Wildhorse Ranch Project

SCH# 2007072020

Draft Environmental Impact Report

Prepared For

Davis
California

April 2009

Prepared By

RANEY
PLANNING & MANAGEMENT, INC.

Wildhorse Ranch Project
Draft Environmental Impact Report

SCH# 2007072020

Prepared For
The City of Davis

Ike Njoku
Community Development Department
(530) 757-5610

Prepared By
Raney Planning & Management, Inc.

Tim Raney, President
1501 Sports Drive
Sacramento, CA 95834
(916) 372-6100

TABLE OF CONTENTS

Appendices

A. Notice of Preparation (includes Initial Study as an attachment)
B. Comments on the Notice of Preparation
C. Traffic Study Calculation Sheets
D. Air Analysis
E. Noise Analysis
F. Biological Resources Assessment
G. Winter and Summer Burrowing Owl Survey
H. Tree Appraisal
I. City Water Supply Demand / Forecasting Memo
J. Water and Wastewater Memo

LIST OF FIGURES

LIST OF TABLES

1 INTRODUCTION

INTRODUCTION

The Wildhorse Ranch Draft Environmental Impact Report (Draft EIR) was prepared in accordance with the California Environmental Quality Act of 1970 (CEQA) as amended. The City of Davis is the lead agency for the environmental review of the Wildhorse Ranch project evaluated herein and has the principal responsibility for approving the project. As required by Section 15121 of the CEQA Guidelines, this EIR will (a) inform public agency decision-makers, and the public generally, of the significant environmental effects of the project, (b) identify possible ways to minimize the significant adverse environmental effects, and (c) describe reasonable and feasible project alternatives which reduce environmental effects. The public agency shall consider the information in the Draft EIR along with other information that may be presented to the agency.

PROJECT BACKGROUND

In 1994, the City of Davis approved the Wildhorse Golf Club and Residential Development project, which designated the proposed project site as a horse ranch. The Wildhorse Golf Club and Residential Development site was formerly used for agricultural purposes, which included the use of row crops and pastures. The initial concept of the Wildhorse Golf Club and Residential Development consisted of residential neighborhoods, including, single-family homes, apartments, affordable housing, parks, and a semi-public championship golf course and clubhouse.

The Wildhorse Golf Club and Residential Development project included a General Plan Amendment to change the land use configuration for approximately 424 acres. Although the General Plan Amendment allowed single-family residences, greenbelts, and parks/recreation land uses to mix throughout the development, the land use map designated an area, located in the southeast portion of the project site, as Agriculture. The area designated as Agriculture is approximately 25.79 acres, and allows for agricultural uses, including a horse ranch; this site is the subject of the environmental analysis contained in this Draft EIR.

PROJECT LOCATION

The proposed Wildhorse Ranch project site is located on the north side of East Covell Boulevard, within the City of Davis. The site currently consists of a horse ranch located in the southeast corner of the existing Wildhorse Subdivision. The property to the east of the project site is the Davis greenbelt and habitat area that also serves as an agricultural buffer to lands east of the project site. The areas to the north and west are established residential portions of the Wildhorse subdivision. To the south is an established residential development known as Davis Manor, while to the southeast is an established residential development known as Mace Ranch. In the

current General Plan (2001), the project site is designated Agriculture which includes permitted uses such as horse boarding, breeding, and farming.

Project Description

The Wildhorse Ranch Project consists of 25.79 acres and includes an amendment of the General Plan land use designation of the site from Agriculture to five uses; Residential High Density, Residential Medium Density, Neighborhood Greenbelt, Natural Habitat Area, and Urban Agricultural Transition Area. The project also includes a Rezone from P-D #3-89 to a new Planned Development. The General Plan land use designation amendment request is also subject to Measure J voter approval. The proposed project includes the development of up to 191 residential units. Although the project design may continue to undergo refinement as additional consideration is given to both City staff and community input, the Draft EIR only evaluates the conservative 191 residential unit configuration. The proposed project also includes public open space, greenbelts, bike paths, and additional land to expand the greenbelt/agricultural buffer between actively farmed land and residential development. According to the Conceptual Site Plan, the residential parcels have up to the following number and type of proposed units:

Detached Single Family, 73 units
Attached single-family townhome, 78 units (36 are Middle Income for sale-attached units)
Low/Very Low Income, 40 multi-family rental units

Total: 191 units

Purpose of the EIR

As provided in the CEQA Guidelines Section 15021, public agencies are charged with the duty to avoid or minimize environmental damage where feasible. The public agency has an obligation to balance a variety of public objectives, including economic, environmental, and social issues.

CEQA requires the preparation of an EIR prior to approving any project that may have a significant effect on the environment. For the purposes of CEQA, the term *project* refers to the whole of an action, which has the potential for resulting in a direct physical change or a reasonably foreseeable indirect physical change in the environment (CEQA Guidelines Section 15378[a]). With respect to the proposed Wildhorse Ranch project, the City has determined that the proposed development is a *project* within the definition of CEQA, which has the potential for resulting in significant environmental effects.

The EIR is an informational document that apprises decision-makers and the general public of the potential significant environmental effects of a proposed project. An EIR must describe a reasonable range of feasible alternatives to the project and identify possible means to minimize the significant effects. The lead agency, which is the City of Davis for this project, is required to consider the information in the EIR along with any other available information in deciding whether to approve the application. The basic requirements for an EIR include discussions of the environmental setting, environmental impacts, mitigation measures, alternatives, growth inducing impacts, and cumulative impacts.

TYPE OF DOCUMENT

The CEQA Guidelines identify several types of EIRs, each applicable to different project circumstances. This EIR has been prepared as a *project-level EIR*, pursuant to CEQA guidelines Section 15161, which examines the environmental impacts of a specific project. The project-level EIR should focus primarily on changes in the environment, which result from the development of the project. All phases of the project, including planning, construction, and operation, should be included in the analysis.

EIR PROCESS

The EIR process begins with the decision by the lead agency to prepare an EIR, either during a preliminary review of a project or at the conclusion of an initial study. Once the decision is made to prepare an EIR, the lead agency sends a Notice of Preparation (NOP) to appropriate government agencies, and when required, to the State Clearinghouse (SCH) in the Office of Planning and Research (OPR), which will ensure that responsible State agencies reply within the required time. The SCH assigns an identification number to the project, which then becomes the identification number for all subsequent environmental documents on the project. Applicable agencies have 30 days to respond to the NOP, indicating, at a minimum, reasonable alternatives and mitigation measures they wish to have explored in the Draft EIR and whether the agency will be a responsible agency or a trustee agency for the project.

As soon as the Draft EIR is completed, a notice of completion is filed with the OPR and public notice is published to inform interested parties that a Draft EIR is available for agency and/or public review and providing information regarding location of drafts and any public meetings or hearings that are scheduled. The Draft EIR is circulated for a specified period, typically 45 days, during which time reviewers may make comments. The lead agency must evaluate and respond to comments in writing, describing the disposition of any significant environmental issues raised and explaining in detail the reasons for not accepting any specific comments concerning major environmental issues. Should comments received result in the addition of significant new information to an EIR, after public notice is given, the revised EIR or affected chapters must be recirculated for another public review period with related comments and responses.

Once the lead agency is satisfied that the EIR has adequately addressed the pertinent issues in compliance with CEQA, a Final EIR will be prepared comprised of the Draft EIR, comments, responses to comments, and any errata and/or changes. The Final EIR is made available for review by the public and commenting agencies. Before approving a project, the lead agency shall certify that the Final EIR has been completed in compliance with CEQA and has been presented to the decision-making body of the lead agency and has been reviewed and considered by that body, and that the Final EIR reflects the lead agency's independent judgment and analysis.

A Notice of Preparation (NOP) for this Draft EIR was released July 5, 2007 for a 30-day review (Appendix A). A public scoping meeting was held on July 18, 2007. Comments provided by the public and public agencies in response to the NOP were received by the City of Davis and are provided in Appendix B. In addition, an Initial Study was prepared to focus the scope of the

Wildhorse Ranch EIR. The Initial Study was included as an attachment to the NOP (See Appendix A to this Draft EIR).

The Wildhorse Ranch Draft EIR will be circulated for a 45-day public review period. Comments received during the comment period and the public hearing(s) will be addressed in a Response to Comments volume. The Davis Planning Commission and City Council, in accordance with CEQA, will review the Draft EIR and Responses to Comments prior to certification of the Final EIR.

In order to approve the project, state law requires that the Council make several types of "findings." Findings are a recitation of the conclusions of the Council on particular issues, including documentation of the evidence in support of those conclusions. The required findings are as follows:

- Certification of the EIR (CEQA Guidelines Section 15090) – These findings support the adequacy of the EIR for decision-making purposes.

- Significant Impacts (CEQA Guidelines Section 15091) – These findings explain how the Council chose to address each identified significant impact, including the mitigation measures adopted or an explanation of why such measures are infeasible.

- Project Approval (CEQA Guidelines Section 15092) – These findings support the Council's action to approve the project.

- Statement of Overriding Considerations (CEQA Guidelines Section 15093) if applicable – These findings document the Council's decision to approve the project despite the fact that unavoidable impacts will result, due to other overriding benefits of the project.

In addition, as indicated in *Section 40.41.020* (Voter Approval) of the Davis Zoning Ordinance, voter approval is required for changes to land use designations on the Land Use Map from Agricultural or Urban Reserve to Urban land use designations or from Agricultural to Urban Reserve land use designations.

In part, this section of the Zoning Ordinance states *(see Section 40.41.020 [B][2C]):*

> (c) Approval by an affirmative majority vote of the voters of the City of Davis voting on the proposal.
>
> The land use entitlements for development on all, or any portion of either of these properties shall become effective only after approval by the City Council and the voters. The City shall not submit any application to voters if the application has not first been approved by the City Council, unless otherwise required by law.

SCOPE OF THE DRAFT EIR

State CEQA Guidelines § 15126.2(a) states, in pertinent part:

> An EIR shall identify and focus on the significant environmental effects of the proposed project. In assessing the impact of a proposed project on the environment, the lead agency should normally limit its examination to changes in the existing physical conditions in the affected area as they exist at the time the notice of preparation is published, or where no notice of preparation is published, at the time environmental analysis is commenced.

Pursuant to these guidelines, the scope of this Draft EIR addresses specific issues and concerns identified as potentially significant. These were determined based on the preparation of an Initial Study, review of comments received on the NOP and review of testimony received at the scoping hearing. The Initial Study prepared for the proposed project concluded that several environmental issues would result in a less-than-significant impact. The complete text of the Initial Study is contained in Appendix A as an attachment to the NOP.

Resources identified for study in this Draft EIR include:

- Land Use and Agricultural Resources;
- Population, Housing, and Employment;
- Transportation and Circulation;
- Air Quality;
- Noise;
- Biological Resources;
- Aesthetics;
- Hydrology, Water Quality, and Drainage;
- Public Services and Facilities; and
- Climate Change.

The evaluation of effects is presented on a resource-by-resource basis in Sections 4.1 through 4.10. Each section is divided into four sections: Introduction, Environmental Setting, Regulatory Context, and Impacts and Mitigation Measures.

Impacts that are determined to be significant in Chapter 4, and for which no feasible mitigation measures are available to reduce those impacts to a less-than-significant level are identified as *significant and unavoidable*. Chapter 5 in the Draft EIR presents a discussion and comprehensive list of all significant and unavoidable impacts identified in Chapter 4.

COMMENTS RECEIVED ON THE NOTICE OF PREPARATION

The City of Davis received eight comment letters during the open comment period on the NOP for the Wildhorse Ranch EIR. In addition, four verbal comments were submitted during the NOP scoping meeting and recorded and subsequently transcribed by Capitol Reporters. A copy of each letter and scoping meeting transcript is provided in Appendix B of this EIR. The letters were authored by representatives of State and local agencies and residents.

State and Local Agencies and Organizations

- Bridget Binning, *California Department of Public Health*
- Wayne Eckert, *Habitat for Humanity*

Adjacent Residents and Other Interested Parties

- Kuk Chow, *City Resident*
- Jerry and Deedra Johnson, *City Residents*
- Ranjit Maan (2), *City Residents*
- Brian McAloon, *City Resident*
- Jill Westrup, *City Resident*
- Laura Westrup (2), *City Resident*
- Warren Westrup, *City Resident*
- Philip Wyels, *City Resident*

The following list, categorized by issue, summarizes the concerns in these letters:

Land Use and Agricultural Resources (Section 4.1)	Concerns related to the following issues: • Loss of Prime Farmland to residential. • Purchasing agricultural conservation easements to offset loss of Prime Farmland. • Loss of open space and open space calculations. • Land use assumptions regarding ConAgra / Hunt Wesson site. • The amount of park space proposed for Wildhorse Ranch. • Impacts related to deeding twenty-feet to adjacent homes or creation of an open space corridor. • Land use consistency with the adjacent homes.
Population, Housing, and Employment (Section 4.2)	Concerns related to the following issues: • Need for additional housing.
Transportation and Circulation: (Section 4.3)	Concerns related to the following issues: • Increased traffic as a result of proposed project. • Accommodation for bicycles and transit. • Traffic impacts to Pole Line Road. • Traffic Impacts to East Covell Boulevard. • Traffic impacts Citywide. • Traffic impacts to additional pedestrians, bicycles, and vehicles near and around the new Junior High School. • Increase ridership of transit services. • Emergency Access compatibility with surrounding homes. • Adequate parking for additional vehicles.

Air Quality (Section 4.4)	Concerns related to the following issues: • Impact analysis of odors, dust, and other impacts in relation to baseline assumption including the Wildhorse Management Plan. • Impacts from aerial pesticide applications. • Impacts from increased traffic.
Noise (Section 4.5)	Concerns related to the following issues: • Increased noise levels from Wildhorse Ranch traffic. • Noise impacts to and from residential uses.
Biological Resources (Section 4.6)	Concerns related to the following issues: • Impacts to Swainson's hawk foraging habitat. • Impacts to Burrowing owl habitat within the project and adjacent agricultural buffer. • Impacts to giant garter snake habitat. • State and federally listed or other special-status species on or near the Wildhorse Ranch site.
Aesthetics (Section 4.7)	Concerns related to the following issues: • Protecting scenic vistas and view corridors. • Aesthetic impacts to adjacent homes to the North and West.
Hydrology, Water Quality, and Drainage (Section 4.8)	Concerns related to the following issues: • Stormwater runoff during 10-year and 100-year events. • On-site drainage, detention, and storage capacity for storm water runoff. • Capacity of Covell Drain to receive increased runoff.
Public Services and Facilities: (Section 4.9)	Consideration of the following issues: • Impact of project on infrastructure and City/County services. • Need for park facilities within the proposed greenbelt. • Increased crime rate. • Impacts related to the increased use of schools. • Electrical power and power infrastructure. • Impacts to wastewater treatment plant associated with additional development.
Climate Change (Section 4.10)	Concerns related to the following issues: • Impacts from greenhouse gas generation.
Alternatives Analysis (Chapter 5)	Concerns related to the following issues: • Analysis of alternatives with less density and more open space.
Statutorily Required Sections (Chapter 6)	Concerns related to the following issues: • Growth-inducing impacts to adjacent properties.
Cultural Resources (Initial Study)	Concerns related to: • Potential occurrence of unknown cultural resources onsite.

Geology (Initial Study)	Concerns related to: • Plasticity of soils.
Topics Outside of CEQA (not discussed further in Draft EIR)	Concerns related to the following issues: • Identification of fiscal impacts of the project.

All of these issues, with the exception of "Topics Outside of CEQA," are addressed in this Draft EIR, in the relevant sections identified in the first column.

ORGANIZATION OF THE DRAFT EIR

The Wildhorse Ranch Draft EIR is organized into the following sections:

Chapter 1 – Introduction
Provides an introduction and overview describing the intended use of the Draft EIR and the review and certification process, as well as summaries of the chapters included in the Draft EIR and summaries of the environmental resources that would be impacted by the project.

Chapter 2 – Summary of Impacts and Mitigation Measures
Summarizes the elements of the project and the environmental impacts that would result from implementation of the proposed project, describes proposed mitigation measures and indicates the level of significance of impacts after mitigation. Acknowledges alternatives that would reduce or avoid significant impacts.

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

Chapter 4 – Environmental Setting, Impacts and Mitigation
Contains a project-level and cumulative analysis of environmental issue areas associated with the proposed project. The section for each environmental issue contains an introduction and description of the setting of the project site, identifies impacts and recommends appropriate mitigation measures.

Chapter 5 – Alternatives Analysis
Describes the alternatives to the proposed project, their respective environmental effects, and a determination of the environmentally superior alternative.

Chapter 6 – Statutorily Required Sections
Provides discussions required by CEQA regarding impacts that would result from the proposed project, including a summary of cumulative impacts, potential growth-inducing impacts, significant and unavoidable impacts, and significant irreversible changes to the environment.

Chapter 7 – Draft EIR Authors / Persons Consulted
Lists report authors and persons consulted who provided technical assistance in the preparation and review of the Draft EIR.

Chapter 8 – References
Provides bibliographic information for all references and resources cited.

Appendices
Includes the NOP, which includes the Initial Study, responses to the NOP, and additional technical information.

2 EXECUTIVE SUMMARY

INTRODUCTION

The Executive Summary chapter of the EIR provides an overview of the Wildhorse Ranch project (described in detail in Chapter 3 – Project Description), and summarizes the conclusions of the environmental analysis (provided in detail in Chapter 4 – Environmental Setting, Impacts, and Mitigation). This chapter also summarizes the alternatives to the proposed project that are described in Chapter 5, Alternatives Analysis, and identifies the Environmentally Superior Alternative. Table 2-1, at the end of this chapter, provides a summary of the environmental effects of the proposed project identified in each technical chapter. The table contains the environmental impacts, the significance of the impacts for the proposed project, the proposed mitigation measures, and the significance of the impacts after the mitigation measures are implemented.

PROJECT LOCATION AND DESCRIPTION

The project site consists of approximately 25.79 acres of land within the City of Davis, Yolo County, California. The project site is located at 3003, 3027, and 3075 East Covell Boulevard, at the intersection of East Covell Boulevard and Monarch Lane. The site is identified by Yolo County Assessor's Parcel Number (APN) 071-140-11. The current City of Davis General Plan (adopted May 2001) designation for the site is Agriculture.

The proposed site is located in the southeast corner of the Wildhorse subdivision. To the east of the site is the Davis greenbelt and agricultural buffer, to the south is Davis Manor and portions of Mace Ranch neighborhoods, and to the west and north are established residential portions of the Wildhorse subdivision.

The project involves the development of up to 191 residential units. The Site Plan for the project indicates that the 25.79-acre project site would include the following mix of residential uses and densities: 73 detached single-family residences, and 78 two to three story attached single-family townhome units (including 36 middle-income units) on 11.95-acres and 1.92-acres of attached affordable housing for a maximum of 40 units at 21 du/ac. The project would require the approval of a General Plan Amendment to redesignate the site's land use from Agriculture to five uses; Residential High Density, Residential Medium Density, Neighborhood Greenbelt, Natural Habitat Area, and Urban Agricultural Transition Area. In addition, the project would require rezone of the site from Planned Development #3-89, which allows for horse boarding and breeding and farming, to a new Planned Development designation. In addition, redesignation of the project site from Agriculture to residential uses would be subject to Measure J, requiring voter approval.

ENVIRONMENTAL IMPACTS AND MITIGATION

Under CEQA, a significant effect on the environment is defined as a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, mineral, flora, fauna, ambient noise, and objects of historic or aesthetic significance. Implementation of the proposed project could result in significant impacts on the resource areas listed below.

This Draft EIR discusses mitigation measures that could be implemented to reduce potential adverse impacts to a level that is considered less-than-significant. Such mitigation measures are noted in this Draft EIR and are found in the following technical sections: Land Use and Agricultural Resources; Transportation and Circulation; Air Quality; Noise; Biological Resources; Aesthetics; Hydrology, Water Quality, and Drainage; Public Services and Facilities, and Climate Change. If an impact is determined to be significant, applicable mitigation measures are identified, as appropriate. These mitigation measures are also summarized in Table 2-1 at the end of this chapter. The mitigation measures presented in the Draft EIR will form the basis of the Mitigation Monitoring Plan. An impact that remains significant after including all feasible mitigation measures is considered a significant and unavoidable impact.

Land Use and Agricultural Resources

The Land Use and Agricultural Resources section evaluates the consistency of the proposed project with City of Davis adopted plans and policies. The evaluation is based on a thorough review of the City of Davis General Plan and the Davis Zoning Ordinance, as well as any other appropriate documents, to address consistency issues. The Land Use and Agricultural Resources section further assesses the compatibility of the proposed project with surrounding land uses, both existing and proposed. In addition, the Land Use and Agricultural Resources section summarizes the status of the existing agricultural resources on the project site and areas surrounding the City of Davis, using the current State model and data, including identification of any State-designated Important Farmlands on the project site. Any conflicts with existing zoning for agricultural use, existing Williamson Act contracts, or right-to-farm ordinances applicable to the project site are also identified. This section further includes a discussion regarding conversion of farmland to non-agricultural uses.

The Land Use analysis notes that significant incompatibilities would arise from the proximity of the proposed residences to nearby agricultural operations with implementation of the proposed project. However, the impact would be reduced to a less-than-significant level with the implementation of the mitigation measures identified in the section. Impacts related to consistency with City of Davis plans, policies, or ordinances and the Davis Planned Development district process were determined to be less-than-significant.

The Agricultural Resources analysis indicates that the majority of the 25.79-acre project site contains soils that are highly suitable for agricultural production and are considered Prime Farmland soils (if irrigated). The General Plan Update EIR states that any conversion of prime agricultural land to urban uses would result in a significant and unavoidable impact. The impact to prime agricultural lands would be reduced by implementing the mitigation measures identified

in the section; however, the loss of Prime Farmland associated with implementation of the proposed project would remain a significant and unavoidable impact in both the short-term and cumulative scenarios.

Population, Housing, and Employment

The Population, Housing, and Employment section of the Draft EIR summarizes regional and local demographic information, and identifies projected population changes resulting from the proposed project.

The Draft EIR determined that development of the proposed project would result in less-than-significant impacts regarding consistency with Growth Management Action "e" in the General Plan's goals and policies related to population growth. The Draft EIR found that long-term impacts to population, housing, and employment from the proposed project in combination with existing and future developments in the Davis area would be less-than-significant. In addition, the following impacts associated with population, housing, and employment were identified as less-than-significant: a) impacts related to inconsistency with City of Davis affordable housing policies and Affordable Housing Ordinance; and b) impacts to employment and housing.

Transportation and Circulation

The Transportation and Circulation section of the Draft EIR is based on a traffic study prepared for the Wildhorse Ranch project site. The Transportation and Circulation section describes existing traffic conditions, summarizes the existing and planned regional and local transportation network, and describes the traffic load and capacity of street systems, including level of service standards for critical street segments and intersections. In addition, the section includes an analysis of the Existing Plus Project scenario and cumulative traffic scenarios (Cumulative No Project and Cumulative Plus Project). Other issues addressed in the section include traffic hazards due to design features, emergency access, and bicycle, pedestrian and transit facilities.

The Transportation and Circulation analysis determined that project-level impacts to study intersections and roadways and impacts to transit facilities would be less-than-significant. However, under the cumulative scenario a significant impact would occur to the Mace Boulevard/Second Street intersection. In addition, several traffic-related impacts are identified as significant in the analysis, including impacts related to the provision of efficient site access and circulation, impacts related to pedestrian and bicycle access and circulation, and impacts to traffic flow from construction traffic associated with grading and development of the project site. However, implementation of the mitigation measures identified in the section would reduce the identified significant impacts to less-than-significant levels.

Air Quality

The Air Quality section summarizes the regional air quality setting, including climate and topography, ambient air quality, and regulatory setting, and is based on an air quality assessment prepared for the Wildhorse Ranch project. The Air Quality section describes the impacts of the proposed project on local and regional air quality. The section includes a discussion of the

existing air quality and associated impacts, construction-related air quality impacts resulting from grading and equipment emissions, direct and indirect emissions associated with the project, the impacts of these emissions on both the local and regional scale, and mitigation measures warranted to reduce or eliminate any identified significant impacts. In addition, this section addresses carbon monoxide impacts, impacts associated with project construction activities, and cumulative air quality impacts.

The Air Quality analysis determined that impacts pertaining to increased carbon monoxide concentrations at project-area intersections, new air pollutant emissions within the air basin resulting from operation, and cumulative air quality impacts of the proposed project would be less-than-significant. Impacts found to be significant were those related to exhaust emissions and fugitive dust emissions from project-associated construction activities. The impact would be reduced to a less-than-significant level with implementation of the mitigation measures identified in the section.

Noise

The Noise section of the Draft EIR is based on an environmental noise assessment prepared for the Wildhorse Ranch project site. The noise assessment includes an analysis of the existing noise setting, including measurements of existing traffic and general ambient noise levels in and near the project area. The Noise section identifies all significant noise impacts on, and generated by, the proposed project. In addition, the Noise section evaluates noise levels associated with the construction and operation of the Wildhorse Ranch project and the resulting impacts to sensitive receptors in the vicinity of the project site. Determination of significance is based on the criteria set forth in the City of Davis General Plan Noise Element and City of Davis Zoning Code, as well as applicable State guidelines.

The Noise analysis concludes that impacts associated with an increase of existing traffic noise levels on surrounding roadways, including cumulative impacts of traffic noise levels at outdoor activity areas proposed within the 60 dB Ldn contours, first-floor and upper-floor residential uses proposed within the 60 dB Ldn contours, cumulative impacts of traffic noise levels at interior residential areas proposed within the 60 dB Ldn contours, and noise impacts related to agricultural activities would be less-than-significant. A few significant noise-related impacts would occur with implementation of the proposed project, including short-term noise impacts from construction activities and noise impacts associated with greenbelt maintenance activities. All impacts identified as significant in the noise analysis would be reduced to less-than-significant levels through the implementation of the mitigation measures found in the section.

Biological Resources

The Biological Resources section of the Draft EIR summarizes the existing biological resources setting for the project area. Data from the California Department of Fish and Game (CDFG) and the U.S. Fish and Wildlife Service (USFWS) are analyzed and reviewed. The section presents the results of a records search of the California Natural Diversity Database (CNDDB), which was conducted to determine the potential of the project area to support rare, threatened, endangered, or otherwise sensitive species. In addition, the section provides the results of on-site

field studies pertaining to the identification of potential habitats for special-status species and wetlands. Finally, the section identifies the biological resources-related permits required as part of the development process.

The Draft EIR determined that development of the proposed project would have significant impacts to special-status animal species including, but not limited to, the American badger, the western burrowing owl, Swainson's hawk, other nesting birds, and certain bat species. However, mitigation measures recommended in the Draft EIR would reduce impacts to these species and the species' habitats to a less-than-significant level. The removal of trees was also found to be significant; however, implementation of appropriate mitigation measures would reduce impacts to a less-than-significant level. In addition, impacts related to the cumulative loss of biological resources in the City of Davis were found to be less-than-significant.

Aesthetics

The Aesthetics section of the Draft EIR summarizes existing regional and project area aesthetics, including a description of the existing visual character or quality of the site. In addition, the section includes an analysis of whether any scenic vistas, scenic highways, or scenic resources (e.g., trees and/or historic resources) exist within the project area. Creation of new sources of light and glare by the project and the effects of the light and glare upon the project's vicinity are also evaluated in the Aesthetics section.

The Aesthetics analysis concludes that impacts to scenic resources would be less-than-significant. Impacts related to light and glare were determined to be significant because the development of residential units would generate new sources of light and glare such as residential lighting, streetlights, and lighting associated with the greenbelt amenity. In order to reduce impacts from light and glare, the applicant has proposed the dedication of an additional 20 feet to each property owner adjacent to the north and west boundary of the project. In addition, the proposed project includes development of an orchard area beyond the 20-foot dedication. This would help reduce light and glare impacts resulting from the project and, along with implementation of the mitigation measure found in the section, would reduce light and glare impacts to a less-than-significant level. However, as stated in the Davis General Plan Update EIR, overall visual impacts pertaining to the conversion of open space or agricultural land to urban uses would result in visual impacts that cannot be mitigated under either near-term or cumulative conditions. Therefore, this impact would be considered significant and unavoidable.

Hydrology, Water Quality, and Drainage

The Hydrology, Water Quality, and Drainage section summarizes existing setting information and identifies potential project-associated impacts pertaining to irrigation drainage, stormwater drainage, flooding, seepage, and water quality. The analysis includes on-site and off-site infrastructure facilities.

The Draft EIR determined that the proposed project site is not located within the 100-year floodplain as shown on the FEMA Flood Insurance Rate Map 0604240029C (FIRM). Other impacts found to be significant include construction-related impacts to surface water quality and

cumulative impacts related to the degradation of water quality. Mitigation measures recommended in the Draft EIR would reduce impacts related to flood hazards and water quality to a less-than-significant level. Impacts associated with increased stormwater runoff from the project site contributing to downstream flooding were found to be less-than-significant with implementation of required mitigation.

Public Services and Facilities

The Public Services and Facilities section of the Draft EIR summarizes existing setting information and identifies potential new demand for services on the domestic water supply, wastewater treatment systems, fire protection, law enforcement, solid waste disposal, gas and electric service, schools, and parks and recreation. This section is based in part on technical memoranda provided by the City and Project Engineer in regard to water, sanitary sewer, and storm drain facilities.

The Draft EIR found that implementation of the proposed project would result in increased demands for public services and facilities. These increased demands would result in significant impacts to water supply, wastewater treatment, law enforcement, schools, and park and recreation facilities. However, the Draft EIR includes mitigation measures that would reduce the above impacts to public services and facilities to a less-than-significant level. In addition, the Public Services and Facilities section concluded that impacts related to the following project impacts would be less-than-significant: a) increased demand for solid waste disposal/recycling services; b) impacts to gas and electric facilities; and c) a cumulative increase in demand for additional public services and utilities. The Draft EIR determined that the project site is located outside of the City of Davis Fire Department five minute response area and even with implementation of mitigation, a significant and unavoidable impact would remain.

As stated in chapter 1, Introduction, the Initial Study prepared for the proposed project concluded that the environmental issues addressed in the Draft EIR would be those that would result in potentially significant impacts. The remaining environmental issues were addressed and dismissed in the Initial Study, which is included as an attachment to the Notice of Preparation (NOP) in Appendix A.

Climate Change

The Climate Change section of the EIR describes the potential impacts of the Wildhorse Ranch project related to greenhouse gas emissions and climate change. The chapter includes a discussion of the potential impacts of these emissions on both local and regional scales, and mitigation measures warranted to reduce any identified significant impacts to the extent feasible. The Climate Change analysis indicates that even with implementation of the mitigation measures a significant and unavoidable impact would result.

SUMMARY OF PROJECT ALTERNATIVES

The following summary provides brief descriptions of the five alternatives to the proposed project that are evaluated in this Draft EIR. For a more thorough discussion of project alternatives, please refer to Chapter 5, Alternatives Analysis.

No Project/No Build Alternative

Under the No Project/No Build Alternative, the project site would remain a horse ranch with associated pastures. However, in the future the owners could convert the project site to other agricultural uses under the existing designation.

