constructed prior to completion of the proposed project (Cole, pers. comm. 2017). In addition, the City has plans to upsize and reroute the sewer line in Leisure Town Road across the frontage of the project site (known as DIF-38). These improvements would increase the capacity of the line and would reroute the line through the project site. This would occur alongside construction of the proposed project. No gaps in service would occur during sewer line improvements.

With this project, the project applicant would install a new 42 to 48-inch sewer main within Carroll Way that would receive flows from the future Northeast Area trunk sewer north of the project and convey flows to the new junction structure that would be constructed in Elmira Road which would then convey flows east to the Easterly WWTP.

An 18-inch sewer line would be installed in Carroll Way to serve Phase 1 of the project (see Figure 3-8 in Chapter 3, Project Description for a phasing plan). Once the 42 to 48-inch sewer line is constructed in Carroll Way this 18-inch line would be taken out of service. The project would install 8, 10 and 12-inch sewer lines within all roadways to service the commercial areas and residences.

Solid Waste

Under a franchise agreement, Recology Vacaville Solano (RVS) holds the exclusive right to provide residential, commercial, and industrial solid waste collection and hauling in the City. Recyclable material can also be taken to several drop-off recycling centers throughout the City including the Recology Vacaville Recycling Center located at 855 1/2 Davis Street. Recyclable

material collected by RVS is sent to the Recology Vallejo facility located at 2021 Broadway Street in Vallejo. Recyclable material generated by the project would be taken to the Recology Vallejo facility located in Vallejo. Unrecyclable solid waste is taken to the Hay Road Landfill located in unincorporated Solano County.

The Recology Hay Road landfill (Solid Waste Facilities Permit 48-AA-0002) has a permitted daily capacity of 2,400 tons and receives 226,777 cubic yards and 136,066 tons of solid waste per year (CalRecycle 2017a, Solano County 2011). The total capacity of the landfill is 37 million cubic yards; as of 2010 the landfill had a remaining capacity of 30.4 million cubic yards and is projected to remain open until 2077 (CalRecycle 2017a). In 2016, Vacaville's per capita disposal rate was 5.3 pounds per person per day (PPD), which was well below the City's target disposal rate of 6.5 PPD, but slightly above the statewide average of 4.5 PPD (CalRecycle 2017b).

Energy

The project also includes natural gas and electric to serve the project site. Gas and electric would be provided by Pacific Gas and Electric (PG&E). All new utilities would be installed underground, per the City's Municipal Code and the existing overhead PG&E lines would be installed underground, if feasible.

Energy Consumption

California's major sources of energy are petroleum products (i.e., gasoline, diesel, and oil), electricity and natural gas. In 2016 California generated 198,227 gigawatt hours (GWH) of electricity in-state including: 324 GWH from coal, 24,410 GWH from large hydro, 98,831 GWH from natural gas, 18,931 GWH from nuclear, 37 GWH from oil, 55,300 GWH from renewables and 394 GWH from other sources (CEC 2017a).

An overview of electricity and natural gas consumption statewide and on a local level is provided below.

Electricity

California's major electric utilities send power through roughly 200,000 miles of overhead transmission and distribution lines and an additional 70,000 miles of underground lines (CEC 2017a).

Based on data and reports compiled by the California Energy Commission (CEC), in 2015, Californians consumed 281,334 GWH of electricity (Garcia, Cary and Chris Kavalec 2017). California produces roughly 68% of its electricity from power plants located within the state and from plants located outside the state but owned by California utilities. About 32% is imported

electricity from the Pacific Northwest and the Pacific Southwest. In 2016, the total electricity imported, not counting California owned plants, was 92,341 GWH (CEC 2017a).

Electricity usage in California varies substantially by the type or function of the building, type of construction materials used, and the efficiency of each electrical device within the building. In 2016, the average annual usage of electricity for single-family residences in the U.S. was 10,764 kilowatthours (kWh), an average of 897 kWh per month (EIA 2017). In 2016, Solano County's residential energy consumption was 1020.84 million kilowatts (ECDMS 2017a).

Natural Gas

California's natural gas demand for industrial, residential, commercial and electric power generation was 2,313 billion cubic feet in 2012 (CEC 2017b). The natural gas was used to produce electricity (45%), in industrial use (25%), in residential use (21%), and in commercial uses (9%) (CEC 2017b).

Natural gas usage in residential homes varies based on the size of the unit, the type of dwelling, the number of major appliances and the construction and siting of the structure. In 2012, residential natural gas consumption totaled 6,312 thousand therms per year of which 41.7% was used for water heating, 3.61% was used for clothes dryers, 6.88% was used for cooking, 2.24% was use for pools and spas, and 45.56% was used for heating (CEC 2017b). Solano County's residential natural gas consumption in 2016 was 53.46 million therms (ECDMS 2017b).

City of Vacaville

PG&E provides electric power and natural gas to the City of Vacaville. PG&E's service area stretches north-south from Eureka to Bakersfield and west-east from the Pacific Ocean to the Sierra Nevada Mountains. Northern California-sourced gas supplies come primarily from the gas fields in the Sacramento Valley. PG&E has over 42,000 miles of natural gas distribution pipelines and 141,215 circuit miles of electric distribution. PG&E delivers 2.6 billion cubic feet of gas per day to its customers (PG&E 2017).

Based on average energy use from 2006 to 2008, residential land uses consume approximately 46% of the City's electricity demand (254 GWH) and 53% of the City's natural gas demand (13 million therms) (City of Vacaville 2013a). The City's Energy and Conservation Action Strategy (ECAS) (City of Vacaville 2015b) establishes energy conservation goals of reducing greenhouse gas emissions by 21.7% below the City's 2020 Business as usual (BAU) forecast. The ECAS includes community-wide measures aimed at reducing GHG emissions in the following nine sectors: transportation and land use; green building; renewable energy and low carbon fuels; energy conservation; water and wastewater; solid waste; parks, open space and agriculture; purchasing; and community action (City of Vacaville 2015b).

4.6.3 Regulatory Setting

Federal Regulations

Wastewater

National Pollution Discharge Elimination System Permit

Discharge of treated wastewater to surface water(s) of the United States, including wetlands, require a NPDES permit. In California, the Regional Water Quality Control Board (RWQCB) administers the issuance of these federal permits. Detailed information is required to obtain a NPDES permit, including characterization of wastewater sources, treatment and processes, and effluent quality. Whether or not a permit may be issued and the condition of a permit are subject to many factors such as basin plan water quality objectives, impaired water body status of the receiving water, historical flow rates of the receiving water, effluent quality and flow, the air quality State Implementation Plan (SIP), the California Toxics Rule, and established total maximum daily loading rates for various pollutants.

Federal and State Clean Water Act

The Porter-Cologne Water Quality Control Act gives the ultimate authority over California water rights and water quality policy to the California State Water Resources Control Board (SWRCB). In addition, the Porter-Cologne Act established nine Regional Water Quality Control Boards (RWQCBs) to ensure that water quality on a local/regional level is maintained. The project site is under the jurisdiction of the Central Valley Regional Water Quality Control Board (CVRWQCB).

Electricity and Natural Gas

Federal Energy Regulatory Commission

The Federal Energy Regulatory Commission (FERC) regulates and oversees the energy industries in the interests of the American public. The Energy Policy Act of 2005 gave FERC additional responsibilities including interstate commerce, licenses and inspections, energy markets, and penalizing energy organizers and individuals who violate FERC rules in the energy market.

State Regulations

Wastewater

General Waste Discharge Requirements for Sanitary Sewer Systems

The General Waste Discharge Requirements (WDRs) for Sanitary Sewer Systems were adopted by the SWRCB in May 2006. These WDRs require local jurisdictions to develop a sewer system

management plan (SSMP) that addresses the necessary operation and emergency response plans to reduce sanitary sewer overflows. The WDRs require that the local jurisdiction approve the SSMP; the Vacaville City Council approved the City's SSMP on July 9, 2009 and recertified it on July 8, 2014.

Waste Discharge requirements included in NPDES permits issued by the CVRWQCB are based on the following guidance documents:

- Water Quality Control Plan for the Sacramento and San Joaquin River Basins (Basin Plan)
- California Toxics Rule
- Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Plan)
- State Title 22 requirements
- Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan)

Solid Waste

California Integrated Waste Management Act – AB 939

To minimize the amount of solid waste that must be disposed of by transformation (i.e., recycling) and land disposal, the State Legislature passed the California Integrated Waste Management Act of 1989 (AB 939), effective January 1990. According to AB 939, all cities and counties are required to divert 25% of all solid waste from landfill facilities by January 1, 1995, and 50% by January 1, 2000. Solid waste plans are required to explain how each city's AB 939 plan will be integrated within the respective county plan.

Senate Bill 1016

SB 1016 enacted in 2007 changes the process for bi-annual review of a jurisdiction's source reduction and recycling element and allows the California Integrated Waste Management Board to make a finding whether each jurisdiction is in compliance with the act's diversion requirements based on the jurisdiction's change in its per capita disposal rate. No longer is a diversion rate used to calculate compliance with AB 939, but a per capita disposal rate is used that calculates the number of pounds of solid waste diverted, divided by the total population, divided by 365 days. The City's 2015 diversion rate is 4.9 pounds per day (PPD), which is below the target of 6.5 PPD, but slightly above the state average of 4.5 PPD (Cal Recycle 2017b).

Energy

California's Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24 Building Standards)

The CEC administers Title 24 Building Standards, which were established in 1978 in response to a legislative mandate to reduce California's energy consumption. Standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. California's building efficiency standards are updated on an approximately 3-year cycle. The 2016 Standards will continue to improve upon the current 2013 Standards for new construction of, and additions and alterations to, residential and nonresidential buildings. The 2016 Standards were established on January 1, 2017, following approval of the California Building Standards Commission (CEC 2017c).

Warren-Alquist Energy Resources Conservation and Development Act

The Warren-Alquist Act gives statutory authority over energy resources to the CEC. The CEC regulates energy resources coordinating research into energy supply and demand problems and to reduce the increase of energy consumption.

Local Regulations

Wastewater

Vacaville Municipal Code

Chapter 13.08, Sewers, of the Vacaville Municipal Code (City of Vacaville 2016b) contains regulations to prevent pollution, and improve the quality and quantity of waste discharge. Chapter 11.01, Development Impact Fees, describes the Sewer System Impact Fee. The Sewer System Impact Fee is required for all new development in the City to provide for the construction of sewer and wastewater facilities as needed to serve the growing demand.

Sewer System Management Plan

The City's SSMP was developed in response to the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, as described above. The SSMP was completed in June 2009 and recertified in July 2014 and provides a general framework for collection system operations, maintenance, and overflow prevention. It includes the following elements, commensurate with the statewide Waste Discharge Requirements:

- Development plan and schedule

- Goals
- Organization
- Legal authority
- Operation and maintenance programs
- Design and performance provisions
- Overflow emergency response program
- Fats, oils, and grease (FOG) control program
- System evaluation and capacity assurance plan
- Monitoring, measurement, and program modifications
- SSMP audits
- Communication program

City of Vacaville General Plan

The following goals and policies from the City of Vacaville General Plan Public Facilities and Services (PUB) Element, and Land Use (LU) Element are applicable to the proposed project.

- | | |
|-------------------------|--|
| Goal PUB-13 | Collect, transmit, treat, and dispose of wastewater in ways that are safe, sanitary, and environmentally acceptable. |
| Policy PUB-P13.3 | Require that new habitable structures located within the city limits connect to the public wastewater collection system. |
| Goal PUB-14 | Coordinate wastewater conveyance, treatment, and disposal with land use planning. |
| Policy PUB-P14.3 | Ensure that new development provides adequate funding for all wastewater infrastructure and facilities. |
| Policy PUB-P14.4 | Prohibit any development that will not maintain adequate standards for wastewater service. All wastewater service standards shall be met prior to project occupancy. |
| Policy PUB-P14.5 | Require that new development designate sewer easements or routes when tentative maps or specific plans are approved. |
| Goal LU-3 | Coordinate land development with the provision of services and infrastructure. |

- Policy LU-P3.2** Manage growth so that the quantity and quality of public services and utilities provided to existing businesses and residents will not drop below the required levels of service because of new development, except when required findings related to levels of service are made. While existing development bears some responsibility to fund improvements that will resolve such deficits, ensure that new development also funds its fair share of the costs of maintenance and depreciation of facilities.
- Policy LU-P3.4** Do not approve new development unless there is infrastructure in place or planned to support growth.
- Policy LU-P3.5** Require that new development or Specific Plan areas be located immediately adjacent to existing development or infrastructure.
- Goal LU-6** All development shall pay its own way and not result in a financial burden to existing development or services.
- Policy LU-P6.2** Require that infrastructure and service improvements for future annexations or growth areas do not create an undue burden on existing City infrastructure and services.

Energy Conservation and Action Strategy

The following community-wide measures from the *Energy Conservation and Action Strategy* are applicable to the proposed project.

Wastewater Measures

- WW-1** Support the conservation measures outlined in the City's Urban Water Management Plan and implement the City's Water Efficient Landscape requirements through the following sub-measures.
- A. For all new development, require all water use and efficiency measures to comply with City Codes.
 - D. Implement water efficient residential programs identified in the current Urban Water Management Plan.
 - F. Encourage the use of non-potable water and recovered residential rainwater for irrigation purposes.
 - G. Continue to meter with commodity rates all new connections and retrofits of existing connections.

Solid Waste

Vacaville Municipal Code

Section 8.08 of the Vacaville Municipal Code, Solid Waste, Yard Waste, and Household Hazardous Waste, regulates the collection and disposal of solid waste, yard waste, and household hazardous materials. This section also implements the provisions of the Source Reduction and Recycling Element required by AB 939 and the SB 1016 update. The City's diversion rate target is 6.4 PPD and the City's actual 2015 diversion rate was 4.9 PPD (CalRecycle 2017b). The City currently has 40 programs in place to facilitate recycling, facility recovery, public education, transformation, and source reduction (CalRecycle 2017c). In addition, residential, commercial, business, industrial and public districts are all required to provide areas for the collection of recyclable materials and solid waste per Section 14.09 of the City's Land Use and Development Code.

City of Vacaville General Plan

The following goals and policies from the City of Vacaville General Plan Public Facilities and Services (PUB) Element are applicable to the proposed project.

- Goal PUB-9** Reduce the volume of solid waste generated in Vacaville through recycling and resource conservation.

- Policy PUB-P9.3** Maintain and expand the citywide curb recycling program.

- Policy PUB-P9.4** Maintain and expand the citywide household hazardous waste collection program.

- Policy PUB-P9.5** Maintain and expand the citywide separate yard waste collection and composting program.

- Policy PUB-P9.9** Require that construction sites provide for the salvage, reuse, or recycling of construction and demolition materials and debris.

Energy Conservation and Action Strategy

The following community-wide measures from the *Energy Conservation and Action Strategy* are applicable to the proposed project.

Solid Waste Measures

- SW-1** Support waste reduction through the following sub-measures:
- A. Continue to require at least 50 percent diversion (i.e., reuse or recycling) of non-hazardous construction waste from disposal, consistent with CALGreen – the Statewide Green Building code.
 - D. Encourage the use of salvaged and recycled-content materials and other materials that have low production energy costs for building materials, hard surfaces, and non-plant landscaping. Require sourcing of construction materials locally, as feasible.

Energy

City of Vacaville General Plan

The following goals and policies from the City of Vacaville General Plan Conservation and Open Space (COS) Element are applicable to the proposed project.

Goal COS-11 Conserve energy and fuel resources by increasing energy efficiency.

Policy COS-P11.1 Require that new development incorporate energy-efficient design features for HVAC, lighting systems, and insulation that exceed Title 24.

Policy COS-P11.2 Require that site and structure designs for new development promote energy efficiency.

Energy Conservation and Action Strategy

The following community-wide measures from the *Energy Conservation and Action Strategy* are applicable to the proposed project.

Renewable Energy and Low Carbon Fuels

RE-2 Encourage residential projects of ten units or more to participate in the CEC’s New Solar Homes Partnership, which provides rebates to developers of six units or more who offer solar power in 50% of new units and is a component of the California Solar Initiative, or a similar program with solar power requirements equal to or greater than those of the CEC’s New Solar Homes Partnership.

RE-5 Require that all new buildings be constructed to allow for the easy, cost-effective installation of future solar energy systems, unless prohibited by topographical

conditions or other site specific constraints. “Solar ready” features should include: proper solar orientation (i.e., south facing roof area sloped at 20 to 55 degrees from the horizontal); clear access on the south sloped roof (i.e., no chimneys, heating vents, plumbing vents, etc.); electrical conduit installed for solar electric system wiring; plumbing installed for solar hot water system; and space provided for a solar hot water storage tank.

Energy Conservation

EC-1 Mandate the use of energy-efficient appliances in new development that meet Energy Star standards and the use of energy-efficient lighting technologies that meet or exceed Title 24 standards.

4.6.4 Impacts

Methods of Analysis

Wastewater

The analysis of impacts to wastewater treatment services is based on wastewater treatment demand generated by the proposed project compared to the thresholds of significance listed below. Wastewater demand for the proposed project was quantified based on the planned land uses and wastewater flow generation rates specified in the City’s *Sanitary Sewer System Design Standards* (City of Vacaville 2013b). The project’s total wastewater generation is calculated in Table 4.6-1, below.

**Table 4.6-1
Proposed Project Wastewater Generation**

Proposed Development	Parcel Acres	Land Use		Flow Factor		Average Dry Weather Flows (gpd) ²
		Quantity	Units	Value	Units	
Residential Low Density	74.4	334	Du ¹	240	gpd/du	80,160
Residential Low-Medium Density	41.6	250	Du	240	gpd/du	60,000
Residential Medium High Density	13.0	184	Du	240	gpd/du	44,160
Neighborhood Commercial	7.4	7.4	Acres	1,900	gpd/acre	14,060

**Table 4.6-1
Proposed Project Wastewater Generation**

Proposed Development	Parcel Acres	Land Use		Flow Factor		Average Dry Weather Flows (gpd) ²
		Quantity	Units	Value	Units	
Neighborhood Park w/ private clubhouse/pool facility	4.7	4.7	Acres	1,500	gpd/acre	7,050
Public/Institutional	14.6	14.6	Acres	0	gpd/acre	0
Park	21.9	21.9	Acres	0	gpd/acre	0
Public Open Space	9.1	9.1	Acres	0	gpd/acre	0
Community Facilities	19.6	19.6	Acres	0	gpd/acre	0
Agricultural Buffer	4.3	4.3	Acres	0	gpd/acre	0
					Total	205,430 gpd

Notes:¹ du = dwelling Unit² gpd = gallons per day**Source:** City of Vacaville 2013b

As shown in Table 4.6-1, the project's total wastewater demand would be 205,430 gpd or approximately 0.21 million gallons per day (mgd) average dry weather flows (ADWF). Using a peaking factor of 2.5, the project's peak dry weather flow would be approximately 0.51 mgd.

Solid Waste

The analysis of impacts to landfill capacity is based on the amount of solid waste that would be generated by the proposed project compared to the thresholds of significance listed below. Solid waste generation was calculated for the project site based on the City's demand rate for solid waste of 4.9 pounds per resident per day (City of Vacaville 2013a). The project's total solid waste generation is calculated in Table 4.6-2 below.

**Table 4.6-2
Proposed Project Solid Waste Generation**

Proposed Use	Demand Factor (lbs/person/day)	Residents ¹	Solid Waste Generation (lbs/day)	Solid Waste Generation (tons/year)
Single-family Residential	4.9	2,104	10,309.6	1,879.8
Total			10,309.6 lbs/day	1,879.8 tons/year

Notes:¹ Based on the City's person per household of 2.74 (City of Vacaville 2015a) and a total of 768 units**Source:** City of Vacaville 2013a

Thresholds of Significance

Consistent with Appendix G of the CEQA Guidelines, the County's General Plan, and professional judgment, a significant impact would occur if development of the proposed project would do any of the following:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.
- Require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- Result in determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.
- Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs.
- Increase demand on local and regional energy supplies requiring additional capacity and infrastructure.
- Comply with existing federal, state and local energy standards.
- Require or result in the construction of new energy production and/or transmission facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Impacts and Mitigation Measures

4.6-1: The proposed project could exceed the treatment requirements of the Central Valley Regional Water Quality Control Board. This would be a less-than-significant impact.

Wastewater flows from the project site would be conveyed to the Easterly WWTP for treatment prior to release into Old Alamo Creek. The Easterly WWTP treats an average of 7.5 mgd of wastewater and has a design capacity of 15 mgd and peak wet weather flows of 55.2 mgd (City of Vacaville Utilities Department 2017). The WWTP is permitted under NPDES permit CA-0077691 and the Central Valley Regional Water Quality Control Board (CVRWQCB) Waste Discharge Requirements (WDRs) Order R5-2012-0072. In order to comply with provisions of the NPDES permit, the Easterly WWTP recently underwent treatment upgrades in order to provide tertiary filtration, advanced disinfection, denitrification, elimination of effluent blending, and related improvements (City of Vacaville 2013a). The Easterly WWTP is required to comply with the NPDES permit requirements as well as the CVRWQCB's WDRs.

The project would contribute an additional 0.21 mgd average dry weather flows and approximately 0.47 mgd of peak wet weather flows. The WWTP is currently treating an average of 7.5 mgd and would have capacity to treat flows from the project site. The project would not exceed the treatment requirements of the WWTP set forth by the CVRWQCB; therefore, the project would have a **less-than-significant impact** on the ability of the Easterly WWTP to meet wastewater treatment requirements of the Central Valley Regional Water Quality Control Board.

Mitigation Measures

None required.

4.6-2: The proposed project could require or result in the construction of new wastewater facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects. This would be a less-than-significant impact.

The Easterly WWTP treats an average of 7.5 mgd of wastewater and has a design capacity of 15 mgd (City of Vacaville Utilities Department 2017). The project's wastewater demand, as calculated in Table 4.6-1, would be approximately 0.21 mgd. Flows from the project site would equal approximately 2.6% of the wastewater currently being treated by the Easterly WWTP. The increase in wastewater from the project site would represent an incremental increase in the amount of wastewater currently treated at the plant and would not exceed the WWTP's capacity resulting in the need to expand the existing plant. Therefore, this impact would be **less than significant**.

Mitigation Measures

None required.

4.6-3: The proposed project could result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments. This would be a less-than-significant impact.

The proposed project would install 8-, 10-, and 12-inch sewer lines within all roadways to service the commercial area and residences. Wastewater flows would be conveyed to the new, combined Alamo/Fry / CSP-S trunk line. The DIF54A project would increase the capacity in this line, and it is anticipated to be constructed prior to the proposed project. The project includes installing a new 42 to 48-inch sewer main within Carroll Way that would receive flows from the future Northeast Area trunk sewer north of the project and flow to the new junction structure that would be constructed in Elmira Road. The junction structure would then convey flows east to the Easterly WWTP, as shown in Figure 4.6-2.



SOURCE: SWA (2018)

DUDEK

The Farm at Alamo Creek Specific Plan EIR

Figure 4.6-2
Sewer Collection System Plan

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The Alamo/Fry / CPS-S combined trunk sewer line is designed to address new growth in the eastern portion of the City and have been sized accordingly. This infrastructure would have existing capacity to accommodate flows from the project site through build-out. An 18-inch sewer line would initially be installed to carry sewer flows from Phase 1 of the project, but would be taken out of service once the 42 to 48-inch sewer line in Carroll Way is constructed in Phase 2.

The City's Infrastructure Master Plan and Development Fee Program requires development projects to pay a Sewer Impact Fee to fund expansion of wastewater collection and treatment facilities. Evaluation of the existing capacity of the Easterly WWTP and its ability to accommodate project flows is included under Impact 4.6-2. As the combined Alamo/Fry /CSP-S trunk line would have capacity to accommodate the proposed project upon the completion of the DIF54A project, and the project applicant would pay the required Sewer Impact Fee, the project would have a **less-than-significant impact**.

Mitigation Measures

None required.

4.6-4: The proposed project could be served by a landfill without sufficient permitted capacity to accommodate the project's solid waste disposal needs. This would be a less-than-significant impact.

The proposed project would generate solid waste associated with construction activities as well as from project operation. The project would comply with General Plan policy PUB-P9.9 that requires construction sites provide for the salvage, reuse, or recycling of construction and demolition materials and debris.

As shown in Table 4.6-2, the proposed project would generate approximately 1,879.8 tons per year (5.15 tons per day) of solid waste at buildout. Solid waste generated by construction and operation would be transferred to the Hay Road Landfill in Vacaville. The Hay Road Landfill is permitted to accept up to 2,400 tons of refuse per day and currently receives approximately 136,066 tons per year of solid waste (CalRecycle 2017a, Solano County 2011). Of the 136,066 tons of solid waste received per year at the landfill, approximately 81,268 (59.7%) is from the City of Vacaville (City of Vacaville 2013a). The project's estimated solid waste generation would be less than one percent of the permitted daily capacity and would be approximately 1.4% of the yearly tonnage received at the Hay Road Landfill. The project's total solid waste generation would increase the amount of tonnage received from the City of Vacaville by 2.3%. Additionally, the total capacity of the landfill is 37 million cubic yards; as of 2010 the landfill had a remaining capacity of 30.4 million cubic yards and is projected to remain open until 2077 (CalRecycle 2017a). Therefore, the Hay Road Landfill would have sufficient capacity to accommodate the proposed project and this impact would be **less than significant**.

Mitigation Measures

None required.

4.6-5: The proposed project could require or result in the construction of new energy production and/or transmission facilities or expansion of existing facilities. This would be a less-than-significant impact.

Electricity and natural gas services in the project area are provided by PG&E. Policies contained in the General Plan are aimed to reduce energy consumption by preventing energy waste and encouraging renewable energy generation. Policy COS-P11.1 requires new commercial and residential buildings to exceed the Title 24 standards for HVAC, lighting and insulation. Additional measures are provided in the ECAS in the Green Building, Renewable Energy and Low Carbon Fuels, and Energy Conservation sectors to promote energy conservation and the development of renewable energy sources in the City. The ECAS is intended to reduce overall energy usage throughout the City and is addressing this by reducing demand thereby reducing the need to require new energy-related infrastructure. The proposed project includes a number of sustainability measures (outlined in Chapter 3, Section 3.3) consistent with General Plan Policies COS-P11.1 and COS-P11.2, including walking paths throughout the community to provide walkability of the project site, trails for biking, street orientation to allow for roof solar panel installation opportunities, provision of bike racks within commercial areas, and trees on all streets to provide shade for streets and sidewalks. In addition, new development would comply with the 2017 California Building Code for Energy Efficiency, which includes the Title 24 requirements.

Integration of energy conservation measures in addition to compliance with General Plan and ECAS policies would ensure that the proposed project has a **less-than-significant impact** on energy demand and would not require the need for PG&E to construct new infrastructure or expand existing infrastructure to accommodate the project.

Mitigation Measures

None required.

4.6.5 Cumulative Impacts

The cumulative impact analysis includes projected buildout under the City of Vacaville 2035 General Plan. In addition to buildout of the 2035 General Plan, the cumulative context for wastewater treatment, solid waste, and energy includes buildout of the specific service area for each utility provided including recently approved and reasonably foreseeable development within the boundaries of the City's service area for wastewater, the Recology Hay Road service area for solid waste, and the PG&E service area for energy.

4.6-6: The proposed project could contribute to a cumulative increase in the demand for wastewater treatment, which could result in inadequate capacity and require the construction of new or expansion of existing wastewater treatment facilities. Based on the analysis below the impact is less than significant.

Buildout of the General Plan in addition to other reasonably foreseeable projects (e.g., Roberts' Ranch Specific Plan and Brighton Landing Specific Plan) and plans within the wastewater operations service area, would increase demands on the Easterly WWTP and wastewater collection infrastructure such that there would be a significant cumulative impact in the absence of system upgrades.

The General Plan EIR noted that the Easterly WWTP is considered to have sufficient capacity to serve anticipated growth in the City for 16 years without the need for further expansion, which includes the project development. Future development within the City is expected to increase flows to the Easterly WWTP to 16.2 mgd by 2035, which would exceed the current treatment capacity of the plant by approximately 8% (City of Vacaville 2013a). Current improvements to the Easterly WWTP allow for compliance with new NPDES permit discharge requirements, but would not add capacity over the current 15 mgd (City of Vacaville 2016b). The City is required to plan, construct and maintain wastewater treatment facilities to meet State discharge requirements and to plan for expanding wastewater treatment capacity consistent with anticipated needs under General Plan policy PUB-P13.4. Additionally, under the NPDES permit, the City is required to annually estimate when flows are expected to reach the plant's 15 mgd capacity. When projections indicate that capacity would be reached within four years, the City is required to complete a plan to address the capacity limitations and send the plan for approval to the CVRWQCB within 120 days. The General Plan EIR concluded that compliance with the NPDES permit requirements and implementation of General Plan policies, future development within the City which included the project site would have a less-than-significant impact on the demand for wastewater treatment and meeting wastewater treatment requirements (City of Vacaville 2013a). Therefore, the proposed project would not contribute to an existing cumulative impact and the project's contribution is **less than significant**.

Mitigation Measures

None required.

4.6-7: The proposed project could contribute to a cumulative increase in solid waste, which could result in either the construction of new solid waste facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects. Based on the analysis below the impact is less than significant.

According to the 2035 General Plan EIR, buildout of the General Plan which includes the project site would result in approximately 26,500 new residents that would generate an additional 26,698 tons of solid waste per year (City of Vacaville 2013a). The City's ECAS includes measures to reduce solid waste and increase recycling, which would reduce the actual amount of solid waste sent to the landfill. All solid waste in the City would be delivered to the Recology Hay Road Landfill. The Recology Hay Road Landfill, as of 2010, had an estimated remaining capacity of 30.4 million cubic yards and is estimated to have enough capacity to remain open until 2077 (CalRecycle 2017a). Solid waste generated through buildout of the General Plan would increase the City's annual solid waste by approximately 0.03% of the permitted capacity of the Recology Hay Road Landfill (City of Vacaville 2013a).

Solano County generated 420,082 tons of solid waste in 2016 (CalRecycle 2017b). Based on County development trends, in the year 2035 the County would generate 411,921 tons of solid waste, approximately 2% less than it generated in 2016. Solano County has successfully diverted more than the state mandated diversion rate and it is reasonable to assume that the County would continue to meet the diversion goals as the population continues to grow in the future (City of Vacaville 2013a).

Cumulative development under the City's General Plan and within the County of Solano was determined would not result in the need to expand existing landfills or construct a new landfill creating a cumulative impact. Cumulative impacts to solid waste facilities were determined to be a **less than significant**; therefore, the proposed project would not contribute to an existing cumulative impact.

Mitigation Measures

None required.

4.6-8: The proposed project could contribute to a cumulative increase in energy demand, which could result in the need for construction of new energy production and/or transmission facilities or expansion of existing facilities. Based on the analysis below the impact is less than significant.

Future development under the City's General Plan would increase the demand for electricity and natural gas in the City and within the PG&E service boundary. Policies from the General Plan and the ECAS include measures to prevent the wasteful use of energy as well as meet the State's energy efficiency standards. The General Plan EIR concluded that implementation of General Plan policies would ensure that future development within the City would not result in significant impacts associated with the cumulative increase in demand for energy resulting in the need for construction or expansion of facilities (City of Vacaville 2013a). Since other jurisdictions in the region are required to meet the State's Title 24 energy efficiency standards,

future development within the City would not contribute to a cumulative impact to increased energy demand, which would require the construction or expansion of production facilities and the impact is **less than significant**. Therefore, the proposed project would not contribute to an existing cumulative impact.

Mitigation Measures

None required.

4.6.6 References

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4.7 TRANSPORTATION AND CIRCULATION

4.7.1 Introduction

The transportation and circulation section discusses existing and cumulative transportation and circulation conditions associated with implementation of The Farm at Alamo Creek Specific Plan project (proposed project). The analysis includes consideration of motorized vehicle traffic impacts on roadway capacity and intersections, and potential impacts to transit, bicycle, and pedestrians. In addition, an evaluation of construction impacts is also included. Quantitative transportation analyses have been conducted for the following six scenarios:

- Existing Conditions
- Existing plus Project
- Existing plus Approved Projects
- Existing plus Approved Projects plus Project
- Cumulative Year 2035 without the Project
- Cumulative Year 2035 plus Project

Comments received in response to the Notice of Preparation (NOP) included a request by Solano County that the EIR addresses traffic impacts on the surrounding road system maintained by the County. The County also notes that the portion of Hawkins Road that resides within the project boundary will need to be annexed into the City of Vacaville. A copy of the NOP and comments received is included in Appendix A. In addition, information on vehicle miles traveled is included in Section 4.1, Air Quality. All of the NOP comments raised are addressed in this section. The Traffic Impact Report prepared by PRISM Engineering for the project is included in Appendix I.

4.7.2 Environmental Setting

Road System

The existing road system and traffic analysis locations are shown in Figure 4.7-1.

Regional Access

Project traffic that is regionally based would primarily use Interstate 80 (I-80) to travel to regions beyond the City of Vacaville (City) limits. Project traffic would connect to I-80 via Leisure Town Road and its interchange with I-80, by Ulatis Drive to the Allison Drive interchange, by Elmira Road to its interchange, and via Alamo Drive to its interchange. I-80 extends southwest through Fairfield and Vallejo, and to the San Francisco-Oakland Bay Bridge terminating at Highway 101

in San Francisco. To the east of Vacaville, I-80 extends through Dixon and Davis, to Sacramento and beyond. I-80 has four travel lanes in each direction in the study area. Interstate 505 (I-505) which also connects to I-80 in the City, has two travel lanes in each direction and connects north to Interstate 5 (I-5) north of Woodland.

Local Access

In addition to I-80 and I-505, the following road segments in the study area have been identified as regional routes and part of the Congestion Monitoring Program system in the 2005 Solano County Comprehensive Transportation Plan (CTP), and/or in the 2015 Congestion Monitoring Program (CMP):

- Leisure Town Road (future Jepson Parkway) between I-80 and Vanden Road (CTP and CMP)
- Vanden Road from Leisure Town Road south to Peabody Road in Solano County (CTP and CMP)
- Elmira Road between Allison Drive and Peabody Road (CTP)
- Elmira Road from Leisure Town Road east to A Street in the Town of Elmira City Limits (CMP)
- Peabody Road Vacaville city limits to California (CMP)
- Vaca Valley Parkway I-80 to I-505 (CMP)

These roads and other key arterials, collectors and local streets in the study area are described below:

- **Elmira Road** is an east-west street that spans between “A” Street in the Town of Elmira and I-80, where it continues westward as Mason Street. Elmira Road is designated as a minor arterial with one travel lane in each direction east of Leisure Town Road. West of Leisure Town Road, it is a major arterial with two travel lanes in each direction. Elmira Road is a designated truck route.
- **Leisure Town Road** is a north-south arterial that extends between I-80 and Vanden Road. In the project vicinity, it has one travel lane in each direction. Leisure Town Road would provide project access via its existing intersection with Fry Road, one proposed limited access street connection, and a proposed full access intersection at Marshall Road. Leisure Town Road is part of the proposed Jepson Parkway Project, a planned four-lane divided arterial.
- **Ulati Drive** is an east-west arterial street serving commercial and residential areas, with a total of 4 signalized intersections between Leisure Town Road on the east and Allison Drive on the west. It has a speed limit of 40 miles per hour (mph) east of Nut

Tree Road and 35 mph west of Nut Tree Road. This road would have direct connection (via Hawkins Road realigned) to the northern border of the project site.

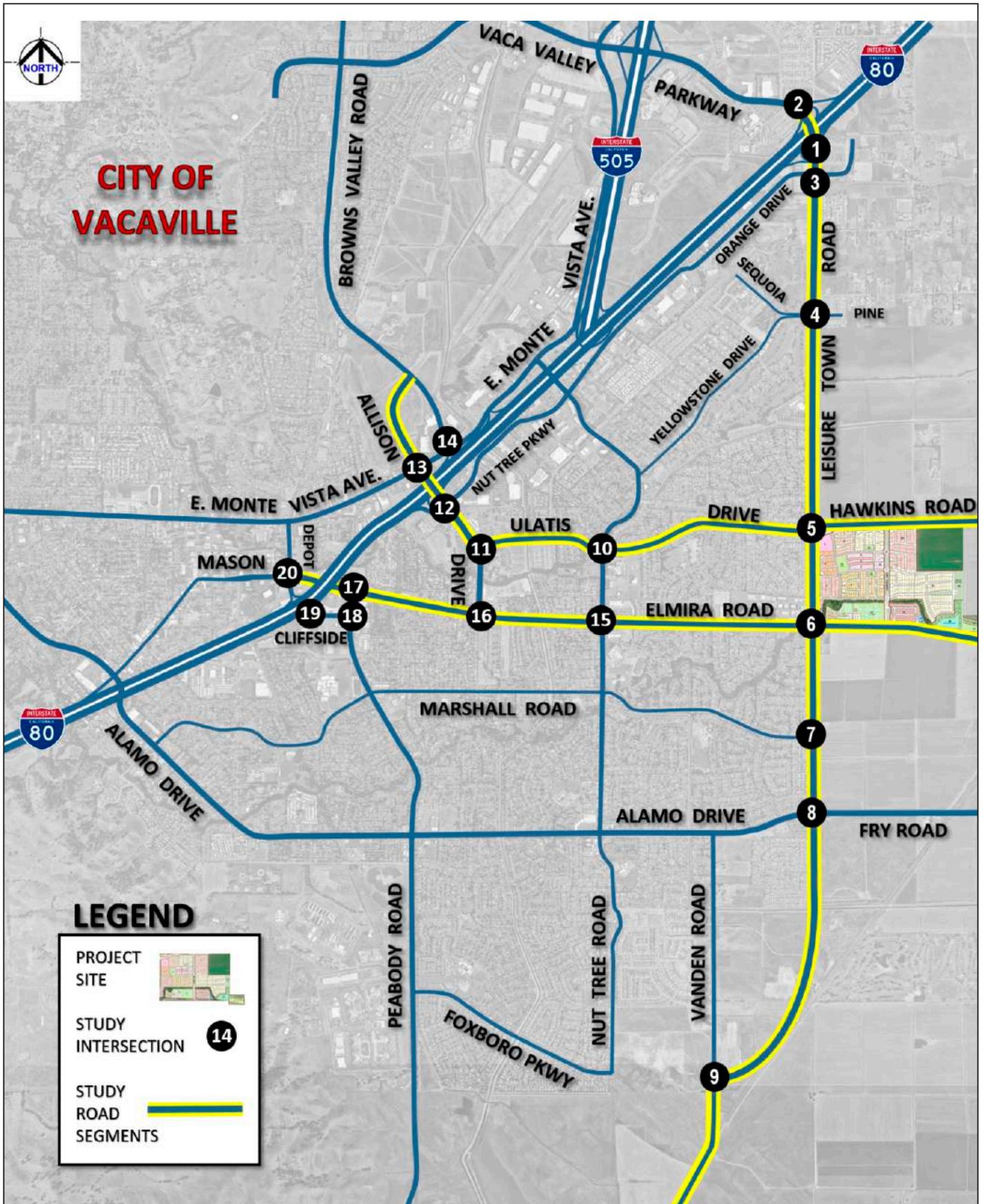
- **Hawkins Road** is an east-west rural roadway beginning at Leisure Town Road on the west to Highway 113 on the east where it terminates. It serves rural residences and intersects with various north-south rural roads. There is a signalized railroad crossing gate at the Union Pacific Railroad tracks near Lewis Road, and a four-way stop at Lewis Road. There is no posted speed limit on this road. The project would have direct access to Hawkins Road via three intersections. With construction of the project, Hawkins Road would be realigned to a four-lane arterial between Leisure Town Road and the proposed new road, Carroll Way, intersecting Carroll Way with a roundabout, and tapering back to a 2-lane arterial east of Carroll Way. Carroll Way is proposed as a two-lane arterial that would serve the project site connecting south all the way to Elmira Road and beyond into Brighton Landing to the south.
- **Elmira Road** is an east-west arterial that spans between “A” Street in the Town of Elmira and I-80, where it continues westward as Mason Street. Elmira Road is currently a 2-lane arterial (one travel lane in each direction) east of Leisure Town Road. West of Leisure Town Road, it is an existing 4-lane arterial with two travel lanes in each direction, posted at 40 mph. Elmira Road would be 4 lanes from Leisure Town to the proposed Carroll Way, and 2 lanes to the east of Carroll Way. The ultimate buildout for Elmira Road is 6 lanes, but cannot be built without a right-of-way take. Elmira Road is a designated truck route. This section of Elmira Road has been identified as a regional route in the 2015 Congestion Monitoring Program (CMP). Elmira Road would also have direct connection to the southern borders and street network of the project site.
- **Leisure Town Road** is a north-south arterial that extends between I-80 and Vanden Road. Roadway widening construction is currently underway from Vanden Road to Commerce Place. In the project vicinity, there generally is one travel lane in each direction north of Commerce Place with some widening south of Commerce Place to allow for left turn pockets and an extra southbound through lane (two total). Leisure Town Road would provide project access directly to some neighborhood commercial lots on the southwest corner of the project site. Leisure Town Road is part of the proposed Jepson Parkway Project, a planned four-lane divided arterial. This road has been identified as a regional route, part of the Congestion Monitoring Program system in the 2005 Solano County Comprehensive Transportation Plan (CTP), and in the 2015 CMP.
- **Marshall Road** is a two-lane collector street that extends between Leisure Town Road, just west of California Drive.
- **Nut Tree Road** is a north-south arterial that connects Foxboro Parkway, across I-80 and East Monte Vista Avenue, to the Nut Tree development area. Where development exists

along Nut Tree Road, it has four travel lanes. As development occurs along the southern portion of Nut Tree Road, it would be widened from its current two lanes to four lanes.

- **Allison Drive** is a north-south arterial that connects Elmira Road on its south terminus to Browns Valley Parkway at its northern end. It crosses I-80 at its midpoint and has a freeway interchange and overcrossing at I-80. There are 6 signalized intersections in its 1.3 mile length, or about a signal every quarter mile. It is posted at 35 mph from Elmira Road to E. Monte Vista Ave., and 40 mph north of E. Monte Vista Ave. There are generally two lanes in each direction with widening at major intersections. The I-80 overcrossing bridge is six lanes total.
- **Peabody Road** is a north-south street extending between Elmira Road in Vacaville and Air Base Parkway in Fairfield. Within Vacaville, Peabody Road is designated as a four-lane arterial. South of Vacaville within Solano County, Peabody Road operates as a two-lane rural road with paved shoulders.
- **Byrnes Road** is a north-south two-lane collector street that extends south from Weber Road to the Town of Elmira where it continues as California Pacific Road to just south of Water Street.
- **Vanden Road** is a two-lane collector street currently under construction for widening from Leisure Town Road to approximately 1300-feet south of Vanden Road. It spans from Peabody Road in Fairfield, through unincorporated Solano County, and terminates at Marshall Road in Vacaville. West of Peabody Road, it continues as Cement Hill Road. Vanden Road from south City limits to Leisure Town Road is part of the Jepson Parkway Project, a planned four-lane divided arterial. This road has been identified as a regional route, part of the Congestion Monitoring Program system in the 2005 Solano County CTP, and in the 2015 CMP.
- **Cliffside Drive** is a short (900 feet length) two-lane collector street that has five driveways for adjacent commercial uses. It primarily serves as a connector road to the I-80 EB on and off-ramps at this location.

Existing Traffic Operations

This section documents the existing conditions of traffic levels and the road system that would serve the proposed project. It also documents the data collection process as well as the organization of all data for analysis purposes. The methodology used is defined in the paragraphs that follow pertaining to specific traffic analysis methods and City policy parameters pertaining to levels of significance in traffic impacts. In addition, the specific methods or procedures used to calculate intersection vehicle delay and the corresponding levels of service are set forth.



SOURCE: Prism Engineering (2017)

FIGURE 4.7-1

Study Area Intersections and Road Segments

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Level of Service Methodology

Traffic operations are quantified through the determination of "Level of Service" (LOS). Level of Service is a qualitative measure of traffic operating conditions, whereby a letter grade "A" through "F" is assigned to an intersection, or roadway segment, representing progressively worsening traffic conditions. LOS "A" represents free-flow operating conditions and LOS "F" represents over-capacity conditions. Levels of service were calculated for all intersection control types, urban street segments, and freeway ramp merge and diverge using the methods documented in the Transportation Research Board Publication Highway Capacity Manual, Fifth Edition, 2010 (HCM 2010).

Intersections

Intersection LOS were calculated for all control types using the methods documented in HCM 2010. For a signalized or all-way stop-controlled (AWSC) intersection, a LOS determination is based on the calculated averaged delay for all approaches and movements. For a two-way stop controlled (TWSC) intersection, a LOS determination is based upon the calculated average delay for all movements of the worst performing approach. The vehicular-based LOS criteria for different types of intersection controls are presented in Table 4.7-1 for un-signalized intersections, and Table 4.7-2 for signalized intersections.

This traffic analysis focuses on a "planning level" evaluation of traffic operating conditions. The planning level evaluation incorporates appropriate heavy vehicle adjustment factors, peak hour factors, and signal lost time factors and reports the resulting intersection delays and LOS as estimated using the HCM 2010 based analysis methodologies. A Peak Hour Factor (PHF) consistent with existing traffic counts was applied in the analysis of all study intersections under all scenarios. The Synchro Suite version 9 (Trafficware) software program was used to implement the HCM 2010 analysis methodologies, and has the capability to produce results using both HCM 2000 and 2010 methodologies. The procedure takes into account intersection signal phasing and queuing constraints when calculating delay, the corresponding delay, and queue lengths. Consistent with the stage of development, assessments of "design level" parameters (including queuing on intersection lane groups, stacking length requirements, etc.) will be prepared at the improvement plan stage of design when final construction details are available.

**Table 4.7-1
Level of Service Definition for Unsignalized Intersections**

Level of Service	Description	Vehicle Delay (seconds per vehicle)
A	Free flow with no delays. Users are virtually unaffected by others in the traffic stream	0 – 10
B	Stable traffic. Traffic flows smoothly with few delays.	> 10 – 15
C	Stable flow but the operation of individual users becomes affected by other vehicles. Modest delays.	> 15 – 25
D	Approaching unstable flow. Operation of individual users becomes significantly affected by other vehicles. Delays may be more than one cycle during peak hours.	> 25 – 35
E	Unstable flow with operating conditions at or near the capacity level. Long delays and vehicle queuing.	> 35 – 50
F	Forced or breakdown flow that causes reduced capacity. Stop and go traffic conditions. Excessive long delays and vehicle queuing.	> 50

Sources: Transportation Research Board, Highway Capacity Manual 2010, National Research Council, 2010, City of Vacaville.

**Table 4.7-2
Level of Service Definition for Signalized Intersections**

Level of Service	Description	Vehicle Delay (seconds per vehicle)
A	Free flow with no delays. Users are virtually unaffected by others in the traffic stream	≤ 10
B	Stable traffic. Traffic flows smoothly with few delays.	> 10 – 20
C	Stable flow but the operation of individual users becomes affected by other vehicles. Modest delays.	> 20 – 35
D	Approaching unstable flow. Operation of individual users becomes significantly affected by other vehicles. Delays may be more than one cycle during peak hours. Unstable flow with operating conditions at or near the capacity level. Long delays and vehicle queuing.	> 35 – 55
E	Unstable operations and substantial delay	> 55 – 80
F	Forced or breakdown flow that causes reduced capacity. Stop and go traffic conditions. Excessive long delays and vehicle queuing.	> 80

4.7 TRANSPORTATION AND CIRCULATION

Sources: Transportation Research Board, Highway Capacity Manual 2010, National Research Council, 2010, City of Vacaville.

The City of Vacaville's General Plan EIR evaluated roadway segments based upon policy TR-P3.1, LOS C, and intersections based upon policies TR-P3.2 and TR-P3.3. Therefore, acceptable LOS thresholds are as follows:

- Signal and all way stop in the priority development areas (PDA) LOS Threshold: LOS D .
- Signal and all way stop outside the PDA LOS Threshold: mid-D.
- Two way stops, outside the PDA LOS Threshold: overall at LOS D.
- Two way stops, in the PDA LOS Threshold: overall at LOS mid-E.

Road Segments

Table 4.7-3 defines the road segment capacities used in this analysis to evaluate project traffic on three different types of roadway segments. These include 6 lane divided arterial (6LDA), 4 lane divided arterial (4LDA), and 2 lane undivided arterial (2LUA) cross-section types.

**Table 4.7-3
Roadway Segment Capacity and Level of Service Criteria**

Segment Classification	LOS C Total Two-Way Capacity	Calculated Directional (60%) LOS C Capacity
6-Lane Divided Arterial, (6LDA)	5,200	3,120
4-Lane Divided Arterial, (4LDA)	3,440	2,064
2-Lane Undivided Arterial, (2LUA)	1,500	900

Source: City of Vacaville, Traffic Engineer.

Notes: Calculated LOS C directional capacity is based on an assumed split of 60%/40% on local streets.

Freeway Mainline Segments

Caltrans' *Guide for the Preparation of Traffic Impact Studies* requires the use of HCM analysis methodology using the HCS 2017 Freeways Version 7.2.1 software, which calculates LOS for freeway facilities including mainline segments, merge segments, diverge segments, and weave segments according to the criteria presented in Table 4.7-4.

**Table 4.7-4
Freeway Segments Level of Service Criteria**

<i>Segment Type</i>	Maximum Density (<i>passenger vehicles per mile per lane</i>)				
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>
Freeway	11	18	26	35	45
Merge	10	20	28	35	45
Diverge	10	20	28	35	45
Weave	10	20	28	35	45

Source: Highway Capacity Manual, Fifth Edition, Transportation Research Board, 2010.

Intersection Operations

A quantitative LOS analyses were performed for the 20 study intersections selected in consultation with City staff. Each of the 20 study intersections and their traffic control type are presented in Table 4.7-5. Weekday AM (7:00 AM to 9:00 AM) and PM (4:00 PM to 6:00 PM) peak period intersection turning movement counts were primarily provided by the City with the City's traffic consultant, PRISM Engineering, supplementing this data at some study intersections in the year 2017.

Existing traffic volumes for the AM peak hour are shown in Figure 4.7-2 and PM peak hour volumes are shown in Figure 4.7-3. These figures also show the lane geometry and traffic control assumed for each intersection. Existing traffic operations levels of service at each intersection are shown in Table 4.7-6.

**Table 4.7-5
Study Intersection Locations**

#	Intersection	Traffic Control	
		<i>Existing</i>	<i>Future</i>
1	Leisure Town Rd at I-80 EB Ramps	Signal	Signal
2	Leisure Town Rd at I-80 WB Ramps	Signal	Signal
3	Leisure Town Rd at Orange Dr	Signal	Signal
4	Leisure Town Rd at Sequoia Dr	Signal	Signal
5	Leisure Town Rd at Ulatis	TWSC	Signal
6	Leisure Town Rd at Elmira Rd	Signal	Signal
7	Leisure Town Rd at Marshall Rd	TWSC	Signal
8	Leisure Town Rd at Alamo Dr	Signal	Signal
9	Leisure Town Rd at Vanden Rd	Signal	Signal
10	Nut Tree Rd at Ulatis Dr	Signal	Signal
11★	Allison Dr at Ulatis Dr	Signal	Signal

**Table 4.7-5
Study Intersection Locations**

#	Intersection	Traffic Control	
		Existing	Future
12★	Allison Dr at Nut Tree Parkway	Signal	Signal
13	Allison Dr at E. Monte Vista Ave	Signal	Signal
14	Browns Valley Pkwy at E. Monte Vista	Signal	Signal
15★	Nut Tree Rd at Elmira Rd	Signal	Signal
16★	Allison Dr at Elmira Rd	Signal	Signal
17	Peabody Rd at Elmira Rd	Signal	Signal
18	Peabody Rd at Cliffside Dr	Signal	Signal
19	Park / Ride at Cliffside Dr (I-80 ramps)	TWSC	TWSC
20★	Depot St at Mason St (I-80 ramps)	Signal	Signal

Source: PRISM Engineering, 2017.

Notes: ★ Intersection is in Planned Development Area (PDA)

TWSC = Two Way Stop Control, stop signs on side street(s). Signal = signalized intersection.

**Table 4.7-6
Intersection Operations – Existing Conditions**

#	Intersection	Traffic Control	Peak Hour	LOS	Delay
1	Leisure Town Rd at I-80 EB Ramps	Signal	AM	B	19.3
			PM	B	20.0
2	Leisure Town Rd at I-80 WB Ramps	Signal	AM	A	5.9
			PM	A	5.8
3	Leisure Town Rd at Orange Dr	Signal	AM	B	16.4
			PM	B	18.5
4	Leisure Town Rd at Sequoia Dr	Signal	AM	A	8.6
			PM	B	12.0
5	Leisure Town Rd at Ulatis	TWSC	AM	B	12.9
			PM	A	5.5
6	Leisure Town Rd at Elmira Rd	Signal	AM	C	33.6
			PM	D	36.1
7	Leisure Town Rd at Marshall Rd	TWSC	AM	A	6.9
			PM	A	3.9
8	Leisure Town Rd at Alamo Dr	Signal	AM	C	24.9
			PM	D	39.8
9	Leisure Town Rd at Vanden Rd	Signal	AM	A	9.2
			PM	A	9.2

**Table 4.7-6
Intersection Operations – Existing Conditions**

#	Intersection	Traffic Control	Peak Hour	LOS	Delay
10	Nut Tree Rd at Ulatis Dr	Signal	AM	C	27.4
			PM	E	55.3
11★	Allison Dr at Ulatis Dr	Signal	AM	B	13.4
			PM	B	13.6
12★	Allison Dr at Nut Tree Parkway	Signal	AM	B	17.8
			PM	C	32.8
13	Allison Dr at E. Monte Vista Ave	Signal	AM	C	20.6
			PM	E	63.6
14	Browns Valley Pkwy at E. Monte Vista	Signal	AM	B	17.1
			PM	B	18.3
15★	Nut Tree Rd at Elmira Rd	Signal	AM	D	36.5
			PM	D	44.4
16★	Allison Dr at Elmira Rd	Signal	AM	B	19.5
			PM	C	33.2
17	Peabody Rd at Elmira Rd	Signal	AM	C	23.3
			PM	E	57.6
18	Peabody Rd at Cliffside Dr	Signal	AM	B	19.3
			PM	D	46.4
19	Park / Ride at Cliffside Dr (I-80 ramps)	TWSC	AM	A	0.1
			PM	A	0.1
20★	Depot St at Mason St (I-80 ramps)	Signal	AM	D	54.0
			PM	E	79.9

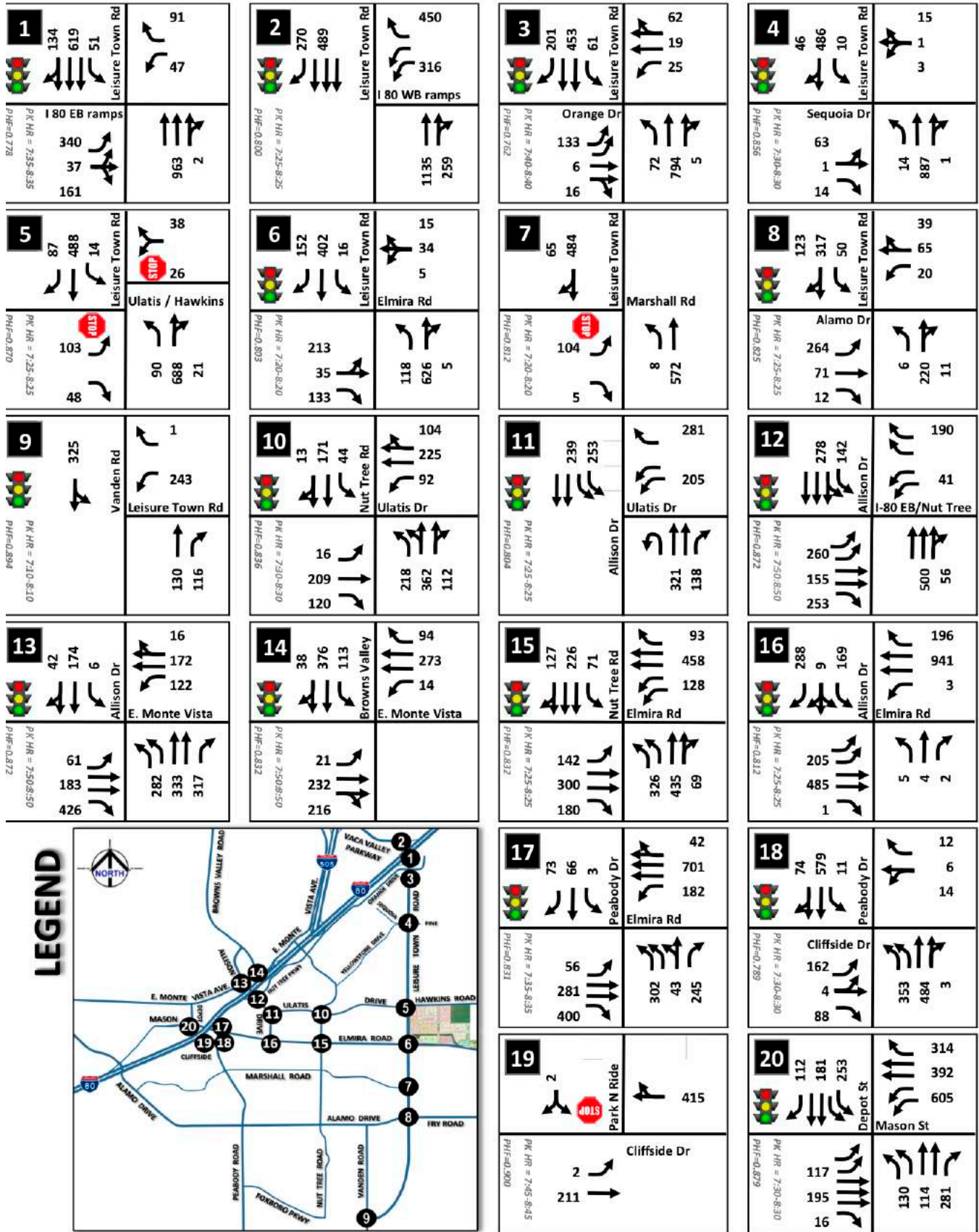
Source: PRISM Engineering, 2017.

Notes: **BOLD text** indicates unacceptable level of service.

★ Intersection is in Planned Development Area (PDA) and has higher threshold than Intersections outside of PDA.

TWSC = Two Way Stop Control, stop signs on side street(s). Signal = signalized intersection.

All study intersections currently operate within the City's General Plan acceptable LOS threshold or better during both the weekday AM and PM peak hours, with the exception of five study intersections: Nut Tree Road at Ulatis Drive (#10), Allison Drive at E. Monte Vista Avenue (#13), Peabody Road at Elmira Road (#17), Peabody Road at Cliffside Drive (#18), and Depot Street at Mason Street (#20).