Reduced Intensity Alternatives

Viewshed Preservation Alternative

The intent of the Viewshed Preservation Alternative is to maintain the partial views of agricultural land and the Sierras east of the project, which are currently afforded to existing residents immediately west of the project site. In order to still achieve the basic objectives of the project, the project site would still be developed with residential uses, albeit, at a lower density than the Proposed Project. Similar to the Proposed Project, this Alternative would involve a General Plan Amendment. For this Alternative, the project site would be re-designated from Agriculture to Low Density Residential. Using the minimum density of the Low Density Residential designation of three units per acre, the Viewshed Preservation Alternative would include 75 units (3 du/acre * 25 acres = 75 dwelling units). Similar single-family product types would be included in this Alternative as are included in the Proposed Project; however, the Alternative would comply with the affordable housing requirement through the creative placement of attached residences, such as duplexes on corner lots. Average lot size would be approximately 0.25 acres in area. The large lot sizes would allow for the development of single-level ranch style units, which would reduce the impact of the development associated with the change in the current character of the site. Furthermore, single-level houses would obstruct fewer views of the Sierra foothills given a maximum building height of 20 feet. In comparison, the Proposed Project includes structures of up to three stories in height. Land dedications for roadways, agricultural buffers, and greenbelt/open space would remain the same as for the Proposed Project.

Agricultural Character Alternative

Similar to the Viewshed Preservation Alternative, the Agricultural Character Alternative would include the construction of 75 residential dwelling units. The units would be predominantly detached single-family residences; however, duplexes would be included to provide the affordable housing component. The Agricultural Character Alternative would differ from the Viewshed Preservation Alternative in that housing would be clustered on smaller lots. A preliminary concept for this Alternative includes lots of approximately 1/6th of an acre, resulting in 12.5 acres being devoted to residential use (See Table 6-2 for land use acreages). The remaining lands would likely be utilized for small-scale agricultural production of grapes,

fruiting trees, or row crops. Trees provided for the residential lots would be agricultural in nature, and could include: olives, walnuts, almonds, or other fruiting trees that would provide both shade and a potential crop. Agricultural lands would likely be owned by the Homeowners Association and leased to an individual or group that would conduct the agricultural operations. An access easement could be included to provide harvesting access to trees in the front yard of residences for tree crops such as olives. The agricultural concept would be woven throughout the development; however, dedicated lands would likely be concentrated along the central greenbelt, adjacent to the agricultural buffer area, and/or in the central portion of the project site. The intended product would be determined at a later date. Similar to the Viewshed Preservation Alternative, low height, low profile street lights would be utilized to reduce the visual presence of the project.

Off-Site Alternatives

Only locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR.

Infill Site Alternative

The Infill Site Alternative would combine geographically separated sites to develop the same project components on a land area of approximately the same size as the Proposed Project. Many potential sites exist within the existing City Limits; however, for the purposes of this analysis three sites have been identified for discussion:

- Simmons Properties (12 acres)
- Grande School Site (8.83 acres)
- Nugget Fields (9.01)

None of the above listed properties are currently owned by the project applicant. Grande School site recently received entitlement approvals from the City Council for the development of 41 single-family units. The property is owned by the school district who intends to sell the entitled property to prospective developers. Project applications have been submitted for the Simmons property for the development of 108 single-family units. The Simmons applications are under review and have not been approved by the City Council. No formal applications have been submitted to the City for the development of the Nugget Fields at this time. Simmons and Nugget Fields sites would require General Plan Amendments and changes of zoning; however, the sites are located within the City Limits and are not designated for agricultural use. Therefore, regardless of which sites are combined for this Alternative, unlike the Proposed Project, approval of this Alternative would not be subject to Measure J voter approval. A combination of any two of the three sites would make up a total of 17.4 to 21 acres. The total land area would be smaller under these potential combinations as compared to the Proposed Project; however, the Proposed Project could still be accommodated as the agricultural buffers would not be required. Therefore, a similar number of residences could be constructed.

Measure J Alternative

The Measure J Alternative project site is located in Yolo County, north and east of the City of Davis City limits, southwest of the curve where East Covell Boulevard becomes Mace Boulevard. The Alternative site is comprised of approximately 47 acres. Similar to the Proposed Project, the Measure J site would need to be annexed to the City of Davis and would require public approval pursuant to Measure J. The site is not currently owned by the current project applicant. The Measure J Alternative would result in the construction of the same number and type of residential units. However, both the dedicated greenbelt/open space and single-family detached lots sizes would be increased to fill the approximately 21 additional acres.

Environmentally Superior Alternative

For the Wildhorse Ranch Project, aside from the No Project Alternative, the Infill Site Alternative would be considered the environmentally superior alternative. The Infill Site Alternative, Viewshed Preservation Alternative, and Agricultural Preservation Alternative would all reduce several of the impact areas discussed for the Proposed Project such as aesthetics, air quality, and noise. However, only the Infill Site Alternative would eliminate the significant and unavoidable impacts to aesthetics by placing the project on lands already designated for urban uses. Therefore, the Infill Site Alternative would result in fewer environmental impacts than the Proposed Project while still providing opportunities to achieve most of the City's and the Applicant's project objectives.

SUMMARY OF IMPACTS AND MITIGATION MEASURES

The following Table (Table 2-1) summarizes the impacts identified in Chapter 4 of this Draft EIR. In Table 2-1, the proposed project impacts are identified for each technical chapter (Chapters 4.1 – 4.10) in the Draft EIR. In addition, Table 2-1 includes the level of significance of each impact, any mitigation measures required for each impact, and the resulting level of significance after implementation of mitigation measures for each impact.

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact		Level of Significance Prior to Mitigation	Mitigation Measures		Level of Significance After Mitigation
4.1 Land Use and Agricultural Resources					
4.1-1	Consistency with the City of Davis General Plan.	LS	*4.1-1*	*None required.*	N/A
4.1-2	Consistency with the Davis Planned Development district process.	LS	*4.1-2*	*None required.*	N/A
4.1-3	Loss of prime agricultural land.	S	*4.1-3*	*The project applicant shall set aside in perpetuity active agricultural acreage at a minimum ratio of 2:1 based on the total project footprint of 25.79 acres, through granting a farmland conservation easement, a farmland deed restriction, or other farmland conservation mechanism to or for the benefit of the City and/or a qualifying entity approved by the City. The mitigation acreage shall be set aside prior to recordation of the final map(s). The location and amount of active agricultural acreage for the proposed project would be subject to the review and approval of the City Council.*	SU
4.1-4	Incompatibilities between future residential uses on the project site and surrounding uses.	S	*4.1-4(a)*	*Consistent with Action AG 1.1(g) of the General Plan and the Davis Right-to-Farm Ordinance, the applicant/developer shall inform and provide recorded notice to prospective buyers within 1,000 feet of agricultural land in writing and prior to purchase, as prescribed by the City's Right to Farm Ordinance, about existing and on-going agricultural activities in the immediate area in the form of a disclosure statement. The notifications shall disclose that Davis and Yolo County are agricultural areas and residents of the property may be subject to inconvenience or discomfort*	LS

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		arising from the use of agricultural chemicals, and from pursuit of agricultural operations, including, but not limited to cultivation, irrigation, plowing, spraying, aerial application, pruning, harvesting, crop protection, and agricultural burning which occasionally generate dust, smoke, noise, and odor. The language and format of such notification shall be reviewed and approved by the Community Development Director prior to recording final maps. Each disclosure statement shall be acknowledged with the signature of each prospective property owner.	
		4.1-4(b) Prior to the use of pesticides on the orchard, the Home Owner's Association and contractor(s) shall obtain a permit and comply with all regulations from the Yolo County Agricultural Commissioner. In addition, signage shall be posted at the perimeter of the orchard notifying the public that pesticides have been recently applied. The signage shall remain posted for the appropriate length, as determined during the permit process.	
		4.1-4(c) Prior to recordation of final map(s), in the event the Davis Sports Park is constructed adjacent and east of the proposed project, the applicant shall prepare and submit a disclosure statement for the review and approval of the Community Development Director which shall disclose the operations associated with the Davis Sports Park Project which will include ballfield lights, weekly games, tournaments etc. Language shall	

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		be included on the final map(s) to ensure that the disclosure of the Sports Park runs with the land, and is therefore provided to all prospective buyers of property.	
4.1-5 Long-term impacts to Prime Farmland from the proposed project in combination with existing and future developments in the Davis area.	S	*4.1-5* *Implement Mitigation Measure 4.1-3.*	SU
4.1-6 Consistency with the City of Davis' plans, policies, or ordinances.	LS	*4.1-6* *None required.*	N/A
4.2 Population, Housing, and Employment			
4.2-1 Inconsistency with City of Davis affordable housing policies and Affordable Housing Ordinance.	LS	*4.2-1* *None required.*	N/A
4.2-2 Inconsistency with Growth Management Action "e" of the Davis General Plan.	LS	*4.2-2* *None required.*	N/A
4.2-3 Impacts to employment and housing.	LS	*4.2-3* *None required.*	N/A
4.2-4 Long-term impacts to population, housing, and employment from the proposed project in combination with existing and future developments in the Davis area.	LS	*4.2-4* *None required.*	N/A

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact		Level of Significance Prior to Mitigation	Mitigation Measures		Level of Significance After Mitigation
4.3 Transportation and Circulation					
4.3-1	Impacts to study intersections and roadways.	LS	*4.3-1*	*None required.*	N/A
4.3-2	Impacts related to the provision of efficient site access and circulation.	S	*4.3-2*	*Prior to approval of the Tentative Map, the project applicant shall ensure that the following items are incorporated into the project design, for the review and approval by the City Engineer:* • *Provision of adequate sight distance at both project access intersections, by setting back any barrier walls far enough from the curb, and by ensuring that existing and new plantings do not obstruct drivers' views;* • *Design of the internal roadways to meet City standards, and inclusion of internal traffic calming elements as may be determined to be necessary, subject to the review and approval of the City Engineer; and* • *Provision of traffic control devices, if and where needed in the internal roadway system, based on an analysis of the internal traffic turning movements to be prepared when the project design is more detailed.*	LS
4.3-3	Impacts related to pedestrian and bicycle access and circulation.	S	*4.3-3*	*Prior to approval of the Tentative Map, the project applicant shall ensure that the pathway and sidewalk network meets ADA accessibility requirements, subject to the review and approval by the City Engineer.*	LS
4.3-4	Impacts related to transit access.	LS	*4.3-4*	*None required.*	N/A

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
4.3-5 Impacts to traffic flow from construction traffic associated with grading and development of the project site.	S	*4.3-5* *Prior to any on-site construction activities, the project applicant shall prepare a Construction Traffic Management Plan subject to the review and approval by the City Engineer. The Construction Traffic Management Plan shall include all measures for temporary traffic control, temporary signage and striping, location points for ingress and egress of construction vehicles, haul routes, staging areas, and shall provide for the timing of construction activity that appropriately limits hours during which large construction equipment may be brought onto or taken off of the site.*	LS
4.3-6 Cumulative impacts regarding the deterioration of the Second Street / Mace Boulevard intersection LOS.	S	*4.3-6* *Prior to the issuance of building permits, or such other time as may be approved at the time of Tentative Map, the project applicant shall pay a fair share fee, as determined by the City Public Works Department, for improvements to the intersection of Second Street and Mace Boulevard; these improvements may include, but are not necessarily limited to: construction of a second left-turn lane on the northbound approach to the intersection of Second Street and Mace Boulevard, re-striping of the eastbound through lane to a shared through-left turn lane, and modification of the signal phasing to allow eastbound and westbound split phasing.*	LS
4.4 Air Quality			
4.4-1 Exhaust emissions and fugitive dust emissions from project-	S	*4.4-1* *Prior to commencement of any ground disturbing activities, the applicant shall submit a dust control plan*	LS

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
associated construction activities.		*to the City Engineer and the Yolo-Solano Air Quality Management District. This plan shall ensure that adequate dust controls are implemented during all phases of project construction. The dust control best management practices (BMPs) may include but are not necessarily limited to the following:* • *Apply nontoxic soil stabilizers according to manufacturer's specifications to all inactive construction areas (previously graded areas inactive for ten days or more);* • *Reestablish ground cover in disturbed areas quickly;* • *Water recently disturbed construction areas (ground disturbed within 10 days) at least twice daily to avoid visible dust plumes;* • *Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites;* • *Enclose, cover, water twice daily or apply non-toxic soil binders to exposed stockpiles (dirt, sand, etc.);* • *Enforce a speed limit of 15 MPH for equipment and vehicles operated in unpaved areas;* • *All vehicles hauling dirt, sand, soil, or other loose materials shall be covered or should maintain at least two feet of freeboard; and* • *Sweep streets at the end of the day if visible soil*	

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		material is carried onto adjacent public paved roads.	
4.4-2 New air pollutant emissions within the air basin resulting from operation of the proposed project.	LS	*4.4-2* *None required.*	N/A
4.4-3 Increased carbon monoxide concentrations at project-area intersections.	LS	*4.4-3* *None required.*	N/A
4.4-4 Long-term air quality impacts from the proposed project in combination with existing and future developments in the Davis area.	LS	*4.4-4* *None required.*	N/A
4.5 Noise			
4.5-1 Impacts associated with an increase of existing traffic noise levels on surrounding roadways.	LS	*4.5-1* *None required.*	N/A
4.5-2 Noise impacts associated with existing agricultural activities.	LS	*4.5-2* *None required.*	N/A
4.5-3 Short-term noise impacts from construction activities.	S	*4.5-3* *Compliance with the following measures shall be incorporated within the Final Planned Development with specific criteria and standards to be reviewed and approved by the Planning Commission:* • *Construction activities shall be scheduled to occur during normal daytime working hours (i.e., 7:00 AM to 7:00 PM Monday through*	LS

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact		Level of Significance Prior to Mitigation	Mitigation Measures		Level of Significance After Mitigation
				Friday and 8:00 AM to 8:00 PM Saturday and Sunday). These criteria shall be included in the Improvement Plans prior to initiation of construction. Exceptions to allow expanded construction activity hours shall be reviewed on a case-by-case basis as determined by the Community Development Director; • *All heavy construction equipment and all stationary noise sources (such as diesel generators) shall be fitted with factory-specified mufflers; and* • *Equipment warm up areas, water tanks, and equipment storage areas shall be located in an area as far away from existing residences as feasible.*	
4.5-4	Noise impacts associated with greenbelt and orchard maintenance activities.	S	*4.5-4*	*Prior to recordation of final map, disclosure statements advising that periods of orchard and greenbelt maintenance could result in elevated noise levels, shall be prepared and submitted for the review and approval of the Community Development Director. A copy of the approved disclosure statements shall be provided to all prospective buyers of property within the Wildhorse Ranch Subdivision. Language shall be included on the Final Map to ensure that the disclosure of elevated noise levels are provided at the time of all future sales.*	LS
4.5-5	Cumulative impact of traffic noise levels.	LS	*4.5-5*	*None required.*	N/A
4.5-6	Cumulative impact of traffic noise levels at outdoor activity	LS	*4.5-6*	*None required.*	N/A

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Level of Significance Prior to Mitigation		Mitigation Measures	Level of Significance After Mitigation
	areas proposed within the 60 dB Ldn contours.				
4.5-7	Cumulative impact of traffic noise levels at interior residential uses proposed within the 60 dB Ldn contours.	LS	*4.5-7*	*None required.*	N/A
	4.6 Biological Resources				
4.6-1	Potential Impacts to the American Badger.	S	*4.6-1(a)*	*A qualified biologist shall conduct pre-construction surveys for American badger in all construction areas identified as potential habitat located within the project area two weeks prior to initiation of construction activities. If an American badger or active burrow, indicated by the presence of badger sign (i.e. suitable shape and burrow-size, scat) is found within the construction area during pre-construction surveys, the CDFG shall be consulted to obtain permission for animal relocation.*	LS
			4.6-1(b)	*If the qualified biologist determines that potential dens are inactive, the biologist shall excavate these dens by hand with a shovel to prevent badgers from re-using them during construction.*	
			4.6-1(c)	*If the qualified biologist determines that potential dens may be active, the entrances of the dens shall be blocked with soil, sticks, and debris for three to five days to discourage use of these dens prior to project disturbance. The den entrances shall be blocked to an*	

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measures		Level of Significance After Mitigation
			incrementally greater degree over the three to five day period. After the qualified biologist determines that badgers have stopped using active dens within the project boundary, the dens shall be hand-excavated with a shovel to prevent re-use during construction.	
		4.6-1(d)	*If badger are determined to be actively using the site, a qualified biologist shall provide project contractors and construction crews responsible for site demolition and/or grading operations with a worker-awareness program before any ground disturbance work within the project area. This program shall be used to describe the species, its habits and habitats, its legal status and required protection, and all applicable mitigation measures.*	
4.6-2 Potential Impacts to Western Burrowing Owl.	S	*4.6-2(a)*	*Prior to commencement of construction-related activities for the project including, but not limited to, grading, staging of materials, or earthmoving activities and within 15 days of initiation of any grading or other construction activities, pre-construction surveys of all potential burrowing owl habitat shall be conducted by a qualified biologist within the project area and within 250 feet of the project boundary. Presence or sign of burrowing owl and all potentially occupied burrows shall be recorded and monitored according to the CDFG and California Burrowing Owl Consortium guidelines. If burrowing owls are not detected by sign or direct observation, construction may proceed.*	LS

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		4.6-2(b) *If potentially nesting burrowing owl are present during pre-construction surveys conducted between February 1 and August 31, grading or other construction related disturbance shall not be allowed within 250 feet of any active nest burrows during the nesting season (February 1 – August 31) unless approved by CDFG.* *4.6-2(c)* *If burrowing owl are detected during pre-construction surveys outside the nesting season (September 1 – January 31), passive relocation and monitoring may be undertaken by a qualified biologist following the CDFG and California Burrowing Owl Consortium guidelines, which involve the placement of one-way exclusion doors on occupied and potentially occupied burrowing owl burrows. Owls shall be excluded from all suitable burrows within the project area and within a 250-foot buffer zone of the impact area. A minimum of one week shall be allowed to accomplish this task and allow for owls to acclimate to alternate burrows. These mitigation actions shall be carried out prior to the burrowing owl breeding season (February 1 - August 31) and the site shall be monitored weekly by a qualified biologist until construction begins to ensure that burrowing owls do not re-inhabit the site.* *4.6-2(d)* *If burrowing owl or sign of burrowing owl are detected at any time on the project site, a minimum of 6.5 acres of foraging habitat per pair or individual resident bird, shall be acquired and permanently protected to*	

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		compensate for the loss of burrowing owl habitat. The acreage shall be based on the maximum number of owls observed inhabiting the property for any given observation period, pre-construction survey, or other field visit. The protected lands shall be occupied burrowing owl habitat and at a location acceptable to CDFG. A report shall be submitted to the City describing the agreed upon location. First priority for habitat preservation shall be accomplished on-site. If the required acreage cannot be preserved on-site, second priority shall be given to habitat preservation at an off-site location within the Davis city limits that shall be acquired and preserved in perpetuity. Third priority shall be given to another off-site location outside of the Davis city limits. Habitat in the amount specified above shall be acquired, permanently protected, and enhanced through management for the benefit of the species, to compensate for the loss of burrowing owl habitat on the project site. Alternatively, the applicant can provide the required mitigation either through an in-lieu fee program, purchase of the required acreage in an approved mitigation bank, or an approved Habitat Conservation Plan (HCP). *4.6-2(e)* *If burrowing owl are determined to be actively using the site, a qualified biologist shall conduct an education session for project contractors and construction crews responsible for site demolition and/or grading operations before any ground disturbance work within*	

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		the project area. The education session, shall include includes photos of burrowing owl for identification purposes, habitat description, limits of construction activities in the project area, and guidance regarding general measures being implemented to conserve burrowing owl as they relate to the project. A qualified biologist shall provide materials and instructions to train new workers whose jobs involve initial ground disturbance, grading, or paving. Training for personnel finalizing exteriors and interiors would not be required. *4.6-2(f)* *A monitoring report of all activities associated with pre-construction surveys, avoidance measures, and passive relocation of burrowing owls shall be submitted to the City and CDFG no later than three days before initiation of grading.*	
4.6-3 Potential Impacts to Nesting Birds.	S	*4.6-3(a)* *The removal of any buildings, trees, or shrubs shall occur from September 1 through December 15, outside of the avian nesting season. If removal of buildings, trees, or shrubs occurs, or construction begins between February 1 and August 31 (nesting season for passerine or non-passerine land birds) or between December 15 and August 31 (nesting season for raptors), a nesting bird survey shall be performed by a qualified ornithologist within 15 days prior to the removal or disturbance of a potential nesting structure, tree, or shrub, or the initiation of other construction activities. During this survey, a qualified biologist shall inspect all potential nesting habitat (trees, shrubs, structures,*	LS

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measures		Level of Significance After Mitigation
			grasslands, etc.) for nests in and immediately adjacent to the impact areas. A report of the survey findings shall be provided to the City and CDFG.	
		4.6-3(b)	*All vegetation and structures with active nests shall be flagged and an appropriate non-disturbance buffer zone shall be established around the nest site. The size of the buffer zone shall be determined by the project biologist in consultation with CDFG and shall depend on the species involved, site conditions, and type of work to be conducted in the area.*	
		4.6-3(c)	*A qualified biologist shall monitor active nests to determine when the young have fledged and are feeding on their own. The project biologist and CDFG shall be consulted for clearance before construction activities resume in the vicinity.*	
4.6-4 Potential Impacts to Special-Status Bat Species.	S	*4.6-4(a)*	*A pre-construction survey for roosting bats shall be performed by a qualified biologist within 30 days prior to any removal of trees or structures on the site. If no active roosts are found, then no further action would be warranted. If either a maternity roost or hibernacula (structures used by bats for hibernation) is present, the following mitigation measures shall be implemented.*	LS
		4.6-4(b)	*If active maternity roosts or hibernacula are found in trees or structures which will be removed as part of project construction, the project shall be redesigned to avoid the loss of the tree or structure occupied by the*	

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		roost to the extent feasible as determined by the City. If an active maternity roost is located and the project cannot be redesigned to avoid removal of the occupied tree or structure, demolition shall commence before maternity colonies form (i.e., prior to March 1) or after young are volant (flying) (i.e., after July 31). Disturbance-free buffer zones, as determined by a qualified biologist in coordination with CDFG, shall be observed during the maternity roost season (March 1 - July 31). *4.6-4(c)* *If a non-breeding bat hibernacula is found in a tree or structure scheduled for removal, the individuals shall be safely evicted, under the direction of a qualified biologist (as determined by a Memorandum of Understanding with CDFG), by opening the roosting area to allow airflow through the cavity. Demolition shall then follow at least one night after initial disturbance for airflow. This action should allow bats to leave during darkness, thus increasing their chance of finding new roosts with a minimum of potential predation during daylight. Trees or structures with roosts that need to be removed shall first be disturbed at dusk, just prior to removal that same evening, to allow bats to escape during the darker hours.* *4.6-4(d)* *If special-status bats are found roosting within trees or structures on-site that require removal, appropriate replacement roosts shall be created at a suitable*	

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measures		Level of Significance After Mitigation
			location on site or off site in coordination with a qualified biologist, CDFG, and the City.	
4.6-5 Potential Impacts to Nesting Swainson's Hawk.	S	*4.6-5(a)*	*In order to ensure that nesting Swainson's hawks will not be affected by construction on the project site, a qualified biologist shall conduct pre-construction surveys according to the CDFG and Swainson's hawk Technical Advisory Committee guidelines (2000). Survey Period I occurs from January 1 – March 20, Period II from March 20 – April 5, Period III from April 5 – April 20, Period IV from April 21 – June 10, and Period V from June 10 – July 30. Three surveys shall be completed in at least each of the two survey periods immediately prior to a project's initiation and shall encompass the area within one half mile of the project site.*	LS
		4.6-5(b)	*Because of the potential for Swainson's hawk to nest on-site, potential adverse affects to this species shall be avoided by establishment of CDFG approved buffers around any active nests. No construction activities shall take place within 0.25 mile of the nest until the young have fledged, or authorization has been obtained from CDFG. Weekly monitoring reports summarizing nest activities shall be submitted to the City and CDFG until the young have fledged and the nest is determined to be inactive. Trees containing nests that must be removed as a result of project implementation shall be removed during the non-breeding season (late September to March) and in accordance with the CDFG "Staff Report*	

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California," November 8, 1994.	
		4.6-5(c) *Replacement trees for any potential Swainson's hawk nest trees removed as part of project construction must be planted either on-site or at a nearby site, and/or an in-lieu fee must be paid to the City of Davis Tree Preservation Fund as detailed in Mitigation Measure 4.6-7.*	
4.6-6 Potential Impacts to Swainson's Hawk Foraging Habitat.	S	*4.6-6(a)* *The applicant shall be responsible for mitigating the loss of any Swainson's hawk foraging habitat. The extent of any necessary mitigation shall be determined by the City in consultation with CDFG; past recommended mitigation for loss of foraging habitat has been at a ratio of one acre of suitable foraging habitat for every one acre utilized by the proposed project. An "Agreement Regarding Mitigation for Impacts to Swainson's Hawk Foraging Habitat in Yolo County" was executed in August, 2002, between the Cities of Davis, West Sacramento, Winters, Woodland, the County of Yolo, and CDFG. The agreement currently requires 1.0 acre of habitat management lands as mitigation for each 1.0 acre of Swainson's hawk foraging habitat lost.*	LS
		4.6-6(b) *The project proponent will compensate for the loss of Swainson's hawk foraging habitat by providing Habitat Management lands (HM lands) to CDFG as defined in the Staff Report Regarding Mitigation for Impacts to*	

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		Swainson's Hawks in the Central Valley of California (published by California Department of Fish and Game in 1994). If the proposed project is located within 1 mile of an active nest (to be determined with preconstruction surveys) the loss of habitat will be compensated at a ratio of 1:1 (HM lands:urban development). The project proponent will provide HM lands through an in-lieu fee process prior to groundbreaking per the Agreement to Yolo County HCP/NCCP Joint Powers Agency. Credits will be purchased through the in-lieu fee program due to the lack of mitigation credits currently available at a bank. As of January 2007, the cost per acre for the in-lieu fee is $8,660 payable to the Joint Powers Agency. Should the in-lieu fee be increased prior to clearance to grade the project site, the project proponent shall pay the in-lieu fee in effect at that time. The project proponent will issue a check to the Joint Powers Agency if mitigation is required. It is estimated that a total of 15.5 acres of Swainson's hawk foraging habitat would be removed as a result of the project. The applicant shall pay the in-lieu fee for the 15.5 acres based on the removal of this Swainson's hawk foraging habitat. *-Or-* *Prior to commencement of construction-related activities for the project including, but not limited to, grading, staging of materials, or earthmoving activities, the project proponent shall place and record one or*	

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		more Conservation Easements that meet the acreage requirements of CDFG's Swainson's Hawk foraging habitat mitigation guidelines. The conservation easement(s) shall be executed by the project proponent and a Conservation operator. The City may, at its discretion, also be a party to the conservation easement(s). The conservation easement(s) shall be reviewed and approved in writing by CDFG prior to recordation for the purpose of confirming consistency. The purpose of the conservation easement(s) shall be to preserve the value of the land as foraging habitat for the Swainson's hawk.	
4.6-7 Potential Impacts to Tree Removal.	S	*4.6-7(a)* *Prior to commencement of construction-related activities for the project including, but not limited to, grading, staging of materials, or earthmoving activities, a tree preservation plan, in compliance with Ordinance 37.03.010 in the City of Davis Municipal Code, shall be submitted to the Community Development Department and City Arborist for review and approval, which shall ensure the following measures:* • *Trees shall be cordoned off with chain link fence prior to construction as specified;* • *Soil compaction under trees is to be avoided;* • *The fence shall prevent equipment traffic and storage under the trees and should extend beyond the drip-line;* • *Excavation within this zone shall be*	LS

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		accomplished by hand, and roots ½" and larger shall be preserved; • *Proper fertilization and irrigation prior to and during the construction period shall be provided as specified;* • *New landscaping under existing trees shall be carefully planned to avoid any grade changes and any excess moisture in trunk area. Existing plants which have compatible irrigation requirements and which complement the trees' color, texture and form are to be saved;* • *Trenching within the drip-line shall be performed only with prior approval of the Park and General Services Department. Boring is preferred when feasible;* • *All paving plans and specifications shall clearly prohibit the use of soil sterilants adjacent to preserved trees; and* • *Grade changes greater than one foot within the drip-line shall be avoided, and nothing other than a saw shall be used for root cutting.* *4.6-7(b) Prior to commencement of construction-related activities for the project including, but not limited to, grading, staging of materials, or earthmoving activities, a sheet shall be included with the project plans, which indicates all of the trees identified. The tree report with corresponding descriptions of each tree by species,*	

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		health, etc. should also be included. In addition, notes shall be included on the plans which clearly state protection procedures for trees that are to be preserved. Any tree care practices, such as cutting of roots, pruning the top, etc., shall be adequately described and shall have the approval of a representative of the Parks and General Services Department prior to execution. In the event of damage to existing trees, a penalty clause shall be replacement tree(s) of equal size in D.B.H. unless specified otherwise by the Parks and General Services Department. *4.6-7(c)* *Trees identified on the site as Trees of Significance, that are proposed for removal, shall be replaced either on site or at a nearby site deemed acceptable by the Director of the City of Davis Parks and General Services Department. The Director may require an in-lieu fee to be paid to the City of Davis Tree Preservation Fund instead of or in addition to tree replacement. The recommendations for avoidance of trees contained in Chapter 37 of the City of Davis Municipal Code (Tree Planting, Preservation, and Protection) should be adopted if feasible. If infeasible, the applicant should identify trees slated for removal on the site plan, including those with encroachments within 30-feet of the drip line of trees and develop a tree replacement plan that shall be reviewed and approved by the City prior to issuance of the grading permit. Tree replacement shall be implemented according to options outlined in Section*	

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		37.03.070 of the City's Municipal Code as follows: *(i) Replanting a tree(s) on site: Trees shall be planted in number and size so that there is no net loss in tree diameter at breast height (DBH). For example, if one tree is removed with a 12-inch DBH size, mitigation may consist of a replacement of equal size, two trees each 6-inch DBH, or four trees each 3-inch DBH. The replanted tree(s) shall be minimum 5 gallon size and of a species that will eventually equal or exceed the removed tree in size.* *(ii) Replanting a tree(s) off site: If there is insufficient space on the property for the replacement tree(s), required planting shall occur on other property in the applicant's ownership or in City-owned open space or park, subject to the approval of the City Arborist and authorized property owners.* *(iii)Payment to the Tree Preservation Fund in lieu of replacement: If in the City Arborist's determination no feasible alternative exists to plant the required mitigation, or there are other considerations for alternative mitigation, the applicant shall pay into the Tree Preservation Fund an amount determined by the Director based upon the ISA appraisal guidelines or other approved method. If the Director approves another method of appraisal guideline, the*	

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Level of Significance Prior to Mitigation		Mitigation Measures	Level of Significance After Mitigation
				Director shall publish notice of that approval and notify the permit applicant at the time the permit application is issued.	
4.6-8	Cumulative loss of biological resources in the City of Davis and the effects of ongoing urbanization in the region.	LS	*4.6-8*	*None required.*	N/A
	4.7 Aesthetics				
4.7-1	Impacts related to altering the existing character of the project site and obstructing views from existing homes.	S	*4.7-1*	*None feasible.*	SU
4.7-2	Impacts related to light and glare.	S	*4.7-2(a)*	*Prior to issuance of the first building permit, the developer shall submit a street lighting plan for review and approval by the City Engineer. Street lightning shall be limited to reduced height low-profile fixtures. The Plan shall comply with Chapter 6 of the Davis Municipal Code- Article VIII: Outdoor Lighting Control.*	LS
			4.7-2(b)	*Prior to the issuance of building permits, the developer shall submit a lighting plan for the review and approval of the Chief Building Official of the City of Davis. The lighting plan shall include shielding on all light fixtures and shall address-limiting light trespass and glare through the use of shielding and directional lighting methods, including but not limited to, fixture location and height. The Plan shall comply with Chapter 6 of the*	