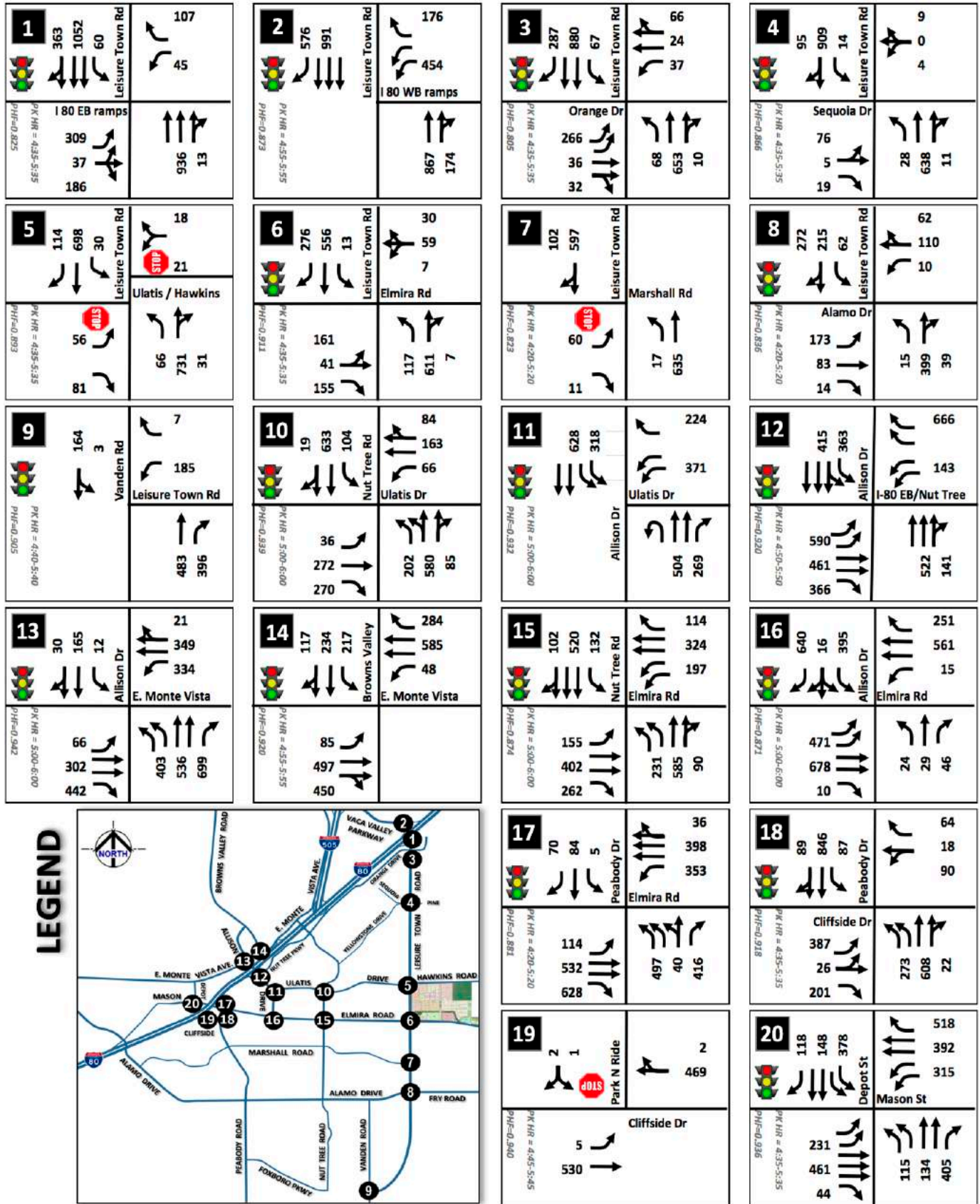


SOURCE: Prism Engineering (2017)

FIGURE 4.7-2

AM Peak Hour Volumes and Control

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SOURCE: Prism Engineering (2017)

FIGURE 4.7-3

PM Peak Hour Volumes and Control

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Road Segment Volumes

Peak hour road segment volumes were derived from the turning movement volumes at adjacent intersections for the AM and PM peak hours. Volumes along these segments were compared to the thresholds listed in Table 4.7-3 depending on the road facility type. Table 4.7-7 shows the road segment analysis along the study segments.

The peak hour volumes on all but one of the study road segments are consistent with LOS C, which the General Plan strives to maintain, or better during the weekday AM and PM peak hours. None of the study road segments exceed LOS D under existing conditions. Leisure Town Road from Orange Drive to Sequoia White Pine (#3) exceeds LOS C, which the General Plan strives to maintain, in the northbound direction during the weekday AM peak hour. The Jepsen Parkway Project would widen Leisure Town Road from two to four lanes.

**Table 4.7-7
Road Segment Level of Service – Existing Conditions**

#	Road Segment	Volume Exceeds LOS C (Exceeds LOS D)			
		AM Peak Hour		PM Peak Hour	
		SB/WB	NB/EB	SB/WB	NB/EB
<i>Leisure Town Road (Jepsen Parkway)</i>					
1	North of I 80 east bound ramps	No / No	No / No	No / No	No / No
2	I 80 east bound ramps to Orange Drive	No / No	No / No	No / No	No / No
3	Orange drive to Sequoia White Pine	No / No	Yes / No	Yes / No	No / No
4	Ulatis/Hawkins to Sequoia White Pine	No / No	No / No	No / No	No / No
5	Elmira road to Ulatis Drive Hawkins Road	No / No	No / No	No / No	No / No
6	Alamo Drive Fry Road to Elmira Dr.	No / No	No / No	No / No	No / No
7	Vanden Road to Alamo Drive	No / No	No / No	No / No	No / No
8	South of Vanden Road	No / No	No / No	No / No	No / No
<i>Hawkins Road</i>					
9	East of north south arterial	No / No	No / No	No / No	No / No
10	Leisure Town Road to north south arterial	No / No	No / No	No / No	No / No
<i>Ulatis Drive</i>					
11	West of Nut Tree Road	No / No	No / No	No / No	No / No
12	Leisure Town Road to Nut Tree Road	No / No	No / No	No / No	No / No
<i>Allison Drive</i>					
13	Ulatis Road to Nut Tree Parkway	No / No	No / No	No / No	No / No
14	North of Nut Tree Parkway	No / No	No / No	No / No	No / No
<i>Elmira Road</i>					
15	West of Nut Tree Road	No / No	No / No	No / No	No / No
16	Nut Tree Road to Leisure Town Road	No / No	No / No	No / No	No / No

**Table 4.7-7
Road Segment Level of Service – Existing Conditions**

#	Road Segment	Volume Exceeds LOS C (Exceeds LOS D)			
		AM Peak Hour		PM Peak Hour	
		SB/WB	NB/EB	SB/WB	NB/EB
17	Leisure Town Road to north south arterial	No / No	No / No	No / No	No / No
18	East of north south arterial	No / No	No / No	No / No	No / No

Source: PRISM Engineering, 2017.

Notes: NB / EB = northbound / eastbound; SB / WB = southbound / westbound; Bold "Yes" in cells means exceeds LOS C, which the General Plan strives to maintain. Parentheses in cells means exceeds LOS C.

Freeway Mainline Segment Operations

Freeway mainline volumes were compiled from data obtained from the California Department of Transportation Performance Enhancement Measurement System (PeMS) database, as well as mainline segment and ramp count data available from Caltrans' website (historical data). The historical data was used in the event where current data was lacking for the analysis segment. Ramp and mainline volumes were added together when possible to determine the downstream analysis volume of that particular segment direction.

Table 4.7-8 shows the freeway mainline segment analysis at selected study locations along I-80 at the east and west end of the study area. As shown in Table 4.7-8, all of the study freeway mainline segments operate at LOS D or better during the weekday AM and PM peak hours.

**Table 4.7-8
Freeway Mainline Segment Level of Service – Existing Conditions**

Freeway Mainline Segment / Direction	AM Peak Hour		PM Peak Hour	
	Density	LOS	Density	LOS
<i>I-80 Mainline w/o Elmira</i>				
Eastbound	17.1	B	29.0	D
Westbound	21.0	C	26.5	D
<i>I-80 Mainline e/o Elmira</i>				
Eastbound	18.7	C	28.6	D
Westbound	18.0	B	28.9	D
<i>I-80 Mainline w/o Leisure Town</i>				
Eastbound	22.1	C	26.6	D
Westbound	16.6	B	26.2	D
<i>I-80 Mainline e/o Leisure Town</i>				
Eastbound	18.8	C	24.2	C
Westbound	21.2	C	20.2	C

Source: Performance Enhancement Measurement System (PeMS), 2017. PRISM Engineering, 2017.

Notes: Density = passenger cars per mile per lane; LOS = Level of Service

Existing Transit

Figure 4.7-4 shows the various bus service lines operative in Vacaville. These services are provided by Vacaville City Coach, Fairfield and Suisun Transit (FAST), and YOLOBUS. Vacaville City Coach offers six local fixed-route services to or from the Vacaville Transportation Center located on Allison Drive at Travis Way. The Transportation Center also serves as a transfer point for intercity routes operated by Fairfield and Suisun Transit. The Vacaville Regional Transportation Center, located at the corner of Davis Street and Hickory Lane, is another key intercity transit hub, with two nearby park and ride lots along Davis Street on either side of I-80. In addition to the fixed-route service, City Coach Special Services provides Americans with Disabilities Act (ADA) paratransit service to eligible residents within Vacaville. Trips beyond the city limits may be specially arranged with City Coach. Fairfield and Suisun Transit (FAST) offers three intercity routes through Vacaville, primarily to serve weekday commuters. YOLOBUS offers one fixed bus route between Vacaville and Davis via Interstate 505 and Winters that provides three daily trips in each direction from Monday to Saturday.

The project site is not currently directly served by any public transit service (does not exist on Leisure Town Road south of Sequoia Drive). The nearest bus stop for City Coach's Route 5 is located on Nut Tree Road near Ulatis Drive, which is over 1.5 miles away from the corner of Leisure Town at Hawkins or at Elmira Road. City Coach Route 5 operates in both directions, connecting with the Transit Plaza via Nut Tree to Alamo to Merchant Street. Its operating hours are between 6:15 AM and 6:45 PM on weekdays and 8:15 AM and 6:15 PM on Saturday.

Existing Bicycle Facilities

There are various bikeways currently in place in Vacaville. The City classifies bikeways into three categories: multi-use path, bike lane, and bike route. Multi-use paths are dedicated off-street public paths designed and constructed for both bicycle and pedestrian traffic. In the project vicinity, Alamo Creek Bikeway is a multi-use path along Alamo Creek between Marshall Road and Leisure Town Road. Bike lanes are marked exclusively for bike travel on roadways. Bike lanes are provided between Leisure Town Road and just east of Nut Tree Road in the vicinity of the project. On-street bike routes, which must be signed or marked, bicycle riders must share the roadway with vehicles. There are no existing on-street bike routes in the project vicinity. However, several facilities are planned in the study area, including the Elmira Road Bike Path, Ulatis Creek Bike Path, and Jepson Parkway Bike Path. The City's existing bicycle network¹ is shown in Figure 4.7-5.

¹ As of August 4, 2010

Existing Pedestrian Facilities

Existing pedestrian facilities in the project vicinity are limited because this area is currently at the urban fringe. In Vacaville, sidewalks with raised curb and gutter are typically provided along arterials and collectors, as well as in newer residential developments. In the project site vicinity, sidewalks are provided only on the west side of Leisure Town Road from Elmira Road to Hawkins Road. Also, there are sidewalks installed for that portion of Brighton Landing on the south side of Elmira Road west of where Carroll Way would be constructed (1/2 mile east of Leisure Town Road). There are no sidewalks or paved shoulders installed on Elmira Road east of Leisure Town Road.

At the signalized intersection of Leisure Town Road (Jepson Parkway) / Elmira Road (#6), pedestrian signal heads are provided as well as marked crosswalks on the north and west legs of the intersection. There are no sidewalks or paved shoulders on Hawkins Road.

Planned Transportation Improvements

The planned transportation improvement most relevant to the proposed project is the Jepson Parkway Road Widening Project, currently underway, which would widen Leisure Town Road to four lanes.

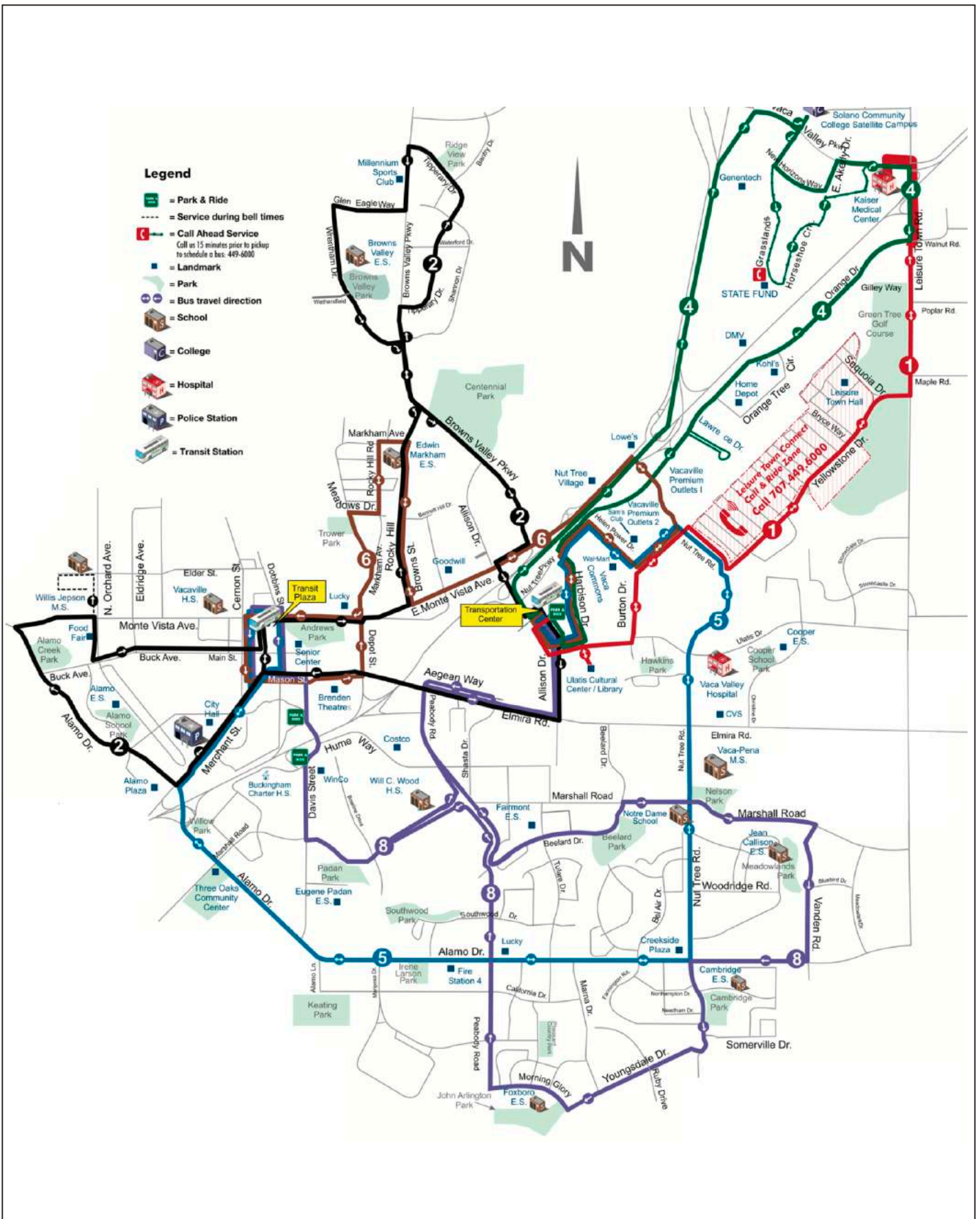
Jepson Parkway Road Widening Project

Jepson Parkway is planned as a four-lane road connecting SR 12 in Fairfield/Suisun City with I-80 in Vacaville. The alignment would include portions of the current alignments of Peabody Road, Vanden Road and Leisure Town Road. The Jepson Parkway Concept Plan provides design guidelines and requirements for each segment of the Parkway. The full project is not yet funded for implementation.

The City of Vacaville has construction taking place for the initial phase of Jepson Parkway between Vanden Road on the south to a point on Leisure Town Road, just north of the intersection with Elmira Road. Construction started in the spring of 2017, and is expected to take two years. The Jepson Parkway Road Widening Project would include an off-street multi-use path on the east side of the roadway.

4.7.3 Regulatory Setting

Existing transportation policies, plans, laws and regulations that apply to the proposed project are summarized below. This information provides a context for the impact discussion related to the project's consistency with applicable regulatory conditions.

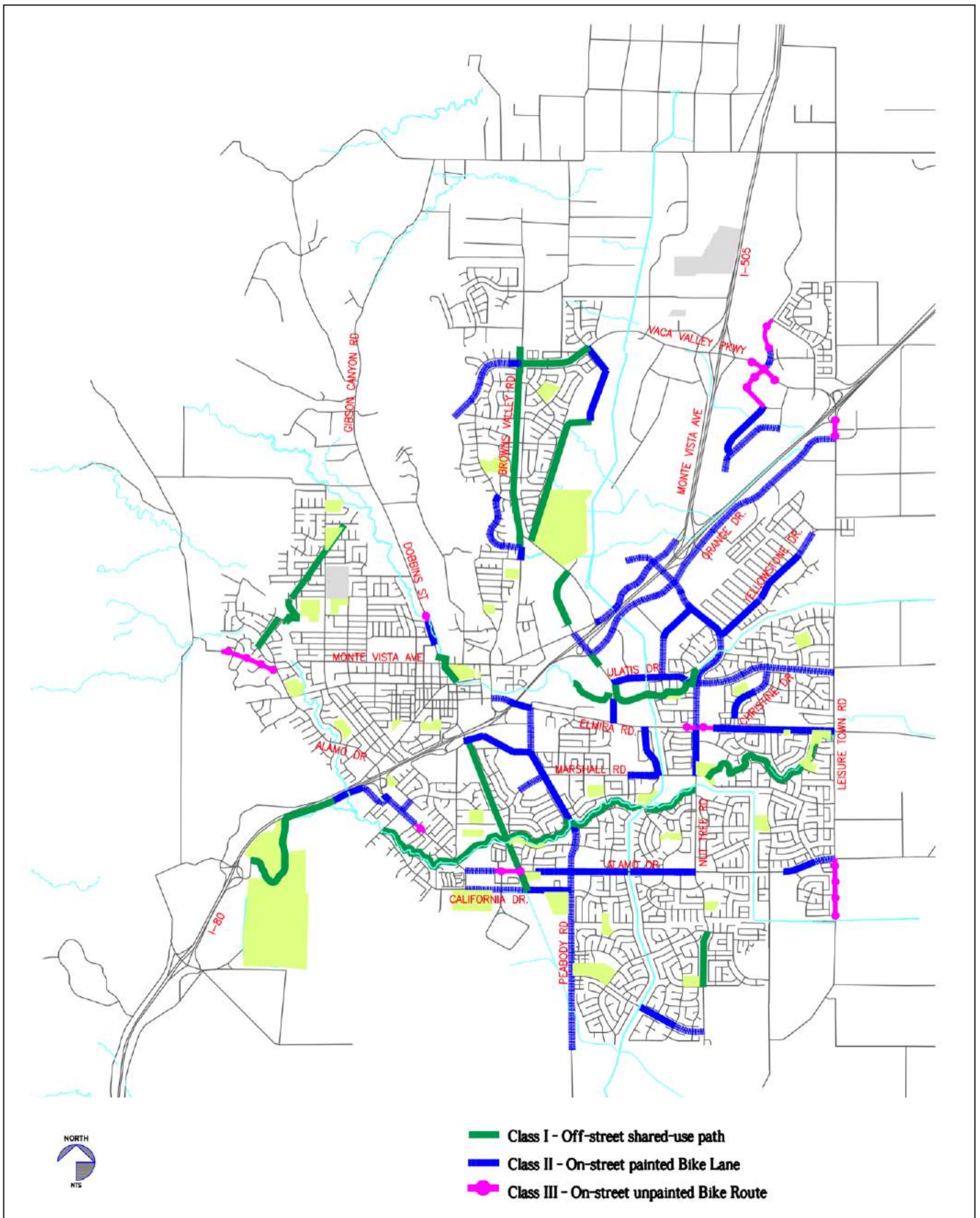


SOURCE: Prism Engineering (2017)

FIGURE 4.7-4

Vacaville Transit Network Service Lines

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SOURCE: Public Works Engineering (2010)

FIGURE 4.7-5
Bike Routes in Vacaville

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Federal Regulations

This section summarizes federal agencies and laws pertinent to the proposed project.

Federal Highway Administration

The Federal Highway Administration (FHWA) is the agency of the United States Department of Transportation (DOT) responsible for the federally funded roadway system, including the interstate highway network and portions of the primary State highway network, such as Interstate 80 (I-80). FHWA funding is provided through the Moving Ahead for Progress in the 21st Century (MAP-21). MAP-21 can be used to fund local transportation improvements in Vacaville, such as projects to improve the efficiency of existing roads, traffic signal coordination, bikeways, and transit system upgrades.

Americans with Disabilities Act

The Americans with Disabilities Act (ADA) of 1990 provides comprehensive rights and protections to individuals with disabilities. The goal of the ADA is to assure equality of opportunity, full participation, independent living, and economic self-sufficiency. To implement this goal, the United States Access Board has created accessibility guidelines for public rights-of-way. The guidelines address various issues, including roadway design practices, slope and terrain issues, and pedestrian access to streets, sidewalks, curb ramps, street furnishings, pedestrian signals, parking, and other components of public rights-of-way. The guidelines would apply to proposed roadways in the project area.

State Regulations

This section summarizes State agencies, regulations, and policies that pertain to transportation in the City of Vacaville.

California Department of Transportation

The California Department of Transportation (Caltrans) is the primary State agency responsible for transportation issues. One of its duties is the construction and maintenance of the State highway system. Caltrans has established standards for roadway traffic flow and developed procedures to determine if State-controlled facilities require improvements. For projects that may physically affect facilities under its administration, Caltrans requires encroachment permits before any construction work may be undertaken. For projects that would not physically affect facilities, but may influence traffic flow and levels of services at such facilities, Caltrans may recommend measures to mitigate the traffic impacts of such projects. Caltrans facilities within the Vacaville study area include Interstate 80 and Interstate 505, as well as the on- and off-ramps from these State facilities.

The following Caltrans procedures and directives are relevant to the project:

- **Level of Service Target.** Caltrans maintains a minimum level of service at the transition between LOS C and LOS D for all of its facilities. Where an existing facility is operating at less than the LOS C/D threshold, the existing measure of effectiveness should be maintained.²

Regional Regulations

This section summarizes regional agencies, plans, and policies that pertain to transportation in Vacaville.

Metropolitan Transportation Commission

The Metropolitan Transportation Commission (MTC) is the transportation planning, coordinating, and financing agency for the nine-county Bay Area, including Solano County. It also functions as the federally mandated metropolitan planning organization (MPO) for the region. MTC authored the current regional transportation plan known as Transportation 2035 that was adopted on April 22, 2009. Transportation 2035 specifies a detailed set of investments and strategies throughout the region from 2010 through 2035 to maintain, manage, and improve the surface transportation system, specifying how anticipated federal, State, and local transportation funds will be spent. The projects included in the 2035 Plan that will most directly affect the proposed project are:

- Construction of a new Fairfield/Vacaville Multi-Modal Train Station at the southeast corner of Peabody Road and Vanden Road in northeast Fairfield for Capitol Corridor intercity rail service.
- Construction of Jepson Parkway from Route 12 to I-80 at the Leisure Town Road Interchange. In Vacaville, Jepson Parkway would follow the Leisure Town Road alignment along the western border of the Brighton Landing Specific Plan area.

Solano Transportation Authority

The Solano Transportation Authority (STA) has been designated as the Congestion Management Agency to address congestion issues in Solano County and the seven cities within the county, including Vacaville. It is responsible for countywide transportation planning, programming transportation funds, managing and providing transportation programs and services, delivering transportation projects, and setting transportation priorities. The STA Board of Directors adopted the Solano County Comprehensive Transportation Plan (CTP 2030)³ in June 2005. The Plan envisions, directs, and prioritizes the transportation needs of Solano County through 2030. As the designated Congestion Management Agency, STA worked with

² California Department of Transportation, 2002. Guide for the Preparation of Traffic Impact Studies.

³ Solano Transportation Authority, *Solano Comprehensive Transportation Plan*, adopted June 8, 2005.

jurisdictions within the county, including Vacaville, to identify locations where periodic congestion monitoring would occur as required by the State's CMP legislation. Level of service standards are established for segments of the CMP roadway system that connect communities with each other and with the State highway system.

Local Regulations

This section summarizes City policies and regulations that pertain to transportation in Vacaville.

Vacaville General Plan

The City of Vacaville's General Plan contains guiding and implementing policies that are relevant to transportation and circulation in the study area. These guiding and implementing policies are listed below.

Resolution 2013-023 adopted the operational analysis methodology in the Transportation Research Board's Highway Capacity Manual as an alternative to the Circular 212 Planning Method that the City previously used to perform intersection level of service.

Policy TR-P1.3 Continue to coordinate and support regional efforts to construct Jepson Parkway in accordance with the Jepson Parkway Concept Plan (2000), or subsequent updates to the Plan for Jepson Parkway.

Policy TR-P2.1 Work with the California Department of Transportation (Caltrans) and Solano Transportation Authority (STA) to achieve timely construction of programmed freeway and interchange improvements.

Policy TR-P2.3 Encourage Caltrans to widen and upgrade Interstate 80 through Vacaville. In new development areas adjoining Interstate 80 and Interstate 505, require major building setbacks and offers-of-dedication to permit the long-term planning and widening of the freeways.

Policy TR-P3.1 Endeavor to maintain LOS C as the LOS goal at all intersections and interchanges to facilitate the safe and efficient movement of people, goods, and services. Strive to design improvements to provide a LOS goal of C, based on the City's most recent 20+ year traffic forecast including signalized and unsignalized intersections.

Policy TR-P3.2 At signalized and all-way stop control intersections, LOS mid-D shall be the LOS significance threshold. At two-way stop control intersections, LOS D shall be the LOS significance threshold.

- Policy TR-P3.3** To allow for infill development and higher density development at transit centers, the LOS significance threshold shall be LOS D at signalized and all-way stop control intersections in the Downtown Urban High Density Residential Overlay District or other Priority Development Areas (PDA) designated by the City. At two-way stop controlled intersections in these areas, the overall LOS significance threshold shall be LOS mid-E.
- Policy TR-P3.4** The City may allow LOS above the established LOS significance thresholds for a particular location as an interim level of service where improvements are programmed by the City that will improve the service to an acceptable level.
- Policy TR-P3.5** The City may allow LOS above the established LOS significance thresholds for a particular location on the basis of specific findings described in Chapter 14.13 of the Vacaville Land Use and Development Code, Traffic Impact Mitigation Ordinance.
- Policy TR-P3.7** Roadway improvements implemented by the City using the Development Impact Fee Program or other funding sources shall be designed based on the level of service standards prescribed in Policies TR-P3.1, TR-P3-2 and TR-P3.3.
- Policy TR-P3.8** Require roadway improvements implemented by development projects to be designed based on the level of service standards prescribed in Policies TR-P3.2 and TR-P3.3.
- Policy TR-P4.1** Evaluate development proposals based on the level of service standards prescribed in Policies TR-3.1 through TR-3.5.
- Policy TR-P4.2** As part of development approvals, require reasonable demonstration that traffic improvements necessary to mitigate development in accordance with Policies TR-3.1 through TR-3.3 will be in place in time to accommodate trips generated by the project, or satisfy findings identified in Policies TR-3.4 and TR-3.5.
- Policy TR-P4.3** In order to ensure that adequate roadway capacity is provided for the buildout of the General Plan and that new development does not preclude the construction of adequate circulation facilities, require all new development to provide right-of-way dedications consistent with this Transportation Element (Figure TR-6).
- Policy TR-P4.4** When reviewing development proposals, consider Year 2035 projections for fair share contributions to transportation improvements (as shown in Figure TR-5) and full buildout projections (beyond Year2035) for dedication of right of way for future road improvements (as shown in Figure TR-6).

- Policy TR-P4.5** For locations where the LOS would exceed thresholds described in Policies TR-P3.2 and TR-P3.3 without the addition of traffic from a proposed development, the City may establish impact and mitigation criteria based on the incremental traffic contribution from the proposed development as described in Chapter 14.13 of the Land Use and Development Code (Traffic Impact Mitigation Ordinance).
- Policy TR-P5.1** Design intersections on arterial roadways to meet level of service standards and to avoid traffic diversion to local roadways or the freeway.
- Policy TR-P5.2** Locate high traffic generating uses so that they have direct access or immediate secondary access to arterial roadways, while balancing the need to control the number of driveways that enter arterial roadways.
- Policy TR-P6.3** Consider traffic calming measures consistent with the City's traffic calming policies and approved by the City as part of development proposals in an effort to lower vehicle speeds and enhance mobility for bicyclists and pedestrians.
- Policy TR-P6.4** Review phased developments for the potential for contributing to, or creating routes for, cut-through traffic, and establish conditions of approval as needed to limit the potential for cut-through traffic on residential roadways.
- Policy TR-P7.3** Require that new development applications include transit amenities, such as bus stops, bus bays, transit shelters, benches, and on-site drop-off locations, as appropriate, or explain why these features are infeasible or unnecessary.
- Policy TR-P7.4** Require that new development applications design roadway networks to accommodate transit vehicles and facilitate efficient transit routes.
- Policy TR-P7.6** Require that new development applications design roadway networks to accommodate on-street bicycle lanes, and only allow bicycle routes with sharrows when on-street bicycle lanes are impractical or infeasible.
- Policy TR-P7.7** Require that new roadway networks be designed as a grid pattern to reduce circuitous travel patterns and improve access and circulation for all modes.
- Policy TR-P7.8** Prioritize transportation improvements that support and enhance travel by transit, bicycle, and pedestrian modes to and from designated Priority Development Areas (PDA).
- Policy TR-P8.4** Require that new development applications include bike paths or bike lanes, when appropriate.

- Policy TR-P8.5** Enhance and improve bicycle connections between neighborhoods and between neighborhoods and significant destinations, such as parks, schools, transit stops and transit centers, shopping centers, and employment centers.
- Policy TR-P8.9** Require that new multi-family and non-residential developments provide adequate public and private bicycle parking and storage facilities.
- Policy TR-P10.1** Cooperate with public agencies and other entities to promote local and regional public transit serving Vacaville.
- Policy TR-P11.4** Continue to work with Caltrans and the Solano Transportation Authority (STA) to identify and evaluate sites for parking to connect with transit and support rideshare parking, and establish standards for the development of parking sites for rideshare and transit users.
- Policy TR-P11.5** Support and encourage Caltrans to preserve options for future transit use when designing improvements for Interstate and State highways.
- Policy TR-P11.7** Require specific plans in new growth areas to include planning for future public transit service to these areas by considering the addition of future transit stops and route connections as part of the public transportation system.

Vacaville Municipal Code

The City's Municipal Code includes regulations that govern the transportation system. The Land Use and Development Code, and the Traffic Impact Mitigation Ordinance are of particular relevance to the project. The Land Use and Development Code identifies off-street parking requirements for each type of land use and provides development standards for emergency vehicle and fire apparatus access to residential projects. The Traffic Impact Mitigation Ordinance establishes a procedure to assess and mitigate the potential impacts of proposed development projects on the transportation system.

4.7.4 Impacts

Methods of Analysis

The City's traffic model was used to estimate the traffic growth increment resulting from the project. This growth was applied to the existing traffic counts to develop the volumes for Existing plus Project scenario.

Trip Generation

The trip generation totals for the proposed project are presented in Table 4.7-9. Table 4.7-10 shows the trip distribution of the project. The project has four general land-use categories which require different generation rates. Trip generation rates for the project were obtained from the City’s traffic model as well as the Institute of Transportation Engineer’s (ITE) Trip Generation, 9th edition (2012), and the City of San Diego Trip Generators for developed city park. These include:

- Single-Family Residential land use category (ITE 210 land use category)
- Neighborhood Commercial (City’s traffic model)
- Condo/Townhouse Residential land use category (ITE 230 land use category)
- City Park Developed (San Diego Trip Generators, City Park Developed)

The proposed project would generate 663 AM peak hour and 875 PM peak hour vehicle trips that will access the road system surrounding (external to) the project site, as shown in Table 4.7-9.

**Table 4.7-9
Vehicle Trip Generation**

Land Use	ITE Code	Size	ITE Rate		Trips	
			AM	PM	AM	PM
Single Family Home	210	584 dwelling units	0.75	1.00	438	584
Neighborhood Commercial	*	7.4 acres	31.38	37.3	232	276
Condo / Townhouse	230	184 dwelling units	0.44	0.52	81	96
City Park Developed	**	19.4 acres	2.00	4.00	39	78
Project Trip Generation Totals					790	1033
Internal capture of commercial and regional park (25%)					68	88
Pass-by percentage for neighborhood commercial (34% of remaining 75%)					59	70
Net external project volumes					663	875

Source: PRISM Engineering, 2017, City of Vacaville, and ITE. Pass-by source: ITE. Internal Capture source: ITE.

Notes:

* Trip rate is from City of Vacaville traffic model for Neighborhood Commercial category. Trip rate is by acre.

** Trip rate is from San Diego Trip Generators, Developed City Park, Table 7.

The project site land uses are diverse, and because they complement each other, this situation can help to reduce impacts to adjacent streets outside the project site. There is a portion of trips within the project site that would be made by residents living in the development, and these include any vehicle trips made to local parks, neighborhood commercial sites, etc. The proposed neighborhood commercial centers are located on the northwest and the southwest quadrants of the project site. Some of that commercial traffic would be satisfied by local residents who live within the project. Specifically, it was assumed that 25 percent of the commercial and regional

park land uses would be satisfied by local residents that live within the project boundaries. The remaining 75 percent of traffic from parks and commercial uses were assumed to come from patrons that live outside of the project site. Of those 75 percent of the commercial trips which could have “pass-by” traffic,⁴ it was assumed that there would be pass-by reductions for this neighborhood commercial land use. A pass-by trip is one where the vehicle driver is already on the road as part of another trip, and they stop by a commercial establishment along the way. In other words, the commercial establishment did not increase the local trip generation of the adjacent street traffic for these specific pass-by drivers. Recognizing these kind of trips helps to prevent double counting of traffic and overestimating trip generation increases.

Vehicle Trip Distribution and Assignment

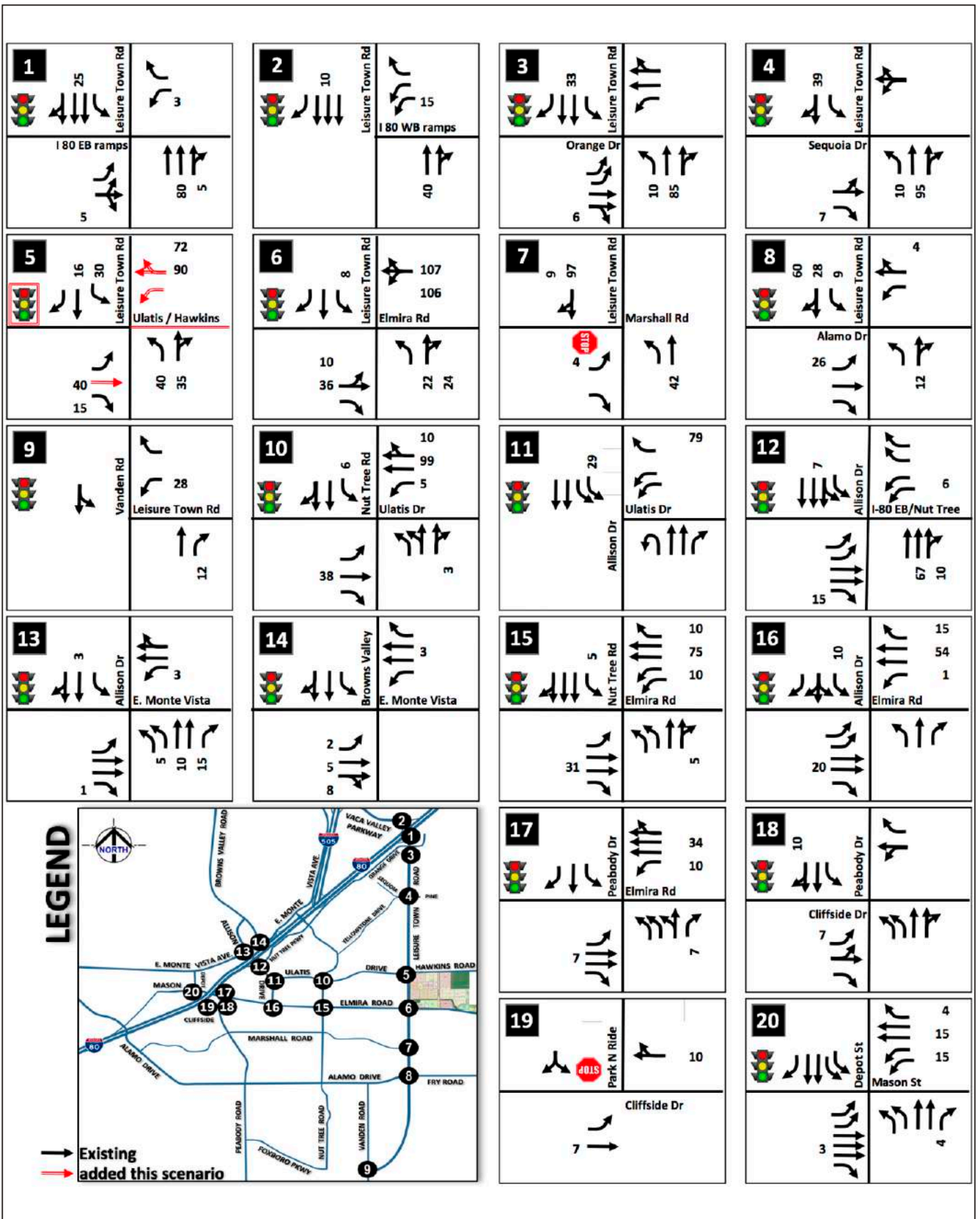
The project-generated vehicle trips were distributed and assigned to the roadway network by the citywide traffic model. The model’s distribution patterns for project trips are summarized in Table 4.7-10. The AM peak hour project only trips are illustrated as turning movements in Figure 4.7-6. The PM peak hour project only trips are illustrated in Figure 4.7-7.

**Table 4.7-10
Project Vehicle Trip Distribution**

Origin/Destination	Distribution Percent	
	AM Peak Hour	PM Peak Hour
Leisure Town Road, North	28%	23%
Leisure Town Road, South	6%	6%
Ulatis Drive, West	26%	28%
Hawkins Road, East	2%	2%
Elmira Road, West	22%	23%
Elmira Road, East	1%	1%
Marshall Road, West	3%	2%
Alamo Drive, West	10%	13%
Alamo Drive / Fry Road, East	2%	2%
Total	100%	100%
<i>Freeway Trips</i>		
I-80 west of Alamo Drive	20%	14%
I-80 east of Leisure Town	13%	8%

Source: PRISM Engineering, 2017. Vacaville Traffic Model.

⁴ Pass-by traffic is traffic that is already on the road (i.e., making a trip home from work) and decides to stop by a store, etc.

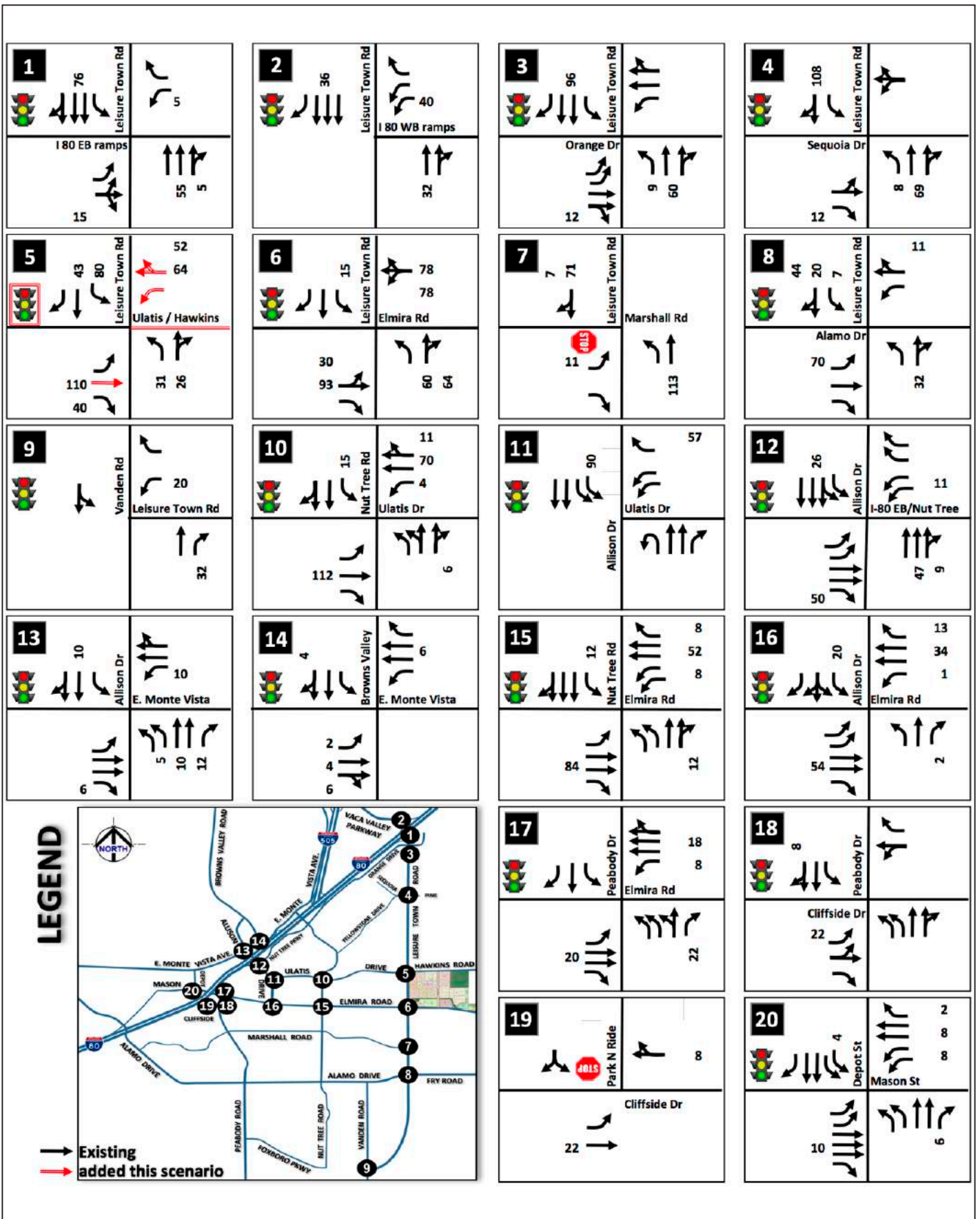


SOURCE: Prism Engineering (2017)

FIGURE 4.7-6

AM Project Only Trips Turn Moves

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SOURCE: Prism Engineering (2017)

FIGURE 4.7-7

PM Project Only Trips Turn Moves



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Traffic Volume Forecasts

Traffic volume forecasts for the Cumulative Existing plus Approved projects (EAP) and Cumulative (Year 2035) scenarios are derived from the Vacaville citywide traffic model. The inputs to the model are land uses and road network assumptions throughout the city. The version of the model is the same that was used for the Roberts' Ranch EIR traffic study (which relied on the traffic model used in the City's General Plan EIR (2015)). That model, used in this study, had specific updates (new street network) to reflect the latest development projections from the City and represents the Roberts' Ranch project. PRISM Engineering used and modified, as appropriate, the Roberts' Ranch EIR traffic model to develop Cumulative (Year 2035) traffic projections (*which now include the Roberts' Ranch project as a default*), and to develop the intersection turning movement volumes for the study intersections that were not in the Roberts' Ranch EIR, namely, Intersections #10-14, and #16-20. The full trip generation and street network for that project was included in the City's traffic model for analysis of the proposed project.

Transportation Network

The Cumulative EAP scenario assumed improvements are set forth in the Roberts' Ranch EIR mitigation measures, and are shown graphically on Figures 4.7-10 and 4.7-11, which also show the EAP scenario volumes (which include the Roberts' Ranch traffic). The Cumulative year 2035 scenario intersection geometry assumptions are shown on Figures 4.7-14 and 4.7-15 with red arrows and lines indicating a proposed new improvement (such as adding lanes, or a signal). Also shown are the year 2035 traffic projections which include the full Roberts' Ranch traffic projections. The following general improvements were assumed in the City's 2035 traffic model, and in the capacity analyses for year 2035 cumulative conditions:

- Vaca Valley / I-505 interchange and overcrossing improvements.
- California Drive overcrossing.
- Jepson Parkway Project, which would improve Leisure Town Road to a four-lane divided arterial from Route 12 to I-80 at the Leisure Town Road interchange. In Vacaville, Jepson Parkway will follow the Leisure Town Road alignment along the western border of the Roberts' Ranch Specific Plan area.
- Signalization and realignment of the Leisure Town Road/Ulatis Drive and Leisure Town Road/Hawkins Road intersections
- Signalization of the Leisure Town Road/Marshall Road intersection.
- Widening of Fry Road to a four-lane arterial east of Leisure Town Road to Carroll Way

- Widening of Peabody Road to a four-lane arterial between the Vacaville City Limits and Markley Lane.

These assumptions of future improvements-in-place were worked out in advance with the City's Traffic Engineer based on programmed improvements that are known, and consistent with previous transportation studies approved by the City.

The following bicycle facilities are planned in the study area:

- **Elmira Road Bike Path.** A Class I bike path would be built along the old Southern Pacific Railroad right-of-way on the north side of Elmira Road between Leisure Town Road and Edwin Drive.
- **Ulatis Creek Bike Path.** A Class II bike lane and Class I bike path along Ulatis Creek between Ulatis Drive and Leisure Town Road.
- **Jepson Parkway Bike Path.** A Class I bike path would be provided as a part of the Jepson Parkway improvements from I-80 along Leisure Town Road and Vanden Road to Fairfield.

The following transit facilities are planned in the study area:

- **Commuter Rail Station.** Construction of a new Fairfield/Vacaville Multi-Modal Train Station at the southeast corner of Peabody Road and Vanden Road in northeast Fairfield for future Capitol Corridor intercity rail service. The Fairfield/Vacaville Multi-Modal Rail Station would further enhance regional transit connections.

Issues Addressed in the Modified Initial Study

As discussed in the Modified Initial Study (see Appendix B), the project would not result in a change in air traffic patterns that could contribute to a safety risk, nor does the project include any design hazards or would introduce any incompatible uses. If additional development is proposed in the project site, additional project-level site plans would be reviewed by the City as a part of the entitlement process. All site plans would conform to the City's Design Standards and Standard Drawings unless exceptions are approved by the City. Therefore, these issues are not addressed further in the EIR.

Thresholds of Significance

Consistent with Appendix G of the CEQA Guidelines, the Vacaville General Plan, and professional judgment, a significant impact with respect to transportation and circulation would occur if development of the proposed project would do any of the following:

Intersections in Vacaville

- Cause a signalized or all-way stop controlled intersection outside of the Downtown Urban High Density Residential Overlay District to operate below LOS mid-D (average delay greater than 45 seconds for signalized, and greater than 30 seconds for all-way stop).
- Cause one/two-way stop controlled intersection outside of the Downtown Urban High Density Residential Overlay District to operate below LOS D (average delay greater than 35 seconds).
- Cause a signalized intersection or all-way stop controlled intersection in the Downtown Urban High Density Residential Overlay District to operate below LOS D (an average delay greater than 55 seconds for signalized and greater than 35 seconds for all-way stop).
- Cause a one/two-way stop controlled intersection in the Downtown Urban High Density Residential Overlay District to operate below LOS mid-E (an average delay greater than 42.5 seconds or more).
- Cause the average delay to increase by 5 seconds or more at an intersection operating at an unacceptable service level without the project.

For intersections and road segments on the Solano County Congestion Management System:

- Cause an intersection or segment to degrade to standard LOS D, E, or F, as identified in the plan.

Conflicts with Congestion Management Programs

According to Section III, CMP System Performance Element, of the Solano County Congestion Management Program, the project impact is considered significant if the project-generated traffic would:

- Cause the following road segments to degrade below LOS E:
 - I-80 between Post Mile 23.03 (Pena Adobe Road) and 24.08 (Alamo Drive). All other adjacent segments of I-80 have a CMP LOS standard of LOS F, including I-80 west of Pena Adobe Road to SR 12 West in Fairfield, and I-80 east of Alamo Drive to SR 113 South in Dixon.
 - I-505 between I-80 and the county line.
 - Elmira Road between Leisure Town Road and the Vacaville city limits.
 - Peabody Road between California Drive and Fairfield city limits.
 - Vaca Valley Parkway between I-80 and I-505.

- Cause the following road segments to degrade below LOS D:
 - Vanden Road between Peabody Road and Leisure Town Road.

Result in Inadequate Emergency Access

- Would the project result in inadequate emergency access.

Conflicts with Transit, Bicycle or Pedestrian Transportation

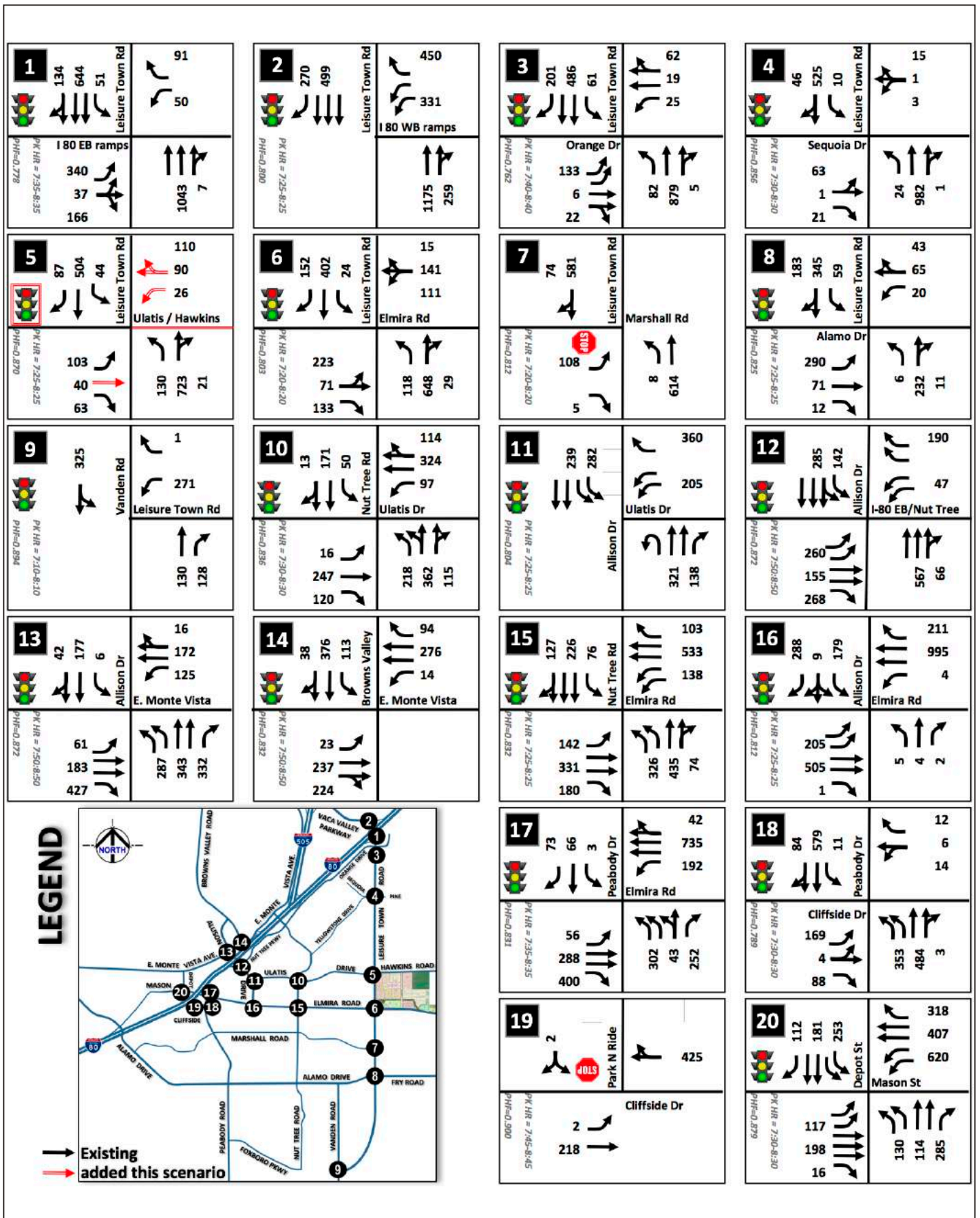
- Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Impacts and Mitigation Measures

4.7-1: Implementation of the proposed project under Existing plus Project conditions would degrade operations at three study intersections that trip the City's thresholds of significance. This is considered a significant impact.

Impacts on the circulation system were assessed in terms of traffic operations at study intersections and traffic volumes on local street segments under Existing plus Project conditions and compared to existing conditions. The HCM "planning level" intersection LOS were determined at each study intersection under Existing plus Project conditions and compared to existing conditions. The capacity analysis results for the volumes shown in each of these figures listed above are summarized in Table 4.7-11. This table shows that under Existing plus Project scenarios, there are several intersections that would operate at a deficient LOS (bold text). When these intersections are *significantly* impacted by the project, the text is bolded and cell is shaded gray.

Figures 4.7-8 and 4.7-9 show the assumed Existing plus Project scenario intersection geometry and peak hour turning movement volumes for each of the study intersections (AM and PM peak hours, respectively). Table 4.7-11 indicates that the PM peak hour is more critical than the AM peak hour because there are seven study intersections currently operating at an acceptable level of service, whereas in the AM peak hour only two study intersections operate at unacceptable conditions.

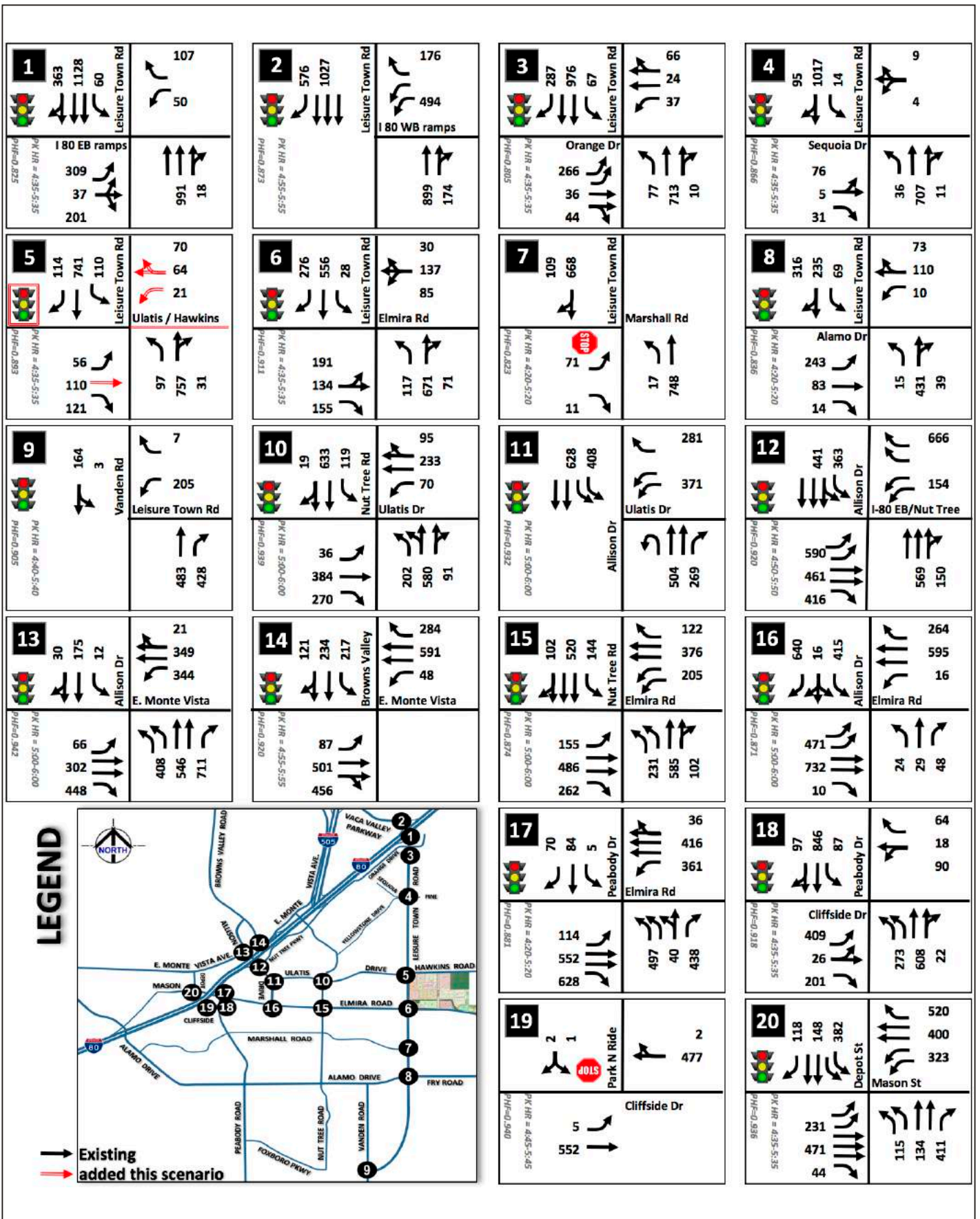


SOURCE: Prism Engineering (2017)

FIGURE 4.7-8

AM Existing Plus Project Turn Moves

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SOURCE: Prism Engineering (2017)

FIGURE 4.7-9

PM Existing Plus Project Turn Moves

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Intersections operating unacceptably are identified in the table as bolded. In addition, there is a distinction between signalized intersection's that exist within a priority development area, and all other signalized intersections that do not exist within a priority development area. The priority development area allows for a higher threshold of significance than outside of a priority development area before mitigation is required. Intersection #5, Leisure Town Road at Ulatis Drive, is not shown as an impact because the project would realign Hawkins Road to align with Ulatis Drive. This three-way intersection currently operating at an unacceptable LOS F condition would operate at an acceptable level when a new signal control at the new four-way intersection is constructed as part of the project. Therefore, this is shown in Table 4.7-11 as operating acceptably, with a resulting LOS C condition. The specific intersection configuration is shown in the mitigation of project impacts section which follows.

The intersections of Elmira Road at Leisure Town Road and Nut Tree Road at Ulatis Drive would have a significant increase in delay with project traffic added. The Leisure Town Road intersection at Elmira Road is being improved as part of the Jepson Parkway Project that is currently under construction. The Jepson Parkway Project is part of the City's traffic impact fee; therefore, payment of these fees mitigates the impact created by the project to Leisure Town Road.

For the remaining intersections, operating unacceptably, the project does not trip a threshold to consider them a significant impact.

The following three intersections are expected to exceed the City's LOS thresholds during the weekday AM and/or PM peak hours under Existing plus Project conditions:

- **Leisure Town Rd at Elmira Road (#6):** The addition of project traffic to existing traffic levels at this location would exceed the City's LOS threshold, and change the operation from LOS D to LOS F during the weekday PM peak hour. During the AM peak hour this would change from LOS C to LOS F conditions, resulting in a **significant impact**.
- **Nut Tree Road at Ulatis Drive (#10):** The addition of project traffic to existing traffic levels at this location would exceed the City's LOS threshold, but the overall operation would remain at LOS E during the weekday PM peak hour (55.3 seconds delay). With project traffic the LOS remains E during the weekday PM peak hour (69.6 seconds delay). This is a considered a **significant impact**.
- **Depot Street at Mason Street (I-80 ramps)(#20):** The addition of project traffic to existing traffic levels at this location would exceed the City's LOS threshold, and change the operation from LOS D to LOS E during the weekday AM peak hour, resulting in a **significant impact**.

**Table 4.7-11
Intersection Operations – Existing plus Project**

#	Intersection	Traffic Control	Peak Hour	Existing		Existing plus Project	
				LOS	Delay	LOS	Delay
1	Leisure Town Rd at I-80 EB Ramps	Signal	AM	B	19.3	C	20.5
			PM	B	20.0	C	21.4
2	Leisure Town Rd at I-80 WB Ramps	Signal	AM	A	5.9	A	6.2
			PM	A	5.8	A	6.3
3	Leisure Town Rd at Orange Dr	Signal	AM	B	16.4	B	17.5
			PM	B	18.5	C	20.2
4	Leisure Town Rd at Sequoia Dr	Signal	AM	A	8.6	A	8.8
			PM	B	12.0	C	22.9
5	Leisure Town Rd at Ulatis	TWSC	AM	B	12.9	C	26.9
			PM	A	5.5	C	26.6
6	Leisure Town Rd at Elmira Rd	Signal	AM	C	33.6	F	80.1
			PM	D	36.1	F	87.7
7	Leisure Town Rd at Marshall Rd	TWSC	AM	A	6.9	B	12.8
			PM	A	3.9	A	9.9
8	Leisure Town Rd at Alamo Dr	Signal	AM	C	24.9	D	35.2
			PM	D	39.8	D	39.2
9	Leisure Town Rd at Vanden Rd	Signal	AM	A	9.2	A	9.5
			PM	A	9.2	A	9.6
10	Nut Tree Rd at Ulatis Dr	Signal	AM	C	27.4	C	28.7
			PM	E	55.3	E ★	69.6
11★	Allison Dr at Ulatis Dr	Signal	AM	B	13.4	B	13.9
			PM	B	13.6	B	17.4
12★	Allison Dr at Nut Tree Parkway	Signal	AM	B	17.8	B	18.4
			PM	C	32.8	C	34.8
13	Allison Dr at E. Monte Vista Ave	Signal	AM	C	20.6	C	20.8
			PM	E	63.6	E	66.9
14	Browns Valley Pkwy at E. Monte Vista	Signal	AM	B	17.1	B	16.9
			PM	B	18.3	B	17.8
15★	Nut Tree Rd at Elmira Rd	Signal	AM	D	36.5	D	38.2
			PM	D	44.4	D	45.8
16★	Allison Dr at Elmira Rd	Signal	AM	B	19.5	C	21.6
			PM	C	33.2	D	35.6
17	Peabody Rd at Elmira Rd	Signal	AM	C	23.3	C	23.9
			PM	E	57.6	E	58.7
18	Peabody Rd at	Signal	AM	B	19.3	B	19.5

**Table 4.7-11
Intersection Operations – Existing plus Project**

#	Intersection	Traffic Control	Peak Hour	Existing		Existing plus Project	
				LOS	Delay	LOS	Delay
	Cliffside Dr		PM	D	46.4	D	48.5
19	Park / Ride at Cliffside/I-80 ramps	TWSC	AM	A	0.1	A	0.1
			PM	A	0.1	A	0.1
20★	Depot St at Mason St (I-80 ramps)	Signal	AM	D	54.0	E	56.4
			PM	E	79.9	F	80.1

Source: PRISM Engineering, 2017

Notes: **BOLD** indicates unacceptable level of service.