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Level of Significance Prior to Mitigation		Mitigation Measures	Level of Significance After Mitigation
				Davis Municipal Code- Article VIII: Outdoor Lighting Control.	
4.7-3	Impacts to scenic resources.	LS	*4.7-3*	*None required.*	N/A
4.7-4	Long-term impacts to the visual character of the region from the proposed project in combination with existing and future developments in the Davis area.	S	*4.7-4*	*None feasible.*	SU
4.8 Hydrology, Water Quality, and Drainage					
4.8-1	Exposure of people and structures to flood hazards on the project site.	LS	*4.8-1*	*None required.*	N/A
4.8-2	Increased stormwater runoff from the project site contributing to downstream flooding.	S	*4.8-2*	*In conjunction with the submittal of a tentative map, the project applicant shall submit a design-level engineering report on the stormwater detention and conveyance system to the City Engineer demonstrating that the proposed project peak flows into the existing 36-inch storm drain would not exceed 6.2 cfs. The report shall also demonstrate that peak flows from the site do not coincide with peak flows within Channel "A" and demonstrate how the system would function to adequately treat stormwater runoff prior to being discharged into Channel "A." Stormwater detention and conveyance plans shall be reviewed and approved by the City Engineer.*	LS
4.8-3	Construction-related impacts to surface water quality.	S	*4.8-3*	*Prior to commencement of construction, the applicant shall obtain a NPDES General Permit for Discharges of Storm Water Associated with Construction Activity*	LS

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Level of Significance Prior to Mitigation		Mitigation Measures	Level of Significance After Mitigation
				(Construction General Permit), which pertains to pollution from grading and project construction. Compliance with the Permit requires the project applicant to file a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) and prepare a Storm Water Pollution Prevention Plan (SWPPP) prior to ground disturbance. The SWPPP would incorporate Best Management Practices (BMPs) in order to prevent, or reduce to the greatest extent feasible, adverse impacts to water quality from erosion and sedimentation. A copy of the SWPP including BMP implementation provisions shall be submitted to the Chief Building Official.	
4.8-4	Long-term water quality degradation associated with urban runoff from the project site.	LS	*4.8-4*	*None required.*	N/A
4.8-5	Long-term increases in peak stormwater runoff flows from the proposed project in combination with existing and future developments in the Davis area.	LS	*4.8-5*	*None required.*	N/A
4.8-6	Cumulative impacts related to degradation of water quality.	S	*4.8-5*	*Implement Mitigation Measures 4.8-2 and 4.8-3.*	LS
4.9 Public Services and Facilities					
4.9-1	Ability of Existing Water Conveyance Facilities to Meet	S	*4.9-1(a)*	*Prior to issuance of building permits, the East Area Tank, the East Area Main Upsize, and the West Area*	LS

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Level of Significance Prior to Mitigation		Mitigation Measures	Level of Significance After Mitigation
	Project Water Demands.			*Main Upsize shall be included within the City's Capital Improvement Plan and fully funded for construction.*	
			4.9-1(b)	*If the following is not included in the City's water connection charge at the time the water charge is paid for any unit in the project, then, in addition to the water connection charge, the project shall pay fair share fees for the above-listed improvements at the time of building permit issuance. This fair share shall include any additional costs that the City may incur to accelerate the timing of the above-listed projects.*	
4.9-2	Long-term availability of water supply to meet the project water demand.	S	*4.9-2*	*The project applicant shall pay fair share fees for the future water supply project(s) required to meet City demand beyond 2020 at the time of building permit issuance.*	LS
4.9-3	Increased demand for wastewater disposal.	S	*4.9-3*	*Prior to the approval of a tentative map for the Wildhorse Ranch project, the applicant shall submit a design-level wastewater report for the proposed project that demonstrates how the project's wastewater will be delivered to the Wastewater Treatment Plant. Included in the report shall be a determination of the capacity of downstream sewer lines and what improvements, if any, need to be constructed to accommodate and convey the project's additional wastewater, and the construction and operational costs of the options. The wastewater report shall be subject to approval by the City Engineer. The applicant shall be required to fully fund and construct the necessary wastewater improvements determined by the wastewater report.*	LS

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact		Level of Significance Prior to Mitigation	Mitigation Measures		Level of Significance After Mitigation
4.9-4	Increased demand for fire protection services.	S	*4.9-4*	*Prior to the issuance of building permits, the applicant shall contribute funds to the Davis Fire Department for the provision of facilities needed to provide adequate fire protection service to the proposed project. These facilities may include but are not necessarily limited to a fourth City fire station and a ladder truck. The amount of funding shall be determined by the Community Development Director and the Davis Fire Chief.*	SU
4.9-5	Increased demand for law enforcement protection services.	S	*4.9-5*	*Prior to the issuance of building permits, the project applicant shall contribute funding to the Davis Police Department needed to provide an additional 0.57 officer. Funding options include, but are not necessarily limited to the following:* *1) Provide an endowment fund that would provide for the hiring of approximately 60 percent law enforcement officer and the support equipment and materials for the officer;* *2) Contribute toward hiring new officers, their equipment and materials with the goal of improving community relations as a good steward of the community; or* *3) The project applicant shall present an alternative and acceptable means, as determined by the Police Chief, whereby the required law enforcement officer will be provided in the long-term.*	LS

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact		Level of Significance Prior to Mitigation	Mitigation Measures		Level of Significance After Mitigation
				The final funding mechanism and dollar amount shall be reviewed and approved by the Community Development Director and the Davis Police Chief.	
4.9-6	Increased demand for school resources.	S	*4.9-6*	*Prior to the issuance of building permits, the applicant shall show proof to the Community Development Department of payment of current SB50 and AB 16 school impacts fees.*	LS
4.9-7	Increased demand for solid waste disposal/recycling services.	LS	*4.9-7*	*None required.*	N/A
4.9-8	Increased demand for park and recreation services and facilities.	S	*4.9-8*	*Prior to the issuance of building permits, the applicant shall pay in-lieu Quimby fees for required park acreage.*	LS
4.9-9	Impacts to gas and electric facilities.	LS	*4.9-9*	*None required.*	N/A
4.9-10	Long-term impacts to public services and facilities from the proposed project in combination with existing and future developments in the Davis area.	LS	*4.9-10*	*None required.*	N/A
4.10 Climate Change					
4.10-1	Project impacts concerning the production of GHGs.	S	*4.10-1*	*In conjunction with the submittal of a Tentative Map for the proposed project, the project applicant shall submit, for the review and approval of the Community Development Department, a sustainability plan, which demonstrates that the proposed project does not conflict with the goals and strategies of Executive Order S-3-05, the Attorney General's suggested global warming mitigation measures, or City of Davis Resolution No.*	SU

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		08-166. The sustainability plan shall include, but not be limited to, the compliance measures included in Table 4.10-6.	
Initial Study			
V. Cultural Resources.	S	*V-1* *Prior to commencement of construction-related activities for the project including, but not limited to, grading, staging of materials, or earthmoving activities, an archaeological monitor shall be retained by the applicant and approved by the City to train the construction grading crew prior to commencement of earth-grading activity in regard to the types of artifacts, rock, bone, or shell that they are likely to find, and when work shall be stopped for further evaluation. One trained crew member shall be on-site during all earth moving activities, with the assigned responsibility of "monitor." If any earth-moving activities uncover artifacts, exotic rock, or unusual amounts of bone or shell, work shall be halted in the immediate area of the find and shall not be resumed until after the archaeologist monitor has inspected and evaluated the deposit and determined the appropriate means of curation. The appropriate mitigation measures may include as little as recording the resource with the California Archaeological Inventory database or as much as excavation, recordation, and preservation of the sites that have outstanding cultural or historic significance.*	LS

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measures		Level of Significance After Mitigation
	S	*V-2*	*Prior to the approval of tentative map(s), the tentative map(s) shall state that during construction, if bone is uncovered that may be human; the Native American Heritage Commission in Sacramento and the Yolo County Coroner shall be notified. Should human remains be found, the Coroner's office shall be immediately contacted and all work halted until final disposition by the Coroner. Should the remains be determined to be of Native American descent, the Native American Heritage Commission shall be consulted to determine the appropriate disposition of such remains.*	LS
VI Geology and Soils.	S	*VI-1*	*Prior to commencement of construction-related activities for the project including, but not limited to, grading, staging of materials, or earthmoving activities, the developer shall prepare a storm water pollution prevention plan (SWPPP), consistent with the State Water Resources Control Board NPDES requirements. A copy of the SWPPP shall be submitted to the City Engineer subject to review and comment.*	LS
	S	*VI-2*	*Prior to the approval of final map(s), a final design-level geotechnical report, with consideration of recommendations from the Wildhorse Geotechnical Investigation, shall be prepared and submitted to the Chief Building Official for review and comment. The recommendations of the final geotechnical report shall be incorporated into the project design prior to issuance of building permits for review and approval of the City Engineer and/or Chief Building Official.*	LS

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact		Level of Significance Prior to Mitigation	Mitigation Measures		Level of Significance After Mitigation
VII	Hazards and Hazardous Materials.	S	*VII-1*	*Prior to commencement of construction-related activities for the project including, but not limited to, grading, staging of materials, or earthmoving activities, the on-site septic systems and agricultural well(s) shall be located and properly destroyed by a licensed contractor in compliance with Yolo County Environmental Health Department standards. Confirmation of the destruction of such facilities shall be submitted to the City Engineer.*	LS

3 PROJECT DESCRIPTION

INTRODUCTION

The Project Description chapter of the EIR provides a comprehensive description of the Wildhorse Ranch (proposed project) components. In addition, the proposed project's background and objectives are discussed.

PROJECT LOCATION

The project site consists of approximately 25.79 acres of land within the City of Davis, Yolo County, California (See Figure 3-1, Regional Location Map). The project site is located at 3003, 3027, and 3075 East Covell Boulevard, at the intersection of East Covell Boulevard and Monarch Lane (See Figure 3-2, Project Location Map). The site is identified by Yolo County Assessor's Parcel Number (APN) 071-140-11. The current City of Davis General Plan (adopted May 2001) designation for the site is Agriculture.

The proposed site is located in the southeast corner of the Wildhorse subdivision. To the east of the site is the Davis greenbelt and agricultural buffer, to the south is Davis Manor and portions of Mace Ranch neighborhoods, and to the west and north are established residential portions of the Wildhorse subdivision.

BACKGROUND

The proposed project subdivision is located in the Davis city limits. The project is part of the Wildhorse Planned Development #3-89 zoning, which designated the site as a horse ranch. The project site was included in the 1994 Wildhorse EIR, which analyzed the subject site as a horse ranch. Current permitted uses include horse boarding, breeding and farming. On March 10, 2006 the Parlin Wildhorse LLC submitted a project application to the City of Davis Community Development Department for the development of a residential subdivision on the project site.

SITE CHARACTERISTICS

The project site is the location of *Araluen Farms, Horse Boarding and Training* and contains three residences and two barns. The project site can be accessed via a gravel and asphalt driveway from East Covell Boulevard. The existing residences are serviced by an on-site water supply well located approximately 300 feet northeast of the residences. In addition, five septic systems, an agricultural well, and four fire hydrants currently exist near the residences and barns. Along the eastern boundary of the project site is an existing City of Davis agricultural/habitat buffer that is approximately 135 feet in width. On the eastern side of the buffer is an existing farm road and then open agricultural lands. The buffer is currently composed of a 35-foot greenbelt/buffer that includes a pedestrian path/trail, and a 100-foot habitat area.

Figure 3-1
Regional Location Map

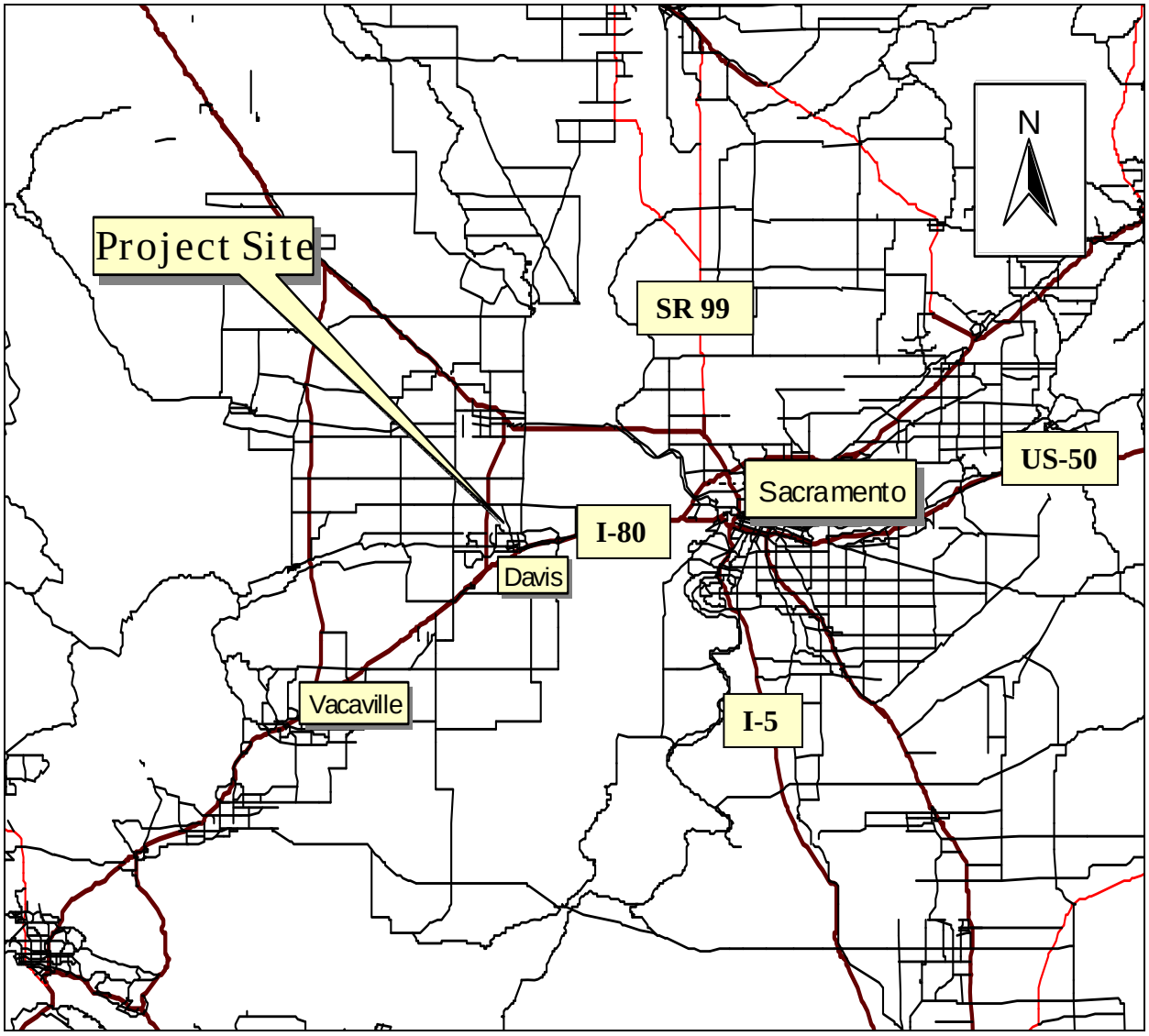
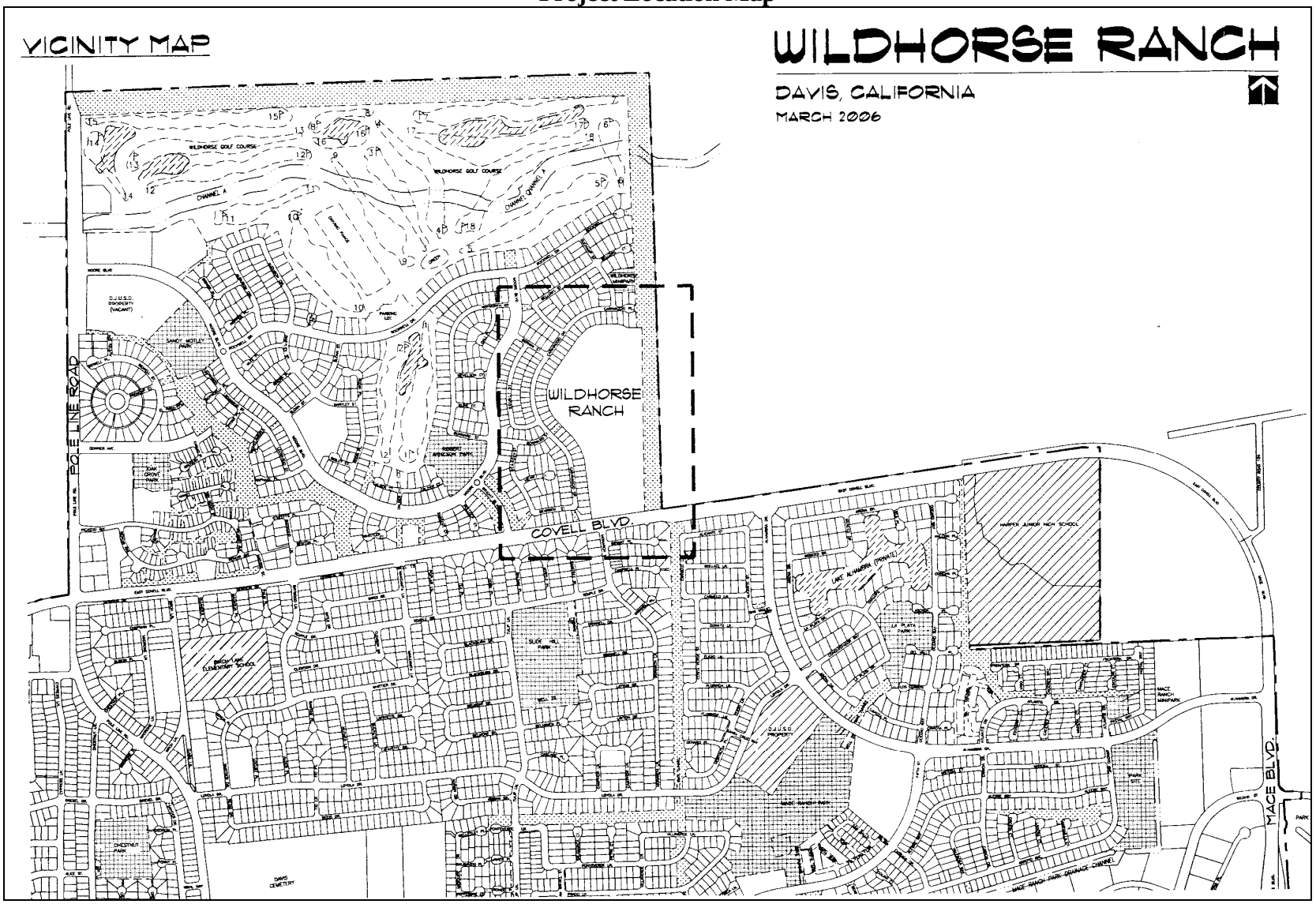


Figure 3-2
Project Location Map



PROJECT COMPONENTS

The proposed project involves a range of entitlements requiring City Council approval. In addition, redesignation of the project site from Agriculture to various urban designations is subject to Measure J, requiring voter approval. The project entitlements are discussed below.

General Plan Amendment

The current City of Davis General Plan land use designation for the project site is Agriculture. The proposed project requires a General Plan Amendment, which will change the site's land use designation from Agriculture to five uses; Residential High Density, Residential Medium Density, Neighborhood Greenbelt, Natural Habitat Area, and Urban Agricultural Transition Area.

Rezone

The zoning for the project site was approved concurrent with the Wildhorse subdivision. The site has been zoned Planned Development #3-89, which allows for horse boarding, breeding and farming. The proposed project requires a zone change from PD #3-89 (horse ranch) to a new Planned Development, in order to allow the proposed residential and greenbelt uses.

Site Plan

The project involves the development of up to 191 residential units. The Site Plan for the project indicates that the 25.79-acre project site would include the following mix of residential uses and densities: 73 detached single-family residences, and 78 two to three story attached single-family townhome units (including 36 middle-income units) on 11.95-acres and 1.92-acres of attached affordable housing for a maximum of 40 units at 21 du/ac (See Table 3-1, Wildhorse Ranch Project Data and Figure 3-3, Wildhorse Ranch Site Plan).

Residential -- Proposed Housing Units

Single-Family

The plan includes 73 detached single-family units located in three areas within the property. To minimize the impact on the adjacent homeowners on Caravaggio, the single-family detached homes would be located on the eastern side of the property, separated by an open space buffer. These single-family lots would be approximately 3,500 square feet (SF) in size.

Attached Single-Family Townhomes

The plan includes 78 attached townhome units located in three areas within the property. The attached townhomes are dispersed along the eastern portion of the property, mixing in with the single-family homes. The townhomes consist of two-story and three-story units ranging in size from 1,400 to 1,600 SF.

Table 3-1
Wildhorse Ranch Project Data

Project Site Acreages	**Site Plan**
General Plan Gross Density	12.03 units/acre[1]
Public Streets	2.21
Residential Area (total):	13.87
Detached Single-Family Residential (3,500 sq. ft.)	7.51
Attached Single-Family Residential and Attached Middle Income	4.44
Attached Affordable	1.92
Additional Land Dedication to Neighbors	1.07 (20' wide)
Additional Agricultural Buffer Dedication	2.26
Interior Greenbelt[2]	1.61
Interior Open Space	4.44
Covell Boulevard Greenstreet	0.33
Total	***25.79 acres***
Project Residential Unit Types	**Units**
Detached Single-Family (3,600 square feet)	73
Attached Single-Family	78*
Middle Income for Sale-Attached	(36* of 78)
Low/Very Low (Multi-family rental units)	40*
Number of Units	***191 units****

Notes: Acreages subject to change.

1. Gross density calculated based upon General Plan interpretation guidelines. Per the guidelines, "gross acres" is the residential area including collector and local streets and excluding arterial streets and non-residential land uses (such as neighborhood greenbelts, parks, schools, commercial, office, industrial, etc.). Using this approach, a total of 9.71 acres (2.26-acre agricultural buffer; 0.33-acre Covell Boulevard Greenstreet; 6.05-acre greenbelt/Open Space; and 1.07-acre neighborhood land dedication) was subtracted from the 25.79-acre total site acreage, resulting in a gross acreage of 16.08 acres. Therefore, the proposed gross density is 12.03 units/acre (191 du/15.87 gross acres). It should be noted that if the 1.07 acres is not accepted by all or some of the adjacent neighbors, the land area will be moved to the Interior Greenbelt/Open Space category and would not change the density calculation.

2. Consistent with the General Plan interpretation guidelines, the Ag Buffer (2.26 ac), the Covell Boulevard Greenstreet (0.33 ac), and neighbors' land dedication (1.07 acres) are excluded from the gross density calculation. Using this approach, a total of 3.92 acres was subtracted from the 25.78-acre total site acreage, resulting in project acreage of 21.88 acres. Using the City Planning Department's preferred guidelines for calculating the greenbelt dedication; the greenbelt acreage is 10% of the gross residential area which includes the internal streets in the total acreage. This calculates to 1.61 acres for city greenbelt.

3. It should be noted that the 10 percent calculation currently provided as part of the project description does not appear to meet the City's GP interpretation guidelines; and that review of the project applications will address this potential inconsistency as part of its analysis.

* Maximum units per the City ordinance. Fewer units may be approved by the City as the Project progresses through the public review process. However, if the eventual development on the affordable housing site becomes rental, the unit count may be increased or decreased.

Figure 3-3
Wildhorse Ranch Site Plan

Affordable Housing

Approximately forty (40) percent of the project's housing would be very low and low income affordable housing as well as middle-income housing provided in accordance with the City's specifications and definitions of affordable and middle-income housing. It is noteworthy that the affordable housing site is different from the middle-income housing.

The affordable housing site for very low and low income residents is located along East Covell Boulevard to maintain compatibility with the surrounding homes and locate affordable housing close to transit and bike trails. The location of the affordable housing enables residents to utilize public transit or commute to employment by walking or biking. In addition, the location of the affordable housing near transit would satisfy tax credit financing goals. The affordable site is approximately 1.92-acres. The applicant proposes to apply to the City for a Project Individualized Plan ("PIP") that would allow it to construct, own and manage the units. The applicant anticipates that part of its application will include a proposal to select a local housing non-profit who specializes in tax credit financed affordable housing projects as a partner in building and managing the apartment site housing. If a PIP is not approved for this project, the developer will provide a land dedication site to the City consistent with City policy. If dedicated to the City, the land dedication site would be required to be at least 2.67 acres. A land dedication site of 2.67 acres for a 40-unit requirement is consistent with the City density calculations of 15 du/acre in accordance with the Affordable Housing Ordinance. The PIP or land dedication would fulfill the City's 25 percent low/mod requirement for the project, with the inclusion of a density bonus for the project's affordability provision. The affordable units are anticipated to be developed as multi-family rental units. Design guidelines would be developed to ensure architectural quality and compatibility.

The middle income units would be located within the townhome areas and mixed within buildings to create a seamless look. These units would be for-sale units and would be designed architecturally and structurally similar to surrounding units, although potentially varying in size. Locations and interior features would be the basis for price differentiation within the types of units. The leasing of the affordable units and sale of the middle-income units would be completed in accordance with the City's Buyer/Tenant Selection Guidelines at the applicant's sole expense and subject to City monitoring.

Green Features

Site Design

The project provides the following site design features to promote sustainability:

- Provision of a range of housing options including affordable housing;
- Incorporation and expansion of the pedestrian walkway/bikeway system that encourages the use of non-motorized modes of transportation;
- Creation of a human scaled and pedestrian friendly environment;
- Landscape plantings that utilize native and drought tolerant species;
- Energy efficient light fixtures throughout the site design;

- Creation of landscape and park elements that minimize the use of pesticides and herbicides;
- Redevelopment of previously disturbed land;
- Management and detention of storm water in a way that improves the quality of on-site post development runoff;
- Reduction of post development impervious paving surfaces through narrow streets, lanes and paseos;
- Creation of an urban forest within the community;
- Homes are clustered together to maximize outdoor space;
- Roof orientation to maximize solar panel efficiency; and
- The community provides a natural buffer edge that decreases the likelihood of further encroachment into the adjacent agricultural uses as well as increasing the amount of accessible open space in the project area.

Architecture

The architectural construction and finishing include the following elements:

- Utilization of alternative and innovative construction techniques and materials that are environmentally friendly;
- Homes are designed with smaller square footages to omit extra spaces that are rarely used;
- Non-combustible siding and roofing materials;
- Low emitting insulation in walls;
- Low emitting insulation and radiant barrier in attics, with quality installation;
- High efficiency heating and air conditioning units with engineered sizing and duct design; and high efficiency HVAC duct insulation;
- Low VOC materials such as carpets and paint;
- Energy Star rated appliances (to include dishwasher, refrigerator and clothes washer);
- High-efficiency built-in lighting;
- If necessary, incorporate pressure regulators at domestic water meters;
- Low-flow faucets, showerheads and toilets;
- Low water-factor clothes washers and dishwashers;
- Efficient hot water delivery (demand-initiated tankless heating/core plumbing system);
- Limit amount of turf coverage per lot and open space areas, and/or require ‘water-budget’ landscape design; and
- Homeowner education on water use and conservation.

Transportation/Circulation

Project Site Access

The Wildhorse Ranch site has been designed to allow primary automobile access from East Covell Boulevard at the existing Monarch Lane and East Covell intersection. The East Covell

Boulevard and Monarch Lane intersection is anticipated for signalization as part of the project and would allow full turn movements to and from the site. A secondary vehicle access point is proposed along East Covell Boulevard at the south end of the 65-foot additional buffer land dedication area. The intersection would be a "T"-intersection with a right-in and right-out only. The proposed project includes the construction of both access points. The exact alignments will be determined in consultation with the City Engineer and the public safety departments and then incorporated into the Site Plan. The two street access points from Covell Boulevard are the primary fire and police access points. A potential third Emergency Vehicle Access (EVA) is located at Caravaggio Place to the north. The final number and location of EVA's will be determined at a later stage.

The access roadway at the intersection of East Covell Boulevard at Monarch Lane would provide primary access to the project site. The roadway would consist of a standard two lane roadway with associated landscaping and sidewalk treatment. The roadway diverges into separate travel lanes to allow the vehicle volume capacity of a standard local city street and provide the experience of driving through the orchard. The lanes rejoin and culminate into a cul-de-sac to allow for vehicles to turn around. Access to the residential units would be provided via minor residential streets which extend easterly. Each single-family detached home and attached townhome would be designated to include two off-street parking spaces within an enclosed garage. Guest parking would be provided at designated stalls at the end of each private lane, at parking areas throughout the site, and along public streets where space is available. The main road, secondary access loop road, and lanes will be public streets. All other lanes and driveways will be privately owned and maintained.

The site plan incorporates Smart Growth and sustainable design elements to create a walkable community. Streets are minimized in favor of lanes serving as private streets. A series of paved sidewalks, trails and mid-block crossings run through the site connecting all of the residential areas, surrounding open spaces and greenbelts together, providing more direct links within the site than the street network.

Bike Paths

A grade separated bike crossing exits at Covell Boulevard just east of the project site. This bikeway connection provides access from the north side of Covell Boulevard to the south side and connects this part of the City bike trail system to the Mace Ranch area. Therefore, students from Harper Junior High School and Fred T. Korematsu Elementary School could safely travel from school to the Wildhorse area. In addition, an east-west 10-foot wide bike path would start at the intersection of Bonnard Street and Caravaggio Drive, continue through the existing undeveloped 50-foot wide lot, from the existing Wildhorse community and into the proposed project, and connect to the proposed paved bike trail and the existing gravel path within the expanded agricultural buffer on the east side of the project site. This connection will provide existing residents, as well as future residents of the plan area with bike access to recreational trails to the north and destinations, including schools, parks, shopping and employment in the rest of the City.

Transit

The project has access to transit service, located across the street from existing eastbound transit stop, at Monarch Lane and East Covell Boulevard, served by Yolo Bus (Lines 42B and 43) and Unitrans (Line P/Q). Yolo Bus Line 42B provides service to the Park & Ride Lot at Mace/I-80 and to/from Sacramento and Woodland. Line 43 provides morning and evening express service to Sacramento. Unitrans Line Q provides service via Mace Blvd to South Davis, travels westbound through South Davis and then follows Russell Blvd via downtown to the Memorial Union (MU) at UC Davis. Line P operates along the same route in a counterclockwise direction, serving west Davis as well.

The applicant would request location of a westbound stop near the project entrance. Installation of this new bus stop as proposed is intended to encourage transit ridership and therefore reduce the amount of traffic generated by the project. The new bus stop would be served by Yolo Bus' and Unitrans' existing westbound Covell routes (Line 42A and Line P respectively). Yolo Bus Line 42A provides service to downtown (5th St) and to the MU; then continues north on SR 113 to Woodland, then on I-5 to Sacramento Airport and downtown Sacramento (with Line 42B providing return service). Unitrans Line P serves Covell Boulevard and East 14th Street, including Davis High School, continuing on to West Davis and finally looping back to the MU (with Line Q providing return service from the MU). Downtown bus connections from Line P are available at Pole Line Road and at J Street.

Public Services

Details of public services are found in their corresponding chapters of this Draft EIR (See Section 4.9). A brief description of each is provided below and is based upon preliminary engineering information provided by the project engineer.

Water Supply

The City of Davis 2005 Well Capacity Replacement EIR states that any new growth approved by the City resulting in new water service customers will be required to develop new water supply capacity to meet the projected growth. This has been confirmed by the Davis Public Works Department who has indicated that new projects must develop additional capacity as the current water system can only serve the demands of existing customers.[1] The minimum requirement for new development projects is that any new water supplies must be of equal or superior water quality than that of the deep aquifer (based on City wells 28-32) and must be reliable on a long-term basis. This additional water supply capacity could be provided by either a new deep well (and wellhead treatment if necessary), or by making improvements to the existing City distribution system to improve effective capacity during periods of peak demand. The City is pursuing several improvements within the City's distribution system that will improve effective capacity during peak demand periods.