Shaded cells = **PROJECT IMPACT** Requiring Mitigation (*exceed City's threshold of significance*)

☛ Significant and Unavoidable impact

★ Intersection is in Planned Development Area (PDA) and has higher threshold than outside of PDA.

TWSC = Two Way Stop Control, stop signs on side street(s). Signal = signalized intersection.

Mitigation Measures

Implementation of Mitigation Measure TRAFF-1a at the Leisure Town Road and Elmira Road (#6) intersection would result in an acceptable LOS, thereby reducing the impact to less than significant. The Nut Tree Road and Ulatis Drive (#10) and the Depot Street and Mason Street (#20) intersections are fully built out with traffic signals, curb and gutter, sidewalks, and adjacent development. A variety of mitigation options at these locations were evaluated, including phase modifications and restriping as well as new construction to add lanes. Right-of-way is not available at these intersections, and it is not feasible to eliminate existing striped bike lanes, as required by the General Plan, to accommodate intersection modifications. Therefore, the impact at the Nut Tree Road and Ulatis Drive (#10) and the Depot Street and Mason Street (#20) intersections would remain significant and unavoidable.

TRAFF-1a At the Leisure Town Road and Elmira Road (#6) intersection, the project applicant shall install the following improvements or pay in-lieu traffic fees to the City:

- Westbound – Provide west bound approach with three lanes as follows: West Bound Left Turn Lane, West Bound Through Lane, and West Bound Right Turn Lane, and provide an additional through lane for the northbound and southbound approaches.

Implementation of Mitigation Measure TRAFF-1a would allow the intersection to operate above the city's LOS thresholds at LOS D with 38.0 seconds of delay in the PM peak hour.

Since this transportation improvement is part of the City’s Traffic Impact Fee, payment of in-lieu traffic fees to the City is acceptable as a mitigation.

4.7-2: Implementation of the proposed project would increase traffic volumes along study freeway segments in the CMP system, but would not exceed LOS thresholds of significance. This would be a less-than-significant impact.

Freeway mainline segment operations under Existing plus Project conditions are summarized in Table 4.7-12. Study freeway segments on the CMP system would operate within acceptable standards under both the Existing and Existing plus Project scenarios. This is considered a **less-than-significant impact**.

Mitigation Measure

None required.

**Table 4.7-12
Freeway Mainline Segment Level of Service –Existing plus Project**

Freeway Mainline Segment / Direction	Existing				Existing plus Project			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Density	LOS	Density	LOS	Density	LOS	Density	LOS
<i>I-80 Mainline w/o Elmira</i>								
Eastbound	17.1	B	29.0	D	17.3	B	29.3	D
Westbound	21.0	C	26.5	D	21.2	C	26.8	D
<i>I-80 Mainline e/o Elmira</i>								
Eastbound	18.7	C	28.6	D	18.9	C	28.9	D
Westbound	18.0	B	28.9	D	18.1	B	29.2	D
<i>I-80 Mainline w/o Leisure Town</i>								
Eastbound	22.1	C	26.6	D	22.3	C	26.9	D
Westbound	16.6	B	26.2	D	16.7	B	26.5	D
<i>I-80 Mainline e/o Leisure Town</i>								
Eastbound	18.8	C	24.2	C	19.0	C	24.4	C
Westbound	21.2	C	20.2	C	21.4	C	20.4	C

Source: Performance Enhancement Measurement System (PeMS), 2017. PRISM Engineering, 2017.

Notes: Density = passenger cars per mile per lane; LOS = Level of Service

4.7-3: Implementation of the proposed project, including installation of traffic circles and other traffic calming devices, may delay emergency response or impede movement of emergency vehicles. This would be a potentially significant impact.

The analysis of emergency access considers both the adequacy of emergency access to and from the project site at ultimate buildout, and the adequacy of emergency access during construction, while some project components are already occupied but before all project roadways have been constructed. Emergency secondary access would be available in all phases of project development to address the requirements of the City's fire department.

The project site layout at buildout has been designed consistent with State Fire Marshall Regulations, Title 19 California Code of Regulations, which requires access road right-of-way to be no less than 20 feet from building to the public street. However, traffic circles and traffic calming devices shown on project plans could potentially delay response time for emergency vehicles resulting in a **potentially significant impact**.

Mitigation Measures

Implementation of Mitigation Measure TRAFF-3 would provide emergency vehicle accessibility that meets accepted standards and the project impact would be less than significant.

TRAFF-3 Roundabouts and traffic circles shall be designed to accommodate fire trucks and other large vehicles to travel through the intersection at an appropriate speed for emergency response. On-street parking shall be prohibited near the traffic circles to ensure clear passage. All traffic calming devices shall be designed in accordance with City standards and be approved by the City.

4.7-4: Implementation of the proposed project could conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities. This would be a potentially significant impact.

The Farm at Alamo Creek Specific Plan, upon completion, would be consistent with the adopted transportation-related plans, ordinance, programs, or policies described in the Regulatory Setting section above, including General Plan goals and policies establishing a balanced multimodal system.

The project's proposed sidewalks and multi-use pathways would provide safe and convenient pedestrian travel throughout the project site. Pedestrian and bicycle pathways would be provided to connect selected cul-de-sacs, including providing access through sound walls along certain streets, thus providing safe and convenient access and connectivity for pedestrians and

bicyclists to collector roads and key local roads . Class II bike lanes would be provided along designated streets, increasing connectivity for bicyclists and would also serve as an additional buffer for pedestrians.

Because the project would be constructed in phases over a period of time, interim phases of the project may potentially conflict with adopted plans, policies and programs related to public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities during the initial phases of implementation prior to full buildout of the project. For instance, the provision of pedestrian and bicycle facilities and connections to Elmira Road and Leisure Town Road might not be adequate during the initial phases, which are slated to occur on the eastern portion of the plan area, are constructed. Therefore, the project would have potentially significant interim or short-term impacts related to multi-modal facilities. However, at full buildout, the project would not conflict with adopted plans, policies, and programs related to multi-modal facilities and would not decrease the performance and safety of such facilities. However, because there may be a potential conflict with adopted plans, policies and programs as interim phases of the project is developed, this would be considered a **potentially significant impact**.

Mitigation Measures

Implementation of Mitigation Measure TRAFF-4 would ensure that multimodal accessibility is provided during all phases of project development; therefore, reducing the project impact to less than significant.

TRAFF-4 The project-level site plan shall be submitted for each phase of the project development for review and approval by the City to ensure safe and direct facilities for pedestrians, bicyclists, and transit riders are provided and the design does not conflict with adopted plans, policies, and programs related to such facilities.

4.7.5 Cumulative Impacts

The cumulative impacts section describes the potential transportation impacts of the project relative to two background conditions, Existing plus Approved Projects (EAP) and projected 2035 development under the General Plan. Impacts related to the following two criteria are included in the cumulative analysis:

- Circulation System Performance
- Conflicts with Congestion Management Programs

Impacts related to inadequate emergency access and conflicts with transit, bicycle or pedestrian transportation would be identical to the impacts described in the project impacts section;

therefore, they are not repeated in the cumulative impacts evaluation. The project would not make a cumulatively considerable contribution to any emergency access or transit, bicycle or pedestrian transportation; therefore, all impacts would be less than significant.

Impacts on the circulation system were assessed in terms of traffic operations at study intersections and traffic volumes on local street segments.

4.7-5: Under Existing plus Approved plus Project conditions, traffic volumes would trip the City's threshold of significance at four intersections. This is considered a significant impact.

Figures 4.7-10 and 4.7-11 show the assumed EAP only peak hour turning movement volumes and intersection geometry for each of the study intersections (AM and PM peak hours, respectively). Figures 4.7-12 and 4.7-13 show the assumed EAP plus Project scenario intersection geometry and peak hour turning movement volumes for each of the study intersections (AM and PM peak hours). The capacity analysis results for the volumes shown in each of these figures listed above are summarized in Table 4.7-13. This table shows that under the Existing plus Approved Projects scenario, there are several intersections that would operate at a deficient level of service. When these intersections are *significantly* impacted by the project, the text is bolded and cell is shaded gray.

The following four intersections are expected to trip the City's threshold of significance during the weekday AM and/or PM peak hours under Existing plus Approved plus Project conditions:

- **Leisure Town Rd at Sequoia Drive (#4):** The addition of project traffic to Existing plus Approved traffic levels would exceed the City's LOS threshold, and change the operation from LOS D to LOS E during the weekday PM peak hour. This is a **significant impact**.
- **Leisure Town Rd at Elmira Road (#6):** The addition of project traffic to Existing plus Approved traffic levels would exceed the City's LOS threshold by exceeding the maximum acceptable delay for non-PDA intersections (LOS D with 45.6 seconds delay) during the weekday PM peak hour. This is a **significant impact**.
- **Nut Tree Road at Ulatis Drive (#10):** The addition of project traffic to Existing plus Approved traffic levels would trip the City's threshold of significance, and change the operation from unacceptable LOS D to LOS E during the weekday PM peak hour resulting in 77.7 seconds of delay. Currently this intersection operates at LOS D resulting in 50.9 seconds of delay. This is a **significant impact**.
- **Peabody Road at Elmira Road (#17):** The addition of project traffic to Existing plus Approved traffic levels would trip the City's threshold of significance, and change the

4.7 TRANSPORTATION AND CIRCULATION

operation from an acceptable LOS D to an unacceptable LOS D during the weekday PM peak hour resulting in 45.1 seconds of delay. This is a **significant impact**.

**Table 4.7-13
Intersection Operations – Existing plus Approved Projects**

#	Intersection	Traffic Control	Peak Hour	Existing plus Approved		Existing plus Approved plus Project	
				LOS	Delay	LOS	Delay
1	Leisure Town Rd at I-80 EB Ramps	Signal	AM	C	30.5	C	31.9
			PM	C	34.7	D	37.5
2	Leisure Town Rd at I-80 WB Ramps	Signal	AM	B	11.4	B	12.3
			PM	B	14.8	B	16.3
3	Leisure Town Rd at Orange Dr	Signal	AM	B	16.9	C	20.6
			PM	B	19.5	C	21.4
4	Leisure Town Rd at Sequoia Dr	Signal	AM	A	8.6	A	8.9
			PM	D	41.4	E	63.2
5	Leisure Town Rd at Ulatis	TWSC	AM	F	51.9	D	52.3
			PM	B	11.3	B	18.2
6	Leisure Town Rd at Elmira Rd	Signal	AM	C	34.1	D	39.2
			PM	D	41.0	D	45.6
7	Leisure Town Rd at Marshall Rd	TWSC	AM	B	18.4	C	19.6
			PM	C	16.7	C	17.7
8	Leisure Town Rd at Alamo Dr	Signal	AM	C	21.4	C	22.9
			PM	C	26.1	C	29.0
9	Leisure Town Rd at Vanden Rd	Signal	AM	A	6.1	A	6.3
			PM	A	7.1	A	7.4
10	Nut Tree Rd at Ulatis Dr	Signal	AM	C	29.6	C	31.2
			PM	D	50.9	E ⊕	77.7
11★	Allison Dr at Ulatis Dr	Signal	AM	B	15.4	B	16.6
			PM	B	15.3	B	15.6
12★	Allison Dr at Nut Tree Parkway	Signal	AM	C	21.1	C	22.0
			PM	D	40.0	D	42.2
13	Allison Dr at E. Monte Vista Ave	Signal	AM	C	20.7	C	21.3
			PM	D	51.1	D	51.0
14	Browns Valley Pkwy at E. Monte Vista	Signal	AM	B	14.6	B	14.9
			PM	B	19.8	B	19.9
15★	Nut Tree Rd at Elmira Rd	Signal	AM	D	41.5	D	47
			PM	D	49.3	D	51.8
16★	Allison Dr at Elmira	Signal	AM	C	25.0	C	28.0

**Table 4.7-13
Intersection Operations – Existing plus Approved Projects**

#	Intersection	Traffic Control	Peak Hour	Existing plus Approved		Existing plus Approved plus Project	
				LOS	Delay	LOS	Delay
	Rd		PM	D	36.4	D	47.8
17	Peabody Rd at Elmira Rd	Signal	AM	C	26.8	C	27.0
			PM	D	42.4	D	45.1
18	Peabody Rd at Cliffsides Dr	Signal	AM	C	22.0	C	22.4
			PM	D	42.5	D	44.9
19	Park / Ride at Cliffsides/I-80 ramps	TWSC	AM	A	0.1	A	0.1
			PM	A	0.1	A	0.1
20★	Depot St at Mason St (I-80 ramps)	Signal	AM	E	77.9	F	81.6
			PM	F	> 90	F	> 90

Source: PRISM Engineering, 2017

Notes: **BOLD** indicates unacceptable level of service.

Shaded cells = **PROJECT IMPACT** Requiring Mitigation (exceeded City's threshold of 5.0 seconds delay for LOS)

☛ Significant and Unavoidable impact

★ Intersection is in Planned Development Area (PDA) and has higher LOS threshold = LOS D @ 55 secs delay. Intersections outside of PDA are 45 secs delay threshold. Unless increase in delay for plus project scenario exceeds 5.0 seconds more than no project condition, it is not considered an impact requiring mitigation as per City policy.

TWSC = Two Way Stop Control, stop signs on side street(s). Signal = signalized intersection.

Mitigation Measures

Implementation of Mitigation Measure TRAFF-5a would allow the Leisure Town Road at Sequoia Drive (#4) intersection to operate above the City's LOS thresholds, and impacts would be reduced to less than significant. Implementation of Mitigation Measure TRAFF-5b would allow the Leisure Town Road at Elmira Road (#6) intersection to operate above the City's LOS thresholds, and impacts would be reduced to less than significant. PRISM Engineering consulted with the City's Traffic Engineer to investigate a variety of mitigation solutions at the Nut Tree Road and Ulatis Drive (#10) and the Peabody Road and Elmira Road (#17) intersections. These intersections are fully built out with traffic signals, curb and gutter, sidewalks, and adjacent development. Mitigation options were evaluated at these locations, including phase modifications and restriping as well as new construction to add lanes. Right-of-way is not available, and it is not feasible to eliminate existing striped bike lanes, as required by the General Plan, to accommodate intersection modifications. Therefore, impacts at the Nut Tree Road and Ulatis Drive (#10) and the Peabody Road and Elmira Road (#17) intersections would remain significant and unavoidable.

TRAFF-5a At the Leisure Town Rd at Sequoia Drive (#4) intersection, the project applicant shall install the following improvements or pay in-lieu traffic fees to the City:

- Southbound Approach – Add a through lane on southbound Leisure Town Road to provide one left-turn lane, one through lane and one shared through-right lane on the southbound approach.
- Southbound Departure – Widen the south leg of the intersection to provide a corresponding receiving lane.

This mitigation is consistent with the ultimate configuration of Jepson Parkway. With this mitigation, the intersection would operate at LOS A during both peak hours. Since this transportation improvement is part of the City's Traffic Impact Fee, payment of in-lieu traffic impact fees mitigates the impact.

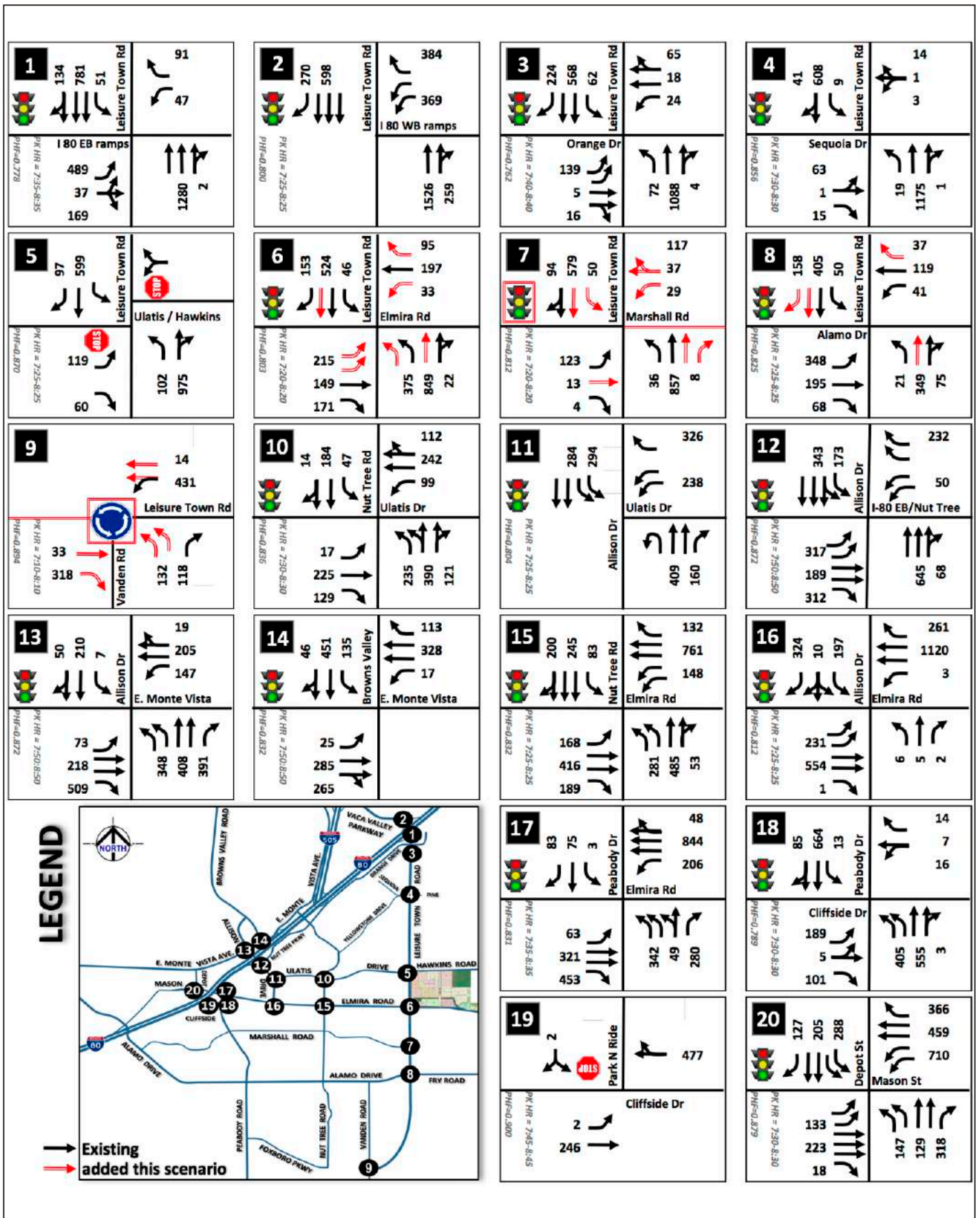
TRAFF-5b At the Leisure Town Rd at Elmira Road (#6) intersection, the project applicant shall install the following improvement or pay in-lieu traffic fees to the City:

- Restripe the west bound approach within existing pavement to accommodate dual West Bound Left Through Lanes, West Bound Through Lane, and a West Bound Through/Right Turn Lane (expand from three lanes to a four lane approach).

Implementation of this mitigation would allow the intersection to operate above the city's LOS thresholds at LOS D with 38.6 seconds of delay in the PM peak hour.

4.7-6: Under Cumulative plus Project conditions, intersection operations would trip the threshold of significance at six intersections. This is considered a significant impact.

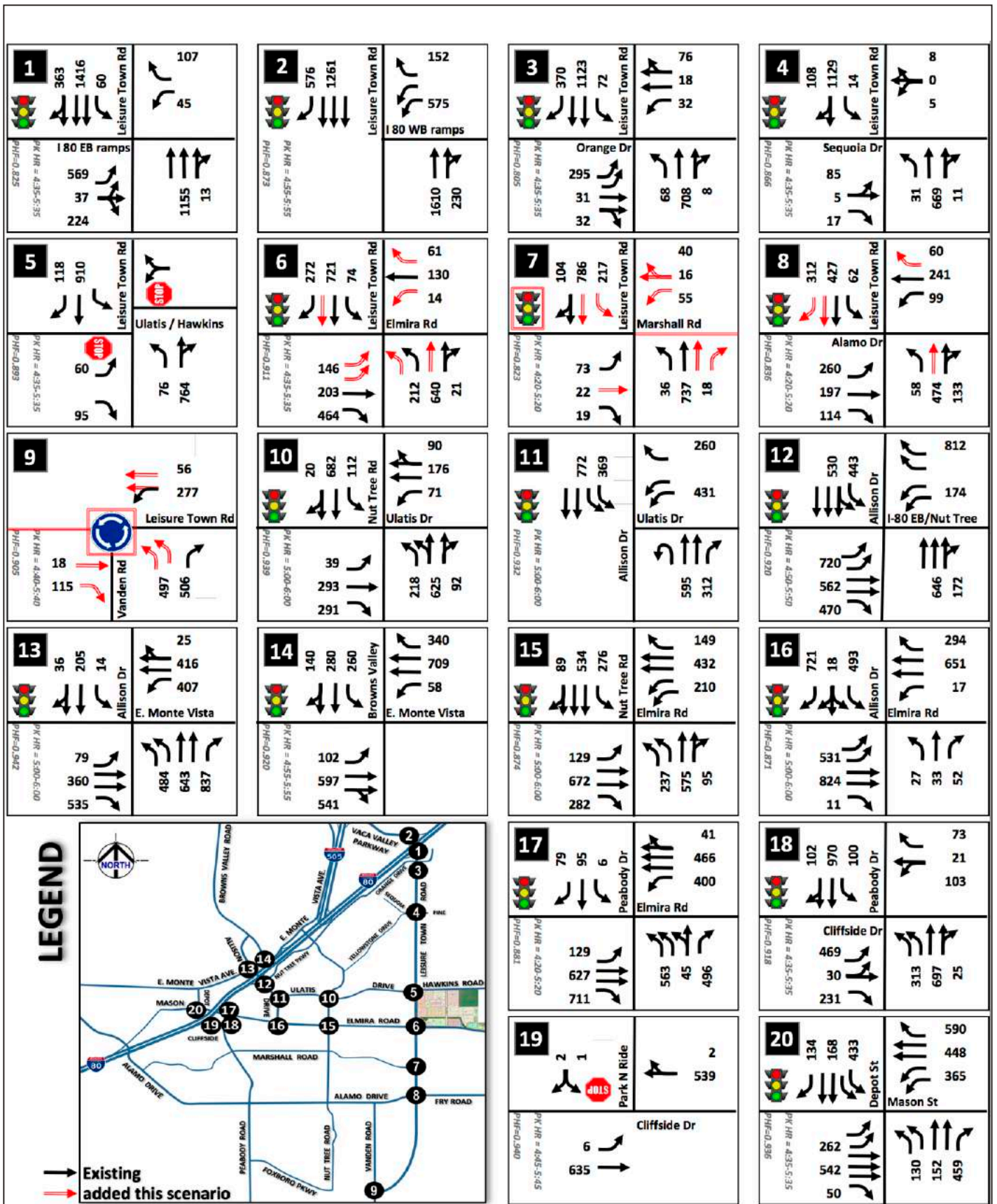
Figures 4.7-14 and 4.7-15 show the assumed Cumulative without Project Scenario intersection geometry and peak hour turning movement volumes for each of the study intersections (AM and PM peak hours, respectively). Figures 4.7-16 and 4.7-17 show the Cumulative Plus Project volumes for each study intersection (AM and PM peak hours, respectively). The capacity analysis results for the volumes shown in each of these figures listed above are summarized in Table 4.7-14. As shown in Table 4.7-14, under the Cumulative plus Project scenarios, there are several intersections that would operate at a deficient level of service (indicated in bold text). When these intersections are *significantly* impacted by the project, the text is bolded and cell is shaded gray.



SOURCE: Prism Engineering (2017)

FIGURE 4.7-10
AM EAP Turn Moves

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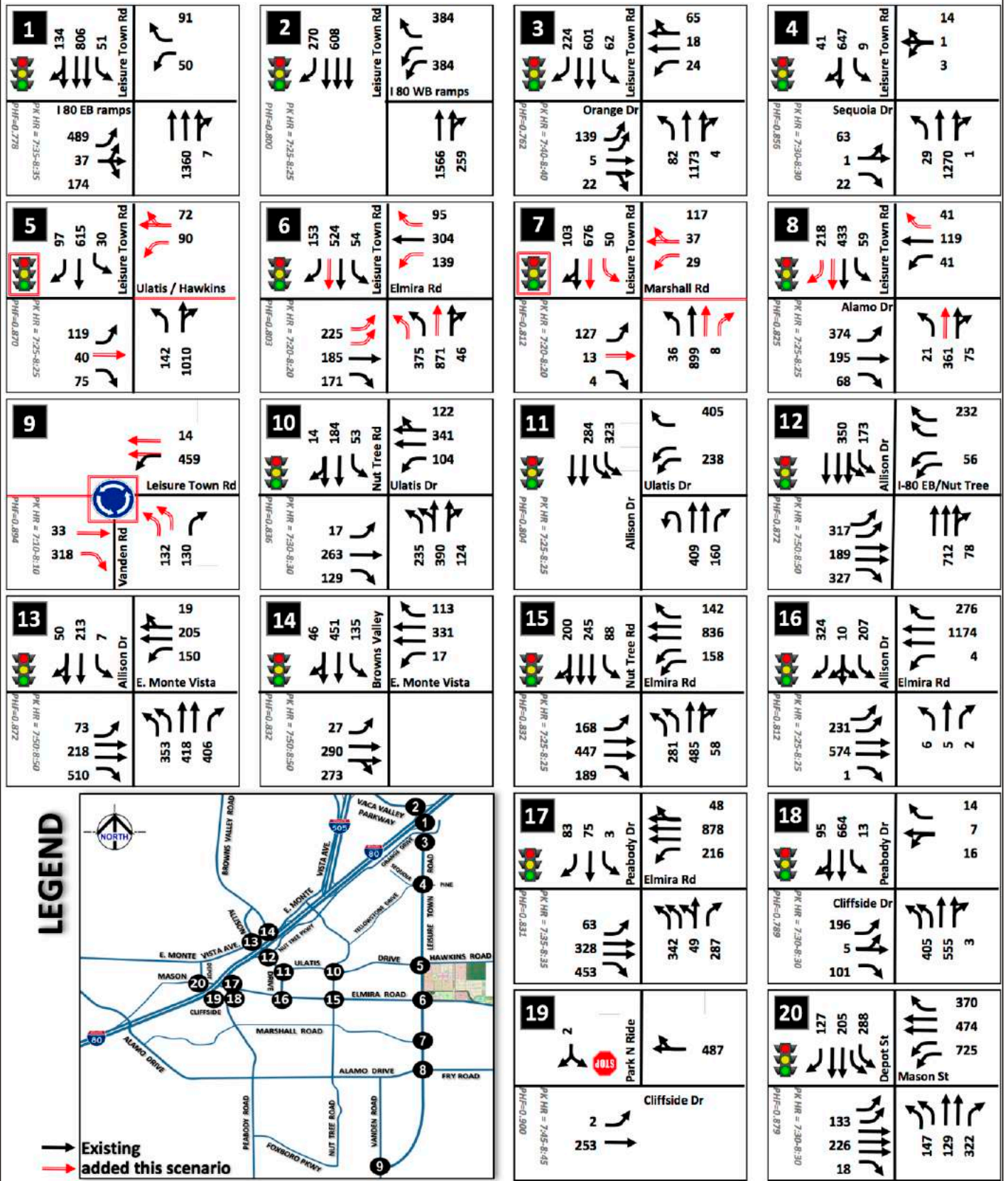


SOURCE: Prism Engineering (2017)

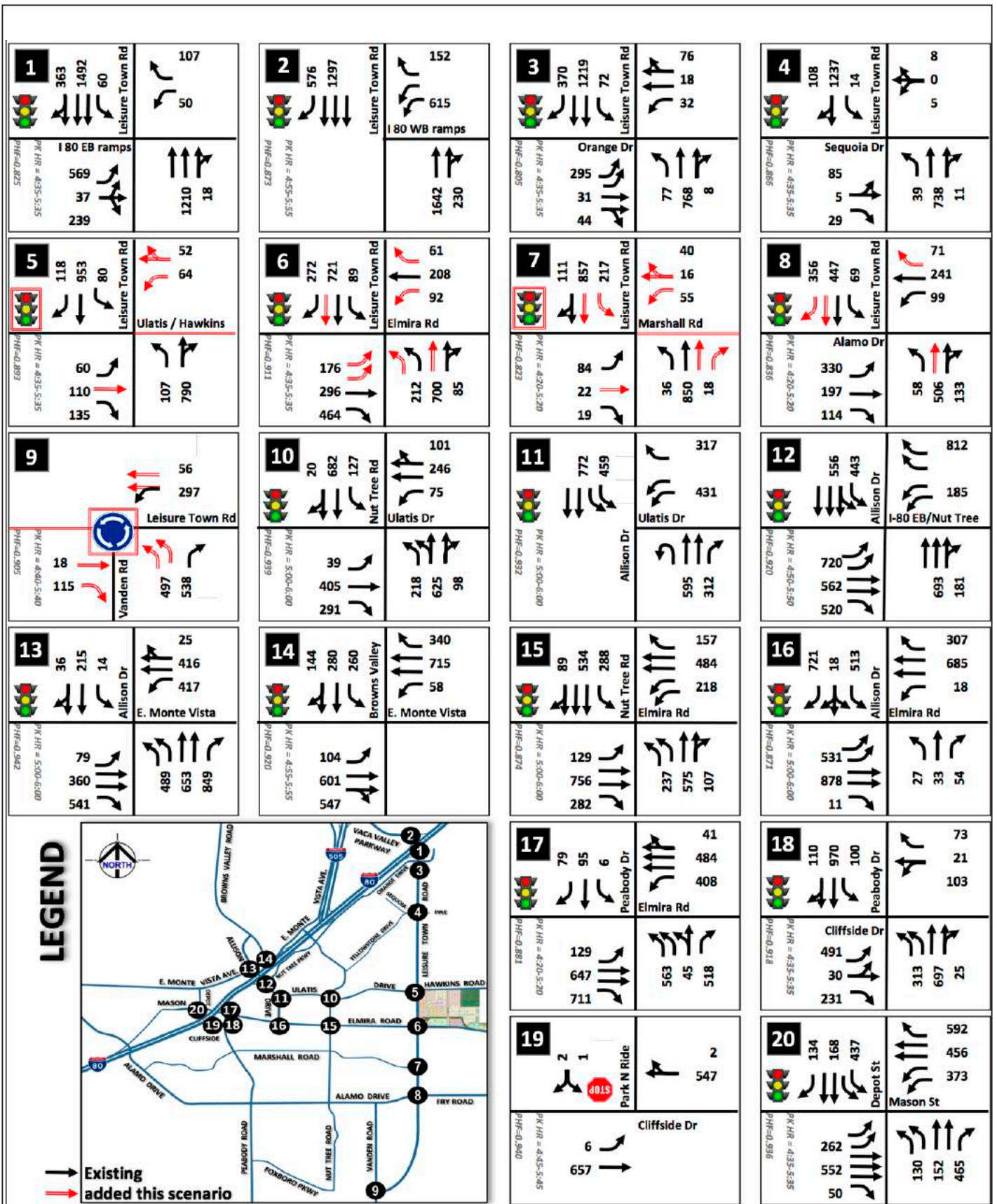
FIGURE 4.7-11
PM EAP Turn Moves



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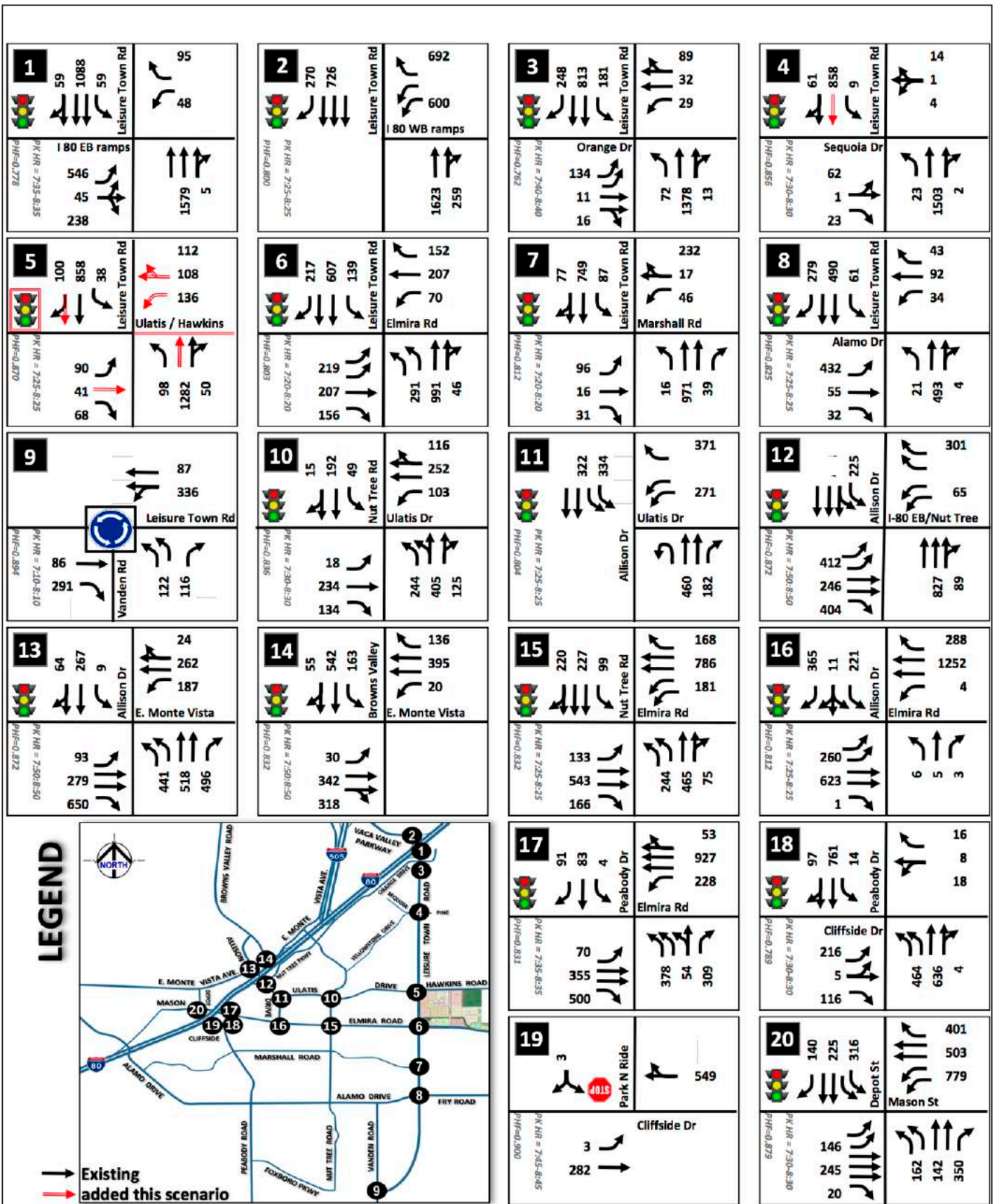
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SOURCE: Prism Engineering (2017)

FIGURE 4.7-13
PM EAP Plus Project Turn Moves

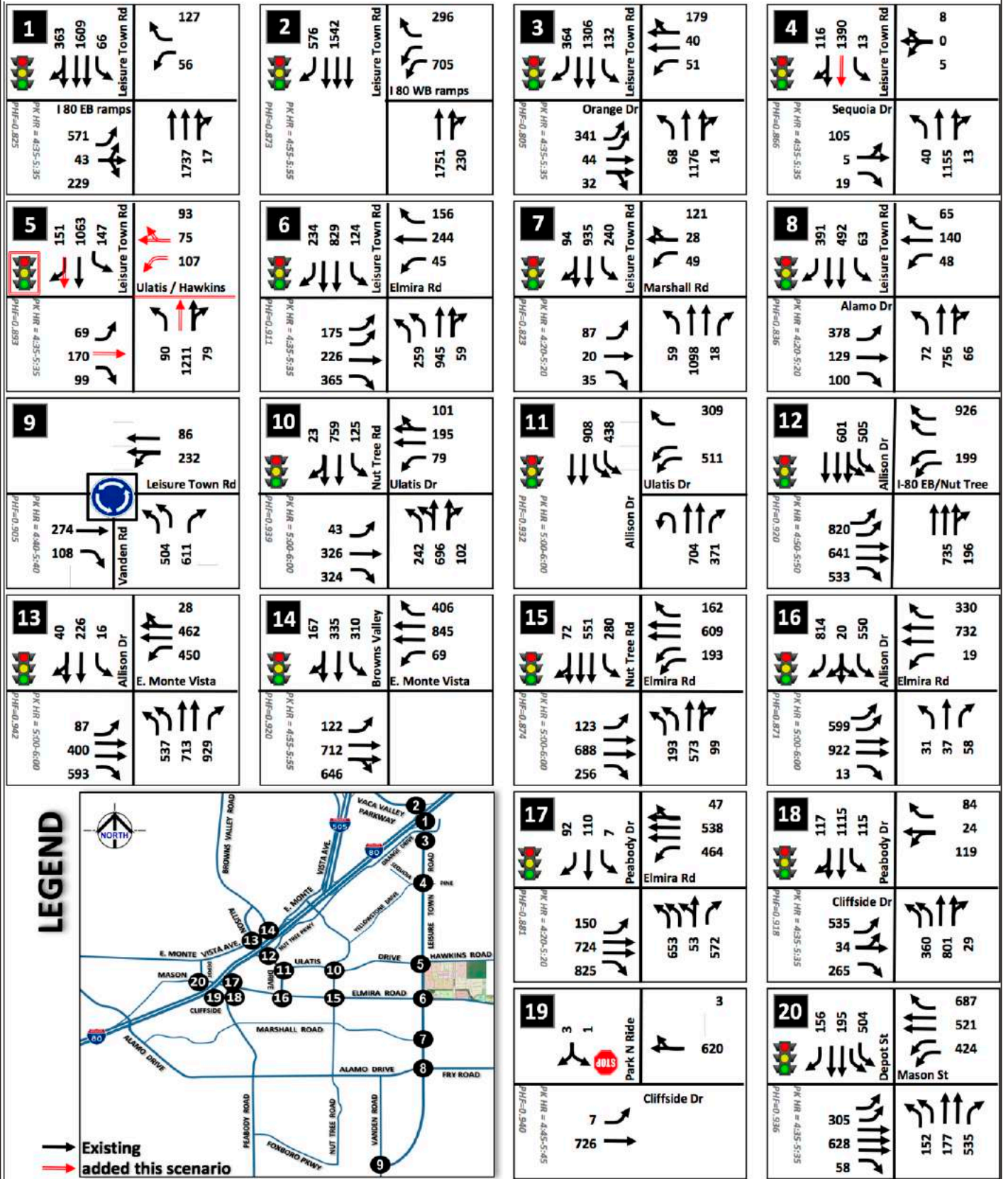
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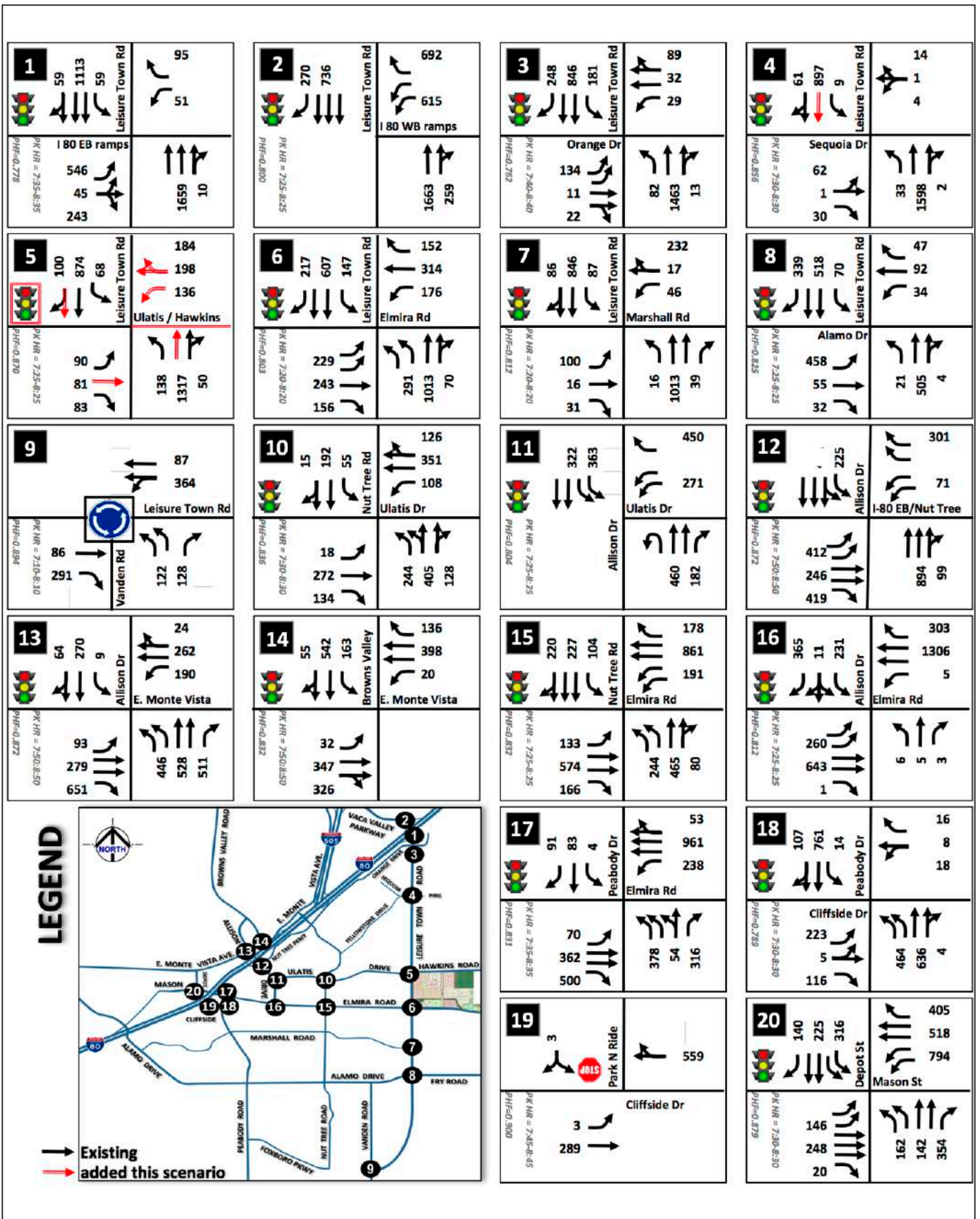
SOURCE: Prism Engineering (2017)

FIGURE 4.7-14
 AM Cumulative Turn Moves

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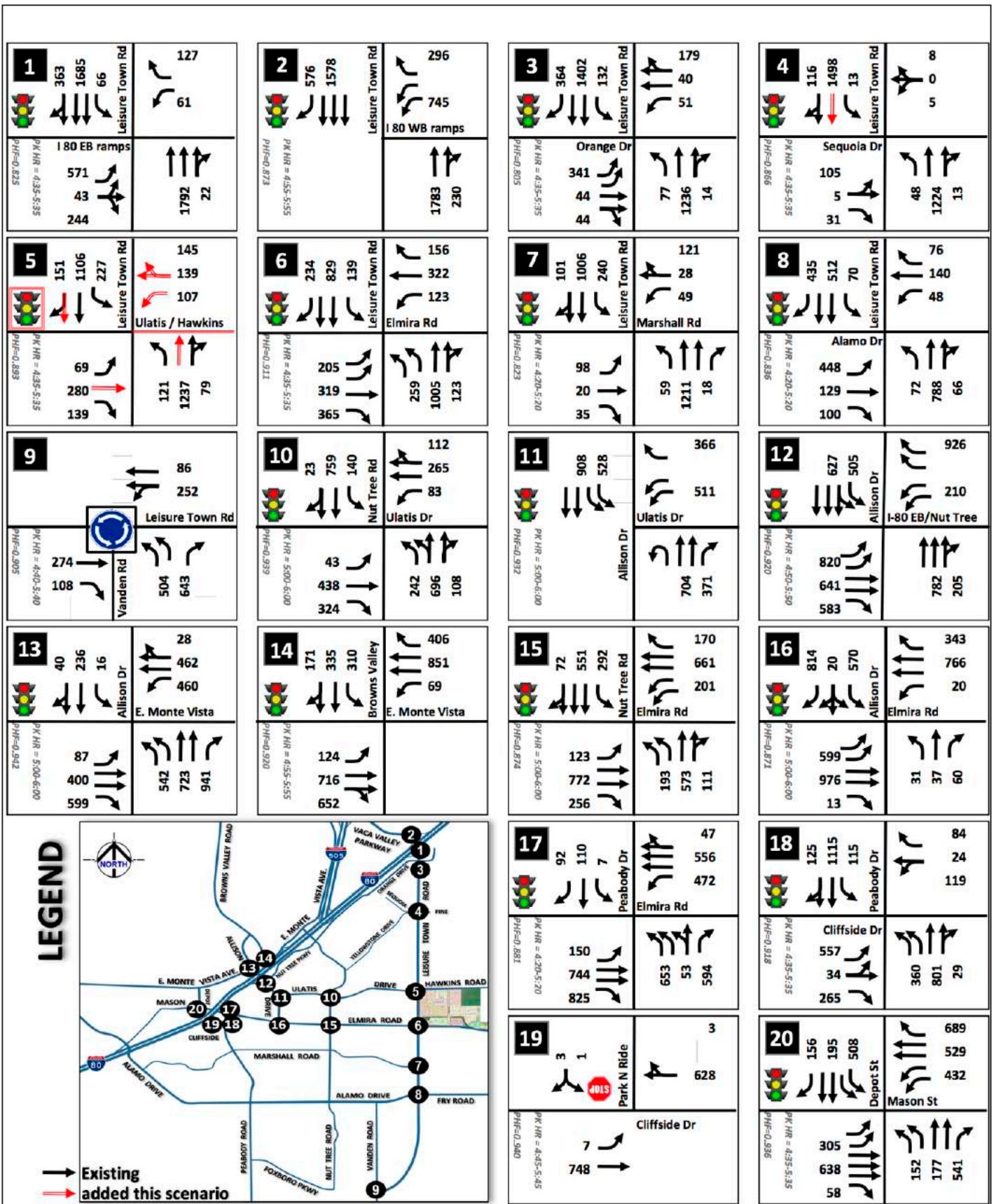
SOURCE: Prism Engineering (2017)

FIGURE 4.7-16

AM Cumulative Plus Project Turn Moves



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SOURCE: Prism Engineering (2017)

FIGURE 4.7-17

PM Cumulative Plus Project Turn Moves



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The following six intersections are expected to exceed the City’s LOS thresholds during the weekday AM and/or PM peak hours under Cumulative plus Project conditions:

- **Leisure Town Rd at I-80 EB Ramps (#1):** The addition of project traffic to Cumulative traffic levels would exceed the City’s LOS threshold during the weekday PM peak hour. This is a **significant impact**.
- **Leisure Town Rd at Ulatis Drive (#5):** The addition of project traffic to Cumulative traffic levels would exceed the City’s LOS threshold during the weekday PM peak hour. This is a **significant impact**.
- **Leisure Town Rd at Elmira Road (#6):** The addition of project traffic to Cumulative traffic levels would exceed the City’s LOS threshold during the weekday PM peak hour. This is a **significant impact**.
- **Nut Tree Road at Ulatis Drive (#10):** The addition of project traffic to Cumulative traffic levels would trip the City’s threshold of significance (more than 5.0 secs delay added), and change the operation from LOS E to LOS F during the weekday PM peak hour. This is a **significant impact**.
- **Allison Drive at Nut Tree Parkway (#12):** The addition of project traffic to Cumulative traffic levels would trip the City’s threshold of significance (more than 5.0 secs delay added), and continue to operate at LOS E during the weekday PM peak hour. This is a **significant impact**.
- **Allison Drive at Elmira Road (#16):** The addition of project traffic to Cumulative traffic levels would exceed the City’s LOS threshold, and change the operation from LOS D to LOS E during the weekday AM peak hour. This is a **significant impact**.

**Table 4.7-14
Intersection Operations – Cumulative**

#	Intersection	Traffic Control	Peak Hour	Cumulative without Project		Cumulative with Project	
				LOS	Delay	LOS	Delay
1	Leisure Town Rd at I-80 EB Ramps	Signal	AM	D	42.0	D★	46.8
			PM	D	44.5	D★	49.8
2	Leisure Town Rd at I-80 WB Ramps	Signal	AM	C	20.7	C	23.0
			PM	C	20.7	C	23.3
3	Leisure Town Rd at Orange Dr	Signal	AM	C	32.7	D	37.7
			PM	D	38.2	D	44.8
4	Leisure Town Rd at Sequoia Dr	Signal	AM	A	8.6	A	9.6
			PM	B	10.7	B	13.4

Table 4.7-14
Intersection Operations – Cumulative

#	Intersection	Traffic Control	Peak Hour	Cumulative without Project		Cumulative with Project	
				LOS	Delay	LOS	Delay
5	Leisure Town Rd at Ulatis	TWSC	AM	C	25.4	D	47.2
			PM	D	35.4	D	45.8
6	Leisure Town Rd at Elmira Rd	Signal	AM	D	41.3	E	59.1
			PM	D	43.0	D	53.4
7	Leisure Town Rd at Marshall Rd	TWSC	AM	C	25.4	D	27.1
			PM	C	28.5	C	32.9
8	Leisure Town Rd at Alamo Dr	Signal	AM	C	26.5	C	31.5
			PM	C	33.0	D	44.6
9	Leisure Town Rd at Vanden Rd	Signal	AM	A	4.9	A	5.2
			PM	A	8.1	A	8.2
10	Nut Tree Rd at Ulatis Dr	Signal	AM	C	30.7	C	32.9
			PM	E	67.6	F ★	82.5
11★	Allison Dr at Ulatis Dr	Signal	AM	B	16.0	B	17.3
			PM	B	16.3	B	17.5
12★	Allison Dr at Nut Tree Parkway	Signal	AM	D	44.4	D	48.2
			PM	E	58.2	E ★	64.3
13	Allison Dr at E. Monte Vista Ave	Signal	AM	C	28.9	C	29.6
			PM	E	65.9	E	68.4
14	Browns Valley Pkwy at E. Monte Vista	Signal	AM	B	14.5	B	14.7
			PM	C	28.7	C	28.9
15★	Nut Tree Rd at Elmira Rd	Signal	AM	D	38.4	D	39.5
			PM	D	49.3	D	51.9
16★	Allison Dr at Elmira Rd	Signal	AM	D	53.3	E	63.4
			PM	D	50.1	D	54.0
17	Peabody Rd at Elmira Rd	Signal	AM	C	29.6	C	30.3
			PM	E	68.8	E	70.5
18	Peabody Rd at Cliffside Dr	Signal	AM	C	28.6	C	29.4
			PM	E	60.4	E	62.6
19	Park / Ride at Cliffside Dr (I-80 ramps)	TWSC	AM	A	0.1	A	0.1
			PM	A	0.1	A	0.1
20★	Depot St at Mason St (I-80 ramps)	Signal	AM	F	> 90	F	> 90
			PM	F	> 90	F	> 90

Source: PRISM Engineering, 2017

Notes: **BOLD text** indicates unacceptable level of service.

Shaded cells = **PROJECT IMPACT** Requiring Mitigation (exceed City's threshold of 5.0 seconds delay for LOS)

★ Significant and Unavoidable impact

★ Intersection is in Planned Development Area (PDA) and has higher threshold than Intersections outside of PDA.

Mitigation Measures

Implementation of Mitigation Measures TRAFF-6a through 6c would reduce impacts at the following intersections to less than significant: Leisure Town Rd at Ulatis Drive (#5), Leisure Town Rd at Elmira Road (#6), and Allison Drive at Elmira Road (#16). PRISM Engineering consulted with the City's Traffic Engineer to investigate a variety of mitigation solutions at the following three intersections: Leisure Town Road at I-80 EB Ramps (#1), Nut Tree Road at Ulatis Drive (#10), and Allison Drive at Nut Tree Parkway (#12). These intersections are fully built out with traffic signals, curb and gutter, sidewalks, and adjacent development. Mitigation options were evaluated at these locations, including phase modifications and restriping as well as new construction to add lanes. Right-of-way is not available, and it is not feasible to eliminate existing striped bike lanes, as required by the General Plan, to accommodate intersection modifications. In addition, the City's General Plan EIR identified impacts at Leisure Town Road at I-80 EB Ramps (#1) and Allison Drive and Nut Tree Parkway (#12) as significant and unavoidable. Therefore, the impact would remain significant and unavoidable at these three intersections.

TRAFF-6a At the Leisure Town Road and Ulatis Drive / Hawkins Road (#5) intersection, the project applicant shall install the following improvements:

- Westbound – Add a separate West Bound Right turn pocket on the westbound approach of Ulatis Drive / Hawkins Road.

Implementation of this mitigation would improve the intersection operations to LOS D or better during both peak hours.

TRAFF-6b At the Leisure Town Road and Elmira Road (#6) intersection, the project applicant shall install the following improvements:

- Westbound – Restripe the West Bound approach within existing pavement to accommodate a dual West Bound Lane, West Bound Through Lane, and West Bound Through/Right Turn Lane (expand from three lanes to a four lane approach).

Implementation of this mitigation would allow the intersection to operate above the City's LOS thresholds at LOS D with 42.5 seconds of delay in the AM peak hour, and LOS D with 41.8 seconds of delay in the PM peak hour.

TRAFF-6c At the Allison Drive and Elmira Road (#16) intersection, the project applicant shall install the following improvements or pay in-lieu traffic fees to the City:

- Westbound – Restripe the westbound approach of Elmira Road to add an additional westbound through lane.

Implementation of this mitigation would allow the intersection to operate above the city's LOS thresholds. Since this transportation improvement is part of the City's Traffic Impact Fee, payment of in-lieu traffic impact fees mitigates the impact.

4.7-7: Traffic volumes under Cumulative plus Project conditions would be LOS C or better conditions on all study road segments. The project has no impact to road segments in this scenario.

Road segment volumes were assessed for Cumulative conditions and compared to thresholds established by the City of Vacaville. Road segment volumes relative to LOS thresholds for Cumulative and Cumulative plus Project conditions are summarized in Table 4.7-15.

There were no road segments that exceeded the LOS C threshold under the Cumulative without Project or with Project scenarios, as Leisure Town Road (Jepson Parkway) would be two lanes in each direction by the Year 2035 and have sufficient capacity for all study road segments. Therefore, there is **no impact**.

Mitigation Measures

None required.

4.7-8: Implementation of the proposed project under Existing plus Approved plus Project conditions would increase traffic volumes along study freeway segments in the CMP system but would not exceed LOS thresholds of significance. This would be a less-than-significant impact.

Freeway mainline freeway segment operations for Existing plus Approved conditions are summarized in Table 4.7-16. Study freeway segments on the CMP system would operate within acceptable standards under both the Existing plus Approved and Existing plus Approved plus Project scenarios. This is a **less-than-significant impact**.

Mitigation Measures

None required.

**Table 4.7-15
Road Segment Level of Service Thresholds – Cumulative Conditions**

#	Road Segment	Cumulative without Project				Cumulative with Project			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB
<i>Leisure Town Road (Jepson Parkway)</i>									
1	North of I 80 east bound ramps	No / No	No / No	No / No	No / No	No / No	No / No	No / No	No / No
2	I 80 EB Ramps to Orange Drive	No / No	No / No	No / No	No / No	No / No	No / No	No / No	No / No
3	Orange drive to Sequoia White Pine	No / No	No / No	No / No	No / No	No / No	No / No	No / No	No / No
4	Ulatis Drive to Sequoia White Pine	No / No	No / No	No / No	No / No	No / No	No / No	No / No	No / No
5	Elmira Rd. to Ulatis Drive	No / No	No / No	No / No	No / No	No / No	No / No	No / No	No / No
6	Alamo Drive Fry Road to Elmira Dr.	No / No	No / No	No / No	No / No	No / No	No / No	No / No	No / No
7	Vanden Road to Alamo Drive	No / No	No / No	No / No	No / No	No / No	No / No	No / No	No / No
8	South of Vanden Road	No / No	No / No	No / No	No / No	No / No	No / No	No / No	No / No
<i>Hawkins Road</i>									
9	East of north south arterial	No / No	No / No	No / No	No / No	No / No	No / No	No / No	No / No
10	Leisure Town Road to N/S arterial	No / No	No / No	No / No	No / No	No / No	No / No	No / No	No / No
<i>Ulatis Drive</i>									
11	West of Nut Tree Road	No / No	No / No	No / No	No / No	No / No	No / No	No / No	No / No
12	Leisure Town Road to Nut Tree Road	No / No	No / No	No / No	No / No	No / No	No / No	No / No	No / No
<i>Allison Drive</i>									
13	Ulatis Road to Nut Tree Parkway	No / No	No / No	No / No	No / No	No / No	No / No	No / No	No / No
14	North of Nut Tree Parkway	No / No	No / No	No / No	No / No	No / No	No / No	No / No	No / No
<i>Elmira Road</i>									
15	West of Nut Tree Road	No / No	No / No	No / No	No / No	No / No	No / No	No / No	No / No
16	Nut Tree Road to Leisure Town Road	No / No	No / No	No / No	No / No	No / No	No / No	No / No	No / No
17	Leisure Town Road to N/S arterial	No / No	No / No	No / No	No / No	No / No	No / No	No / No	No / No
18	East of N/S arterial	No / No	No / No	No / No	No / No	No / No	No / No	No / No	No / No

Source: PRISM Engineering, 2017.

Notes: NB / EB = northbound / eastbound; SB / WB = southbound / westbound; Bold "Yes" in cells means exceeds LOS C threshold. Parentheses in cells means exceeds LOS D threshold.

**Table 4.7-16
Freeway Mainline Segment Level of Service –Existing plus Approved**

Freeway Mainline Segment / Direction	Existing plus Approved				Existing plus Approved plus Project			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Density	LOS	Density	LOS	Density	LOS	Density	LOS
<i>I-80 Mainline w/o Elmira</i>								
Eastbound	16.9	B	28.7	D	17.1	B	29.0	D
Westbound	20.8	C	26.2	D	21.0	C	26.5	D
<i>I-80 Mainline e/o Elmira</i>								
Eastbound	18.5	B	28.3	D	18.7	C	28.5	D
Westbound	17.8	B	28.6	D	18.0	B	28.9	D
<i>I-80 Mainline w/o Leisure Town</i>								
Eastbound	21.9	C	26.3	D	22.1	C	26.6	D
Westbound	16.4	B	25.9	C	16.6	B	26.2	D
<i>I-80 Mainline e/o Leisure Town</i>								
Eastbound	18.6	C	24.0	C	18.8	C	24.2	C
Westbound	21.0	C	20.0	C	21.2	C	20.2	C

Source: Performance Enhancement Measurement System (PeMS), 2017. PRISM Engineering, 2017.

Notes: Density = passenger cars per mile per lane; LOS = Level of Service

4.7-9: Implementation of the proposed project under Cumulative plus Project conditions would increase traffic volumes along study freeway segments in the CMP system but would not exceed LOS thresholds of significance. This would be a less-than-significant impact.

Freeway mainline freeway segment operations under Cumulative conditions are summarized in Table 4.7-17. Study freeway segments on the CMP system would operate within acceptable standards under both the Cumulative plus Project scenarios. This is a **less-than-significant impact**.