Based on information provided by City of Davis Public Works Department, existing average domestic water use in the City is typically around 190 gallons per capita per day (gcd). Given the

proposed home sizes and higher density within the proposed project a per-capita rate of 190 gcd is likely a conservative estimate for the project.

The project water demand was evaluated using separate calculations for inside and outside uses Assuming inside use constitutes around 40 percent of overall use for single-family homes,[2] and using the City's average usage of 190 gcd as a baseline, the project's average inside use would be around 80 gcd. Assuming 191 dwelling units at a typical occupancy of 2.48 persons/du,[3] the average residential irrigation demand (excluding the Orchard and City-irrigated areas) translates to an additional 45 gcd. With the Orchard and City-irrigated areas included, the overall site-wide irrigation demand is estimated at approximately 85 gcd. Thus the project's estimated per-capita inside plus outside average use would be 165 gcd.

To reduce projected demand, the project proposes to implement a number of water conservation and efficiency measures. Domestic inside-use water-saving measures will include low-flow fixtures, low water use dishwashers and efficient hot water delivery systems. If mainline water pressure conditions so warrant, pressure regulators will be installed at domestic water meters. When included as part of the appliance package of homes or apartments, builders will be directed to select low water factor clothes washers. It is anticipated that the above measures would reduce inside usage by approximately 20 percent. Assuming inside use constitutes around 40 percent of overall use for single-family homes, and using the City's average usage of 190 gcd as a baseline, the project's average inside use would be around 80 gcd. Therefore, a 20 percent reduction will result in an inside use in the region of 65 gcd and an overall use of 150 gcd.

To further reduce the demand on the City's water supply infrastructure, the project landscaping, maintained by a Homeowner's Association (HOA), will be irrigated via a new agricultural well, and not served by the City's domestic water supply. The well would be shallower than the City standard depth. Irrigation equipment would be 'purple pipe,' irrigation would occur at night, and water quality would be monitored to ensure that minimum standards for safety are met. It is estimated that irrigating the Orchard and other HOA areas via an onsite agricultural well could reduce the demand on the City supply by as much as 30 gcd, resulting in a net average City demand of approximately 120 gcd.

It should be noted that a domestic water supply well is currently located on the project site. Given its location, the existing supply well on the property would need to be abandoned, a procedure that requires a well abandonment permit from the Yolo County Public Health Services, Environmental Health Division.

Wastewater

A public sewer line does not currently serve the project site. To provide public sanitary sewer (SS) service to the project site, four preliminary options were initially considered:

1. A gravity drain connecting to the existing 42-inch sewer trunk to the north of the Wildhorse Golf Course. The 42-inch line is a primary conveyance leading directly to the Davis Wastewater Treatment Plant.

2. Construction of a gravity sewer to an exiting line in Monarch Lane. This entails collecting Wildhorse Ranch wastewater at the south end of the property, then running a new connecting line across East Covell Boulevard to an existing 8-inch line in Monarch Lane. The capacity and depths of the downstream lines, as well as the capacity of the Manzanita Sewer Lift Station would need to be confirmed.

3. Construction of an on-site central lift station and force main to the 42-inch sewer trunk to the north of Wildhorse Golf Course. Given the cost to construct a sewer pump station to current City standards, Option 3 is likely to be more expensive than Options 1 and 2.

4. A gravity system connecting to the existing Wildhorse Subdivision sewer system. The two possible points of connection would be the 6-inch SS main at the end of Caravaggio Place and the 6-inch SS main at the intersection of Caravaggio/Bonnard. Capacity of the downstream pipes and connection point elevations would need to be confirmed to determine the feasibility of either of the options. However, given the shallow depths of the connection points, large quantities of fill would be required to allow gravity discharge. Given the cost and design challenges of elevating the site, this option is considered the least viable.

After preliminary review of the above, it was determined that Options 1 and 2 appear the most feasible. Of these two, Option 1 is proposed as the preferred alternative, with Option 2 as a secondary alternative, to be evaluated later (during the Tentative Map stage) if necessary.

It should be noted that several septic systems exist on the project site. The systems would need to be properly removed per the procedures of the Yolo County Public Health Services, Environmental Health Division.

Storm Drainage

The existing site generally drains from south to north, discharging to an inlet near the site's northeast corner. The inlet drains to an existing 36-inch storm drain pipe, which drains north into Channel ‘A’ near the northeast corner of the adjacent Wildhorse residential development. The 36-inch pipe was originally sized to convey the developed 10-year peak discharge from a portion of Wildhorse Units 2 and 3, plus the 10-year peak discharge from the project site, assuming agricultural use.

Upon development of the project site for residential use, the existing outlet pipe would continue to be used as the site's outlet conveyance to Channel A. The conversion of agricultural land to residential use would increase the storm water runoff generated onsite. In order to mitigate for the increase in peak discharge, distributed storm water detention would be incorporated into the project. Onsite runoff would be conveyed to multiple local detention areas via overland drainage and underground piping.

Preliminary calculations indicate that approximately three acre-feet of detention storage would be required in the 100-year event. The applicant envisions the necessary detention to be accomplished in swales and gently sloped open spaces with shallow storage (typically around two-feet deep), as opposed to a single, centralized storm water detention ‘pond.’

A small fraction of open space areas within the detention storage basin are anticipated to be inundated on a regular basis by small, frequent storms. In the larger, less frequent events such as the 10-year to 100-year storms, detained stormwater would back up further into the open space areas, but would recede as the storm subsides. However, given the infrequent nature of such events, utilizing open spaces to accommodate some of the 100-year detention storage is not anticipated to compromise the recreational and aesthetic aspects of those areas. It should be noted that Davis has successful existing examples of multi-purpose open area/greenbelt drainage facilities, such as Aspen, Evergreen and Willow Creek. It should also be noted that City of Davis General Plan policies specifically allow for storm water detention within agricultural buffer areas.

In addition to accommodating detention for the 100-year event, the open areas may include storm water Best Management Practice (BMP) facilities in combination with other BMP's throughout the site. Current designs emphasizing Low Impact Development (LID) techniques such as vegetative swales and rain gardens would be incorporated into the site design. The site plan incorporates a number of linear open areas that incorporate overland drainage as feasible.

In addition, pervious pavement is effective if placed over well-draining soils (typical infiltration rates of 0.3 to 0.5 inches/hour or higher). A Geotechnical Engineer would investigate the site soil infiltration potential and advise the project designers as to the effectiveness and viability of pervious pavements.

As with all surface drainage systems on flat slopes and/or involving ponding, mosquito abatement would be considered in the drainage design. Areas of concern include grading (to ensure positive drainage), ponded water depths (generally not too shallow or spread-out for the small, frequent events) and detention times (generally less than 48 hours for small storms).

The quality of the soil is a critical factor in water infiltration and landscape vigor. The project would stockpile existing soils on site, and limit grading and compaction operations in order to maintain existing soil tilth where feasible and redistribute the native soils on site.

Streets Trees and Open Space

Consistent with General Plan Policy UD2.2, where feasible all streets would be lined with shade trees, creating a well shaded street and green canopy that slows traffic, reduces the heat island affect, and enhances the neighborhood aesthetics. Residential access streets and lanes would have some tree canopy, but at this time the percentage is not known. It should be noted that the potential exists for some lots within the proposed subdivision to not have adequate frontage to accommodate City required street trees. Where feasible, existing trees could be incorporated into the new landscape plans. Special landscape treatments and trees are intended to be used to mark the entries.

The project includes an open space area near the west border of the property where trees would be planted in an orchard style, providing additional buffer space to the existing neighborhood, as well as providing routing for stormwater quality swales and a passive open space area. The orchard area would be privately owned and maintained as part of the community amenities. The

specific species of tree to be planted in this area has not been determined, however they will not be fruit bearing. The orchard is anticipated to require approximately 15 acre-feet of water per year. To reduce the water demand the following BMPs are proposed: the use of a shallow agricultural well for irrigation water rather than the City supplied domestic water; improved irrigation equipment including smart controller and water efficient delivery system; soil conditioning and 'soil decompaction' to improve water infiltration; cover crops to improve soil tilth and nitrogen fixation; and three inches of mulch to reduce evaporation.

A view corridor will extend from Caravaggio Drive into the project, including a multi-use path for bikes, pedestrians, and possibly emergency vehicles, linking the existing Wildhorse subdivision with the proposed project and existing City greenbelt.

An additional 2.43 acres (65 feet in width) would be added to the existing Davis agricultural/habitat buffer. The expanded buffer would be 200 feet wide and would include the 100-foot existing fenced habitat area, the existing gravel bike path in the current 35-foot greenbelt, and the additional 65-foot greenbelt land dedication with a new paved 10-foot wide bike path connecting Covell Blvd. with Caravaggio Court.

REQUIRED PUBLIC APPROVALS

The Wildhorse Ranch project requires the following discretionary actions by the Davis City Council:

- Certification of the EIR;
- Approval of a General Plan Amendment from Agriculture to Residential Medium Density, Residential High Density, Residential Low Density, Neighborhood Greenbelt, Natural Habitat Area, and Urban Agriculture Transition Area;
- Approval of a Rezone from PD# 3-89 (Horse Ranch) to a new Planned Development (residential);
- Development Agreement; and
- Affordable Housing Plan.

Upon a successful passage of a Measure J vote, the following approvals and actions are also required:

- Lot Line Adjustment;
- Tentative subdivision map approval;
- Final planned development approval;
- Design Review for affordable rental housing;
- Final subdivision map approval;
- Site plan/building plan approval;
- Issue demolition permits, grading permits, and building permits;
- Conduct final inspections and issue occupancy permits;
- Complete other processing as required; and
- Applicable permits from Yolo County Environmental Health Department.

PROJECT OBJECTIVES

The City's project objectives are as follows:

- Provide a diversity of housing types and sizes that will provide options to a range of economic levels;
- Contribute to the City's regional fair share housing needs;
- Provide safe and attractive transportation networks to assure appropriate public safety and emergency access and promote alternative transportation modes, such as bicycling, walking, and public transit;
- Protect the viability of agriculture and prime agricultural land in and around Davis including consistent agriculture buffer; and
- Minimize impacts on Davis' land, water, air, and biological resources, and provide outdoor common areas, greenbelts, and agricultural buffers that enhance the environment and foster a sense of community.

In addition, the Applicant's objectives for the project are as follows:

- Provide a net positive value to the neighborhood and the City;
- Create a model for social, ecological, and economic sustainable community development.
- Incorporate the best of smart growth planning concepts;
- Create a strong network of open spaces within the project and connections to existing or planned City open space. Create small nodes for informal resident interaction throughout;
- Embrace Low Impact Development concepts for the site such as on-site stormwater management; reduced pavement heat sinks; water conserving landscaping; and porous paving;
- Create architecture that is aesthetically pleasing and that utilizes the best of green building practices; and
- Define a project that is economically viable. A reasonable profit is necessary to assure completion and provision of amenities for the Davis community.

Endnotes

[1] Jacques Debra, City of Davis Public Works Department, e-mail correspondence, January 3, 2007.
[2] City of Davis, Wastewater Treatment Plant Expansion Plan, 2005.
[3] City of Davis Public Works Department, January 2009.

4.0 INTRODUCTION TO THE ANALYSIS

INTRODUCTION

The Introduction to the Analysis chapter of the EIR analyzes the potential impacts of the proposed project on a range of environmental issue areas. Sections 4.1 through 4.10 describe the focus of the analysis, references and other data sources for the analysis, the environmental setting as related to the specific issue, project-specific impacts and mitigations measures, and cumulative impacts of the proposed project for each issue area. The format of each of the sections is described below.

DETERMINATION OF SIGNIFICANCE

Under CEQA, a significant effect is defined as a substantial or potentially substantial adverse change in the environment (Public Resources Code § 21068). The Guidelines implementing CEQA direct that this determination be based on scientific and factual data. The specific criteria for determining the significance of a particular impact are identified within the impact discussion in each section, and are consistent with significance criteria set forth in the CEQA Guidelines.

INITIAL STUDY

The Initial Study originally prepared for the proposed project (provided as an attachment to the Notice of Preparation [NOP] in Appendix A) as a part of this EIR includes a detailed environmental checklist addressing a range of technical environmental issues. It should be noted that the Initial Study was prepared for buildout of 259 residential units on the project site. For each technical environmental issue, the Initial Study identifies the level of impact for the proposed project. The Initial Study identifies the environmental effects as either "no impact," "less-than-significant," "less-than-significant with mitigation incorporated," and "potentially significant." The Initial Study provided the following conclusions:

Impacts identified for the proposed project in the Initial Study as less-than-significant or nonexistent, which do not require mitigation, are presented below.

- *Air Quality (III e., p.23):* The project would not include industrial or intensive agricultural uses, which are typically associated with objectionable odors. In addition, the project could potentially result in an elimination of odors associated with the existing horse ranch operations.

- *Biological Resources (IV c. f., p.25):* The project would not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act through direct removal, filling, hydrological interruption, or other means, as the

project site does not contain wetland, marsh, vernal pool or coastal area habitat. A County-wide Habitat Conservation Plan has not yet been adopted for Yolo County.

- *Cultural Resources (V a., p.27-28):* The structures on-site are less than 50 years old and are not of a significant historical resource; therefore, the proposed project would have no impact on known historical resources.

- *Geology and Soils (VI ai-iv., c., e., p.30-32):* The project site is not susceptible to fault rupture, seismic ground shaking, liquefaction, landslides, lateral spreading, or subsidence. Furthermore, the proposed project has been designed to connect to existing sewer systems.

- *Hazards and Hazardous Materials (VII a., c.-f., h. p.33):* The project site is not located within an airport land use plan, within two miles of an airport, or located within an area where wildland fires occur. Therefore, the proposed project would result in no impacts pertaining to the aforementioned hazards.

- *Hydrology and Water Quality (VIII g.-j., p.38):* The project site is not within a 100-year floodplain, nor located within an area subject to damage by seiche, tsunami, or mudflow. Therefore, implementation of the proposed project would result in no impact relating to these phenomena.

- *Land Use and Planning (IX a., c. p.39):* The proposed project would not divide an existing community. A County-wide Habitat Conservation Plan has not yet been adopted for Yolo County.

- *Mineral Resources (X a., b., p.41):* The proposed project would not result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan or a known mineral resource that would be of value to the region and the residents of the State.

- *Noise (XI e., f., p. 43):* The proposed project would not expose people to excessive noise levels associated with airport uses.

- *Population and Housing (XII b., c., p.44):* The proposed project would not displace substantial housing or people because the site would result in a net gain of residential units.

- *Transportation and Circulation (XV c., p.48):* The proposed project would not be expected to change existing air traffic patterns, either in terms of volume or location.

Impacts identified in the Initial Study as less-than-significant with the implementation of mitigation measures, are presented below.

- *Cultural Resources (V b.-d., p.27):* A cultural resources report that included the project site did not identify any prehistoric sites within the project area; however, the potential exists for prehistoric resources to be uncovered during construction.

Although the impact would be considered potentially significant, implementation of the included mitigation measure would reduce the impact to a less-than-significant level.

- *Geology and Soils (VI b., d., p.30-31):* Construction of the proposed project could contribute to short-term impacts on surface water quality through increased turbidity and sediment loading and could potentially place structures on expansive soils. Although the impact would be considered potentially significant, implementation of the included mitigation measure would reduce the impact to a less-than-significant level.

- *Hazards and Hazardous Materials (VII b., p. 34):* The Phase I Assessment identified an on-site agricultural well and five on-site septic systems. The septic systems are accident and grading hazards, as they may include various waste fluids and other chemicals, which could potentially release hazardous materials. In addition, wells, such as the agricultural well located on the project site, would require proper abandonment. Although the impacts would be considered potentially significant, implementation of the included mitigation measure would reduce the impact to a less-than-significant level.

All remaining issues were identified in the Initial Study as potentially significant and are discussed in this Draft EIR.

Issues Addressed in this Draft EIR

The Initial Study, included as an attachment to the NOP in Appendix A of this Draft EIR, identified environmental impacts as potentially significant and requiring further analysis. This Draft EIR provides the additional analysis necessary to address the technical environmental impacts not fully resolved in the Initial Study. Consistent with the conclusions of the Initial Study, the following environmental issues are addressed in this chapter of the Draft EIR:

- Land Use and Agricultural Resources;
- Population, Housing, and Employment;
- Transportation and Circulation;
- Air Quality;
- Noise;
- Biological Resources;
- Aesthetics;
- Hydrology, Water Quality, and Drainage;
- Public Services and Facilities; and
- Climate Change.

SECTION FORMAT

Each section in Chapter 4 addressing a specific environmental issue begins with an **introduction** describing the purpose of the section. The introduction is followed by a description of the project's **environmental setting** as pertains to that particular issue. The setting description is followed by the **regulatory context** and the **impacts and mitigation measures** discussion. The *impacts and mitigation measures* discussion contains the **significance criteria**, followed by the **methods of analysis**. The *impact and mitigation measures* discussion includes impact statements prefaced by a number in bold-faced type. An explanation of each impact and an analysis of its significance follow each impact statement. All mitigation measures pertinent to each individual impact follow directly after the impact statement (See below). The degree of relief provided by identified mitigation measures is also evaluated. An example of the format is shown below:

4.x-1 Statement of Impact

Discussion of impact for the proposed project in paragraph format.

Statement of ***level of significance*** of impact prior to mitigation is included at the end of each impact discussion.

Mitigation Measure(s)
Statement of *level of significance* after the mitigation is included immediately preceding mitigation measures as well as the applicability of the mitigation measure to the alternative.

4.x-1(a) *Recommended mitigation measure(s) presented in italics and numbered in consecutive order.*

4.x-1(b) *etc. etc.*

4.1 LAND USE AND AGRICULTURAL RESOURCES

INTRODUCTION

The Land Use and Agricultural Resources section of the EIR describes the existing land use setting of the Wildhorse Ranch project site and the adjacent area, including the identification of existing land uses and current General Plan policies and zoning designations. The proposed Wildhorse Ranch project is analyzed for consistency with existing City of Davis policies and compatibility with surrounding land uses. The agricultural resources analysis describes the soils of the project site and whether or not the site is identified as prime farmland. Documents referenced to prepare this section include the *City of Davis General Plan,*[1] the *City of Davis Zoning Ordinance,*[2] and *National Resource Conservation Service Web Soil Survey*.[3]

ENVIRONMENTAL SETTING

Section 15125 of the CEQA Guidelines states that "an EIR must include a description of the physical environmental conditions in the vicinity of the project […] and shall discuss any inconsistencies between the proposed project and applicable general plans and regional plans." The following provides the existing land uses on the project site, as well as the existing plans and policies that guide the development of the project site.

Land Uses on the Project Site

The project site encompasses approximately 25.79 acres of land within the City of Davis. The site is identified by Yolo County Assessor's Parcel Number (APN) 071-140-11. The proposed project is designated as Planned Development #3-89 (horse ranch) under the original Wildhorse zoning designations. The project site was included in the Wildhorse EIR, which is over ten years old and analyzed the subject site as a horse ranch. Permitted uses include horse boarding, breeding, and farming which could create nuisances such as flies, odor, and dust from operations for the adjacent residential area surrounding the horse ranch. The site is surrounded by urban residential uses on three sides. According to the *National Cooperative Web Soil Survey* and the *Soil Candidate Listing for Prime Farmland and Farmland of Statewide Significance*, all soils on the site are designated Prime Farmland and Farmland of Statewide Importance by the California Department of Conservation (CDC).

Current Land Use Designations

The City of Davis General Plan designates the 25.79-acre parcel on the project site as Agriculture (AG). The City of Davis General Plan definition for the Agriculture land use is:

> *Agriculture (AG)*: To protect valuable natural resources such as agricultural land and wildlife habitat, to allow for productive agricultural use surrounding or within Davis, to

ensure a permanent buffer between adjacent jurisdictions that will maintain the separate identities of Davis and the surrounding cities, and to serve as a visual amenity around urban development.

Proposed Land Use Designations

The project includes a request for a General Plan Amendment to re-designate the project site from AG to five (5) uses: Residential High Density, Residential Medium Density, Neighborhood Greenbelt, Natural Habitat Area, and Urban Agricultural Transition Area (See Figure 4.1-1). In addition, the project includes a 65-foot land dedication to the existing agricultural buffer and continuation of the Wildhorse neighborhood greenbelt.

Residential: This category is intended to allow for residential development emphasizing compact clustered development in new areas and infill in existing neighborhoods, together with a mixture of local-serving retail and institutional uses, to meet housing demands, reduce pressure for peripheral growth and facilitate transit and bicycle/pedestrian travel.

a. *Low Density*: 3.0 to 5.99 units per gross acre.
b. *Medium Density*: 6.0 to 13.99 units per gross acre.
c. *High Density*: 14.0 to 25.0 units per gross acre.

Neighborhood Greenbelt: To provide safe and secure linear parkways and connectors close to residences as alternatives to biking or walking on streets. Neighborhood greenbelts connect to Urban Agriculture Transition Area, Greenstreets, parks, other open space network elements, activity centers and public facilities.

Urban Agriculture Transition Area Intent:

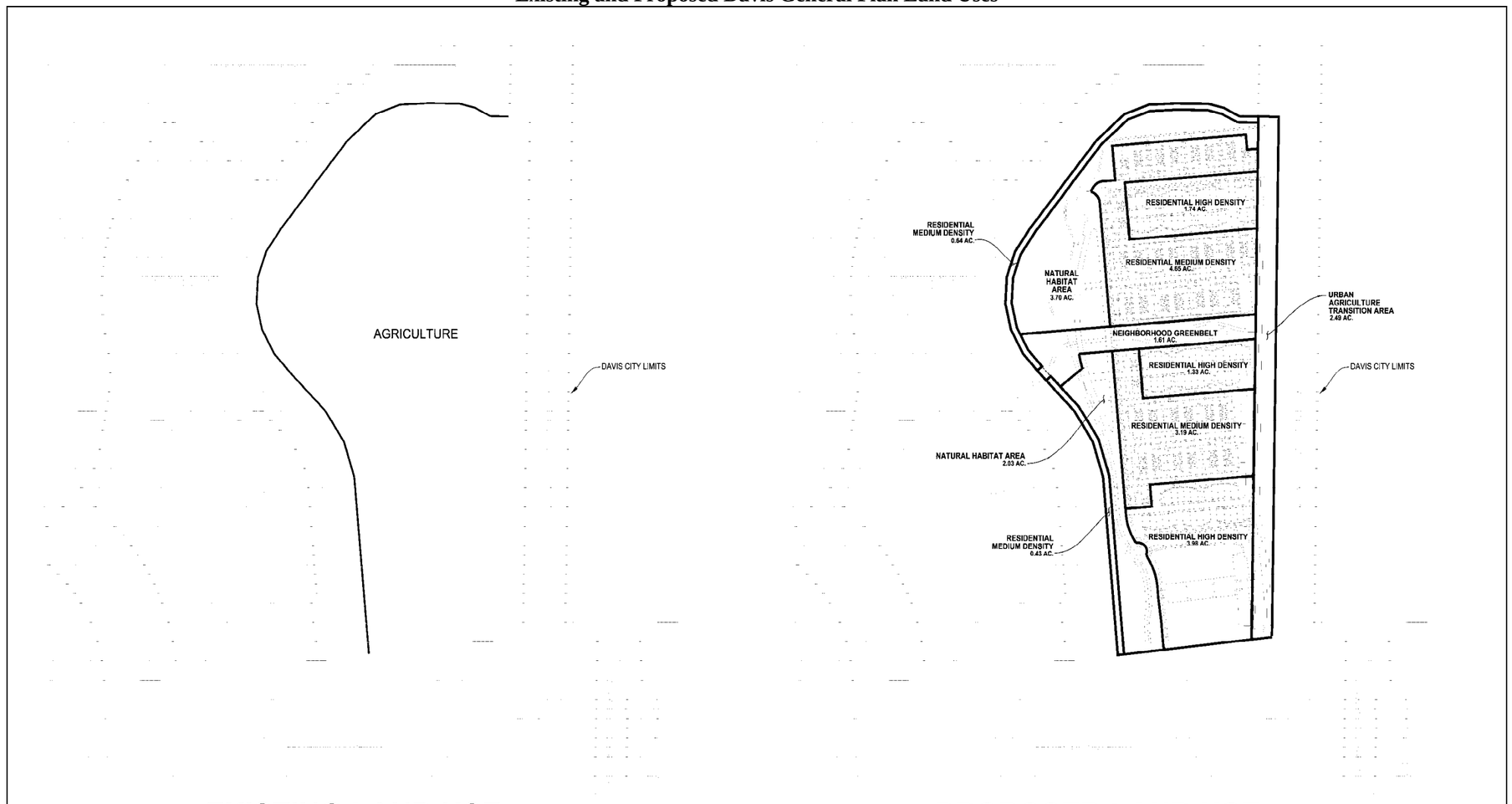
1. To provide a buffer and minimize conflicts between urban and agricultural areas.
2. To provide public open space.
3. To define the planned urbanized edge of the City, as one of many useful growth management tools.

Natural Habitat Area: To preserve existing wildlife habitat and develop new habitat. Wildlife preserves, habitat for permanent and migratory waterfowl and other species, native tree and plant areas, seasonal and permanent wetlands, drainage facility. Agriculture, low intensity recreation, nature study and interpretive centers are also allowed provided they are compatible with habitat uses.

Current Zoning Designations

The current City of Davis zoning for the 25.79-acre project site is P-D #3-89 (Horse Ranch). The City of Davis Zoning Ordinance defines the purposes of the P-D districts as follows:

Figure 4.1-1
Existing and Proposed Davis General Plan Land Uses



GPA LAND USE SUMMARY

EXISTING LAND USE	AREA	PROPOSED LAND USE	AREA
AGRICULTURE	25.79 AC.	RESIDENTIAL (MED DENSITY)	8.91± AC.
		RESIDENTIAL (HIGH DENSITY)	7.05± AC.
		NEIGHBORHOOD GREENBELT	1.61± AC.
		NATURAL HABITAT AREA	5.73± AC.
		URBAN AGRICULTURE TRANSITION AREA	2.49± AC.
TOTAL AREA:	25.79 AC.	TOTAL AREA:	25.79 AC.

Planned Development (P-D): The purpose of the planned development district is to allow diversification in the relationship of various buildings, structures and open spaces in order to be relieved from the rigid standards of conventional zoning. A planned development district shall comply with the regulations and provisions of the general plan and any applicable specific plan and shall provide adequate standards to promote the public health, safety and general welfare without unduly inhibiting the advantages of modern building techniques and planning for residential, commercial or industrial purposes. The criteria upon which planned development districts shall be judged and approved will include the development of sound housing for persons of low, moderate and high income levels, residential developments which provide a mix of housing styles and costs, creative approaches in the development of land, more efficient and desirable use of open area, variety in the physical development pattern of the city and utilization of advances in technology which are innovative to land development.

Proposed Zoning Designations

The proposed project includes a request to rezone the project site from P-D #3-89 (Horse Ranch) to a new Planned Development (P-D) District (residential). The proposed underlying zoning areas for the Wildhorse Ranch P-D district will be consistent with the proposed uses for the project as illustrated in Figure 4.1-2, which include: Single Family and Multi-Family Residential, Open Space, and Neighborhood Green Belt.

Land Uses Surrounding the Project Site

This section describes the land use designations and land use types surrounding the proposed project site.

Land Use Designations

The Davis General Plan designates the areas surrounding the project site with the following land use designations (see Figure 4.1-3).

North: Residential-Medium Density, Residential-Low Density, and Parks/Recreation, and Neighborhood Greenbelt.

South: Residential-Low Density.

East: Urban Agriculture Transition Area and Agriculture in Yolo County.

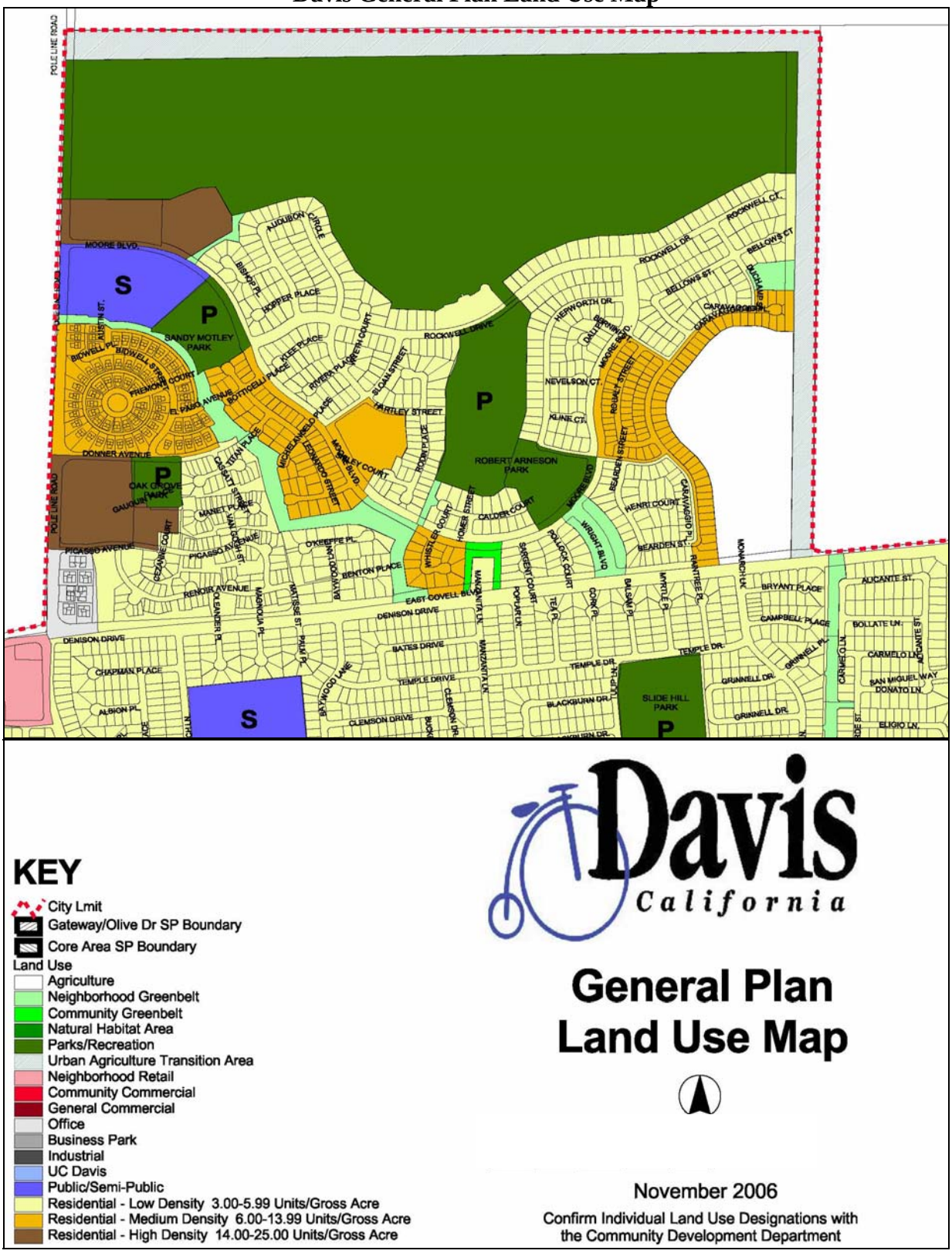
West: Residential-Medium Density, Residential-Low Density, and Parks/Recreation, and Neighborhood Green Belt.

Land Use Types

The following discussion has been prepared to detail the types of land uses currently surrounding the project site:

Figure 4.1-2
Proposed On-Site Land Use Types

Figure 4.1-3
Davis General Plan Land Use Map



North: Land uses to the north of the site include the single-family residential Wildhorse Development.

South: The site is bordered to the south by East Covell Boulevard. Land uses south of Covell Boulevard include single-family housing, and Neighborhood Green Belt.

East: The project site is bordered to the east by Urban Agricultural Transition Area land. Land uses east of the Urban Agriculture Transition area are in agricultural production.

West: Land uses to the west of the site include the single-family residential Wildhorse Development.

Agricultural Resources on the Project Site

Farmland Classifications

The USDA Natural Resources Conservation Service (NRCS, formerly known as the Soil Conservation Service [SCS]) uses two systems to determine a soil's agricultural productivity: the Land Capability Classification System and the Storie Index Rating System. The "prime" soil classification of both systems indicates the absence of soil limitations which, if present, would require the application of management techniques (e.g., drainage, leveling, special fertilizing practices) to enhance production. The California Department of Conservation (CDC) Farmland Mapping and Monitoring Program (FMMP), part of the Division of Land Resource Protection, uses the information from the NRCS to create maps illustrating the types of farmland in the area.

Land Capability Classification System

The Land Capability Classification System takes into consideration soil limitations, the risk of damage when soils are used, and the way in which soils respond to treatment. Capability classes range from Class I soils, which have few limitations for agriculture, to Class VIII soils that are unsuitable for agriculture. Generally, as the rating of the capability classification system increases, yields and profits are more difficult to obtain. A general description of soil classification, as defined by the NRCS, is provided in Table 4.1-1, Land Capability Classification.

Storie Index Rating System

The Storie Index Rating system ranks soil characteristics according to their suitability for agriculture from Grade 1 soils (80 to 100 rating) which have few or no limitations for agricultural production, to Grade 6 soils (less than 10) which are not suitable for agriculture. Under this system, soils deemed less than prime can function as prime soils when limitations such as poor drainage, slopes, or soil nutrient deficiencies are partially or entirely removed. The six grades, ranges in index rating, and definition of the grades, as defined by the NRCS, are provided below in Table 4.1-2.

Table 4.1-1
Land Capability Classification

Class	Definition
I	Soils have slight limitations that restrict their use.
II	Soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.
III	Soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.
IV	Soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.
V	Soils are not likely to erode but have other limitations; impractical to remove that limit their use largely to pasture or range, woodland, or wildlife habitat.
VI	Soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife habitat.
VII	Soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland, or wildlife habitat.
VIII	Soils and landforms have limitations that preclude their use for commercial plants and restrict their use to recreation, wildlife habitat, or water supply or to aesthetic purposes.

Source: USDA Soil Conservation Service, Soil Survey of Yolo County, California, 1972.

Table 4.1-2
Storie Index Rating System

Grade	Index Rating	Definition
1	80 through 100	Few limitations that restrict their use for crops
2	60 through 80	Suitable for most crops, but have minor limitations that narrow the choice of crops and have a few special management needs
3	40 through 60	Suited to a few crops or to special crops and require special management
4	20 through 40	If used for crops, are severely limited and require special management
5	10 through 20	Not suited for cultivated crops, but can be used for pasture and range
6	Less and 10	Soil and land types generally not suited to farming

Source: USDA Soil Conservation Service, Soil Survey of Yolo County, 1972.

Farmland Mapping and Monitoring Program (FMMP)

The FMMP was established in 1982 to continue the Important Farmland mapping efforts begun in 1975 by the USDA Soil Conservation Service (USDA-SCS). The intent of the USDA-SCS was to produce agriculture maps based on soil quality and land use across the nation. As part of the nationwide agricultural land use mapping effort, the USDA-SCS developed a series of definitions known as Land Inventory and Monitoring (LIM) criteria. The LIM criteria classified the land's suitability for agricultural production; suitability included both the physical and chemical characteristics of soils and the actual land use. Important Farmland Maps are derived from the USDA-SCS soil survey maps using the LIM criteria.

Since 1980, the State of California has assisted the USDA-SCS with completing its mapping in the state. The FMMP was created within the CDC to carry on the mapping activity on a continuing basis, and with a greater level of detail. The CDC applied a greater level of detail by modifying the LIM criteria for use in California. The LIM criteria in California utilize the Land Capability Classification and Storie Index Rating systems, but also consider physical conditions such as dependable water supply for agricultural production, soil temperature range, depth of the ground water table, flooding potential, rock fragment content, and rooting depth.

The CDC classifies lands into seven agriculture-related categories: Prime Farmland, Farmland of Statewide Importance (Statewide Farmland), Unique Farmland, Farmland of Local Importance (Local Farmland), Grazing Land, Urban and Built-up Land (Urban Land), and Other Land. The first four types listed above are collectively designated by the State as Important Farmlands. Important Farmland maps for California are compiled using the modified LIM criteria (as described above) and current land use information. The minimum mapping unit is 10 acres unless otherwise specified. Units of land smaller than 10 acres are incorporated into surrounding classifications. Each of the seven land types is summarized below, based on CDC's *A Guide to the Farmland Mapping and Monitoring Program* (2004).[4]

Prime Farmland: Prime Farmland is land with the best combination of physical and chemical features able to sustain the long-term production of agricultural crops. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. The land must have been used for the production of irrigated crops at some time during the two update cycles (a cycle is equivalent to 2 years) prior to the mapping date.

Statewide Farmland: Farmland of Statewide Importance is land similar to Prime Farmland, but with minor shortcomings, such as greater slopes or with less ability to hold and store moisture. The land must have been used for the production of irrigated crops at sometime during the two update cycles prior to the mapping date.

Unique Farmland: Unique Farmland is land of lesser quality soils used for the production of the State's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyards, as found in some climatic zones in California. The land must have been cultivated at some time during the two update cycles prior to the mapping date.

Local Farmland: Farmland of Local Importance is land of importance to the local agricultural economy, as determined by each county's Board of Supervisors and a local advisory committee. Yolo County local farmland includes lands which do not qualify as Prime, Statewide, or Unique designation, but are currently irrigated crops or pasture or non-irrigated crops; lands that would meet the Prime or Statewide designation and have been improved for irrigation, but

are now idle; and lands that currently support confined livestock, poultry operations and aquaculture.

Grazing Land: Grazing Land is land on which the existing vegetation, whether grown naturally or through management, is suited to the grazing of livestock. The minimum mapping unit for this category is 40 acres.

Urban Land: Urban and Built-up Land is occupied with structures with a building density of at least one unit to one-half acre. Uses may include but are not limited to, residential, industrial, commercial, construction, institutional, public administration purposes, railroad yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment plants, water control structures, and other development purposes. Highways, railroads, and other transportation facilities are mapped as part of this unit, if they are part of a surrounding urban area.

Other Land: Other Land is land that is not included in any other mapping categories. The following uses are generally included: rural development, brush timber, government land, strip mines, borrow pits, and a variety of other rural land uses.

According to the CDC, between 2002 and 2004, 7,249 acres of Important Farmland (i.e., Prime, Statewide Importance, Unique, and Local Importance) in Yolo County were converted to non-agricultural use, out of 653,452 acres inventoried.[5] In addition, 2,602 acres of Prime Farmland in Yolo County were converted to other uses during that period; however, 591 acres were gained during the same period (mainly due to the creation of irrigated vineyards), in order that the net effect was a loss of 2,011 acres of Prime Farmland. Farmlands of Statewide Importance and Unique Farmlands remained fairly constant between 2002 and 2004. During that period, however, a net loss of 4,251 acres of Farmland of Local Importance occurred in the County.

Williamson Act Land

The California Land Conservation Act, also known as the Williamson Act, was adopted in 1965 in order to encourage the preservation of the state's agricultural lands and to prevent their premature conversion to urban uses. Williamson Act contracts promote the preservation of land used for agricultural purposes. When a jurisdiction enters into a contract with a landowner under the Williamson Act, the landowner agrees to limit the use of the land to agricultural and compatible uses for a period of at least ten years. The jurisdiction then agrees to tax the land at a rate based on the agricultural production of the land, rather than its real estate market value.

According to the Yolo County GIS system,[6] the project site is not under a Williamson Act contract.

The *Web Soil Survey* shows that the project site contains the following Capability Class I and IV soils.[7]

- Sycamore silt loam, drained (Sp) – Prime Farmland if irrigated
- Sycamore silty clay loam, drained (St) – Prime Farmland if irrigated
- Tyndall very fine sandy, drained (Tc) – Prime Farmland if irrigated

The soils are described below in Table 4.1-3 and shown in Figure 4.1-4.

Table 4.1-3
On-Site Land Capability Classification and Storie Index Rating

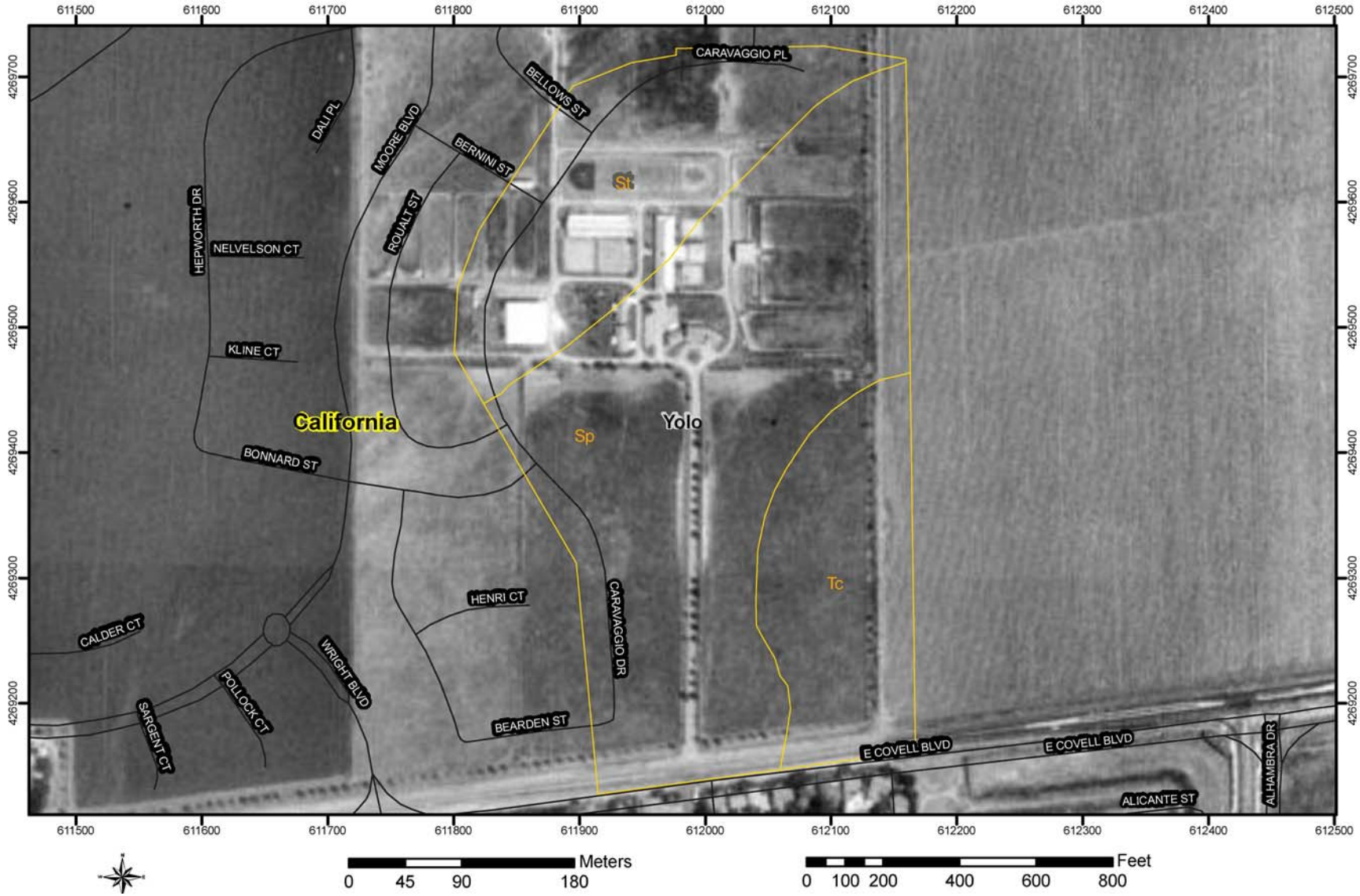
Soil Map Symbol and Name	Land Capability Classification	Storie Index
Sycamore silt loam, drained (Sp)	I-1	76
Sycamore silty clay loam, drained (St)	I-1	77
Tyndall very fine sandy loam, drained (Tc)	I-1/IVc	77
Source: USDA Soil Conservation Service, Soil Survey of Yolo County, 1972.		

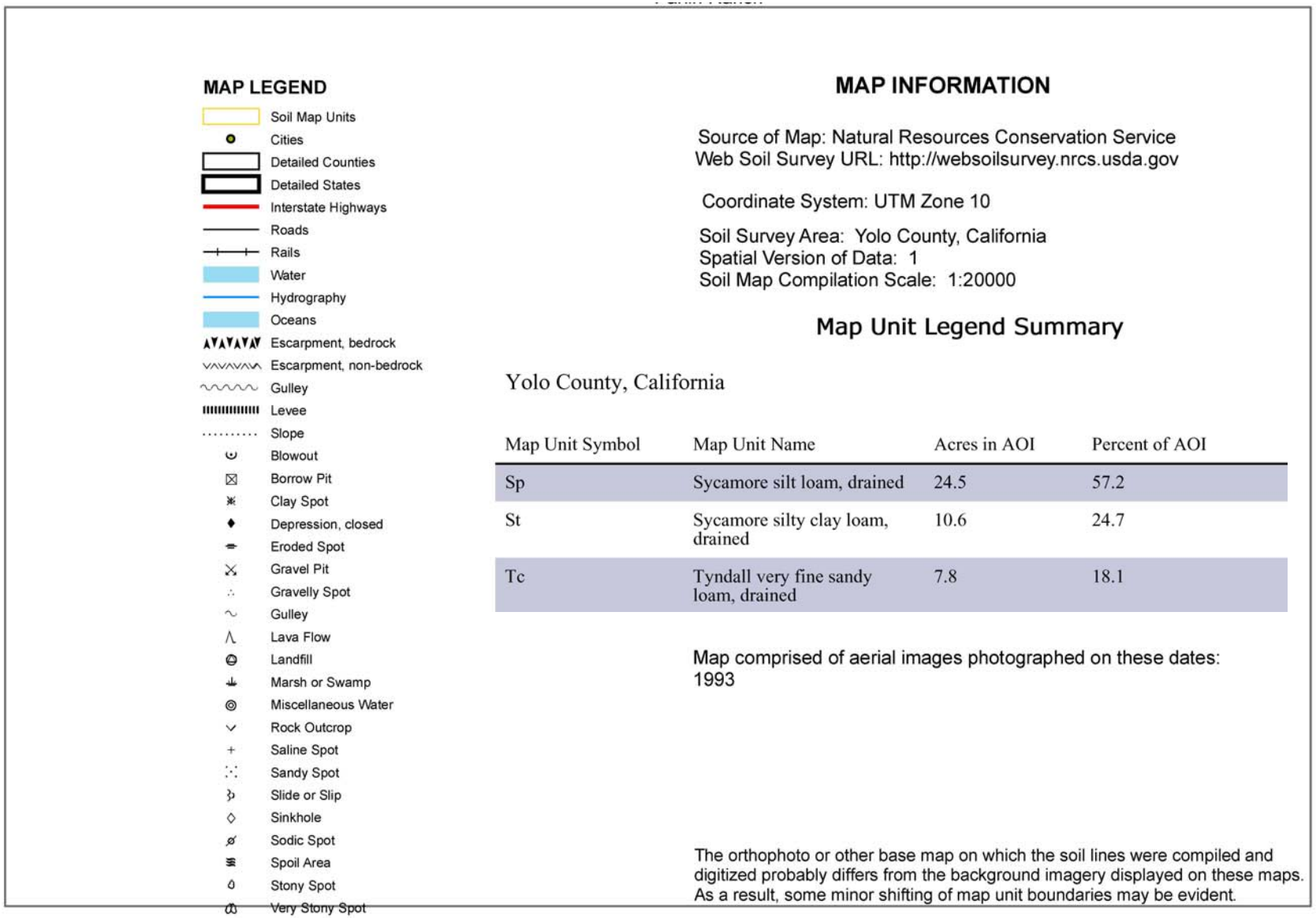
Sycamore silty clay loam (St) is found in the northwestern portion of the project site, and is considered Prime Farmland if irrigated. The soil occurs on alluvial fans, and slopes are less than one percent. The drainage of this Sycamore soil has been improved by natural deepening of channels and by reclamation structures. Permeability is moderately slow, surface runoff is very slow, and the erosion hazard is none to slight. Available water holding capacity is 10.0 to 12.0 inches, and effective rooting depth is more than 60 inches. Natural fertility is high. This soil is used mainly for irrigated sugar beets, tomatoes, alfalfa, asparagus, walnuts, and pears. Other uses include dryfarmed barley, wildlife habitat, and recreation. The land capability unit is I-1 irrigated and non-irrigated.

Sycamore silty loam (Sp) is similar to Sycamore silty clay loam, drained, except that it has a silt loam texture throughout the profile. This Sycamore soil is moderately permeable. The available water holding capacity is 10.0 to 12.0 inches. The effective rooting depth is more than 60 inches. This soil is used mainly for irrigated sugar beets, tomatoes, alfalfa, asparagus, almonds, and walnuts. Other uses include dryfarmed barley, wildlife habitat, and recreation. The land capability unit is I-1 irrigated and non-irrigated.

Tyndall very fine sandy loam, drained (Tc) occurs on alluvial fans, and slopes are less than one percent. Permeability of the soil is moderately rapid. Surface runoff is very slow, and the erosion hazard is none to slight. The available water holding capacity is 8.0 to 10.0 inches in areas that have been drained. This Tyndall soil has been improved by reclamation structures, and the water table is below a depth of 60 inches. Effective rooting depth is more than 60 inches. The soil is used principally for walnuts, pears, sugar beets, tomatoes, alfalfa, and asparagus. Other uses include irrigated pasture, wildlife habitat, and recreation. The land capability unit is I-1, irrigated; IVc, non-irrigated.

Figure 4.1-4
Wildhorse Ranch Web Soil Survey




MAP LEGEND
Soil Map Units
Cities
Detailed Counties
Detailed States
Interstate Highways
Roads
Rails
Water
Hydrography
Oceans
Escarpment, bedrock
Escarpment, non-bedrock
Gulley
Levee
Slope
Blowout
Borrow Pit
Clay Spot
Depression, closed
Eroded Spot
Gravel Pit
Gravelly Spot
Gulley
Lava Flow
Landfill
Marsh or Swamp
Miscellaneous Water
Rock Outcrop
Saline Spot
Sandy Spot
Slide or Slip
Sinkhole
Sodic Spot
Spoil Area
Stony Spot
Very Stony Spot
Perennial Water
Wet Spot
MAP INFORMATION
Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 10
Soil Survey Area: Yolo County, California
Spatial Version of Data: 1
Soil Map Compilation Scale: 1:20000
Map Unit Legend Summary
Yolo County, California
Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI
Sp | Sycamore silt loam, drained | 24.5 | 57.2
St | Sycamore silty clay loam, drained | 10.6 | 24.7
Tc | Tyndall very fine sandy loam, drained | 7.8 | 18.1
Map comprised of aerial images photographed on these dates:
1993
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.
USDA Natural Resources
Web Soil Survey 1.1
3/14/2007

REGULATORY CONTEXT

Local Regulations

The following are applicable goals and policies are taken from the Land Use and Growth Management Element of the *City of Davis General Plan Update*.

Residential Land Use

Policy LU A.1 In infill projects, respect setback requirements, preserve existing greenbelts and greenstreets, and respect existing uses and privacy on adjacent parcels.

Policy LU A.2 A minimum of 50% of future residential lots (exclusive of any required affordable or multifamily lots) within a new residential development of 50 single-family lots or more shall be designated as "diverse architectural lots" (DAL). These lots shall be designated as part of the project zoning and on the tentative and final maps. Houses built on DAL lots may not be of the same stock plan nor have a floor plan and front elevation substantially similar to any other house within the same final map area. All residential lots not designated as DALs, including any required single-family affordable housing lots and lots within new developments of 50 units or less, shall comply with the City's new site design standards, to be developed under Action UD 5.1e.

Policy LU A.3 Require a mix of housing types, densities, prices and rents, and designs in each new development area.

Policy LU A.4 Allow home occupations, home offices and live/work uses by right where appropriate provided that the home occupation is compatible with the surrounding neighborhoods and does not cause significant negative impacts on the surrounding neighborhoods.

Policy LU A.5 Require neighborhood greenbelts in all new residential development areas. Require that a minimum of 10 percent of newly-developing residential land be designated for use as open space primarily for neighborhood greenbelts.

Growth Management

Goal LU 1 Maintain Davis as a small, University-oriented city surrounded by and containing farmland, greenbelt, and natural habitats and reserves.

Policy LU 1.1 Recognize that the edge of the urbanized area of the city depicted on the land use map under this General Plan represents the maximum extent of

urbanization through 2010, unless modified through the Measure J process.

Policy LU 1.3 Establish and require a citizens' vote process for any proposed amendment to the Land Use Map as amended through August 1, 1999 from an agricultural or urban reserve designation to an urban designation, or from an agriculture designation to an urban reserve designation; or from any development proposal on the Covell Center and Nishi properties[1]; to ensure full public participation and consideration of issues related to such decisions, including impacts on policies calling for compact urban form, preservation of agricultural lands surrounding the City for long term agricultural use, and provisions of adequate housing supply to meet internal needs of the City. This policy and land use designation affected by this policy shall remain in effect in the General Plan or any update to the General Plan until December 31, 2010 or as long as the Citizens' Right to vote on the Future of Agricultural and Open Space Lands Ordinance remains in effect.

This policy is intended to assure full participation in land use decisions by the citizens and voters of the city, including but not limited to public debate and a vote of the people, and to assure that the principles set forth in the General Plan relating to land use, affordable housing, open space, agricultural preservation and conservation and the like are fully implemented.

Policy LU 1.4 Establish a distinct permanent urban edge which shall be defined by an open space, hedgerows, tree rows, similar landscape features, passive recreation spaces, buffer containing transitional agricultural uses, or similar elements.

Policy LU 1.5 Aggressively work to prevent urban sprawl on the periphery of Davis and in the region utilizing a variety of legislative / legal methods and strategic land acquisitions.

Policy LU 1.6 For developments that are on the edge of the City, a minimum of a 150-foot wide urban agricultural transition area is required.

Policy LU 1.7 Plan for the timing and costs of infrastructure when developing new areas. The planning process shall include working with public transit providers and the Davis Joint Unified School District.

Development Processing

Goal LU 3 Integrate land use, economic development, environmental, and transportation planning.

Policy LU 3.1 Create an efficient system of planning and zoning.

The following are applicable goals and policies are taken from the Parks and Open Space Element of the *City of Davis General Plan Update.*

Parks and Open Space

Goal POS 3 Identify and develop linkages, corridors, and other connectors to provide an aesthetically pleasing and functional network of parks, open space areas, greenbelts, and bike paths throughout the City.

Policy POS 3.1 Require creation of neighborhood greenbelts by project developers in all residential projects, in accordance with Policy LU A.5.

Policy POS 3.2 Develop a system of greenbelts and accessways in new non-residential development areas.

Policy POS 3.3 Implement specific projects to augment the existing greenbelt/open space system.

The following are applicable goals and policies are taken from the Agriculture, Soils, and Minerals Element of the *City of Davis General Plan Update*.

Goal AG 1 Maintain agriculture as an important industry around Davis.

Policy AG 1.1 Protect agricultural land from urban development except where the general plan land use map has designated the land for urban uses.

Policy AG 1.2 Promote and enhance local agriculture.

Goal AG 2 Encourage sustainable and organic forms of agriculture.

Policy AG 2.1 Foster the growth of environmentally friendly agricultural business and industry in Davis.

The following are applicable sections from the City of Davis Municipal Code.

Measure J

Section 40.41.020 Voter Approval.

The City of Davis Zoning Ordinance requires voter approval for changes to land use designations on the Land Use Map from Agricultural or Urban Reserve to Urban land use designations or from Agricultural to Urban Reserve land use designations. The section pertaining to voter approval of the Davis Zoning Ordinance is included below.

Section 40.41.020 (A)

A. Voter Approval of Changes to Land Use Designations on the Land Use Map from Agricultural or Urban Reserve to Urban land use designations or from Agricultural to Urban Reserve land use designations.

1. Each and every proposed amendment or modification of the Land Use Map to modify the land use designation of lands designated for agricultural, open space or urban reserve use on the Land Use Map to an urban or urban reserve designation is a significant change that affects the City and its ability to maintain its vision for a compact urban form surrounded by farmlands and open space. Any such proposal, therefore, requires public participation in the decision, including, but not limited to, voter approval of the proposed amendment or modification of the Land Use Map.

2. Any application for an amendment or modification of the Land Use Map that proposes changing the Land Use Map land use designation for any property from an agricultural, open space, or urban reserve land use designation (e.g. agricultural, open space, agricultural reserve, urban reserve, environmentally sensitive habitat, Davis Greenbelt) to an urban land use designation or from an agricultural designation to an urban reserve designation shall require:

    a. Establishment of baseline project features and requirements such as recreation facilities, public facilities, significant project design features, sequencing or phasing, or similar feature and requirements as shown on project exhibits and plans submitted for voter approval, which cannot be eliminated, significantly modified or reduced without subsequent voter approval.

    b. Approval by the City Council, after compliance with the California Environmental Quality Act, the State Planning and Zoning laws and any other applicable laws or regulations, and then

c. Approval by an affirmative majority vote of the voters of the City of Davis voting on the proposal. The land use designation amendment or modification shall become effective only after approval by the City Council and the voters. The City shall not submit any application to the voters if the application has not first been approved by the City Council, unless otherwise required by law.

3. If, after compliance with the California Environmental Quality Act and other applicable laws, the City Council modifies or amends the land use designation for any property from an urban land use designation to an agricultural, open space, or urban reserve land use designation, the land use of that property shall not be amended or modified from the agricultural, open space, or urban reserve designation to an urban land use designation without first complying with this Article, including but not limited to the voter approval requirements set forth in subsection A(2), above.

Planned Development Requirements

The purpose of the Planned Development District is to allow diversification in the relationship of various buildings, structures, and open spaces in order to be relieved from the rigid standards of conventional zoning. The criteria upon which planned development districts shall be judged and approved will include the development of sound housing for persons of low, moderate and high income levels, residential developments which provide a mix of housing styles and costs, creative approaches in the development of land, more efficient and desirable use of open area, variety in the physical development pattern of the City and utilization of advances in technology which are innovative to land development. (Ord. No. 716 §1)

City of Davis Right to Farm and Farmland Preservation Ordinance

The goal of the City of Davis General Plan is to work cooperatively with the Counties of Yolo and Solano to preserve agricultural land within the Davis Planning Area, and encourage agricultural operations on land that has not been identified in the General Plan as necessary for development. Additionally, the City seeks to reduce conflicts between agricultural and nonagricultural land uses, and to protect public health. The Right to Farm and Farmland Preservation Ordinance helps achieves these goals by limiting the circumstances under which agricultural operations may be deemed a nuisance.

As part of this effort, the City provides purchasers and tenants of nonagricultural land adjacent to agricultural land with notice about the City's support for the preservation of agricultural lands and operations. This notification requirement promotes a “good neighbor” policy by informing these prospective purchasers and tenants of the considerations associated with living in close proximity to agricultural land and operations. In addition, the City requires all new development adjacent to agricultural operations to provide a buffer zone, in order to reduce potential conflicts between agricultural and nonagricultural land uses.

40A.02.010 Properly Operated Farm not a Nuisance

This section of the Zoning Ordinance states that agricultural operations in compliance with all applicable laws and regulations shall not be considered a nuisance except under California Civil Code Sections 3482.5 and 3482.6. The section further states that any allegations of agricultural nuisance must undergo the agricultural grievance procedure provided in Section 40A.02.020. This section does not interfere with an individual's ability to pursue legal action under other applicable laws.

40A.03.030 Agricultural Land Mitigation Requirements

This section states that the City shall require agricultural mitigation as a condition of approval for any development project that would change the general plan designation or zoning from agricultural land to nonagricultural land and for discretionary land use approvals that would change an agricultural use to a nonagricultural use.

This section of the Davis Municipal Code was recently amended by City Council in November 2007. Amendments include requiring agricultural mitigation on adjacent lands for certain types of projects. The City determined that effectively locating mitigation lands provides increased protection of agricultural lands threatened with conversion to non-agricultural uses. Requirements and incentives are established in this article to direct mitigation to areas that are under threat of conversion. In recognizing the importance of the location of mitigation, the City has identified two general categories of agricultural mitigation: (1) adjacent mitigation; and (2) remainder mitigation.

Adjacent Mitigation. All new development projects adjacent to agricultural land that are subject to mitigation under this article shall be required to provide agricultural mitigation along the entire non-urbanized perimeter of the project. The required adjacent mitigation land shall be a minimum of ¼ mile in width, as measured from the outer edge of the agricultural buffer required in section 40A.01.050. Certain land uses listed in section 40A.03.030(e) are exempt from the adjacency requirement.

> (e) Exemptions. The following land uses are exempt from the adjacent mitigation requirements of this article, but not the remaining provisions:
> (1) The following projects, so long as they are not a part of a larger development project: permanently affordable housing, public schools, and public parks.
> (2) That portion of a development project abutting land already protected by permanent conservation easements or by some other form of public ownership that guarantees adjacent lands will not be developed for urban uses.
> (3) That portion of a development project abutting a limited access public road such as Interstate 80 or State Highway 113.
> (4) Small projects, as defined in Section 40A.03.020. This section defines small projects as a development project that is less than forty (40) acres in size.

The proposed project is exempt from the requirement to provide adjacent agricultural mitigation per exemption 4 listed above.

Remainder Mitigation. Remainder mitigation is mitigation land that is not required to be located at the non-urbanized perimeter of a project. Remainder mitigation may be located anywhere within the Davis planning area, subject to approval by the City Council, in accordance with section 40A.03.050. Incentives shall be provided for locating the remainder mitigation in areas targeted for protection by the City as shown in Table 4.1-4, below.

Table 4.1-4
Remainder Mitigation

Location of Mitigation Land	Credit Factors
Adjacent to city limits and within 0.25 mile of the city limits, excluding any land required as adjacent mitigation land	2 times the number of acres protected
Adjacent to the required minimum adjacent mitigation land, if applicable	1 times the number of acres protected
Within city designated priority open space acquisition areas	1 times the number of acres protected
Elsewhere in the Davis planning area	0.2 times the number of acres protected
Total	Mitigation acreage, as adjusted by the credit factors for adjacent mitigation (see section 40a.03.030) and remainder mitigation (above), must total two (2) times the acreage changed to nonagricultural. If the calculation of credit factors results in actual mitigation that is less than 2:1, additional acreage within the Davis Planning Area shall be secured to satisfy the total mitigation ratio requirement.

Source: City of Davis Zoning Ordinance.

Total mitigation for a development project shall not be less than a ratio of two acres of protected agricultural land for each acre converted from agricultural land to nonagricultural land. Location based factors (credits) for remainder mitigation contained in section 40A.03.035 may result in ratios greater than 2:1.