Mitigation Measures

None required.

**Table 4.7-17
Freeway Mainline Segment Level of Service –Cumulative**

Freeway Mainline Segment / Direction	Cumulative without Project				Cumulative with Project			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Density	LOS	Density	LOS	Density	LOS	Density	LOS
<i>I-80 Mainline w/o Elmira</i>								
Eastbound	17.8	B	36.3	E	17.6	B	35.9	E
Westbound	23.5	C	30.0	D	23.3	C	29.8	D
<i>I-80 Mainline e/o Elmira</i>								
Eastbound	19.1	C	37.7	E	18.9	C	37.4	E
Westbound	21.9	C	32.9	D	21.7	C	32.6	D
<i>I-80 Mainline w/o Leisure Town</i>								
Eastbound	16.5	B	24.9	C	16.3	B	24.8	C
Westbound	17.2	B	20.6	C	17.0	B	20.4	C
<i>I-80 Mainline e/o Leisure Town</i>								
Eastbound	20.9	C	40.2	E	20.6	C	39.8	E
Westbound	30.3	D	24.2	C	30.0	D	23.9	C

Source: Performance Enhancement Measurement System (PeMS), 2017. PRISM Engineering, 2017.

Notes: Density = passenger cars per mile per lane; LOS = Level of Service

4.7.6 References

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CHAPTER 5 CEQA CONSIDERATIONS

5.0 INTRODUCTION

Section 15126 of the California Environmental Quality Act (CEQA) Guidelines requires that all aspects of a project must be considered when evaluating its impact on the environment, including planning, acquisition, development, and operation. As part of this analysis, the Environmental Impact Report (EIR) must also identify (1) significant environmental effects of the proposed project, (2) significant environmental effects that cannot be avoided if the proposed project is implemented, (3) significant irreversible environmental changes that would result from implementation of the proposed project, (4) growth-inducing impacts of the proposed project, and (5) alternatives to the proposed project (evaluated in Chapter 6, Project Alternatives).

5.1 SIGNIFICANT ENVIRONMENTAL EFFECTS

Chapter 2, Executive Summary, and Sections 4.1 through 4.7 of this Draft EIR provide a comprehensive identification of the proposed project's significant environmental effects, including the level of significance both before and after mitigation.

5.2 SIGNIFICANT AND UNAVOIDABLE ENVIRONMENTAL IMPACTS

Section 15126.2(b) of the CEQA Guidelines requires that an EIR describe any significant impacts that cannot be avoided, even with the implementation of feasible mitigation measures. The environmental effects of the proposed project on various aspects of the environment are discussed in detail in the technical sections contained in Chapter 4, Environmental Analysis, of this Draft EIR. There are three project-specific and six cumulative impacts that cannot be avoided if the project is approved in Air Quality and Transportation and these impacts cannot be mitigated to a less-than-significant level so they remain significant and unavoidable. In addition, the project would contribute to the significant and unavoidable impacts identified in the General Plan EIR, as further described in Appendix B. The remainder of the project impacts can be mitigated to a less-than-significant level through the adoption of recommended mitigation measures.

5.3 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL IMPACTS

Section 15126.2 (c) of the CEQA Guidelines requires a discussion of any significant irreversible environmental change that would be caused by the proposed project. Generally, a project would result in significant irreversible changes if:

- The primary and secondary impacts would generally commit future generations to similar uses (such as highway improvement that provides access to a previously inaccessible area);
- The project would involve a large commitment of nonrenewable resources (CEQA Guidelines Section 15126.2(c));

- The primary and secondary impacts would generally commit future generations to similar uses;
- The project would involve uses in which irreversible damage could result from any potential environmental accidents associated with the project;
- The project would involve a large commitment of nonrenewable resources; or
- The proposed consumption of resources is not justified (e.g., the project involves the wasteful use of energy).

Implementation of the proposed project would result in the long-term commitment of resources of the project site to urban land use. The development of the proposed project would likely result in or contribute to the following irreversible environmental changes:

- Conversion of undeveloped land, currently used for agriculture. Approximately 200 acres of undeveloped land would be converted to urban uses, thus precluding other alternate land uses in the future.
- Irreversible consumption of energy and natural resources associated with the future use of the site.

Development of the proposed project would result in the commitment of the project site to urban development, thereby precluding other uses for the lifespan of the project. Restoration of the site to pre-developed conditions would not be feasible given the degree of disturbance, the urbanization of the area, and the level of capital investment.

Resources that would be permanently and continually consumed by project implementation include water, electricity, natural gas, and fossil fuels. Wood products, asphalt, and concrete would be used in construction along with gas and diesel fuel. With respect to operational activities, compliance with all applicable state and local building codes, as well as mitigation measures, planning policies, and standard conservation features, would ensure that resources are conserved to the maximum extent possible. The project would incorporate a number of sustainable practices that reduce the consumption of energy. Nonetheless, construction activities related to the proposed project would result in irretrievable commitment of nonrenewable energy resources, primarily in the form of fossil fuels, natural gas, and gasoline and diesel for automobiles and construction equipment.

The CEQA Guidelines also require a discussion of the potential for irreversible environmental damage caused by environmental accidents associated with the project. While the project would result in the use, transport, storage, and disposal of minor amounts of hazardous materials during project construction and operation, as described in the Modified Initial Study (see Appendix B), all such activities would comply with applicable local, state and federal laws related to the use, storage

and transport of hazardous materials, which significantly reduces the likelihood and severity of accidents that could result in irreversible environmental damage. The project itself does not include any uniquely hazardous uses that would require any special handling or storage. Further, the project does not contain any industrial uses that would use or store acutely hazardous materials.

Implementation of the proposed project would result in the long-term commitment of resources to urban development. The most notable significant irreversible impacts include the use of non-renewable and/or slowly renewable natural and energy resources, such as lumber and other forest products and water resources during construction activities. Operations associated with future uses would also consume natural gas and electricity. These irreversible impacts, which are unavoidable consequences of urban growth, are described in detail in the appropriate sections of this Draft EIR (see Chapter 4).

5.4 GROWTH-INDUCING IMPACTS

As required by Section 15126.2(d) of the CEQA Guidelines, an EIR must discuss ways in which a proposed project could foster economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding environment. Also, the EIR must discuss the characteristics of the project that could encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. Growth can be induced in a number of ways, such as through the elimination of obstacles to growth, the stimulation of economic activity within the region, or the establishment of policies or other precedents that directly or indirectly encourage additional growth. Under CEQA, this growth is not to be considered necessarily detrimental, beneficial, or of significant consequence. Induced growth would be considered a significant impact if it can be demonstrated that the potential growth, directly or indirectly, significantly affects the environment.

In general, a project could foster spatial, economic, or population growth in a geographic area if the project removes an impediment to growth (e.g., the establishment of an essential public service, the provision of new access to an area, or a change in zoning or General Plan amendment approval), or economic expansion or growth occurs in an area in response to the project (e.g., changes in revenue base, employment expansion). These circumstances are further described below.

- **Elimination of Obstacles to Growth:** This refers to the extent to which a proposed project removes infrastructure limitations or provides infrastructure capacity, or removes regulatory constraints that could result in growth unforeseen at the time of project approval.
- **Economic Effects:** This refers to the extent to which a proposed project could cause increased activity in the local or regional economy. Economic effects can include such effects as the “multiplier effect.” A “multiplier” is an economic term used to describe interrelationships among various sectors of the economy. The multiplier effect provides a

quantitative description of the direct employment effect of a project, as well as indirect and induced employment growth. The multiplier effect acknowledges that the on-site employment and population growth of each project is not the complete picture of growth caused by the project.

Elimination of Obstacles to Growth

The elimination of either physical or regulatory obstacles to growth is considered to be a growth-inducing effect, though not necessarily a significant one. A physical obstacle to growth typically involves the lack of public service infrastructure. The extension of public service infrastructure, including roadways, water mains, and sewer lines into areas that are not currently provided with these services would be expected to support new development. Similarly, the elimination or change to a regulatory obstacle, including existing growth and development policies, could result in new growth.

Removal of Infrastructure Limitations or Provision of Capacity

The elimination of physical obstacles to growth is considered a growth-inducing effect, though not necessarily a significant one. The physical constraints to growth in the vicinity of the project site include the Southern Pacific Railroad right-of-way on the east, the approved Brighton Landing Specific Plan project in the City of Vacaville to the south, the approved Roberts' Ranch Specific Plan to the south and existing residential development west of the site.

The proposed project includes sizing of infrastructure to serve development approved under the project and that is consistent with the City's approved infrastructure master plans. The project site is located in the City of Vacaville's planned Sphere of Influence and is proposed for annexation. Due to the location of the project site, existing residential development immediately west of the site and the two recently approved Specific Plan projects to the south would preclude development to the south and west. Undeveloped land in the County is located to the north and east of the project site, which could feasibly be developed in the future. Land to the north of the project site is included within the City's Urban Growth Boundary, Urban Services Boundary, and Sphere of Influence, but does not include lands to the east. Development of infrastructure to accommodate the project could be considered growth inducing because it may hasten new lands to be annexed to the City and developed to the north. Lands to the east are within the County and according to the County's General Plan these lands are designated for agricultural uses. The County does not have any infrastructure in this area to support development and at this time no development is proposed. The proposed project would not eliminate any constraints that are currently obstacles to growth in this portion of the City, with the exception of extending utility infrastructure to serve the project site that could hasten development to the north of the project site.

As discussed in the General Plan EIR on pages 6-1 through 6-3, the General Plan includes specific policies that limit that growth to the city limits and UGB. For example, policies under Goal LU-5 set forth the parameters of the UGB. The proposed General Plan land use map provides a mixture of housing, shopping, public, and employment opportunities so that as the number of residents increase, they do not pressure adjacent communities to provide new commercial and employment opportunities. The General Plan commits to only allow development where infrastructure is in place or is planned. In addition, the proposed General Plan discourages piecemeal development. Policy LU-P2.2 requires that specific plans be prepared for new areas brought into the city for development, and that they provide a coordinated plan for land use, public facilities, and public services. This policy also prohibits individual, piecemeal developments within these outlying areas. As a result, the General Plan EIR concluded the proposed General Plan policies would result in a less-than-significant indirect growth inducing impact.

Economic Effects

The proposed project would affect the local economy by the construction of new residences that would encourage people to live in Vacaville and would help encourage people to stay in the City to take advantage of proximity to local shops, restaurants, and other amenities in nearby downtown Vacaville.

Additional local employment can be generated through the multiplier effect, as discussed previously in this chapter. The multiplier effect tends to be greater in regions with larger, diverse economies due to a decrease in the requirement to import goods and services from outside the region.

Two different types of additional employment are tracked through the multiplier effect. *Indirect* employment includes those additional jobs that are generated through the expenditure patterns of direct employment associated with the project. Indirect jobs tend to be in relatively close proximity to the places of employment and residence.

The multiplier effect also calculates *induced* employment. Induced employment follows the economic effect beyond the expenditures of the residents within the project area to include jobs created by the stream of goods and services necessary to support residences within the proposed project. When a manufacturer buys or sells products, the employment associated with those inputs or outputs are considered *induced* employment.

For example, when an employee of the project goes out to lunch, the person who serves the employee lunch holds a job that is *indirectly* related to the proposed project. When the server then goes out and spends money in the economy, the jobs generated by this third-tier effect are considered *induced* employment.

The multiplier effect also considers the secondary effect of employee expenditures. Thus, it includes the economic effect of the dollars spent by those employees and residents who support the employees of the project.

Increased future employment generated by employee spending ultimately results in physical development of space to accommodate those employees. It is the characteristics of this physical space and its specific location that will determine the type and magnitude of environmental impacts of this additional economic activity. Although the economic effect can be predicted, the actual environmental implications of this type of economic growth are too speculative to predict or evaluate, since they can be spread throughout the City, Solano County, and beyond.

Impacts of Induced Growth

The growth induced directly and indirectly by the proposed project could contribute to the environmental impacts, discussed in Chapter 4, in the City and the County, as well as the greater regional area. Any such environmental effects, however, are too diffuse and speculative to predict or describe with any particularity.

Indirect and induced population growth in the City would further contribute to the loss of open space because it would encourage the conversion of undeveloped land to urban uses for additional housing and infrastructure. However, it is assumed this new growth would occur within areas of the City designated and zoned for development or planned for potential future urban development. Again, however, the particular open space that might get converted cannot be predicted with any certainty, all such conversions to urban land use would occur within areas planned for growth in the City's General Plan. Development of the property to the north of the project site would require a general plan amendment, compliance with the Urban Reserve Ordinance and would require environmental review under CEQA prior to approval.

In summary, although the proposed project can be said to induce growth, the consequences of such growth-inducement are too speculative to meaningfully predict and, furthermore, due to existing General Plan policies would not result in a significant growth inducing impact.. Growth-inducing effects are therefore considered **less than significant**.

5.5 ENERGY USAGE

Measures intended to reduce unnecessary or inefficient use of resources or energy consumption are incorporated into the City's adopted Energy & Conservation Action Strategy (ECAS). Implementation of the proposed project, which is consistent with the General Plan and ECAS, would result in the commitment of limited, renewable resources such as lumber and water. In addition, development allowed by the General Plan would irretrievably commit nonrenewable resources for the construction and maintenance of buildings, infrastructure, and

roadways. These non-renewable resources include mined materials such as sand, gravel, steel, copper, and other metals. The City recognized that buildout of the General Plan also represents a long-term commitment to the consumption of fossil fuels, natural gas, diesel and gasoline. Increased energy demands would be used for construction, lighting, heating, and cooling of residences, and transportation of people within, to, and from the project site. General Plan Goals COS-10 and COS-11 and their associated policies and actions promote energy conservation, which would minimize or incrementally reduce the consumption of these resources. In addition, the ECAS includes measures to promote energy conservation and the development of renewable energy in Vacaville. In particular, Measure GB-1 provides incentives for green building certification, Measure GB-2 requires measures that reduce energy use through solar orientation, and Measures RE-1 and RE-5 include solar-related requirements for new development. The project incorporates features designed to implement these measures and would not result in effects not addressed in the General Plan EIR. Please see Section 4.6, Public Utilities for more information on energy demands of the project.

5.6 CUMULATIVE IMPACTS

CEQA requires that an EIR contain an assessment of the cumulative impacts that could be associated with the proposed project. This assessment involves examining project-related effects on the environment in the context of similar effects that have been caused by past or existing projects, and the anticipated effects of future projects. As indicated in the CEQA Guidelines, the discussion of cumulative impacts need not provide the same level of detail as project-related impacts. The discussion should be guided by “standards of practicality and reasonableness” (CEQA Guidelines, Section 15130(b)). Although project-related impacts can be individually minor, the cumulative effects of these impacts, in combination with the impacts of other projects, could be significant under CEQA and must be addressed (14 CCR Section 15130(a)). Where a lead agency concludes that the cumulative effects of a project, taken together with the impacts of other closely related past, present, and reasonably foreseeable probable future projects are significant, the lead agency then must determine whether the project’s incremental contribution to such significant cumulative impact is “cumulatively considerable” (and thus significant in and of itself).

Cumulative Context

To ensure an adequate discussion of cumulative impacts is included in an EIR, CEQA allows the lead agency to use either a list of past, present, and probable future projects (including those projects outside of the control of the lead agency), or projections included in an adopted local, regional, or statewide plan like a general plan (CEQA Guidelines, Section 15130(b)(1)). The general cumulative impact context for evaluating cumulative impacts for the majority of the technical issue areas evaluated in Chapter 4 of this Draft EIR considers development projections identified in the City’s General Plan, or evaluates the potential loss of resources on a

much broader, regional scale. The cumulative impact analyses in this Draft EIR thus do not rely on any list of specific pending, reasonably foreseeable development proposals in the general vicinity of the proposed project.

It is important to note that the basis of the cumulative analysis varies by technical area. For example, traffic and traffic-related air emissions and noise analyses assume development that is planned and/or anticipated in the City, as well as the surrounding unincorporated area, because each contributes to traffic on local and regional roadways that is quantifiable. Operational air quality impacts are evaluated against conditions in the City and surrounding areas within the Sacramento Federal Nonattainment Area for ozone. The technical sections in Chapter 4 evaluate the project's cumulative impacts at the end of the impacts analysis. The cumulative analysis in each of the technical sections evaluates the proposed project's contribution to the cumulative scenario. A description of the cumulative context for each issue area evaluated is included in the cumulative impacts at the end of each technical section of Chapter 4.

CHAPTER 6 ALTERNATIVES TO THE PROPOSED PROJECT

6.1 INTRODUCTION

The following discussion is intended to inform the public and decision makers of feasible alternatives to the proposed project that would avoid or substantially lessen any significant effects of the project. Section 15126.6(a) of the CEQA Guidelines states that:

An EIR shall describe a range of reasonable alternatives to the project, or the location of the project, which 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, and evaluate the comparative merits of the alternative. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation.

Consistent with the CEQA Guidelines, the EIR does not consider every conceivable alternative to the project or multiple variations on the alternative that it does consider. Rather, the EIR considers a reasonable range of potentially feasible alternatives that would mitigate or avoid potentially significant impacts of the proposed project in order to foster informed decision making and public participation.

As described in the City of Vacaville's 2015 General Plan EIR, various residential densities and uses along with commercial uses and parks proposed on the project site were evaluated extensively by the City during its General Plan Update process, between 2010 and 2015. The City specifically evaluated a range of land use alternatives for the East of Leisure Town Road growth area and determined that the project site should be developed at certain residential densities designed to accomplish the City's policies and objectives with respect to housing and planned growth of the City. The low-density, low-medium density, and medium-high density residential General Plan land use designations along with the neighborhood commercial, agricultural buffer, and public parks land use designations of the proposed project generally reflect the City's review process and policy determinations. The land use designations in the proposed zoning and development plan for the Farm at Alamo Creek Specific Plan area, were designed following the City's decision on the General Plan. The City's policy to accommodate anticipated housing growth is reflected in the analysis of project alternatives below. Extensive analysis provided in the General Plan EIR is incorporated by reference into this EIR, this EIR does not evaluate alternatives involving densities that conflict with the policy decisions made during the recent General Plan Update process.

The alternatives to the project analyzed below include a "No Project" Alternative. A "No Project" Alternative is required under Section 15126.6(e)(1) to allow decision makers to compare the impacts of the proposed project with the impacts of not approving the project. Each alternative is analyzed against the significance thresholds considered in Chapter 4, Environmental Evaluation. This chapter assesses whether the impacts of the alternatives would be greater than, less than, equal to or similar to those of the proposed project.

This chapter identifies the proposed project objectives, describes the project alternatives, and evaluates the comparative effects of the alternatives relative to the proposed project. As required under Section 15126.6(e)(2) of the CEQA Guidelines, the environmentally superior alternative is identified and included at the end of this chapter.

Alternatives to the proposed project are:

- **No Project/No Development Alternative** – Which assumes the project site would remain in its current undeveloped condition.
- **No Project/Existing General Plan Land Use Alternative** - This alternative assumes the project would be developed consistent with the current General Plan land use designation which includes a designation of Urban Reserve on approximately one third of the project site. Under this alternative approximately 488 residential units would be developed in the western portion of the site while 252 residential units and the detention basin would not be developed in the eastern portion of the site. This area would remain consistent with existing agricultural use, as shown in Figure 6-1.
- **Reduced Intensity Alternative** – This alternative assumes a reduction in the total number of residential units to a total of 676 (514 residential low-density, 162 residential medium-high density), 6.5 acres in neighborhood commercial uses and 17 acres in parks, as shown in Figure 6-2.

Significant and Unavoidable Impacts

The proposed project would result in the following significant and unavoidable air quality impacts on both a project level and cumulatively and the following project level and cumulative traffic impacts. There is no feasible mitigation available to reduce these impacts to less than significant.

- Operation of the proposed project would result in emissions of ROG, NO_x, or PM_{10/2.5} at levels that could substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions.

- Under cumulative plus project conditions, the proposed project would result in a cumulatively considerable net increase of any criteria pollutant for which the project area in non-attainment under an applicable federal or state ambient air quality standard.
- Under Existing plus Project conditions, traffic volumes would increase above the City's threshold at the Depot Street at Mason Street (I-80 ramps) intersection and the Nut Tree Road at Ulatis Drive intersection.
- Under Existing plus Approved plus Project conditions, traffic volumes would increase above the City's threshold at the Nut Tree Road at Ulatis Drive intersection and Peabody Road and Elmira Road intersection.
- Under Cumulative plus Project conditions, intersection operations would exceed the City's LOS at the Leisure Town Road at I-80 eastbound and westbound ramps, Nut Tree Road at Ulatis Drive, and Allison Drive at Nut Tree Parkway intersections.

Project Objectives

Pursuant to CEQA Guidelines, Section 15124(b), a clear statement of project objectives is required. The project includes the following project objectives.

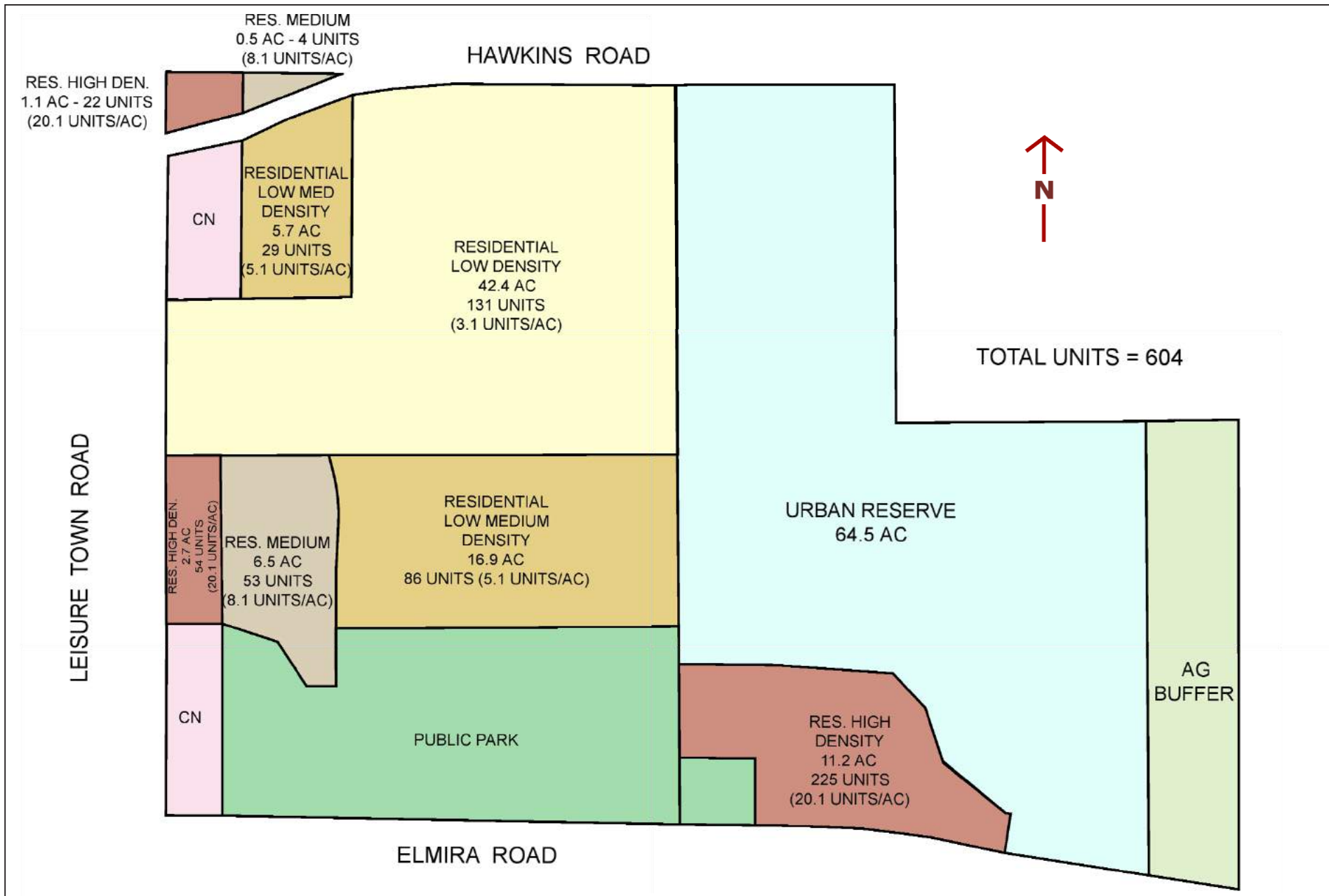
- Provide for the orderly, well planned, and balanced development of future projects in the East of Leisure Town Road Growth Area, including the comprehensive planning of property between Leisure Town Road and the City's Urban Growth Boundary.
- Support the City's General Plan policies, including the encouragement of range of residential densities and types.
- Support improvements to Leisure Town Road (Jepson Parkway), including planning and funding for development of frontage roadway features and landscaping.
- Provide public benefits such as multi-use trails, dedicated open space and recreational areas, and pedestrian and bike connectivity to enhance the City's existing recreational opportunities.
- Support a unique city-wide recreational opportunity through a "Play-4-All" park.
- Create a community that centers on a farm-to-table "place-making" theme and supports neighborhood amenities that would potentially include a club house and pool.
- Provide infrastructure and services that meet City standards and are sized in accordance with the City's infrastructure master plans and integrated with existing and planned facilities and connections.
- Create livable residential neighborhoods through the use of high quality building materials and design standards and through high quality pedestrian and bike facilities within the project.

- Support the implementation of sustainability features to encourage efficient use of the project site through building and landscape designs.
- Provide housing at a scale and density appropriate to the project site and sufficient to support the creation of public amenities including the “Play-4-All” park, open space, and a community park.
- Develop a project that is capable of attracting commercially reasonable financing.

6.2 ALTERNATIVES CONSIDERED BUT DISMISSED FROM FURTHER CONSIDERATION

As noted previously, the purpose of an alternatives analysis is to develop alternatives to the proposed project that substantially lessen at least one of the significant environmental effects identified as a result of the project, while still meeting most, if not all, of the basic project objectives. Project alternatives that would change the mix of uses that would lessen the severity of some of the impacts identified under the project are addressed later in this chapter.

The EIR prepared for the City’s General Plan Update evaluated a few different land use alternatives that included the project site. The General Plan Update process began in March 2010 and included extensive community input including seven City Council study sessions, 17 Steering Committee meetings, and four community workshops, all of which were open to the public and included extensive public comment. Within this process, one community workshop, eleven Steering Committee meetings, and six City Council meetings were specifically devoted to creating, evaluating, and selecting among the various land use alternatives. The Planning Commission also held three hearings on the Draft General Plan (August 5, August 18, and September, 22, 2014) and recommended that several revisions be incorporated into the final plan documents. At its January 13, 2015 meeting, the City Council directed staff to prepare a Final Revised Focused Growth land use plan for the East of Leisure Town Road Growth Area. The City Council then held another hearing on March 24, 2015, to consider the Revised Focused Growth Alternative land use alternative for the East of Leisure Town Road Growth Area. During this process, the land use alternatives were evaluated and compared in relation to market and financing feasibility, utilities and transportation, infrastructure needs, public service needs, and impacts on environmental resources.



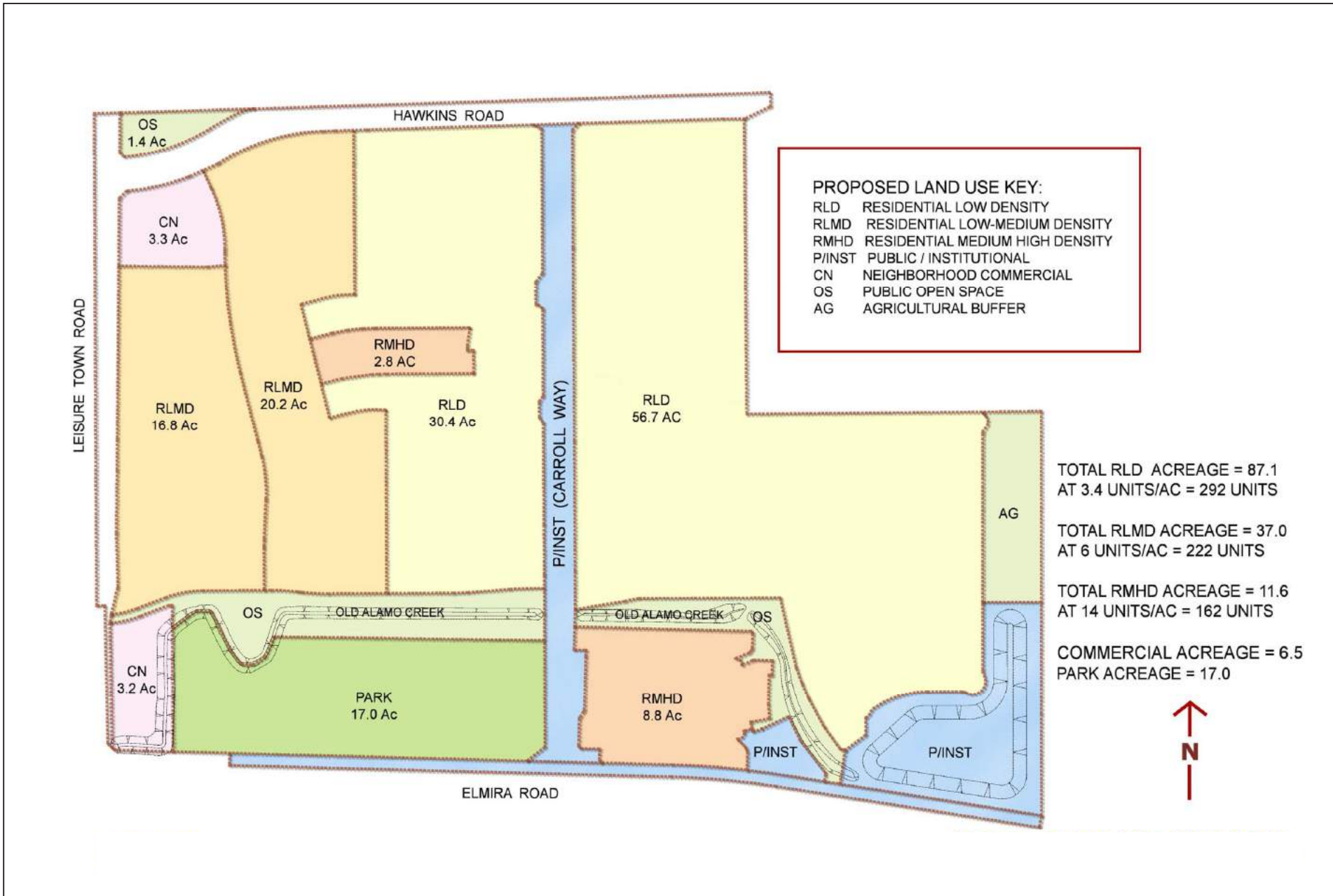
SOURCE: Phillippi Engineering (2018)

DUDEK

The Farm at Alamo Creek Specific Plan EIR

Figure 6-1
No Project/Existing General Plan Land Use Alternative

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At the end of this process, on August 11, 2015, the City Council approved the Revised Focused Growth Alternative for the East of Leisure Town Road Growth Area, including the project site, which resulted in a reduction in residential scale and density. The approved General Plan included Policy LU-P17.1, which limited residential development in areas north of Elmira Road to 610 residential units. After considering several reduced density alternatives (which includes the project site), according to the General Plan, "the proposed General Plan land use map represents a land use plan that the City believes is most appropriate to accommodate growth projected for 2035 and beyond" (City of Vacaville 2015).