40A.01.050 Agricultural Buffer Requirement

This section of the Zoning Ordinance states that all new developments adjacent to designated agricultural, agricultural reserve, agricultural open space, greenbelt/agricultural buffer, Davis greenbelt, or environmentally sensitive habitat areas shall be required to provide an agricultural buffer/agricultural transition area. The transition/buffer areas meet the policy objectives of the City of Davis General Plan and contribute to the area's aesthetic qualities by providing for unobstructed views of farmland, and allowing recreational use through the incorporation of bicycle and pedestrian trails.

The ordinance states that agricultural buffer/agricultural transition areas shall be a minimum of 150 feet measured from the edge of the agricultural, greenbelt, or habitat area; however, in consideration of the 500-foot aerial spray setback established by the Counties of Yolo and Solano, a buffer wider than 150 feet is encouraged. The transition/buffer areas shall be comprised of a 50-foot wide agricultural transition area located contiguous to a 100-foot wide

agricultural buffer, which shall be directly adjacent to the agricultural, greenbelt, or habitat area. The transition/buffer areas may not be used as farmland mitigation.

Various uses are permitted in the 100-foot wide agricultural buffer areas. These uses include native plants, tree or hedgerows, drainage channels, storm retention ponds, natural areas such as creeks or drainage swales, railroad tracks or other utility corridors, and any other use determined by the planning commission to be consistent with the use of the property as an agricultural buffer. The 100-foot wide buffer area does not allow for public access, unless permitted uses such as railroad tracks already exist in the buffer area. Buffer areas shall be developed under a plan approved by the Parks and General Services Director, and the plan must provide for the establishment, management, and maintenance of the area. In addition, the City shall obtain either an easement for the transition/buffer area, or dedication of the property in fee title.

Unlike the 100-foot wide agricultural buffer areas, the 50-foot agricultural transition areas provide for public use. Uses permitted in the transition area include bike paths, native plants, tree and hedgerows, benches, lights, trash enclosures, fencing, and any other use determined by the Planning Commission to be of the same general character. As with the buffer areas, the 50-foot agricultural transition areas must be developed under a plan approved by the Parks and General Services Director. Once developed, the land shall be dedicated to the City. The City shall maintain the agricultural transition area.

Wildhorse Horse Ranch Management Plan

The proposed project site is within a Planned Development District with a horse ranch designation. The designation, however, includes specific operational standards to ensure a viable, functional horse ranch that would be visible and compatible with the community and adjacent agricultural lands. The Horse Ranch Management Plan was last updated on March 29, 2000.

IMPACTS AND MITIGATION MEASURES

Standards of Significance

For the purposes of this Draft EIR, impacts are considered significant if implementation of the proposed project would:

- Allow development of land uses that would be incompatible with existing surrounding land uses;
- Allow development of land uses that would be incompatible with planned surrounding land uses;
- Allow development that would be inconsistent with other City plans, policies or ordinances;
- Result in the conversion of Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance to non-agricultural uses;
- Adversely affect agricultural viability, by placing incompatible or potentially incompatible land uses near active agricultural areas; or

- Adversely affect agricultural production.

Method of Analysis

The land use analysis is based on a qualitative comparison of existing and proposed uses on the site and the compatibility with existing and planned surrounding land uses as defined in the City General Plan and the Zoning Ordinance. In addition, the analysis evaluates the consistency of the project's proposed land uses with what is currently allowed for the project site under the General Plan and Zoning Ordinance. The agricultural analysis was assessed based upon information contained in the City of Davis General Plan, the City of Davis General Plan Update EIR, and the Soil Survey of Yolo County.

Project Impacts and Mitigation Measures

4.1-1 Consistency with the City of Davis General Plan.

The project site is currently agricultural land operating as a horse ranch with associated outbuildings on-site. This is consistent with the Davis General Plan land use designation for the project site. According to the Davis General Plan (2001), Figure 11b, the project site is currently designated as Agriculture (AG).

The proposed project involves the development of single family, multi-family, neighborhood greenbelt, and open space. These land uses are not consistent with the City's Agriculture land use designation. Therefore, the project involves a request for a General Plan Amendment to re-designate the site from Agriculture to Residential-Medium Density, Residential High Density, Neighborhood Greenbelt and Urban Agriculture Transition Area.

While the proposed project is inconsistent with the General Plan Land Use designation for the site, the application for the site includes a request to amend the General Plan designation. In evaluating the General Plan designation amendment, several General Plan policies must be examined for consistency.

The project is consistent with *Policy LU A.3* of the General Plan which requires each new development to include a mix of housing types, densities, prices and rents, and designs. The proposed project is consistent with the policy because the project includes 73 detached single-family residences, 78 two to three story attached single-family units (including 36 middle-income units) on 11.95 acres, and 1.92 acres of attached affordable housing for a maximum of 40 units at 21 dwelling units per acre. Therefore, the proposed project would provide a mix of densities, price and rents, and housing types.

General Plan *Policy POS 3.1*, states that the creation of neighborhood greenbelts by project developers should be required in all residential projects, in accordance with Policy LU A.5 (minimum of 10 percent shall be designated for use as open space for neighborhood greenbelts). Consistent with the General Plan interpretation guidelines, the Ag Buffer (2.26 ac), the Covell Boulevard Greenstreet (0.33 ac), and neighbors' land

dedication (1.07 acres) are excluded from the gross density calculation. Using this approach, a total of 3.92 acres was subtracted from the 25.79-acre total site acreage, resulting in a greenbelt calculation acreage of 21.88 acres. Multiplying this amount by the City's calculation factor results in a greenbelt requirement of 1.61 acres. If the 1.07 acres is not accepted by some or all of the adjacent neighbors, the land area would be moved to the Interior Greenbelt/Open Space category and would not change the greenbelt requirement.

It should be noted that the 10 percent calculation currently provided as part of the project description does not appear to meet the City's GP interpretation guidelines; and that review of the project application(s) will address this potential inconsistency as part of its analysis.

Policy AG 1.1 of the Davis General Plan promotes the protection of agricultural land from urban development except where the General Plan land use map has designated the land for urban uses. Although the current designation is Agriculture, the horse ranch on site is surrounded on three sides by urban development and includes an agricultural buffer on the fourth/east side.

Overall, in terms of the goals and policies in the Davis General Plan, the project is generally consistent. However, the final authority for determination of General Plan consistency rests with the Davis City Council and the voters through the determination of land uses and zoning. Should the City Council determine that the project is consistent with the General Plan and the voters approve the Wildhorse Ranch project through the Measure J process, a ***less-than-significant*** impact would result.

Mitigation Measure(s)
None required.

4.1-2 Consistency with the Davis Planned Development district process.

Section 40.22.060 of the Davis Zoning Ordinance, *Contents and approval of preliminary application*, states in part that an application for a Planned Development (P-D) district must include a preliminary development plan (herein referred to as "preliminary application"). This section also states the contents, which must be included in the preliminary application. The applicant for the Wildhorse Ranch project has submitted a preliminary application to the Community Development Department and staff has determined that the application is generally consistent with the requirements of the Zoning Ordinance regarding P-D districts. The process for establishing a P-D district is ongoing and the applicant will be required to submit a final application for review and approval of City Council through a public hearing process. The final application must comply with the requirements of the Davis Zoning Ordinance under Chapter 44.20. Compliance with the Zoning Ordinance would ensure that the project continues to remain consistent with the City's P-D process, resulting in a ***less-than-significant*** impact.

Mitigation Measure(s)
None required.

4.1-3 Loss of prime agricultural land.

The majority of the 25.79-acre project site contains soils that are highly suitable for agricultural production and are considered Prime Farmland soils (if irrigated). All of the soil types, Sycamore silt loam, drained (Sp); Sycamore silty clay loam (St); and Tyndall very fine sandy loam, drained (Tc), that make up of the project site are considered Prime Farmland soils according to the *Soil Candidate Listing for Prime Farmland and Farmland of Statewide Importance, Yolo County*.[8]

The project site is composed of soils having a Storie Index Ratings of 76 to 77 (see Tables 4.1-2 and 4.1-3), indicating that the soils are well suited for agricultural purposes. In addition, the Land Capability Classification for both series is I-1, which means that the soils have few limitations that restrict their use (see Table 4.1-1). Section 40A.03.010 of the Davis Municipal Code indicates that it is the policy of the City to protect and conserve agricultural land, especially in areas presently farmed or having Class 1, 2, 3 or 4 soils. As can be seen in Table 4.1-3, all project site soil types are within this classification range.

The City of Davis General Plan Update EIR (p. 5A-33) states that the City would require preservation of agricultural land on a two-to-one (2:1) basis to mitigate for the conversion of prime agricultural land to urban uses, and that this requirement would reduce the adversity of the impact. However, the EIR states that the conversion of prime agricultural land to urban uses remains a significant and unavoidable impact. Therefore, the loss of Prime Farmland associated with implementation of the proposed project would be considered a ***significant*** impact.

Mitigation Measure(s)
The following mitigation measure would reduce the magnitude of the impact. However, because the majority of the Prime Farmland and Farmland of Local Importance on the project site would be permanently lost, consistent with the General Plan Update EIR, the impact would remain *significant and unavoidable.*

4.1-3 *The project applicant shall set aside in perpetuity active agricultural acreage at a minimum ratio of 2:1 based on the total project footprint of 25.79 acres, through granting a farmland conservation easement, a farmland deed restriction, or other farmland conservation mechanism to or for the benefit of the City and/or a qualifying entity approved by the City. The mitigation acreage shall be set aside prior to recordation of the final map(s). The location and amount of active agricultural acreage for the proposed project would be subject to the review and approval of the City Council.*

4.1-4 Incompatibilities between future residential uses on the project site and surrounding uses.

The City of Davis has expressed the intent to support and encourage agricultural operations both within the City and in Yolo County (2001 General Plan, Policies AG 1.1 and AG 1.2). In addition, the City of Davis has adopted its own Right-to-Farm and Farmland Preservation Ordinance.

Development of the proposed project would result in the placement of residential uses adjacent to existing agricultural operations east of the project site. The eastern boundary of the project site is directly adjacent to agricultural lands in Yolo County. Placement of residential uses in a largely agricultural area could potentially result in conflicts with the existing agricultural operations. Such conflicts could include trespassing by residents into the nearby agricultural fields, as well as increased traffic hazards for farm workers moving agricultural equipment on local roadways. In addition, agricultural operations may result in conflicts with residential uses, because of the production of dust and noise.

However, between the eastern boundary of the project site and the proposed on-site residential areas is the existing 135-foot Davis agricultural/habitat buffer. An additional 2.26 acres (65 feet in width) would be added to the existing Davis agricultural/habitat buffer. The expanded buffer would be 200 feet wide and would include the 100-foot existing fenced habitat area, the existing gravel bike path in the current 35-foot greenbelt, and the additional 65-foot greenbelt land dedication with an east-west 10-foot wide bike path.

The Yolo County Agricultural Commissioner has indicated that County farmers are required to submit applications once a year for the approval of operations, including application of pesticides.[9] As part of this process, the County restricts farmers from aerial applications within 500 feet of any sensitive receptors, which includes residential areas. Therefore, aerial application of pesticides would not be allowed within 500 feet of the Wildhorse Ranch project. County requirements do allow ground spraying of restricted pesticides within 100 feet of residential areas, unless the farmer has orchard crops with an air blast sprayer, in which case a 300-foot restriction is enforced. However, given the proposed 200-foot agricultural/habitat buffer, the distance between future residential areas and spraying locations would effectively be increased.

The project site is also bordered by residential uses to the north, south, and west. The project includes an open space area near the western border of the property where trees would be planted in an orchard style, providing additional buffer space to the existing neighborhood, as well as providing routing for storm water quality swales and a passive open space area. The orchard area would be privately owned and maintained as part of the community amenities. The orchard is intended to be planted with non-fruit-bearing trees that would require typical landscaping maintenance. Typical maintenance includes the use of fertilizer and weed control products. However, should fruit-bearing trees be planted, typical tree maintenance would occur and the use restricted pesticides would require a permit from the Yolo County Agricultural Commissioner.

The plan includes 73 detached single-family units and 78 attached townhome units located in three areas within the property. These detached and attached single-family units would be mixed and dispersed along the eastern site of the property. To minimize the impact on the adjacent homeowners on Caravaggio, the single-family detached homes would be located on the eastern side of the property, separated by a generous open space buffer. The detached single-family lots would be approximately 3,500 square feet (SF). The townhomes would consist of two and three-story units.

The affordable housing site for very low and low income residents would be located along East Covell Boulevard to maintain compatibility with the surrounding homes and locate affordable housing close to transit and bike trails. The location of affordable housing enables residents to utilize public transit or commute to employment by walking or biking. In addition, the location of the affordable housing near transit would satisfy tax credit financing goal. The affordable site is approximately 1.92-acres, and is anticipated to be dedicated to the City. The affordable housing site density, if intended to be dedicated, would be based on 21 units per acre. The dedication would be inconsistent with the Affordable Housing Ordinance (AHO) which requires 15 units per acre. However, a Project Individualized Affordable Housing Plan (PIP) is being proposed to address the inconsistency with the AHO. The PIP will be submitted at the time of Tentative Map submittal, at which time it will be reviewed by the Community Development Director. If found not to comply with the AHO the PIP will be revised accordingly. This land dedication would fulfill the City's 25 percent low/mod requirement for the project, with the inclusion of a density bonus for the project's affordability provision. Design guidelines would be developed to ensure architectural quality and compatibility.

The middle income units would be located within the town home areas and mixed within buildings to create a seamless look. The middle income units would be for-sale units and would be designed architecturally and structurally similar to surrounding units, although potentially varying in size. Locations and interior features would be the basis for price differentiation within the types of units.

It should be noted that the City of Davis is preparing an environmental document for the Davis Sports Park. The Mace Covell Gateway property, immediately adjacent and east of Wildhorse Ranch, is one of the three locations proposed for the Davis Sports Park. The Davis Sports Park is anticipated to introduce new sources of light and glare and noise. However, the proposed project would be separated from the Davis Sports Park by the 200 foot agricultural buffer. During a portion of the year, deciduous trees within the agricultural buffer would reduce the effects of light and glare from the Davis Sports Park to proposed residential units. In addition, the Davis Sports Park is subject to environmental review which would determine the potential impacts as well as necessary mitigation to minimize adverse impacts.

The proposed site design would ensure that the proposed project would not result in incompatibilities with residential uses located to the north, south, and west. Although health impacts associated with adjacent agricultural operations would not be expected to

occur should all applicable City and County policies be complied with, a ***significant*** impact could occur if future on-site residents are not properly notified of the temporary disturbances associated with ongoing agricultural operations east of the project.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the impact to a *less-than-significant* level.

4.1-4(a) *Consistent with Action AG 1.1(g) of the General Plan and the Davis Right-to-Farm Ordinance, the applicant/developer shall inform and provide recorded notice to prospective buyers within 1,000 feet of agricultural land in writing and prior to purchase, as prescribed by the City's Right to Farm Ordinance, about existing and on-going agricultural activities in the immediate area in the form of a disclosure statement. The notifications shall disclose that Davis and Yolo County are agricultural areas and residents of the property may be subject to inconvenience or discomfort arising from the use of agricultural chemicals, and from pursuit of agricultural operations, including, but not limited to cultivation, irrigation, plowing, spraying, aerial application, pruning, harvesting, crop protection, and agricultural burning which occasionally generate dust, smoke, noise, and odor. The language and format of such notification shall be reviewed and approved by the Community Development Director prior to recording final maps. Each disclosure statement shall be acknowledged with the signature of each prospective property owner.*

4.1-4(b) *Prior to the use of pesticides on the orchard, the Home Owner's Association and contractor(s) shall obtain a permit and comply with all regulations from the Yolo County Agricultural Commissioner. In addition, signage shall be posted at the perimeter of the orchard notifying the public that pesticides have been recently applied. The signage shall remain posted for the appropriate length, as determined during the permit process.*

4.1-4(c) *Prior to recordation of final map(s), in the event the Davis Sports Park is constructed adjacent and east of the proposed project, the applicant shall prepare and submit a disclosure statement for the review and approval of the Community Development Director which shall disclose the operations associated with the Davis Sports Park Project which will include ballfield lights, weekly games, tournaments etc. Language shall be included on the final map(s) to ensure that the disclosure of the Sports Park runs with the land, and is therefore provided to all prospective buyers of property.*

Cumulative Impacts and Mitigation Measures

The cumulative context for land use and agricultural impacts is other development projected in the City of Davis General Plan and in Yolo County.

4.1-5 Long-term impacts to Prime Farmland from the proposed project in combination with existing and future developments in the Davis area.

The proposed project would contribute to the ongoing conversion of farmland to urban uses. Major areas of growth in the region include Woodland, West Sacramento, and the North Natomas area. Development in these areas would contribute to the loss of agricultural land.

As mentioned above, the General Plan Update EIR found that the conversion of prime farmland would be considered a significant and unavoidable impact even with the implementation of General Plan policies, including the provision of agricultural acreage at a minimum 1:1 ratio. In addition, because the project site is designated as Agriculture on "Figure 11b – Land Use" of the 2001 Davis General Plan, the project site has not been anticipated for urban development. Therefore, the conversion of the project site in addition to the cumulative loss of Prime Farmland elsewhere in the vicinity would result in a ***significant*** impact.

Mitigation Measure(s)
The following mitigation measure would reduce the magnitude of the impact. However, because the majority of the Prime Farmland and Farmland of Local Importance on the project site would be permanently lost, the impact would remain *significant and unavoidable.*

4.1-5 Implement Mitigation Measure 4.1-3.

4.1-6 Consistency with the City of Davis' plans, policies, or ordinances.

As discussed above, because the proposed project is located on land that is currently designated Agriculture, the project has requested a General Plan Amendment to the land use designation to accommodate the project. However, as with the other entitlements requested for the proposed project, the final authority for determination of the proposed, or any future, General Plan amendments to this designation rests with the Davis City Council. Approval of this project or any potential future project application of a similar nature in the City of Davis is a discretionary action of the City Council. Future conversion of land designated for agricultural use to residential uses, if any, would undergo analysis and environmental review. Furthermore, pursuant to Measure J, should the project or any similar project be approved by the City Council the decision would be voted on by the residents of the City of Davis. It is also pertinent to note that the proposed project has been designed to be consistent with several General Plan goals and policies related to provision of needed housing and alternative modes of transportation. As a result, approval of the proposed project or any future project would require the

approval of both the City Council and the residents of Davis; therefore, a ***less-than-significant*** cumulative land use impact would result.

Mitigation Measure(s)
None required.

Endnotes

[1] City of Davis, *City of Davis General Plan*, May 2001.
[2] City of Davis, *City of Davis Zoning Ordinance*, 2001.
[3] United States Department of Agriculture, National Resources Conservation Service, 2007. [website] Available at: http://websoilsurvey.nrcs.usda.gov/app/
[4] California Department of Conservation, Division of Land Resource Protection, FMMP: *A Guide to the Farmland Mapping and Monitoring Program*. [website] Available at: http://www.consrv.ca.gov/DLRP/fmmp/pubs/fmmp_guide_2004.pdf, 2004.
[5] California Department of Conservation, Division of Land Resource Protection, FMMP: *Yolo County 2002-2004 Land Use Conversion*, available at: http://www.consrv.ca.gov/DLRP/fmmp/pubs/2002-2004/conversion_tables/yolcon04.xls, 2007.
[6] www-gis.yolocounty.org/website/yolo/viewer.htm, September 17, 2004.
[7] U.S. Department of Agriculture, Soil Conservation Service, S*oil Survey of Yolo County, California*, June 1972.
[8] California Department of Conservation, Farmland Mapping and Monitoring Program: *Soil Candidate Listing for Prime Farmland and Farmland of Statewide Importance*, 1995.
[9] Personal Communication with Rick Landon, Yolo County Agricultural Commissioner, December 12, 2007.

4.2 POPULATION, HOUSING, AND EMPLOYMENT

INTRODUCTION

The Population, Housing, and Employment section of the EIR describes existing and projected population, housing, and employment conditions in the City of Davis. Primary documents and information sources referenced to prepare this section include the *City of Davis General Plan,*[1] the *Program EIR for the City of Davis General Plan Update and Project EIR for the Establishment of a New Junior High School* (General Plan Update EIR),[2] Sacramento Area Council of Government (SACOG),[3] the City of Davis website,[4] the California Department of Finance (DOF),[5] the *Davis General Plan Housing Element Update Needs Assessment Background Report* (Housing Element Background Report),[6] and estimates and projections of the 1990 and 2000 Census reports modeled through MapInfo based software developed by AnySite Technologies.[7]

ENVIRONMENTAL SETTING

The following setting information provides an overview of the existing population, housing supply, and employment characteristics in the City of Davis in Yolo County. In addition, the regulatory agencies and policies associated with population, housing, and employment are described.

Current Population

According to the California Department of Finance, the population of the City of Davis as of January 1, 2008 was estimated to be 65,814. As can be seen in Table 4.2-1 below, the population of the City of Davis has increased by over 5,000 residents in the past eight years; however, the growth has moderated over the past three years.

Population projections based on information from SACOG and the Housing Element Background Report indicate a larger population of approximately 66,356 residents, as shown below in Table 4.2-2. Therefore, the analysis contained in this section of the DEIR will use the DOF and SACOG as the lower and upper bounds of the current City of Davis population, respectively.

Growth Rates

As indicated in the Housing Element Background Report, the City of Davis population increased by 7.1 percent between 2000 and 2006, or 1.2 percent annually. Growth is expected to slow to approximately 0.6 percent annually between 2005 and 2013.

Table 4.2-1 Davis Population from 2000-2008	
As of January 1	**Estimated Population**
2008	65,814
2007	64,938
2006	64,638
2005	64,350
2004	64,545
2003	63,853
2002	63,357
2001	61,856
2000	60,308
Source: California Department of Finance, E-1Population Estimates for Cities and Counties, 2008; and E-5 Population Estimates for Cities, Counties, and State, 2001-2008 with 2000 DRU Benchmark; accessed at www.dof.ca.gov, December 2008. The 2000 through 2007 figures are year end adjusted or revised figures by DOF, while the 2008 is not.	

Table 4.2-2 Population Projections for the City of Davis						
	2005	**2009***	**2010**	**2013**	**2015**	**2035**
Total Population	65,176	66,754	67,382	68,271	68,863	77,560
*Projection based on 0.6 percent annual growth rate. *Sources: Bay Area Economics, Davis General Plan Housing Element Update Needs Assessment Report, September 28, 2007, http://www.city.davis.ca.us/cdd/ GPUpdate/pdfs/20071011/ Davis_Housing_Needs_Final_10-3-2007.pdf, January 2008.* *SACOG DRAFT 2035 Projections for Households and Population by Housing Type and Employment by Sector, http://www.sacog.org, September 2007.*						

Relevant Population Growth Actions in General Plan

Since UC Davis became a general campus of the University of California in the early 1950s, Davis' average growth rate has been among the highest in the Sacramento Metropolitan Area. Concern about this growth rate was expressed by the electorate in June 1986, when 58 percent of those voting approved an advisory measure calling for Davis "to grow as slow as legally possible."

The size of the City has been a major policy issue throughout the recent history of Davis. The Land Use and Growth Management Chapter of the 2001 Davis General Plan includes more than one "Action" pertaining to the limiting of Davis' population. The most specific standard is contained in "Action e" of Land Use Policy 1.1, which is described below.

> Create and maintain an effective growth management system designed to keep the population of the City below 64,000 and the number of single-family dwellings below 15,500 in 2010, which corresponds to a sustained 1.81 percent annually-compounded growth rate from January 1, 1988 to January 1, 2010 and a sustained

1.4331 percent annually-compounded growth rate from January 1, 1996 to January 1, 2010 due to "front loading."

As indicated above, the current lower and upper population estimates for the City of Davis exceed the target population for 2010 established by General Plan Action "e."

Current Housing

Table 4.2-3 shows the amount of housing units per housing type within the City of Davis as of January 1, 2008.

Table 4.2-3
Davis Housing Units (as of January 1, 2008)

Unit Type	Number of Units
Single Family	13,968
Multiple Family	11,523
Mobile Homes	385
Total	**25,876**

Source: California Department of Finance, E-5 City/County Population and Housing Estimates, 2001-2008; accessed on www.dof.ca.gov, December 2008.

The Housing Element Background Report identifies a total of 25,269 dwelling units within the City of Davis in 2006. Therefore, the larger DOF figure of 25,876 will be used to conservatively analyze the potential impacts to housing in the City of Davis.

Future Housing Projections

The SACOG Regional Housing Needs Allocation (RHNA) for the City of Davis from January 2006 to June 2013 is 498 dwelling units. The City of Davis is currently updating the General Plan Housing Element, as well as other elements of the General Plan, to ensure that the City has sufficient land designated for residential development to meet the RHNA requirements.

Housing Tenure

Demographic data provided by the AnySite modeling program indicates that 46.0 percent of the housing stock is owner-occupied while 54.0 percent of the stock is renter-occupied.

As of January 2008, the DOF total vacancy rate was 2.18 percent. Vacancy rates in the 4 to 6 percent range generally indicate a healthy housing market where new housing is being absorbed efficiently by the market. The City's vacancy rate reflects an undersupply of housing resulting in an imbalance between housing demand and supply (Davis General Plan Update EIR, p. 5B-4).

Household Income

Table 4.2-4 shows the projected incomes of households in Davis in 2008. The median household income in 2008 was $60,669 and the average household income was $87,579.

Table 4.2-4 Davis and Yolo County Household Incomes (2008)		
Households	**Number**	
	Davis	**Yolo County**
Less than $10,000	1,931	4,249
$10,000 to $14,999	1,185	3,240
$15,000 to $19,999	1,159	3,529
$20,000 to $24,999	1,442	3,961
$25,000 to $29,999	1,210	3,385
$30,000 to $34,999	1,056	3,601
$35,000 to $39,999	927	3,457
$40,000 to $44,999	875	3,745
$45,000 to $49,999	875	3,817
$50,000 to $59,999	2,034	7,706
$60,000 to $74,999	3,476	12,315
$75,000 to $99,999	4,892	10,587
$100,000 to $124,999	1,699	3,601
$125,000 to $149,999	1,184	2,017
$150,000 to $199,999	927	1,584
$200,000 or more	824	1,296
Median Household Income (dollars)	**$60,669**	**$53,931**
Average Household Income (dollars)	**$87,579**	**$76,560**
Source: AnySite, 2008.		

Very-low-income households are defined as earning a gross income of less than 50 percent of the median income of Yolo County (as determined by the U.S. Department of Housing and Urban Development) (General Plan, p. 166). Low-income households are defined as earning a gross income of more than 50 percent and less than 80 percent of the median income for Yolo County. Moderate-income households are defined as earning a gross income of more than 80 percent and less than 121 percent of the median income for Yolo County. Therefore, a moderate-income household in Yolo County is one that earns between $43,145 and $64,717 per year, which would include approximately 23.3 percent of the households in the City of Davis.

Employment

Table 4.2-5 contains the SACOG projections for employment within the City of Davis. Assuming a linear increase in employment, the current number of people employed within the City of Davis and UC Davis would be 28,216. Therefore, the current jobs-to-housing balance would be approximately 1.09:1, which is within the acceptable range of 0.8:1 and 1.2:1 identified in the General Plan Update EIR.

Table 4.2-5 Employment in the City of Davis				
	2005	**2013**	**2018**	**2035**
Davis	15,828	16,969	17,222	19,160
UC Davis	11,103	15,101	15,775	15,775
Total	26,931	32,070	32,997	34,935
Source: SACOG, www.sacog.org; September 2007.				

REGULATORY CONTEXT

The following regulations apply to population, housing, and employment issues associated with the Wildhorse Ranch project.

State Regulations

Regional Housing Needs Plan

California General Plan law requires each city and county to have land zoned to accommodate a fair share of the regional housing need. The share is known as the Regional Housing Needs Allocation (RHNA) and is based on a Regional Housing Needs Plan (RHNP) developed by councils of government. SACOG is the lead agency for developing the RHNP for a six county area that includes Yolo County and the City of Davis. The latest housing allocation covers the 7.5 year period from January 1, 2006 through June 30, 2013. The jurisdiction is not required to make development occur; however, the jurisdiction must facilitate housing production by ensuring that land is available and that unnecessary development constraints have been removed.

As mentioned above, the City of Davis is currently updating the Housing Element and other portions of the General Plan. The Housing Element will provide for the provision of the RHNA that has been assigned to the City of Davis. On November 5, 2008, the City Council adopted a resolution to approve an EIR Addendum and to direct staff to implement, with modifications, the recommendations of the Steering Committee. In addition on April 1, 2008 the City Council directed staff to submit the Draft Housing Element to the State Department of Housing and Community Development; however the Housing Element has not been adopted.

Local Regulations

The following are applicable goals and policies from the Land Use and Growth Management Element of the City of Davis General Plan related to population, housing, and employment:

Goal LU 1 Maintain Davis as a small, University-oriented city surrounded by and containing farmland, greenbelt, and natural habitats and reserves.

Policy LU 1.1 Recognize that the edge of the urbanized area of the city depicted on the land use map under this General Plan represents the maximum extent of

urbanization through 2010, unless modified through the Measure J process.

The following are applicable goals and policies from the Housing Element of the City of Davis General Plan related to population, housing, and employment:

Goal HOUSING 1 Promote adequate housing opportunities for people of all ages, incomes, lifestyles and types of households.

Policy HOUSING 1.1 Encourage a variety of housing types that meet the housing needs of an economically and socially diverse Davis.

Policy HOUSING 1.2 Strive to maintain an adequate supply of rental housing in Davis to meet the needs of all renters, including students.

Policy HOUSING 1.3 Encourage the construction of housing to meet the needs of single persons and households with children with extremely low, very low, and low incomes.

Policy HOUSING 1.4 Encourage a variety of housing types and care choices for disabled persons.

Policy HOUSING 1.6 Include students from low-income families within the targeted population for affordable housing opportunities.

Policy HOUSING 1.7 Analyze the models and options to promote housing for local employees.

Policy HOUSING 1.8 Encourage a variety of housing types and care choices, as well as housing innovation, for seniors.

Policy HOUSING 1.9 Encourage construction of housing to meet the needs of farmworkers.

Goal HOUSING 2 Provide housing that is affordable for residents with low paying jobs, fixed incomes and pensions.

Policy HOUSING 2.1 Strive to meet the identified current and projected local need for housing and of housing affordable to extremely low, very low, low, and moderate

income households including provision of Davis' five-year fair share of regional housing need.

Goal HOUSING 3 Increase Equal Housing opportunities for all persons and households in Davis.

Policy HOUSING 3.1 Affirmatively further fair housing opportunities for all persons regardless of race, color, religion, sex, national origin, familial status, disability, age, marital status, sexual orientation, source of income, and receipt of Section 8 or other subsidized rental.

Policy HOUSING 3.2 Strive to ensure that required affordable housing is occupied by those of the greatest need.

Policy HOUSING 3.4 Strive to assure that all new subsidized affordable housing and the land on which it is located remain affordable permanently. In a case in which that is infeasible, assure affordability for the longest feasible time and recapture of the local subsidies. Also, should economic circumstances, or state and federal subsidies dictate that permanent affordability requirement be released for a specific development project, then appropriate recapture mechanisms for the subsidies and owner occupancy for the longest period feasible shall be imposed. Specific findings for release of the permanent affordability requirement shall be established in the Affordable Housing Ordinance.

Goal HOUSING 4 Disperse affordable and rental housing fairly throughout the City.

Policy HOUSING 4.1 Maintain and periodically review the Affordable Housing Ordinance to require the inclusion of affordable housing in all new development areas to the extent feasible.

Policy HOUSING 4.2 Provide housing opportunities for the local workforce in the Davis Area.

Policy HOUSING 4.3 Promote a linkage between new ownership housing and the local workforce.

Policy HOUSING 4.4 Encourage senior housing in all parts of Davis and near neighborhood centers, shopping centers,

public transportation, and/or parks and greenbelts where compatible with existing uses.

Policy HOUSING 4.6 The City will develop procedures and criteria to clarify the types of modifications or changes that are and are not subject to addition voter approval. The procedures and criteria will be consisted with the general parameters contained in measure J. The procedures will establish an expeditious process for changing or establishing project components such that any project and/or land use entitlement implanting the Measure J approval does not have to undergo additional approval by the local electorate. Features of such projects not subject to additional voter approval will likely include, but are not limited to, building setbacks and height; building façade design including materials, colors and roof pitch; on-site landscaping layout, and on-site parking and internal circulation designs.

Goal HOUSING 5 Disperse affordable and rental housing fairly throughout the City.

The following are applicable goals and policies from the Economic and Business Development Element of the City of Davis General Plan related to population, housing, and employment:

Goal ED 3 Retain existing businesses and encourage new ones as means to increase higher paying jobs, create greater job diversification, and create a more balanced economy for all economic segments of the community, while also maintaining the City's fiscal and environmental integrity.

Policy ED 3.1 Adopt policies that make Davis a more business-friendly community and eliminate unnecessary barriers to business.

Policy ED 3.2 Encourage new businesses to locate in Davis, targeting business which improve the city's fiscal base, are consistent with the City's values and identity, and match the employment skills of the population, such as those in the emerging technology and knowledge-based industries.

Policy ED 3.3 Work with other organizations to identify needs and develop work force and training opportunities in areas identified as needed by the Davis business community.

Davis Affordable Housing Ordinance – Section 18.05 of the Municipal Code

The City's existing affordable housing ordinance establishes requirements for the development of both for-sale and rental housing projects. The developer of residential for-sale units must make the equivalent of 25 percent of the units affordable to very low, low, and moderate-income households. The standard method of meeting this requirement includes a mix of the construction of for-sale affordable units; the dedication of land suitable for the purpose of developing affordable units; and the provision of lots to allow for the construction of self-help housing.

The developer of a multi-family rental development must make at least 25 percent of the units affordable to low-income households and at least 10 percent of the units affordable to very low-income households. As an alternative to requirements, a developer may submit for approval a project individualized plan that generates the same or more affordable housing units.

In accordance with requirements of state law, the City's affordable housing ordinance provides a 25 percent density bonus for the provisions of required affordable units. The density bonus may be market-priced units.

IMPACTS AND MITIGATION MEASURES

Standards of Significance

For the purposes of this EIR, an impact is considered potentially significant if the proposed project would:

- Provide less-than 25 percent of dwelling units as affordable rental or ownership units to very-low, low, and moderate income households;
- Contribute to population growth that causes the annual compounded growth rate to exceed 1.81 percent;
- Substantially affect existing housing or create a demand for additional housing;
- Conflict with the acceptable jobs/housing ratio specified in the General Plan Update EIR, which ranges between 0.8:1 to 1.2:1; or
- Conflict with housing and population projections and policies set forth in Davis' General Plan.

Methods of Analysis

The following section evaluates the impacts of the proposed project on the existing population, housing, and employment that would occur if the project as currently proposed is developed. Impact significance is determined by comparing project conditions to the existing conditions. The existing conditions and growth projects are based on research conducted through the DOF, SACOG, and City of Davis using publicly available documents. In addition, demographic modeling software developed by AnySite Technologies (AnySite Version 8.7) was also used to complement the information provided by public agencies.

Project Impacts and Mitigation Measures

4.2-1 Inconsistency with City of Davis affordable housing policies and Affordable Housing Ordinance.

Standard "a." under Policy HOUSING 4.1 of the General Plan, states "Twenty-five percent of all proposed new for-sale residential units should be affordable to very low, low, and moderate income households. The units should be as affordable rental or ownership."

The City of Davis Affordable Housing Ordinance reiterates the above requirement regarding single-family housing and also states that the developer of a multi-family rental development must make at least 25 percent of the units affordable to low-income households and at least 10 percent of the units affordable to very low-income households.

Forty (40) percent of the project's housing would be affordable to very low and low as well as middle-income housing provided in accordance with the City's specifications and definitions of affordable and middle income housing. The affordable housing would be composed of 36 units of attached for-sale middle-income units, and 1.92 acres of land designated for the development of affordable housing. The City's Social Services Commission, Planning Commission, and City Council are in the process of reviewing reduction of required middle-income housing units for projects such as this, given the current market conditions. The outcome could be a reduction in the number of required middle-income housing units for this project. The affordable housing site would likely be dedicated to the City. The affordable housing site density, if intended to be dedicated, would be based on 21 units per acre. As previously noted, the Affordable Housing Ordinance (AHO) requires 15 units per acre. This proposal is inconsistent with this requirement; however, a Project Individual Affordable Housing Plan (PIP) is being proposed to address the difference. This plan will be submitted at the time of Tentative Map submittal, at which time it will be reviewed by the Community Development Director. If the PIP is found not to comply with the AHO, then the PIP shall be revised accordingly. This land dedication would fulfill the City's 25 percent very-low, low, and moderate income affordability requirement for the project, with the inclusion of a density bonus for the project's affordability provision.

The middle income units would be located within the townhome areas and mixed within buildings to create a seamless look. These units would be designed to look architecturally and structurally similar to surrounding units, although potentially varying in size. Locations and interior features would be the basis for price differentiation within the types of units. The leasing or sale of the affordable units, if developed as a for-sale product, and sales of the middle-income units would be completed in accordance with the City's Buyer/Tenant Selection Guidelines and under the City's supervision.

The proposed project would comply with the City's Affordable Housing Ordinance; therefore, the proposed project would have a ***less-than-significant*** impact on affordable housing.

Mitigation Measure(s)
None required.

4.2-2 Inconsistency with Growth Management Action "e" of the Davis General Plan.

As stated above, Action "e" of the General Plan (under Goal LU 1, Policy LU 1) states:

> Create and maintain an effective growth management system designed to keep the population of the City below 64,000 and the number of single-family dwellings below 15,500 in 2010, which corresponds to a sustained 1.81 percent annually-compounded growth rate from January 1, 1988 to January 1, 2010 and a sustained 1.4331 percent annually-compounded growth rate from January 1, 1996 to January 1, 2010 due to 'front loading.'

Table 4.2-6 details the estimated population that would be generated by the Wildhorse Ranch Project. As can be seen in the table, the proposed project would be expected to result in the construction of 191 housing units. According to Table 5B-2 of the Davis General Plan Update EIR, full buildout of General Plan Alternative 3 (the alternative approved by the City of Davis) would result in an estimated total of 25,486 housing units and a total population of 62,073 residents. The project site is designated for agricultural use; therefore, the additional 191 units proposed for the Wildhorse Ranch project site would increase the projected General Plan buildout population by 474 residents. However, as indicated above in Tables 4.2-1 and 4.2-2, the population of Davis has already exceeded 64,000 residents; therefore, the General Plan buildout population and the Action "e" target population have already been exceeded. The current number of housing units according to DOF is 25,816 with 13,968 of the units being single-family. Of the proposed project's 191 units, 151 would be single-family. Therefore the total number of single-family units with the proposed project and approved projects would be 14,243. The Action "e" target for single-family residences has not been exceeded, as the current number of single-family units is approximately 1,500 units less-than the 15,500 identified as the maximum allowable, and an annually-compounded growth rate in excess of 2.5 percent per year would be required to reach the 15,500 mark by 2010. The estimated City of Davis population

Table 4.2-6
Projected Population Growth Generated by the Wildhorse Ranch Project

Housing Type	Population Density	Total Number of Units	Estimated Population
Detached Single-Family For Sale	2.48 per unit	73	181
Attached/Detached Single Family For Sale	2.48 per unit	78	194
Apartments	2.48 per unit	40	99
TOTAL		**191**	**474**

In February 2008, the Davis City Council adopted a resolution directing staff to prepare amendments that implement an annual growth guideline of one percent. However, permanently very low, low, and moderate income households would be exempt from the one percent grow limits. In addition, in November 2008, the City Council adopted overarching goals and principles for growth. The City Council recognizes the need for affordable housing to meet the Regional Housing Needs Assessment (RHNA). Therefore, as the proposed project would be consistent with the current General Plan policy because it does not exceed the number of single family dwellings or the growth rate, and the proposed project is consistent with the proposed City Council growth limits, a ***less-than-significant*** impact would result.

Mitigation Measure(s)
None required.

4.2-3 Impacts to employment and housing.

Based on a linear projection of the employment data contained in Table 4.2-5 and the housing units in Table 4.2-3, the current jobs/housing balance in the City of Davis is approximately 1.09:1 (28,216 jobs ÷ 25,876 housing units = 1.09). The General Plan Update EIR (Page 5B-15) states that a jobs/housing ratio of between 0.8:1 and 1.2:1 is determined to be acceptable.

The proposed project would not create jobs beyond the construction phase, and would construct 191 residential units (See Table 4.2-6). Therefore, the total number of jobs in Davis would remain at approximately 28,216 and the total housing unit number would increase to approximately 26,067. The resulting jobs/housing balance with the proposed project would be approximately 1.08:1 (28,216 ÷ 26,067 = 1.08).

The proposed project would not substantially alter the jobs/housing balance, and the ratio would remain within the acceptable range identified in the Davis General Plan Update EIR. Therefore, the proposed project would have a ***less-than-significant*** impact to the jobs/housing balance within the City of Davis.

Mitigation Measure(s)
None required.

Cumulative Impacts and Mitigation Measures

4.2-4 Long-term impacts to population, housing, and employment from the proposed project in combination with existing and future developments in the Davis area.

The proposed project is identified in the City of Davis General Plan EIR Addendum as a yellow light project. The addendum identifies that with buildout of all currently zoned and "green light" projects (includes, but not limited to, buildout of the Verona, Chiles Ranch also known as Simmons, and Grande sites) by June 2013 the total single-family

residences within the City would be approximately 15,291, remaining below the anticipated 15,500. Development of the proposed project would result in the construction of up to 191 residential units, 151 of which are single family residences. Therefore, with buildout of the proposed project, the total single family residences would be 15,442, below the Growth Management Action "e" and a ***less-than-significant*** impact would result.

Mitigation Measure(s)
None required.

Endnotes

[1] City of Davis, *City of Davis General Plan*, May 2001.
[2] *Program EIR for the City of Davis General Plan Update and Project EIR for the Establishment of a New Junior High School*, January 2000.
[3] http://www.sacog.org; September, 2007.
[4] http://www.city.davis.ca.us; September, 2007.
[5] California Department of Finance, E-1: City/County Population Estimates with Annual Percent Change January 1, 2006 and 2007; www.dof.ca.gov; September 2007.
[6] Bay Area Economics, *Davis General Plan Housing Element Update Needs Assessment Background Report*, September 28, 2007.
[7] AnySite Version 8.7, computer model run on January 7, 2008.

4.3 TRANSPORTATION AND CIRCULATION

INTRODUCTION

The Transportation and Circulation section of the EIR analyzes transportation impacts that would result from the implementation of the Wildhorse Ranch project (proposed project). Potential impacts to the off-site roadway, bicycle, pedestrian, and transit systems are evaluated, as well as site access, on-site circulation, and parking. Mitigation measures are suggested to reduce or eliminate potential significant impacts of the project. Information for this section is drawn from a Traffic Impact Study[1] prepared by Fehr & Peers. It should be noted that the Traffic Impact Study analyzed buildout of 259 residential units on the project site. The proposed project would result in the development 191 residential units; therefore the analysis is conservative and less intense traffic impacts would result than shown in the Traffic Impact Study.

EXISTING ENVIRONMENTAL SETTING

The project site and surrounding roadway network is shown in Figure 4.3-1. In addition, the key intersections in the transportation analysis project study area are shown on Figure 4.3-1.

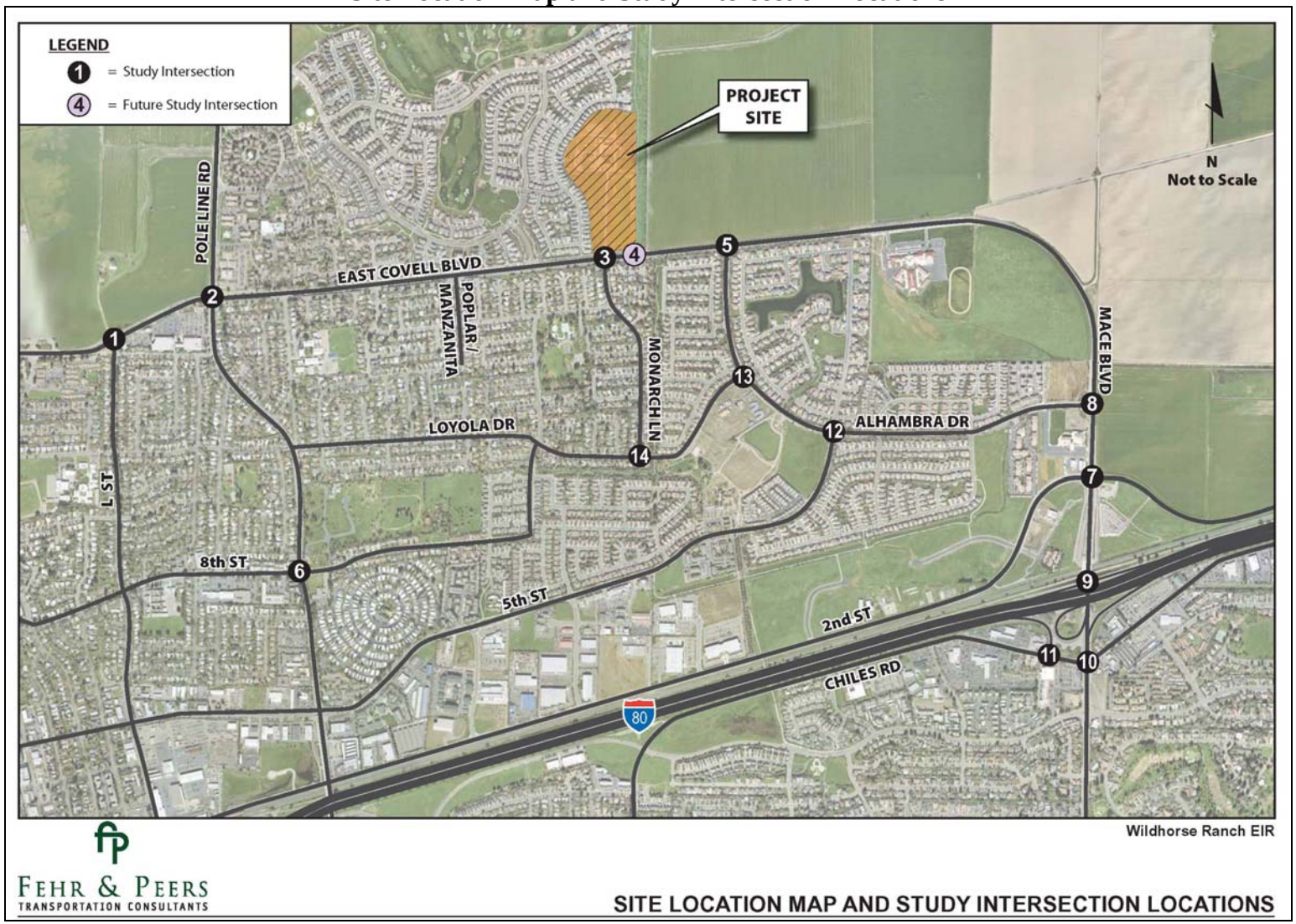
Existing Roadway Network

Interstate 80 (I-80) provides regional access to the study area, while local access to the project site is provided via East Covell Boulevard and a planned northerly extension of Monarch Lane. The project site is bounded by Covell Boulevard to the south, farmland to the east, and residential housing to the west and north of the project site. Other roadways in the study area include Pole Line Road, Loyola Drive, Alhambra Drive, Mace Boulevard, L Street, Second Street, Fifth Street, Eighth Street, and Chiles Road. The roadways in the study area are described below and their locations in relation to the site are depicted on Figure 4.3-1. The lane configurations and traffic control devices (traffic signals or stop signs) for each existing study intersection are shown on Figure 4.3-2.

Interstate 80 runs east-west, carrying three lanes in each direction just south of the site. The Mace Boulevard interchange provides the most direct access to the site.

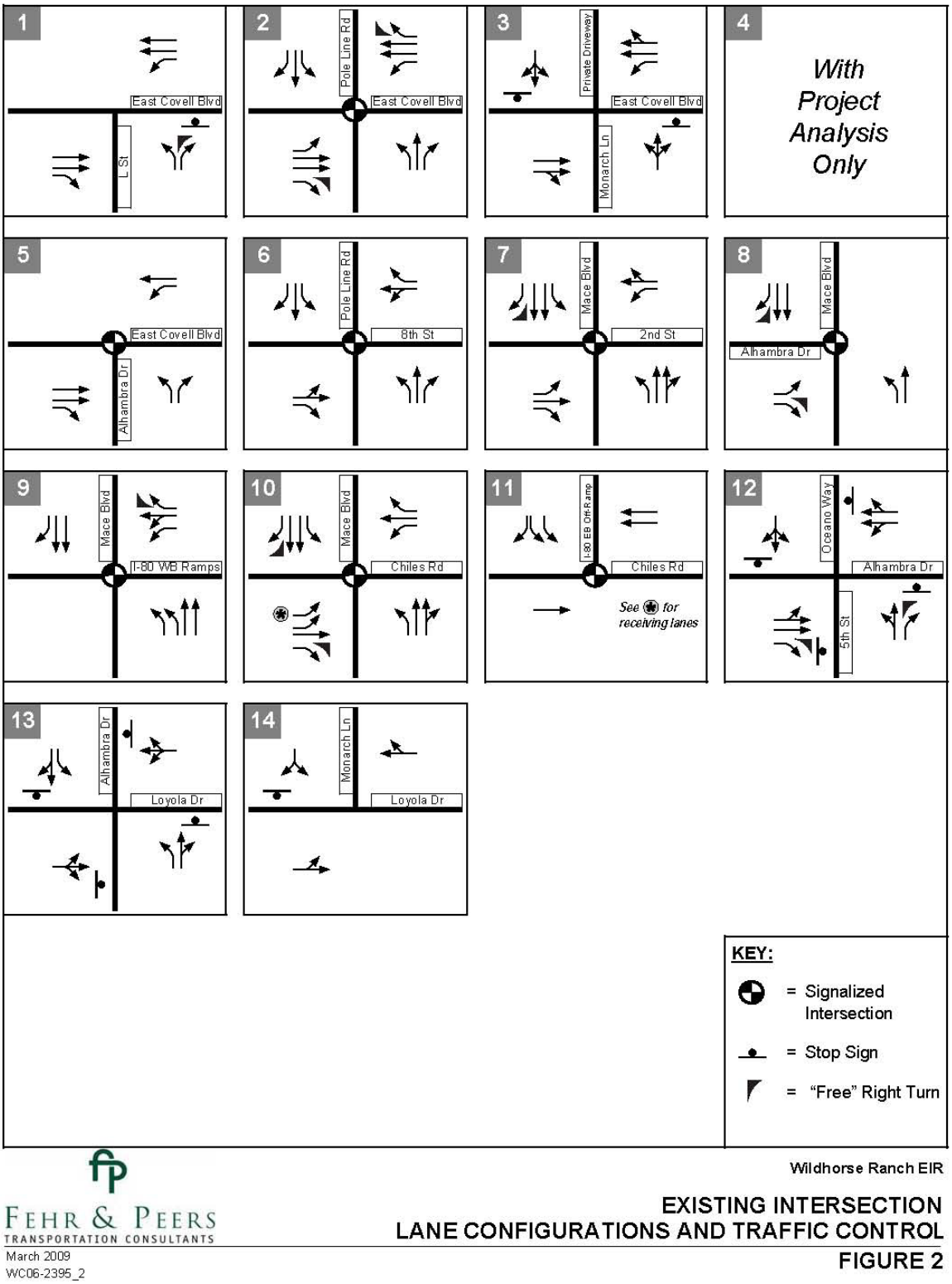
Covell Boulevard is a two-to-four-lane east-west major arterial that becomes Mace Boulevard southeast of the project site. The speed limit is 40 mph on the segment nearest the site. Shared bicycle/pedestrian paths exist on the north side of Covell from Pole Line Road to the east side of the project and on the south side from Poplar Lane to the eastern end of Harper Junior High (east of Alhambra). The travel lanes within the roadway are separated by a raised landscaped median. Covell Boulevard provides the main access to the project site.

Figure 4.3-1
Site Location Map and Study Intersection Locations



Source: Fehr & Peers, March 2009.

Figure 4.3-2
Existing Intersection Lane Configurations and Traffic Control



Source: Fehr & Peers, March 2009.

Monarch Lane is a two-lane north-south local street that connects Covell Boulevard to Loyola Drive. Monarch Lane is a residential street with sidewalks and on-street parking on both sides of the roadway, with a speed limit of 25 miles per hour.

Pole Line Road is a two-lane north-south roadway located west of the project site. South of Covell Boulevard, Pole Line Road is a minor arterial to Fifth Street. From Covell to East Eighth Street the speed limit is 25 mph, and from E. Eighth to Fifth Street, the speed limit is 30 mph. South of Fifth Street, Pole Line Road is classified as a major arterial and crosses over I-80, terminating at Cowell Boulevard in South Davis. The speed limit on this segment is 35 mph. Bicycle lanes and sidewalks exist on both sides of the roadway, except that there is no sidewalk on the east side of the street from Halsey Circle to just south of Fifth Street.

Loyola Drive is a two-lane collector street that runs east-west from Pole Line Road to Alhambra Drive. East of Alhambra Drive, Loyola Drive becomes Conquistador Way, which serves the Lake Alhambra Estates residential community. Loyola Drive has bicycle lanes and sidewalks on both sides, and the speed limit is 25 miles per hour.

Alhambra Drive is a two-lane collector street that runs through the Mace Ranch neighborhood southeast of the project site, connecting Covell Boulevard to Mace Boulevard, with intermediate intersections including Loyola and Fifth Street. The speed limit on Alhambra Drive is 30 miles per hour. Bicycle lanes and sidewalks or shared bicycle/pedestrian paths exist on both sides of the roadway.

Mace Boulevard is primarily a four-lane north-south major arterial that runs southeast of the proposed project site. It should be notated that Mace Boulevard is four lanes in the vicinity of Alhambra Drive. A full-access interchange exists at Mace Boulevard and I-80. The posted speed limit is 40 miles per hour north of Second Street and 35 miles per hour south of Second Street. A shared bicycle/pedestrian path exists on the west side of the roadway from north of Alhambra Drive to Second Street, and sidewalk only south of Chiles Road. Sidewalks exist on the east side of the roadway from Second Street to just south of Chiles Road. Bicycle lanes exist on both sides of the roadway.

L Street is a two-lane north-south collector street that connects Covell Boulevard and Second Street. L Street has a 25 mile per hour speed limit with bicycle lanes and sidewalks on both sides of the roadway.

Second Street, east of L Street, is a two-lane east-west arterial with a two way left turn lane or turn pockets, that runs parallel to I-80 north of the freeway. The speed limit for Second Street is 45 miles per hour. Sidewalks exist on the north side of the roadway for most of the study area, and bicycle lanes exist on both sides of the roadway throughout its length.

Fifth Street is a two-lane east-west minor arterial, within the study area, that runs south of the site and connects Pole Line Road and Alhambra Drive with intermediate intersections including Peña/San Rafael. Fifth Street has a 30 mile per hour speed limit, and has bicycle lanes and sidewalks or shared bicycle/pedestrian paths on both sides of the roadway. Between the vicinity of Peña/San Rafael and Pole Line Road, bicycle/pedestrian paths are on both sides of the street.

Eighth Street is a two-lane collector street that runs east-west south of the project site and connects Pole Line Road and L Street. Eighth Street provides access to Loyola Drive via Tulip Lane. In the study area, the roadway is a residential street that has a 25 mile per hour speed limit with bicycle lanes and sidewalks on both sides of the roadway.

Chiles Road is a two-lane east-west arterial that runs parallel to I-80 south of the freeway. The roadway provides an off-ramp for eastbound I-80 traffic. Sidewalks and bicycle lanes are provided on segments of the roadway. The posted speed limit is 40 miles per hour.

Existing Pedestrian and Bicycle Facilities

The area surrounding the project site provides good access for pedestrians and cyclists. Pedestrian facilities include sidewalks, crosswalks, and traffic signals with pedestrian indications. Sidewalks or shared bicycle/pedestrian paths are generally provided on the roadway facilities in the study area, except for segments on Covell Boulevard, Mace Boulevard, Second Street, and Chiles Road. Pedestrian signals and striped crosswalks are provided at the signalized intersections. Striped crosswalks are also provided on at least one leg, at all unsignalized intersections studied in this document except for the Loyola Avenue / Monarch Lane intersection.

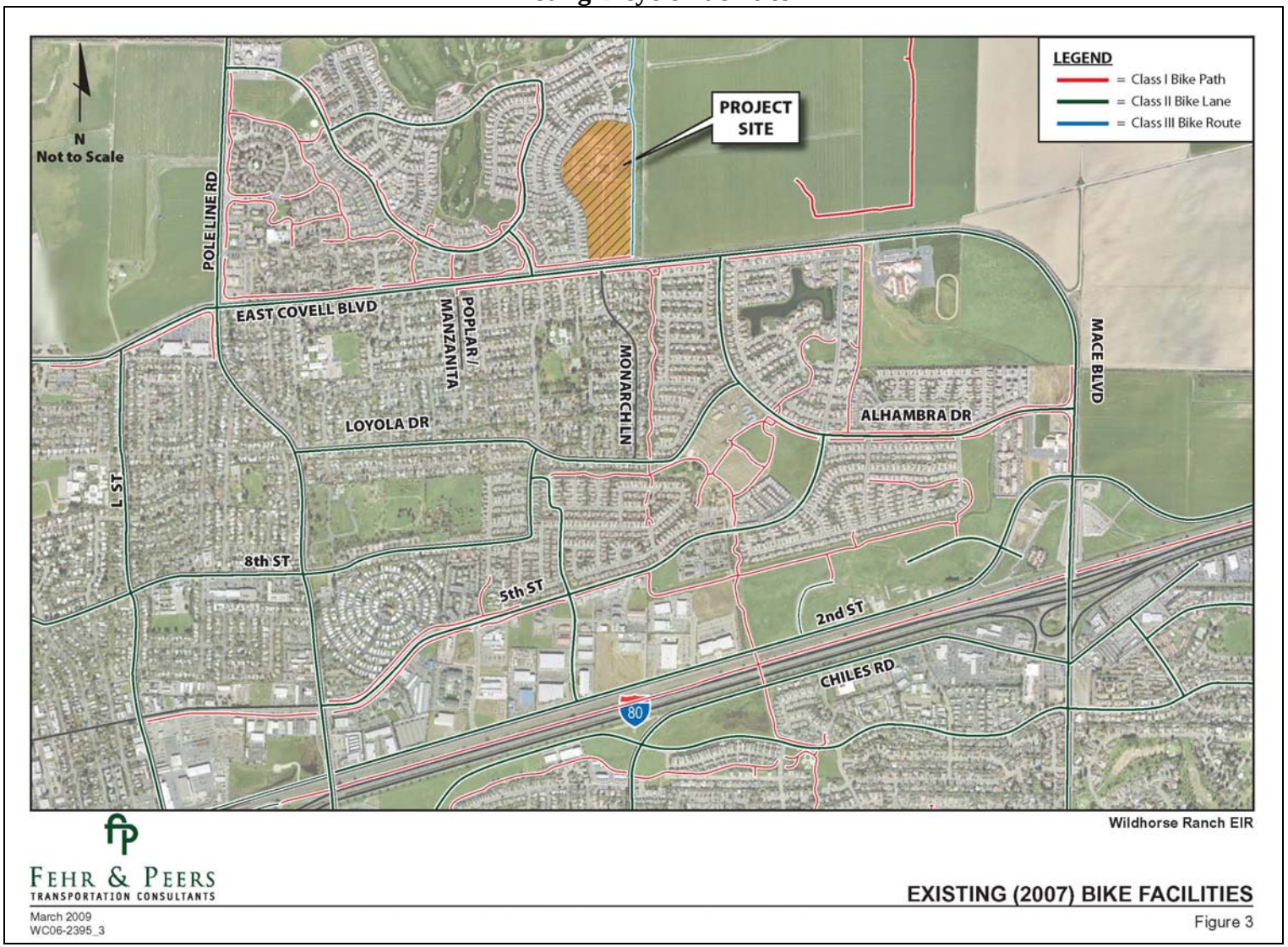
Bicycle facilities include bike paths (Class I), bike lanes (Class II), and bike routes (Class III). Bike paths are paved trails that are shared by bicycles and pedestrians and are separated from roadways. Bike lanes are lanes on roadways designated for use by bicycles by striping, pavement legends, and signs. Bike routes are roadways that are designated for bicycle use with signs but do not necessarily include any additional pavement width or markings.

Davis has an extensive bicycle network of Class I and Class II facilities throughout the City. In the vicinity of the project, Class I bike paths exist along the southern and eastern borders of the project site. Along the south side of Covell the path extends from Poplar Lane to east of Alhambra and on the north, between Pole Line Road and the east side of the project. There are Class I paths on both sides of Alhambra Drive from Fifth Street to Mace and south of Second Street between the railroad tracks and I-80. Class II bike lanes are provided along Covell Boulevard, Pole Line Road, Loyola Avenue, Alhambra Drive, Mace Boulevard, L Street, Second Street, Fifth Street, Eighth Street, and Chiles Road. A map illustrating the bike facilities around the project site is shown on Figure 4.3-3.

Existing Transit System

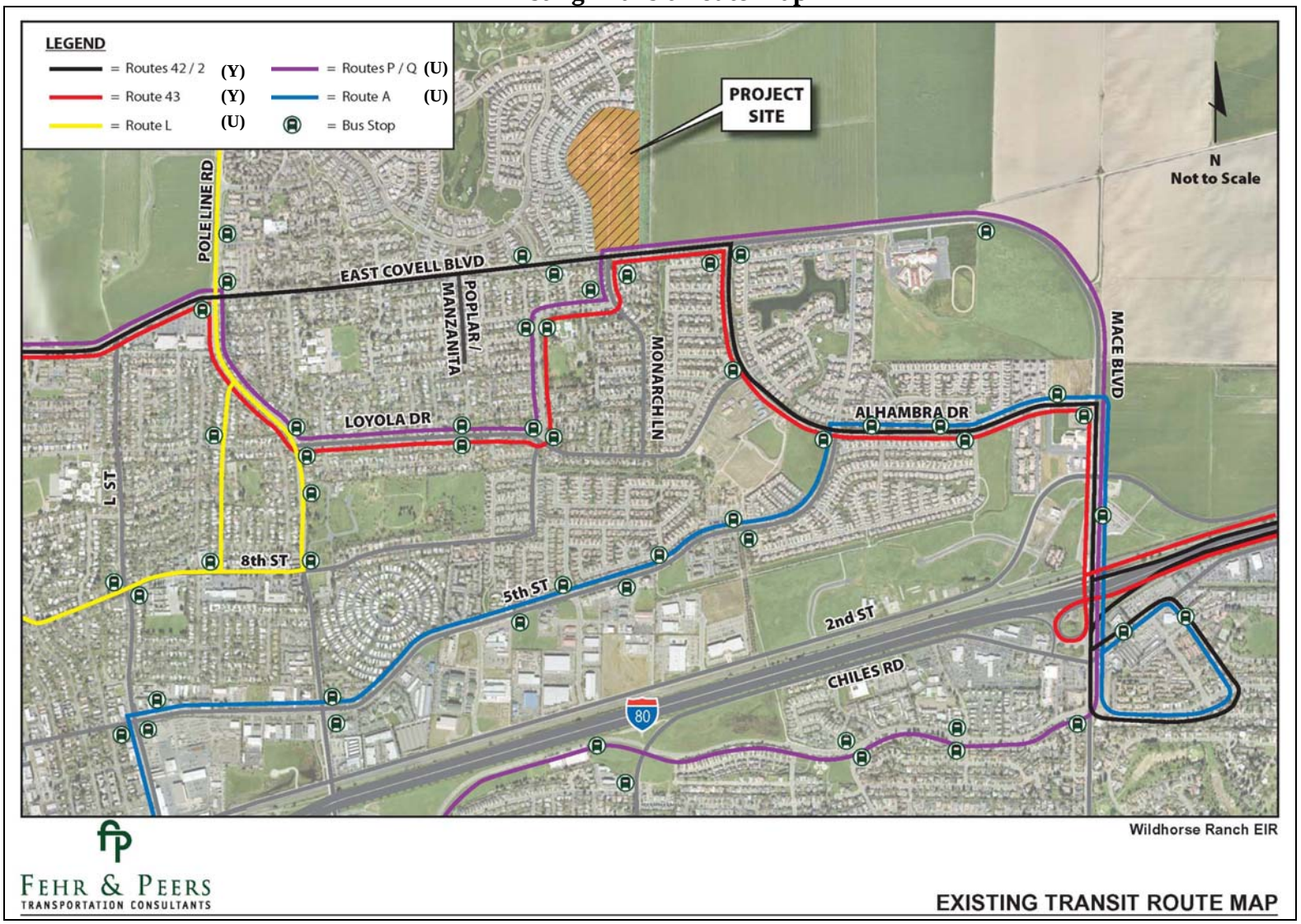
Transit services to the project area are provided by Yolobus, a local and inter-city bus system that serves Yolo County and neighboring areas, and Unitrans, a UC Davis student-run organization offering local bus service throughout the City of Davis. Davis Community Transit also provides service for registered riders (senior citizens and persons with disabilities) using a reservation system. Existing transit routes around the project site are shown on Figure 4.3-4.