During the General Plan process the City evaluated various options for development in the area north of Elmira Road, including different residential densities and intensities. Therefore, the alternatives evaluated include a reduction in development to address the significant impacts identified under the project.

An Off-Site Alternative was also dismissed because as discussed in *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553 (*Goleta II*), where a project is consistent with an approved general plan, no off-site alternative need be analyzed in the EIR. In this case a majority of the project site is consistent with the City's General Plan and development of the Urban Reserve portion of the site was considered in the General Plan EIR. The General Plan EIR assumed low density residential uses would be developed in the UR portion of the project site and this was evaluated in the General Plan EIR. General Plan Policies LU-17.1 and LU-17.4, last revised in April 2017, set forth the number of residential units located in the East of Leisure Town Road Growth Area and specifically notes The Farm at Alamo Creek Specific Plan to include 768 dwelling units. The EIR "is not ordinarily an occasion for the reconsideration or overhaul of fundamental land-use policy." (*Goleta II, supra*, 52 Cal.3d at p. 573.) In approving a general plan, the local agency has already identified and analyzed suitable alternative sites for particular types of development and has selected a feasible land use plan. "Informed and enlightened regional planning does not demand a project EIR dedicated to defining alternative sites without regard to feasibility. Such ad hoc reconsideration of basic planning policy is not only unnecessary, but would be in contravention of the legislative goal of long-term, comprehensive planning." (*Goleta II, supra*, 52 Cal.3d at pp. 572-573.) The majority of the project site is designated consistent with the City's Land Use Map (City of Vacaville 2015, Figure LU-6) and is requesting the site be pre-zoned Residential Low Density (RL-5 & RL-6), Residential Low Medium Density (RLM-3.6 and RLM-4.5), Residential Medium High Density (RMH), Neighborhood Commercial (CN), public parks and Community Facilities (CF) with an agricultural buffer overlay zone over portions of the publicly owned lands, consistent with the existing land use designations and the City's intent to develop this land. Therefore, the EIR need not analyze an off-site alternative.

6.3 ALTERNATIVES TO THE PROPOSED PROJECT CONSIDERED IN THIS EIR

This section provides a description of the alternatives to the proposed project analyzed in this Draft EIR and evaluates how specific impacts differ in severity from those associated with the project. For purposes of this analysis, the potentially significant impacts identified under the alternatives analysis are assumed to be fully mitigated through compliance with mitigation measures identified in Sections 4.1 through 4.7 included in Chapter 4, which contains the environmental analysis of the proposed project.

The project alternatives identified herein address the significant impacts (before mitigation) identified for the project including biological resources, cultural resources, land use and planning, traffic, and air emissions. Thus, the alternatives developed for the project contemplate a change in land uses that includes a reduction in development to address these impacts. The No Project/Existing General Plan Land Use and the Reduced Intensity alternatives both reduce the total number of residential units. In many instances, the impacts are virtually identical to the proposed project and are described as such.

This Draft EIR has incorporated a reasonable range of project alternatives that, collectively, attain a majority of the project objectives in a reasonable manner while reducing the severity of the significant impacts (before mitigation) identified under the proposed project.

The alternatives to the proposed project analyzed in this Draft EIR are:

- **Alternative 1:** No Project/No Development
- **Alternative 2:** No Project/Existing General Plan Land Use
- **Alternative 3:** Reduced Intensity

Alternative 1: No Project/No Development Alternative

Description

The No Project/No Development Alternative considers the effects of forgoing the project entirely, and leaving the project site in its current, undeveloped condition. Under the No Project/No Development Alternative, the proposed project would not be adopted. The approved build-out for the Specific Plan area as set forth in the General Plan would not be developed and the project site would not be annexed into the City. In addition to not providing up to 768 residential units, over 40 acres of parks, open space and trails, and improvements to the transportation network, the No Project/No Development Alternative would not provide a Community park or a Play-4-All park. Under this alternative, the project site would not be zoned and developed in a manner consistent with the General Plan land use designations. This alternative would also not meet the City's policies, General Plan or project objectives, or

State policies of promoting the development of new housing. For policy reasons, and because the No Project/No Development Alternative would fail to meet any of the basic objectives of the project or of the City's General Plan, this alternative could be rejected in favor of the proposed project. The No Project/No Development Alternative thus allows decision-makers to compare the impacts of the proposed project to retaining the existing condition of the site. The No Project/No Development Alternative describes the environmental conditions that exist at the time that the environmental analysis commenced (CEQA Guidelines, Section 15126.6 (e)(2)).

Comparative Analysis of Environmental Effects

The No Project/No Development Alternative would produce no changes on the project site, because the site would remain in its current condition, effectively eliminating those project impacts discussed in this Draft EIR. There would be no air emissions associated with project construction and operation and would not increase emissions of ROG, NO_x, or PM₁₀ at levels that could substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions. There would be no land disturbance so there would be no impacts to biological or cultural resources so no mitigation would be required. There would be no increase in the number of vehicles accessing the site and on area roadways and intersections, or increase in demand for public utilities. Mitigation would not be required to address the increase in vehicle trips and traffic.

Relationship to the Project Objectives

The No Project/No Development Alternative would not achieve any of the project objectives.

Alternative 2: No Project/Existing General Plan Land Use Alternative

Description

Under the No Project/Existing General Plan Land Use Alternative, approximately 60 acres currently designated as Urban Reserve in the eastern portion of the site would not be developed with 252 low-density residential units and a detention basin, as proposed under the project. Consistent with the General Plan the western portion of the site would be developed with approximately 488 residences that would include a mix of low-density residential, residential low-medium density, residential medium-density, neighborhood commercial and parks. A total of 252 residences would be developed in the western portion of the site including 26.6 acres in parks, 7.4 acres in neighborhood commercial, and a smaller detention basin would be included within one of the fields in the Community park.

Comparative Analysis of Environmental Effects

The No Project/Existing General Plan Land Use Alternative would have the following impacts compared to the proposed project.

Air Quality. Under this alternative, approximately 60 acres of the project site would not be developed resulting in a reduction in the amount of construction activities including grading and constructing 252 new residential units. Due to the decrease in construction activities there would be a decrease in the amount of air emissions created in the local air basin caused by soil disturbance, fugitive dust emissions, and combustion pollutants from on-site construction equipment. In addition, emissions would be reduced due to a reduction in the number of trucks hauling materials and from construction workers travelling to and from the site. However, compliance with Mitigation Measure AQ-1a and AQ-1b would still be required to ensure impacts are reduced to less than significant.

There would also be a reduction in the total number of vehicle trips due to fewer units constructed associated with project operation. The amount of PM₁₀ associated with project operation would be reduced to below the threshold under this alternative, but the generation of NO_x, although lower than the project would still exceed the threshold. Compliance with Mitigation Measure AQ-2 would still be required and because NO_x emissions exceed the threshold even with mitigation the impact would remain significant and unavoidable, the same as the project. It is anticipated the cumulatively considerable net increase in NO_x, a precursor to ozone for which the project area is in non-attainment under federal and state ambient air quality standards would also remain a significant and unavoidable impact.

Biological Resources. Under this alternative, approximately 60 acres in the eastern portion of the project site would not be developed resulting in a reduction in the amount of construction activities including grading and constructing up to 610 new residential units. Therefore, impacts to special-status plants and wildlife resulting from these activities would be reduced due to a smaller project impact area. However, vegetation clearing along Old Alamo Creek during construction of the project could still occur under this alternative. Therefore, potentially significant impacts could occur to Valley elderberry longhorn beetle (VELB) and western pond turtle habitat and individuals. As construction would still occur on the remainder of the project site, impacts from activities such as grading and operation of heavy equipment and conversion of foraging habitat could still impact burrowing owl, although impacts would be less than the proposed project because a smaller area would be disturbed. Although approximately 60 acres would not be developed under this alternative, the remaining 150 acres of available nesting and foraging habitat of the proposed project would still be removed. Although more area would be available for Swainson's hawk and other bird species to forage, light, noise and disturbance from site occupancy and construction could still impact bird nesting. Roosting habitat for bats

along Old Alamo Creek could still be removed and impacts could still occur to these species due to construction activities. Implementation of Mitigation Measures BIO-1 through BIO-3 would still be required to reduce impacts to sensitive species to less than significant. Impacts to riparian habitat adjacent to Old Alamo Creek would remain potentially significant under this alternative, as the understory and unhealthy or dead trees within the riparian area would still be removed. Impacts to potential waters of the State would remain potentially significant under this alternative, as aquatic features including irrigation canals, roadside ditches, and irrigation ditches would still be converted. Conflicts with the draft Solano HCP due to conversion of reserve areas for Swainson's hawk and areas designated as an Irrigated Agriculture Conservation Area would remain significant under this alternative. By preserving a larger area of irrigated agricultural lands, site attractiveness for foraging bird species would increase. However, by not constructing the 9.6-acre detention basin, bird attractants would be somewhat minimized but there would still be an on-site joint-use detention basin with the Community park that would only retain water during bigger storm events. Water would not be retained on a year-round basin. Mitigation Measures BIO-1 through BIO-4 would still be required to mitigate for impacts to biological resources. Although impacts to special-status plant and wildlife species would be reduced under this alternative, impacts to VELB, western pond turtle, burrowing owl, Swainson's hawk, nesting and foraging birds, and bats would remain potentially significant. Furthermore, significant impacts would still occur to riparian habitat surrounding Old Alamo Creek, potential waters of the State, as well as creating potential conflicts with the Solano HCP.

Cultural Resources. As identified for the proposed project, ground-disturbing activities associated with construction of this alternative have the potential to encounter or disturb previously unidentified subsurface historical, archeological, tribal cultural resources and paleontological resources or unrecorded human remains. Although this alternative would reduce the construction area by approximately 60 acres, impacts to cultural resources could still occur. As with the proposed project, impacts of the No Project/Existing General Plan Land Use Alternative would be mitigated to a less-than-significant level with Mitigation Measures CUL-1 and CUL-2.

Hydrology and Water Quality. This alternative would not develop the 60 acres in the eastern portion of the project site resulting in a reduction in the amount of construction activities including grading and constructing up to 610 new residential units. This would reduce impacts to water quality resulting from erosion and discharge of sediment and pollutants to receiving waters from areas caused by construction. Furthermore, this alternative would decrease the amount of land that would be converted to impervious surface, which would reduce stormwater runoff and pollutants from the project site. Under this alternative a smaller detention basin that accommodates stormwater flows would be designed in accordance with the City's Standard Conditions of Approval for storm drainage that would adequately direct all flows, including overland flows during the 100-year storm, into the detention basin. This alternative

would also be required to comply with a Storm Drain Master Plan that identifies specific improvements that would adequately collect and convey stormwater from project site and convey those flows downstream without increasing the area subject to flooding compared to pre-project conditions. Therefore, this alternative would slightly reduce impacts related to hydrology and water quality compared to the proposed, but the impacts would remain less than significant the same as the project.

Land Use and Planning. The proposed project is consistent with the City of Vacaville General Plan and Zoning Ordinance as well as the Travis Air Force Base Airport Land Use Compatibility Plan and potential impacts due to creation of wildlife attractants could be mitigated. The removal of approximately 60 acres and the creation of a smaller detention basin that would only retain water during bigger storm events would not result in any inconsistency with the City's General Plan or the Travis Air Force Base Airport Land Use Compatibility Plan. Therefore, land use impacts under this alternative would be the same as the proposed project.

Public Utilities. This alternative would construct fewer residential units than the proposed project and would not develop the 60 acres in the eastern portion of the project site. Therefore, the demand for public utilities would be reduced under this alternative. Impacts related to wastewater treatment and conveyance, solid waste disposal, and energy generation and transmission would be less than significant, the same as the proposed project.

Transportation and Circulation. Traffic is primarily generated by residential units with some traffic generated by the neighborhood commercial uses and the active park uses under the proposed project. However, the neighborhood commercial and active park uses would only generate a small increase in vehicle trips. Typically these trips would not occur during the AM and PM peak hours, but throughout the day and during the weekends. Under this alternative there would be fewer residential units but the amount of neighborhood commercial and active park uses would be the same as the project. It is anticipated there could be a small decrease in the number of vehicle trips due to the reduction in total number of residential units. The decrease in vehicle trips may help eliminate the PM impact at the Nut Tree Parkway / Allison Drive intersection and would not further degrade operations at any other intersection, significantly increase traffic volumes on the freeway, impede emergency access or adversely affect transit, bicycle or pedestrian movements, the same as the project. The impacts and mitigation measures identified under the proposed project would still be required. Therefore, Mitigation Measures TRAFF-1 through TRAFF-6 would still be required under this alternative to address impacts primarily associated with development of the remainder of the project site.

Relationship to the Project Objectives

This alternative would fulfill a majority of the project objectives. However, because fewer units would be developed it may not provide housing at a scale to support the creation of public amenities including the “Play-4-All” park, open space, and a community park, or be capable of attracting commercially reasonable financing.

Alternative 3: Reduced Intensity Alternative

Description

The Reduced Density Alternative would reduce the total number of residential units to be developed to 676 units (a reduction of 92 units). Under this alternative there would be 514 single family units, 162 medium high density units, 6.5 acres of neighborhood commercial, and 17 acres in parks, as shown in Figure 6-3. The detention basin would remain in the southeast portion of the project site. This alternative would result in generally the same amount of land disturbance as the proposed project, as discussed below, and would fail to avoid or lessen several of the project’s impacts.

Comparative Analysis of Environmental Effects

Air Quality. Under this alternative, the number of residential units would be decreased by a total of 92 units and the amount of neighborhood commercial uses would be decreased by 0.9 acre and parks would be decreased by 9.6 acres. Overall, a similar amount of site disturbance would occur as under the proposed project so construction activities associated with grading activities would essentially be the same as the project. There would be a decrease in disturbance to approximately 11 acres, resulting in a small decrease in air emissions created in the local air basin caused by fugitive dust emissions and combustion pollutants from on-site construction equipment. Emissions would be reduced due to fewer trucks hauling materials and from construction workers travelling to and from the site because fewer residential units would be constructed. However, compliance with Mitigation Measure AQ-1 would still be required to ensure impacts are reduced to less than significant.

There would also be a reduction in the total number of vehicle trips due to fewer units constructed associated with project operation. The amount of PM₁₀ would be reduced to below the threshold under this alternative, but the generation of NO_x, although lower than the project would still exceed the threshold. Compliance with Mitigation Measure AQ-2 would still be required and because NO_x emissions exceed the threshold even with mitigation the impact would remain significant and unavoidable, the same as the project. It is anticipated the cumulatively considerable net increase in NO_x, a precursor to ozone for which the project area is in non-attainment under federal and state ambient air quality standards would also remain a significant and unavoidable impact.

Biological Resources. Under this alternative, the project site would be developed with 92 fewer residential units and units would be constructed at a lower density. Furthermore, the acreage of neighborhood commercial and parks would be reduced by 0.9 acre and 9.6 acres, respectively. As 92 residential units would not be developed under this alternative, the amount of construction activities including grading and constructing 92 residential units would be reduced. However, the reduction in impacts to special-status plants and wildlife would be minimal, as this alternative would result in generally the same amount of land disturbance as the proposed project. Vegetation clearing along Old Alamo Creek during construction would still occur under this alternative. Therefore, potentially significant impacts could occur to VELB and western pond turtle habitat and individuals. Impacts from activities such as grading and operation of heavy equipment and conversion of foraging habitat could still impact burrowing owl, because generally the same amount of land would be disturbed as the project. Approximately the same amount of available nesting and foraging habitat for bird species would be removed. Although slightly reduced, light, noise and disturbance from site occupancy and construction could still impact bird nesting and foraging. Roosting habitat for bats along Old Alamo Creek could still be removed and impacts could still occur to these species due to construction activities. Impacts to riparian habitat adjacent to Old Alamo Creek would remain potentially significant under this alternative, as the understory and unhealthy or dead trees within the riparian area would still be removed. Impacts to potential waters of the State would remain potentially significant under this alternative, as aquatic features including the irrigation canal, irrigation ditches and roadside ditches would still be converted. Conflicts with the draft Solano HCP due to conversion of reserve areas for Swainson's hawk and areas designated as an Irrigated Agriculture Conservation Area would remain significant under this alternative. Mitigation Measures BIO-1 through BIO-3 would still be required to mitigate for impacts to biological resources. Although impacts to special-status plant and wildlife species could be slightly reduced under this alternative, impacts to VELB, western pond turtle, burrowing owl, Swainson's hawk, nesting and foraging birds, and bats would remain potentially significant the same as the project.

Cultural Resources. As identified for the proposed project, ground-disturbing activities associated with construction of this alternative would have the potential to encounter or disturb previously unidentified subsurface historical, archeological, tribal cultural resources and paleontological resources or unrecorded human remains. Although this alternative would reduce the total number of residential units and acreage of neighborhood commercial and parks, generally the same area of disturbance would occur so impacts to cultural resources could still occur. As with the proposed project, impacts could be mitigated to a less-than-significant level with Mitigation Measures CUL-1 and CUL-2.

Hydrology and Water Quality. This alternative would reduce the total number of residential units to be developed by 92 units and the acreage of neighborhood commercial

and parks by 0.9 acre and 9.6 acres, respectively. As fewer residential units would be constructed, the amount of construction activities including grading and constructing 92 new residential units would be reduced. This could slightly reduce impacts to water quality resulting from erosion and discharge of sediment and pollutants to receiving waters from areas caused by construction. However, because generally the same area of disturbance would occur it would be minimal. This alternative would decrease the amount of land that would be converted to impervious surface slightly by constructing fewer buildings. However, it is likely that the amount of runoff and pollutants from the project site would be similar to the project, as this alternative would result in generally the same amount of land disturbance as the proposed project. By retaining the 9.6 acre detention basin in the southeast portion of the project site, peak flows would be accommodated and pollutants exiting the project site would be reduced. This alternative would have a slight reduction in the intensity of impacts related to hydrology and water quality compared to the proposed project. However, impacts would remain less than significant, the same as the project.

Land Use and Planning. Under this alternative impacts would essentially be the same as the proposed project. The elimination of 92 residential units and land designated for neighborhood commercial and park uses would not result in an inconsistency with the City's General Plan, Zoning Ordinance or Travis Air Force Base Airport Land Use Compatibility Plan and potential impacts due to creation of wildlife attractants could be mitigated. Therefore, land use impacts under this alternative would remain the same as the proposed project

Public Utilities. This alternative would construct 92 fewer residential units than the proposed project and would reduce the acreage of neighborhood commercial and parks uses on the project site. Therefore, the demand for public utilities would be lessened under this alternative. Impacts related to wastewater treatment and conveyance, solid waste disposal, and energy generation and transmission would be less than significant.

Transportation and Circulation. The reduction in residential units and slight reduction in neighborhood commercial and park uses would decrease vehicle trips. Based on this decrease in trips the significant and unavoidable impact at the Nut Tree Road / Allison Drive intersection would not occur. Overall there would be a reduction in vehicle trips compared to the project and under this alternative it would not further degrade the LOS at any intersection, significantly increase traffic volumes on the freeway, impede emergency access or adversely affect transit, bicycle or pedestrian movements, the same as the project. The impacts and mitigation measures identified under the proposed project would still be required, but the significant and unavoidable impact under Cumulative plus Project conditions at the Nut Tree Parkway/Allison Drive intersection would not occur. Therefore, Mitigation Measures TRAFF-1 through TRAFF-6 would still be required

under this alternative to address impacts primarily associated with development of the remainder of the project site.

Relationship to the Project Objectives

By reducing the overall density across the project site and reducing the acreage of neighborhood commercial and parks uses, the Reduced Intensity Alternative would fulfill some of the project objectives, but would not meet the project’s objectives of providing for orderly and well-planned development and housing at a scale and density appropriate to the project site and that supports the creation of public amenities. As the reduced density of residential units would allow for less available acreage for parks uses (because a smaller number of units would be spread over a greater amount of land area), the proposed alternative would not include a density that also provides the amount of public amenities included within the proposed project. The Reduced Intensity Alternative would not be consistent with the land use designations for the project site in the City’s General Plan and would require an amendment to the General Plan as with the proposed project.

6.4 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA Guidelines require that an EIR identify the environmental superior alternative (Section 15126.6 (e)(2)). If the environmentally superior alternative is the “No Project” Alternative, the EIR must identify an environmentally superior alternative from among the other alternatives. As shown in Table 6-1, the No Project/No Development Project is the environmentally superior alternative.

After the No Project/No Development Project Alternative, the next most environmentally superior alternative is, Alternative 2, No Project/Existing General Plan Land Use, which would reduce some of the project’s significant impacts associated with air quality and transportation and would meet some, but not all of the project objectives. However, because this is also a “No Project” alternative, the environmentally superior development proposal alternative is Alternative 3, the Reduced Intensity Alternative, which would reduce some of the project’s significant impacts associated with air quality and transportation would meet some, but not all of the project objectives.

**Table 6-1
Evaluation of Alternatives by Impact**

Impact	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: No Project/Existing General Plan Land Use	Alternative 3: Reduced Intensity
<i>4.1 Air Quality</i>				
4.1-1: Construction of the proposed project could result in emissions of ROG, NO _x , or PM _{10/2.5} at levels that could substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions.	LS/M	NI	LS/M-	LS/M-
4.1-2: Operation of the proposed project would result in emissions of ROG, NO _x , or PM _{10/2.5} at levels that could substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions.	SU/M	NI	SU/M-(PM ₁₀ would be below the threshold under operation)	SU/M-(PM ₁₀ would be below the threshold under operation)
4.1-3: The proposed project would not result in CO concentrations that exceed the 1-hour state ambient air quality standard (i.e., 20.0 ppm) or the 8-hour state ambient standard (i.e., 9.0 ppm).	LS	NI	LS-	LS-
4.1-4: The proposed project would not result in the exposure of sensitive receptors to substantial pollutant concentrations.	LS	NI	LS-	LS-
4.1-5: The proposed project would result in a cumulatively considerable net increase of any criteria pollutant for which the project area is in non-attainment under an applicable federal or state ambient air quality standard (including the release of emissions that exceed quantitative thresholds for ozone precursors).	SU/M	NI	LS-	LS-

**Table 6-1
Evaluation of Alternatives by Impact**

Impact	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: No Project/Existing General Plan Land Use	Alternative 3: Reduced Intensity
<i>4.2 Biological Resources</i>				
4.2-1: Implementation of the proposed project may result in substantial adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.	LS/M	NI	LS/M-	LS/M-
4.2-2: Implementation of the proposed project could result in a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS.	LS/M	NI	LS/M-	LS/M-
4.2-3: Implementation of the proposed project may result in placement of fill into potential jurisdictional waters of the U.S and State.	LS/M	NI	LS/M-	LS/M-
4.2-4: Implementation of the proposed project may interfere 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.	LS	NI	LS/M-	LS/M-

**Table 6-1
Evaluation of Alternatives by Impact**

Impact	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: No Project/Existing General Plan Land Use	Alternative 3: Reduced Intensity
4.2-5: Implementation of the proposed project could conflict with applicable land use plans, policies, regulations, or ordinances, of an agency with jurisdiction over the project, including the Solano County Water Agency's draft HCP adopted for the purpose of protecting biological resources or avoiding and mitigating impacts to biological resources.	LS/M	NI	LS/M-	LS/M-
4.2-6: The proposed project could contribute to cumulative impacts to special-status species in the region due to removal of foraging and breeding habitat.	LS/M	NI	LS/M-	LS/M-
<i>4.3 Cultural Resources</i>				
4.3-1: Implementation of the proposed project may cause a substantial adverse change in the significance of an archaeological resource.	LS/M	NI	LS/M-	LS/M-
4.3-2: Implementation of the proposed project may cause a substantial adverse change in the significance of an historical resource.	LS	NI	LS-	LS/M-
4.3-3: Implementation of the proposed project may disturb human remains, including those interred outside of formal cemeteries.	LS/M	NI	LS/M-	LS/M-
4.3-4: Implementation of the proposed project may cause a substantial adverse change in the significance of a known Tribal Cultural Resource.	LS/M	NI	=	=

**Table 6-1
Evaluation of Alternatives by Impact**

Impact	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: No Project/Existing General Plan Land Use	Alternative 3: Reduced Intensity
4.3-5: The proposed project could contribute to cumulative impacts to historical, archaeological, tribal cultural resources and paleontological resources in the area.	LS/M	NI	LS/M-	LS/M-
<i>4.4 Hydrology and Water Quality</i>				
4.4-1: Implementation of the proposed project may violate water quality standards or waste discharge requirements, or otherwise substantially degrade water quality.	LS	NI	LS-	LS-
4.4-2: Implementation of the proposed project may alter the existing drainage pattern of the site or area in a manner which would result in substantial erosion or siltation on- or off-site.	LS	NI	LS-	LS-
4.4-3: Implementation of the proposed project may substantially alter the existing drainage pattern of the site or area or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.	LS	NI	LS-	LS-
4.4-4: Implementation of the proposed project may create or contribute to runoff water which would exceed the capacity of the existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.	LS	NI	LS-	LS-

**Table 6-1
Evaluation of Alternatives by Impact**

Impact	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: No Project/Existing General Plan Land Use	Alternative 3: Reduced Intensity
4.4-5: The proposed project, in addition to other projects in the watershed, could result in the generation of polluted runoff that could violate water quality standards or waste discharge requirements for receiving waters.	LS	NI	LS-	LS-
<i>4.5 Land Use and Planning</i>				
4.5-1: Implementation of the proposed project may conflict with a regional land use plan, policy or regulation.	LS/M	NI	=	=
<i>4.6 Public Utilities</i>				
4.6-1: The proposed project could exceed the treatment requirements of the applicable Regional Water Quality Control Board.	LS	NI	LS-	LS-
4.6-2: The proposed project could require or result in the construction of new wastewater facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects.	LS	NI	LS-	LS-
4.6-3: The proposed project could result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.	LS	NI	LS-	LS-
4.6-4: The proposed project could be served by a landfill without sufficient permitted capacity to accommodate the project's solid waste disposal needs. This would be a less-than-significant impact.	LS	NI	LS-	LS-

**Table 6-1
Evaluation of Alternatives by Impact**

Impact	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: No Project/Existing General Plan Land Use	Alternative 3: Reduced Intensity
4.6-5: The proposed project could require or result in the construction of new energy production and/or transmission facilities or expansion of existing facilities.	LS	NI	LS-	LS-
4.6-6: The proposed project could contribute to a cumulative increase in the demand for wastewater treatment, which could result in inadequate capacity and require the construction of new or expansion of existing wastewater treatment facilities.	LS	NI	LS-	LS-
4.6-7: The proposed project could contribute to a cumulative increase in solid waste, which could result in either the construction of new solid waste facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects.	LS	NI	LS-	LS-
4.6-8: The proposed project could contribute to a cumulative increase in energy demand, which could result in the need for construction of new energy production and/or transmission facilities or expansion of existing facilities.	LS	NI	LS-	LS-
4.7 Transportation and Circulation				
4.7-1: Implementation of the proposed project under Existing plus Project conditions would degrade operations at two study intersections that trip the City's thresholds of significance.	SU/M	NI	-	

**Table 6-1
Evaluation of Alternatives by Impact**

Impact	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: No Project/Existing General Plan Land Use	Alternative 3: Reduced Intensity
4.7-2: Implementation of the proposed project would increase traffic volumes along study freeway segments in the CMP system, but would not exceed LOS thresholds of significance.	LS	NI	LS-	LS-
4.7-3: Implementation of the proposed project, including installation of traffic circles and other traffic calming devices, may delay emergency response or impede movement of emergency vehicles.	LS/M	NI	LS/M=	LS/M=
4.7-4: Implementation of the proposed project could conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.	LS/M	NI	LS/M=	LS/M=
4.7-5: Under Existing plus Approved plus Project conditions, traffic volumes would trip the City's threshold of significance at three intersections.	SU/M	NI	SU/M=	SU/M=
4.7-6: Under Cumulative plus Project conditions, intersection operations would trip the threshold of significance at six intersections.	SU/M	NI	SU/M- (Allison Dr/Nut Tree Parkway reduced to LTS)	SU/M- (Allison Dr/Nut Tree Parkway reduced to LTS)
4.7-7: Traffic volumes under Cumulative plus Project conditions would be LOS C or better conditions on all study road segments.	NI	NI	NI=	NI=

**Table 6-1
Evaluation of Alternatives by Impact**

Impact	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: No Project/Existing General Plan Land Use	Alternative 3: Reduced Intensity
4.7-8: Implementation of the proposed project under Existing plus Approved plus Project conditions would increase traffic volumes along study freeway segments in the CMP system but would not exceed LOS thresholds of significance.	LS	NI	LS-	LS-
4.7-9: Implementation of the proposed project under Cumulative plus Project conditions would increase traffic volumes along study freeway segments in the CMP system but would not exceed LOS thresholds of significance.	LS	NI	LS-	LS-

Notes:

NI = No impact

LS = Impacts less than significant

LS/M = Impacts less than significant after mitigation

SU/M = Impacts significant and unavoidable after mitigation

“+” indicates the impact is more severe than the project impact

“-” indicates that the impact is less severe than the project impact

“=” indicates that the impact is the same as the proposed project

CHAPTER 7 EIR PREPARATION

Report Preparation

Dudek prepared this document under the direction of the City of Vacaville.

City of Vacaville Planning Services

Amy Feagans, Contract Planner

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