Figure 4.3-3
Existing Bicycle Facilities



Source: Fehr & Peers, March 2009.

Figure 4.3-4
Existing Transit Route Map



Source: Fehr & Peers, March 2009.

Yolobus

Yolobus is run by the Yolo County Transportation District, which operates local and inter-city bus service 365 days a year in Yolo County and neighboring areas. Yolobus serves Davis, West Sacramento, Winters, Woodland, downtown Sacramento, Sacramento International Airport, Cache Creek Casino, Esparto, Madison, and Knights Landing. Fares are currently $1.50 ($0.75 student/$0.60 senior) for regular routes and $2.00 ($1.00 student/senior) for express routes. The following three Yolobus routes (42, 43, and 232) serve the project vicinity:

1. *Route 42* serves Davis, Woodland, Sacramento International Airport, and West Sacramento. Route 42 buses run along Covell Boulevard and Alhambra Drive to Mace Boulevard, with stops on Alhambra at Covell, Covell at Pole Line, Alhambra at Loyola, Alhambra at Fifth Street, Alhambra at Mace, and at the Davis Park-and-Ride lot just east of Mace Boulevard and north of I-80. Service is provided between approximately 5:00 AM and 11:00 PM Monday through Friday and from approximately 7:00 AM to 8:00 PM on weekends. Buses run on 60-minute headways.

2. *Route 43* is an express route from the City of Davis to Sacramento. Route 43 buses run along Covell Boulevard, Pole Line Road, Loyola Avenue, Monarch Lane, and Alhambra Drive to Mace Boulevard, with stops on Covell at Pole Line and Alhambra at Mace. Service is provided between 6:00 AM and 8:00 AM and between 4:00 PM and 7:00 PM, Monday through Friday only. Buses run on 30-minute headways.

3. *Route 232* is a South Davis express route. Route 232 runs along Alhambra Drive and Mace Boulevard across I-80 to Chiles Road, with stops on Covell at Pole Line, Alhambra at Covell, Alhambra at Loyola, and on Mace Boulevard between Alhambra and I-80. Buses run from 6:30 AM to 8:00 AM and from 5:30 PM to 6:30 PM, Monday through Friday only.

Unitrans

Unitrans is a student-run public bus system that serves the University of California, Davis (UCD) and the City of Davis. Buses run more frequently during the UCD academic year when ridership is higher, and less frequently during the summer and other academic breaks. Fares are $1.00, and many types of prepaid discount tickets and passes are available. One special fare category is UCD undergraduate students, who can show a valid identification card instead of paying a cash fare, because a portion of their quarterly ASUCD fees supports Unitrans. Seniors (ages 60 plus) and City employees may also ride free with an identification card. The following four routes (A, L, P, and Q) serve the project area:

1. *Route A* runs along Fifth Street and Alhambra Drive to Mace Boulevard, with stops at Second Street and Mace Boulevard. The A "Silo/Shields" service connects UC Davis with the area near Mace and Cowell Boulevard, and runs from approximately 7:00 AM to 11:00 PM on weekdays only (until 8:00 PM during the summer) on 30-minute headways when UC Davis is in session and 60-minute headways when UC Davis is not in session.

2. *Route L* runs along Pole Line Road and Eighth Street, with stops on Pole Line near Covell and Pole Line at Eighth. The route connects the Fremont Circle to the Art Building Terminal. Route L operates from approximately 7:00 AM to 11:00 PM on 60-minute headways.

3,4. *Routes P and Q* travel in opposing loop routes around the City of Davis. The P and Q routes include Covell Boulevard and Mace Boulevard, with stops at Second Street and Mace Boulevard. The P route (the counterclockwise loop) runs from approximately 7:00 AM to 11:00 PM on weekdays with 25- to 30-minute headways and from 9:00 AM to 6:00 PM on Saturdays with 60-minute headways. The Q route (the clockwise loop) runs from approximately 7:00 AM to 11:00 PM on weekdays with 25- to 35-minute headways and on Saturday from 9:00 AM to 6:00 PM with 60-minute headways. The PQ express remains on Covell instead of turning at Monarch and Pole Line Road and runs once an hour. Stops include one near Pole Line Road and one near Wright Boulevard.

Intersections and Roadway/Freeway Segments Studied

In general, the operational characteristics of a roadway network are defined by the operations of key intersections within the network. Intersections are typically considered to be the critical analysis locations, because conflicting traffic movements at intersections impose the chief capacity constraints on the overall roadway network.

The following 14 study intersections were selected in consultation with City staff as locations to include in the transportation analysis:

1. Covell Boulevard/L Street;
2. Covell Boulevard/ Pole Line Road;
3. Covell Boulevard/Monarch Lane/Proposed Project Entrance #1;
4. Covell Boulevard/Proposed Project Entrance #2;
5. Covell Boulevard/ Alhambra Drive;
6. East Eighth Street/Pole Line Road;
7. Second Street/Mace Boulevard;
8. Mace Boulevard/Alhambra Drive;
9. Mace Boulevard/I-80 Westbound Ramps;
10. Mace Boulevard/Chiles Road;
11. Chiles Road/I-80 Eastbound Off-Ramp;
12. Alhambra Drive/Fifth Street;
13. Alhambra Drive/Loyola Drive; and
14. Loyola Drive/ Monarch Lane.

In addition, three roadway/freeway segments were assessed:

1. Southbound Mace Boulevard to eastbound I-80 loop on-ramp queues;
2. Interstate 80, east of Mace Boulevard; and
3. Interstate 80, west of Mace Boulevard.

The locations of the study intersections are shown on Figure 4.3-1. Figure 4.3-2 illustrates the existing intersection lane configurations and associated traffic control devices (i.e., traffic signals or stop signs) at each study intersection.

Existing Traffic Conditions Analysis

The following discussion summarizes the methods used to analyze the existing operating conditions of the study intersections and freeway segments, and presents the results of the analysis.

Existing Traffic Volumes

Traffic operations at the study intersections were analyzed for weekday morning (AM) and evening (PM) peak hours. Peak traffic volumes usually occur during the morning and evening commute periods between 7:00 AM and 9:00 AM and 4:00 PM and 6:00 PM, respectively. Existing intersection vehicle turning movement counts were conducted in January 2007 (when schools were in session, including UC Davis) at the study intersections on clear days. For each intersection, the single hour with the highest traffic volumes during the count periods was identified. Existing peak hour freeway mainline volumes were derived from Caltrans data provided at various mainline postmiles near the site, along with the ramp intersection counts at the Mace Boulevard interchange. Figure 4.3-5 presents the existing AM and PM peak-hour turning movement volumes at the study intersections.

Intersection Level of Service Methodology

The operations of roadway facilities are described using the *level of service* concept. Level of service (LOS) is a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom to maneuver. Six levels are defined from LOS A, as the best operating conditions, to LOS F, as the worst operating conditions. LOS E represents "at capacity" operations. When volumes exceed capacity, stop-and-go conditions result and operations are designated as LOS F.

Signalized Intersections Analysis

Traffic conditions at signalized intersections were evaluated using the Transportation Research Board's 2000 *Highway Capacity Manual* (HCM) method. This operations analysis method uses various intersection characteristics (such as traffic volumes, lane geometry, and signal phasing) to estimate the average control delay experienced by motorists traveling through an intersection. Control delay incorporates delay associated with deceleration, acceleration, stopping, and moving up in the queue. Table 4.3-1 summarizes the relationship between average delay per vehicle and LOS for signalized intersections.

Figure 4.3-5
Existing Peak Hour Traffic Volumes

Source: Fehr & Peers, March 2009.

Table 4.3-1
Signalized Intersection Level of Service Definitions
Using Average Control Vehicular Delay

Level of Service	Description	Average Control Delay Per Vehicle (Seconds)
A	Operations with very low delay occurring with favorable progression and/or short cycle lengths.	≤ 10.0
B	Operations with low delay occurring with good progression and/or short cycle lengths.	10.1 to 20.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.1 to 35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, and high volume-to-capacity (V/C) ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	55.1 to 80.0
F	Operations with delays unacceptable to most drivers occurring due to over-saturation, poor progression, or very long cycle lengths.	> 80.0

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

Unsignalized Intersections Analysis

Traffic conditions at unsignalized intersections were also evaluated using the 2000 HCM method. With this method, operations are defined by the average control delay per vehicle (measured in seconds) for each movement that must yield the right-of-way. At two-way or side-street stop-controlled intersections, the control delay (and LOS) is calculated for each controlled movement, the left-turn movement from the major street, and for the entire intersection. For controlled approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. The delays for the entire intersection and for the movement or approach with the highest delay are reported. At four-way stop-controlled intersections, LOS is based on the average delay experienced on all approaches. Table 4.3-2 summarizes the relationship between delay and LOS for unsignalized intersections.

Existing Level of Service Standard

The City of Davis General Plan calls for maintaining a LOS E or better level of service for both signalized and unsignalized intersections. This standard applies to intersection average LOS for both signalized and all-way stop-controlled intersections, and to the worst-case movement for side-street stop controlled intersections. Exceptions to this standard have been made in the Core area, and may be made at other locations if the City Council determines that finding of overriding considerations are justified.

Table 4.3-2
Unsignalized Intersection Level of Service Definitions

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

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

Existing Intersection Levels of Service

Existing operations were evaluated for the weekday AM and PM peak hours at the study intersections. Table 4.3-3 summarizes the intersection analysis results. As shown, all study intersections currently operate at acceptable service levels during both the AM and PM peak hours (i.e., LOS E or better).

Existing Peak Hour Traffic Signal Warrants

To assess the need for signalization of stop-controlled intersections, the *Manual of Uniform Traffic Control Devices* (MUTCD) (Federal Highway Administration, 2000) presents eight signal warrants. The use of the peak hour signal warrants is intended to examine the general correlation between the planned level of future development and the need to install new traffic signals. Meeting one of the signal warrants could justify signalization of an intersection; however, the full set of warrants should be considered as part of an evaluation and survey before the decision to install a signal is made. Peak hour volume warrant analysis for urban conditions was conducted, using the available data. The results of the traffic signal warrant analysis are shown in Table 4.3-4. See Appendix C of the Traffic Study, included as Appendix C of this EIR, for further information regarding signal warrant analysis.

As shown in Table 4.3-4, the urban peak hour volume traffic signal warrant is currently satisfied at the Covell Boulevard / L Street intersection. Although the traffic signal warrant is satisfied at this intersection, the intersection operates at an acceptable service level, LOS A overall, and LOS D for the worst movement. An evaluation of all applicable warrants should be conducted and additional factors (e.g., congestion, approach conditions, driver confusion) should be considered before the decision to install a signal is made.

Table 4.3-3
Existing Peak Hour Intersection Levels of Service

Intersection	Control[1]	Peak Hour	Delay (in seconds)[2]	LOS
Covell Boulevard/L Street	SSSC	AM PM	3 (26) 3 (30)	A (D) A (D)
Covell Boulevard/Pole Line Road	Signal	AM PM	25 33	C C
Covell Boulevard/Monarch Lane/Proposed Project Entrance #1	SSSC	AM PM	2 (24) 2 (19)	A (C) A (C)
Covell Boulevard/Proposed Project Entrance #2	**With Project Analysis Only**			
Covell Boulevard/Alhambra Drive	Signal	AM PM	10 7	A A
Eighth Street/Pole Line Road	Signal	AM PM	17 16	B B
Second Street/Mace Boulevard	Signal	AM PM	28 25	C C
Mace Boulevard/Alhambra Drive	Signal	AM PM	12 11	B B
Mace Boulevard/I-80 Westbound Ramps	Signal	AM PM	12 12	B B
Mace Boulevard/Chiles Road	Signal	AM PM	29 22	C C
Chiles Road/I-80 Eastbound Off-Ramp	Signal	AM PM	6 7	A A
Alhambra Drive/Fifth Street	AWSC	AM PM	8 8	A A
Alhambra Drive/Loyola Drive	AWSC	AM PM	9 8	A A
Loyola Drive/Monarch Lane	SSSC	AM PM	2 (10) 2 (9)	A (A) A (A)

Notes:
1. Signal = signalized intersection, SSSC = side street stop controlled intersection, AWSC = all-way stop-controlled intersection
2. For side-street stop-controlled intersections, delay is reported as: Intersection average (worst case approach).

Source: Fehr & Peers, March 2009.

Table 4.3-4
Existing Peak Hour Signal Warrant Analysis

Intersection	Control[1]	Peak Hour Warrant Met?
Covell Boulevard/L Street	SSSC	**Yes**
Covell Boulevard/Monarch Lane/Proposed Project Entrance #1	SSSC	No
Alhambra Drive/Fifth Street	AWSC	No
Alhambra Drive/Loyola Drive	AWSC	No
Loyola Drive/Monarch Lane	SSSC	No

Note:
1. SSSC = side-street stop-controlled intersection, AWSC = all-way stop-controlled intersection.

Source: Fehr & Peers, March 2009.

Mace Boulevard Overcrossing Analysis

This study also evaluated the impacts of the project on the Mace Boulevard overcrossing. The overcrossing was reconstructed in 2001. The overcrossing's six-lane cross-section includes two southbound lanes, two northbound left-turn lanes (for access to westbound I-80), and two northbound through lanes. The outside southbound lane also provides access to the eastbound loop on-ramp. Upon the request of Public Works staff, this study evaluates operations on Mace Boulevard in the southbound direction at the loop on-ramp to eastbound I-80. The purpose of the analysis is to assess whether an auxiliary lane to the on-ramp would be needed in the future. Accommodating the lane would require that the freeway overcrossing and railroad overpass be widened.

Three analyses were conducted to evaluate the current configuration and the need for widening. The first two analyses were performed for both the current condition, in which the ramp is metered, and the un-metered condition that existed when this study was initiated. These aimed to determine (1) if the peak volume of the loop ramp would exceed the ramp's capacity (both unmetered and metered cases); (2) if a queue on the ramp (at the freeway merge point in the unmetered case, or at the meter in the metered case) would extend back to the Mace overcrossing; and (3) if the use of the loop ramp by southbound vehicles on Mace would cause a lane imbalance at the Mace / I-80 westbound ramp intersection that would impact operations at that intersection. These analyses provide a planning-level evaluation of the operations of the loop ramp and adjacent freeway and roadway segments. Each of the three analyses is discussed below.

Tables 4.3-5, 4.3-6, and 4.3-7 present the three analyses for the existing conditions case.

Table 4.3-5
Loop Ramp Volume to Capacity Analysis

Scenario	Variable	Existing Conditions
Without Ramp Metering	Loop Ramp Capacity (vehicles/hr)	**1,450**
	AM Peak Hour Demand (vehicles/hr)	**650**
	PM Peak Hour Demand (vehicles/hr)	**420**
	AM Exceed Capacity?	NO
	PM Exceed Capacity?	NO
With Ramp Metering	AM Metering Rate (vehicles/hr) (1)	**650**
	PM Metering Rate (vehicles/hr) (1)	**440**
	AM % HOV (2)	**11%**
	PM % HOV (2)	**12%**
	AM Non-HOV Demand (vehicles/hr)	579
	PM Non-HOV Demand (vehicles/hr)	370
	AM Exceed Capacity?	NO
	PM Exceed Capacity?	NO

Note: **Bold** = Input Value Shaded = Exceeds Capacity

Source: Fehr & Peers, March 2009.

Table 4.3-6
Mace Overcrossing Queue Analysis

Scenario	Variable	Existing Conditions
Without Ramp Metering	Capacity of Right-Most Freeway Lane (vehicles/hr)	**2,250**
	Merge Rate (Freeway:Ramp)	**1**
	Capacity for Ramp Vehicles (vehicles/hr)	1,125
	Vol > Capacity AM?	NO
	Vol > Capacity PM?	NO
Queue Length Needed Calculation	AM Vehicles Served by Cycle (vehicles/cycle)	22
	PM Vehicles Served by Cycle (vehicles/cycle)	14
	AM 90% Poisson Distribution	27
	PM 90% Poisson Distribution	18
	Vehicle Length (feet/vehicle)	25
	AM Queue Length Needed	675
	PM Queue Length Needed	450
Without Ramp Metering	Length from Gore Point to Mace Road	**1,350**
	Q > Storage AM?	NO
	Q > Storage PM?	NO
With Ramp Metering	AM Metering Rate (vehicles/hr) (1)	650
	PM Metering Rate (vehicles/hr) (1)	440
	Vol > Capacity AM?	NO
	Vol > Capacity PM?	NO
Queue Length Needed Calculation	AM Vehicles Served by Cycle (vehicles/cycle)	20
	PM Vehicles Served by Cycle (vehicles/cycle)	13
	AM 90% Poisson Distribution	25
	PM 90% Poisson Distribution	17
	Vehicle Length (feet/vehicle)	25
	AM Queue Length Needed	625
	PM Queue Length Needed	425
With Ramp Metering	Length from Ramp Meter to Mace Road	**850**
	Q > Storage AM?	NO
	Q > Storage PM?	NO

Note: **Bold** = Input Value Shaded = Exceeds Capacity

Source: Fehr & Peers, March 2009.

Table 4.3-7
Lane Imbalance Analysis

Scenario	Variable	Existing Conditions
Lane Utilization Factor Calculation	Total Southbound Flow AM	**1,075**
	Highest Volume Lane AM	650
	Total Southbound Flow PM	**900**
	Highest Volume Lane PM	420
	Lanes	**2**
	Lane Utilization Factor AM	0.83
	Lane Utilization Factor PM	1.07
	Average Delay AM	12
	Level of Service AM	B
	Average Delay PM (from Synchro worksheets)	12
	Level of Service PM (from Synchro worksheets)	B
	AM Imbalance Problem?	NO
	PM Imbalance Problem?	NO

Note: **Bold** = Input Value Shaded = Exceeds Capacity

Source: Fehr & Peers, March 2009.

1. *Loop Ramp Volume-to-Capacity (V/C) Analysis*

   Un-Metered Analysis

   For this analysis, an un-metered ramp design capacity of 1,450 vehicles per hour (vph) was used. This is based on the maximum design capacity of a loop on-ramp, which is 1,500 vph (Caltrans, *Highway Design Manual, Fifth Edition*). This maximum is reduced by 50 vph to account for the effect of truck traffic. According to counts conducted in January 2007, existing peak hour volumes on the loop ramp are 650 vph in the AM and 420 vph in the PM. Thus, the ramp volume currently does not exceed the ramp capacity.

   Metered Analysis

   For this analysis the current meter rates obtained from Caltrans were used. The meter rates average 650 vph in the AM peak hour, and 440 vph in the PM peak hour. Since high occupancy vehicles and low emissions vehicles with appropriate identification can bypass the meters, HOV/LEV counts were conducted to determine what percentage of the overall peak hour ramp traffic they constitute. HOV/LEV counts conducted by Fehr & Peers in April 2006 indicated 11 percent HOVs/LEVs in the AM peak hour and 12 percent HOVs/LEVs in the PM peak hour. Thus, the metered volume is 579 vph (11 percent less than 650 vph) in the AM peak hour, and 370 vph (12 percent less than 420 vph) in the PM peak hour. Thus, the metered ramp volume currently does not exceed the metered ramp capacity.

2. *Mace Overcrossing Queue Analysis*

   Un-Metered Analysis

   For this analysis, the capacity of the right-most freeway lane is assumed to be 2,250 vph. This is based on a capacity of 2,350 vph for a 65 mph freeway lane (*Highway Capacity Manual 2000*), reduced to account for truck traffic. With 1:1 merging at the ramp/freeway junction, 1,125 vph can be served by the ramp. Given the peak hour counts described above, a maximum of 650 vph would merge onto the freeway from the loop ramp. Thus, all of these vehicles would be able to merge onto the freeway, and a queue would not extend back to the Mace overcrossing.

   The storage length necessary to serve the ramp volume was also considered. The signal at the Mace / I-80 westbound ramps intersection currently operates with a cycle length of approximately 124 seconds. With this timing and a peak hour volume of 650 vehicles in the right-hand southbound lane (based on the assumption that only the ramp volume, which represents 60 percent of the southbound traffic, will be in this lane), approximately 22 vehicles would be released each cycle. To account for the random arrival of vehicles, this number is adjusted using a Poisson distribution. Under these assumptions, a storage length of 680 feet (sufficient for 27 vehicles at 25 feet per vehicle) would be recommended to serve the volume arriving at the ramp during each signal cycle. The length of the ramp (measured to the merge point on Mace Boulevard) is approximately

1,350 feet. This length is sufficient to prevent a queue from extending onto the Mace overcrossing.

Metered Analysis

For the metered case, the queue storage length is shorter, as it is measured from the meter to the merge point on Mace Boulevard. This storage length is approximately 850 feet. This is also longer than the 625-foot maximum queue projected (See Table 4.3-5). Thus, the length is sufficient to prevent a queue from extending onto the Mace overcrossing.

Notwithstanding this analysis, it is noted that observations indicate that the queue does occasionally reach the right-hand lane on Mace Boulevard, but this is not a regular, hour-long condition during the peak hours.

3. *Lane Imbalance Analysis*

For this analysis, a Lane Utilization Factor (LUF) is calculated for the Mace / I-80 westbound ramps intersection. The LUF is a measure of the distribution or balance of volume between lanes on a given approach, and is defined as follows (HCM 2000):

> *LUF = demand flow for lane group / (demand flow for highest-volume lane x number of lanes in lane group)*

The LUF for the southbound approach at the Mace / I-80 WB ramps intersection was calculated and incorporated into the intersection Level of Service analysis presented in the previous section. Under existing conditions, the total southbound demand flow during the AM peak hour is 1,075 vph, while demand in the highest volume lane (the right-most lane) is 650 vph. Because this approach has two lanes, the LUF is *1,075 / (650 x 2) = 0.83*. In the PM peak hour, the LUF is greater than one; therefore, the analysis assumes that a lane imbalance would not occur. Under existing conditions, the intersection operates at a LOS B in the AM and PM peak hours. Thus, the AM lane imbalance does not cause operations at the Mace / I-80 westbound ramps intersection to fall below the City's standard.

Freeway Traffic Analysis

Mainline volumes were derived from Caltrans data provided at various mainline postmiles near the site, along with the ramp intersection counts at the Mace interchange. The peak hour volumes were used for the traffic operations analysis.

For the freeway mainline segments, LOS was calculated using the 2000 HCM method. This method considers peak hour traffic volumes, free-flow speeds, percentage of heavy vehicles, and the number of travel lanes. These factors are used to determine vehicle density, measured in passenger cars per mile per lane. Table 4.3-8 summarizes the relationship between vehicle density and LOS for mainline freeway segments.

Table 4.3-8
Freeway Mainline LOS Criteria

LOS	Description	Density[1]
A	Free-flow speeds prevail. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream.	≤ 11
B	Free-flow speeds are maintained. The ability to maneuver with the traffic stream is only slightly restricted.	> 11 to 18
C	Flow with speeds at or near free-flow speeds. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver.	> 18 to 26
D	Speeds decline slightly with increasing flows. Freedom to maneuver with the traffic stream is more noticeably limited, and the driver experiences reduced physical and psychological comfort.	> 26 to 35
E	Operation at capacity. There are virtually no usable gaps within the traffic stream, leaving little room to maneuver. Any disruption can be expected to produce a breakdown with queuing.	> 35 to 45
F	Represents a breakdown in flow.	>45

Note:
1. Density measured in passenger cars per mile per lane.

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

The results for the freeway mainline segments and ramps are presented in Table 4.3-9. For this analysis, a Peak Hour Factor of 0.95, free flow speeds of 65 mph on the mainline and 45 mph on the ramps, and a truck volume of 8 percent on the mainline were used. As shown, all of the segments studied currently operate at LOS D or better based on the comparison of their traffic volumes to the LOS thresholds.

Table 4.3-9
Existing Freeway Segment LOS

Segment	Direction of Travel	Peak Hour	# of Lanes	Volume	Density[1]	LOS
I-80: West of Mace Boulevard	Eastbound	AM PM	3	4,350 4,619	23.8 25.4	C C
I-80: West of Mace Boulevard	Westbound	AM PM	3	4,242 4,574	23.1 25.1	C C
I-80: East of Mace Boulevard	Eastbound	AM PM	3	4,906 4,804	27.3 26.6	D D
I-80: East of Mace Boulevard	Westbound	AM PM	3	4,405 4,931	24.1 27.5	C D

Note:
1. Density measured in passenger cars per mile per lane.

Source: Fehr & Peers, March 2009.

REGULATORY CONTEXT

Existing transportation polices, laws, and regulations that would 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.

State

The California Department of Transportation (Caltrans) is responsible for operating and maintaining the state highway system. In the project vicinity, Interstate 80 (I-80) falls under Caltrans jurisdiction. Caltrans has published a *Guide for the Preparation of Traffic Impact Studies* that lays out the types of development projects that warrant a traffic study of Caltrans facilities, the general scope of such studies, and methodologies to be used.

Local

The following applicable goals and policies related to transportation and circulation are taken from the Mobility Element of the *City of Davis General Plan Update*.[2]

Goal MOB 1 Provide attractive streets designed to serve a broad spectrum of travel modes as well as automobiles.

- Policy MOB 1.1 Provide and maintain a roadway network to meet the needs of vehicular traffic in Davis.
- Policy MOB 1.2 As part of the initial project review for any new project, the City Engineer may determine that a project-specific traffic study shall be prepared. Studies shall identify impacted roadway segments and intersections and recommend mitigation measures designed to reduce these impacts to acceptable levels.
- Policy MOB 1.3 Encourage the use of alternative transportation modes.
- Policy MOB 1.4 Create a network of street and bicycle facilities that provides for multiple routes between various origins and destinations.
- Policy MOB 1.5 Develop a traffic calming program and implement traffic calming measures, where appropriate and feasible, to minimize the impacts on the use of local streets by vehicular traffic and to maintain, or as necessary enhance, livability of the neighborhoods. Consider traffic calming measures along collector

		and minor arterial streets, where appropriate and feasible, to slow speeds where needed.
	Policy MOB 1.6	Build new intersections and redesign existing intersections to maximize pedestrian and bike convenience and safety relative to automobile needs.
	Policy MOB 1.7	Adopt development policies to improve the appearance of each major arterial street.
	Policy MOB 1.10	Prohibit through truck traffic on streets other than identified truck routes.
Goal MOB 3	Increase walking and the use of non-polluting forms of transportation, including bicycles.	
	Policy MOB 3.2	Continue to build transportation improvements specifically targeted at bicycles.
	Policy MOB 3.3	Provide pedestrian and bicycle amenities.
	Policy MOB 3.4	Attempt to provide safe and convenient pedestrian access to all areas of the city.
Goal MOB 4	Reduce automobile use by improving transit service and encouraging transit use.	
	Policy MOB 4.3	Require new development designs that maximize transit potential.

IMPACTS AND MITIGATION MEASURES

This section describes the standards of significance, methods of analysis, and traffic impacts and mitigation measures for the proposed project.

Standards of Significance

According to the California Environmental Quality Act (CEQA) *Guidelines*, a project results in a significant impact if the project causes an increase in traffic that is substantial and adverse in relation to the traffic load and capacity of the existing street system. This standard of significance relates to automobile traffic only and does not address the potential effects on other travel modes including transit, bicycle, and pedestrian facilities. In order to evaluate a broad range of travel characteristics, the following standards of significance apply to the transportation impacts discussed in this EIR.

Traffic Impacts

According to the *City of Davis General Plan Update*, intersection and roadway operations at LOS E or better are acceptable. For the purposes of this EIR analysis, significant traffic impacts at intersections are defined when the addition of project traffic causes any of the following:

- For signalized intersections, cause overall intersection operations to deteriorate from an acceptable level (LOS E or better) to an unacceptable level (LOS F);
- For unsignalized intersections, cause the worst-case movement (or average of all movements for all-way stop-controlled intersections) to deteriorate from an acceptable level (LOS E or better) to an unacceptable level (LOS F) *and* meet MUTCD peak hour signal warrant;[1]
- For signalized intersections, exacerbate unacceptable (LOS F) operations by increasing an intersection's average delay by five seconds or more;
- For unsignalized intersections that operate unacceptably (LOS F) and meet MUTCD's peak hour signal warrant without the project, exacerbate operations by increasing the overall intersection's volume by more than one percent; or
- For unsignalized intersections that operate unacceptably but do not meet MUTCD's peak hour signal warrant without the project, add sufficient volume to meet the peak hour signal warrant.

For Caltrans facilities, such as I-80, freeway operations are evaluated based on the density of vehicles on the mainline. Freeway segments with peak hour volumes that do not exceed capacity are generally considered acceptable. For the purposes of this EIR analysis, significant traffic impacts on freeway segments are defined when the addition of project traffic causes either of the following:

- Cause the operating level of a freeway segment to deteriorate from LOS E or better to LOS F; or
- Cause traffic volume on a freeway segment already operating at LOS F without the project to increase by more than five percent.

Transit, Bicycle, and Pedestrian Impacts

The proposed project is considered to result in a significant transit, bicycle, and/or pedestrian impact if the project does any of the following:

- Conflicts with existing, planned, or possible future transit, bicycle, and/or pedestrian facilities and services;
- Conflicts with or creates demand for public transit services above that which is provided or planned;
- The path of travel between the project site and transit stops would not meet current California Title 24 handicap accessibility standards; or

[1] Included in the traffic study.

- Does not provide connections to bicycle and pedestrian circulation systems of the surrounding area.

Additional Impacts

The proposed project is considered to result in a significant impact if any of the following conditions occur:

- Estimated parking demand exceeds parking supply;
- The site plan does not accommodate truck maneuvers;
- The project does not provide for adequate emergency vehicle access and on-site circulation; or
- Construction-related traffic causes significant intersection impacts, as defined by the traffic system criteria described above.

Methods of Analysis

The impact analysis considers the roadway, transit, bicycle, and pedestrian components of the transportation system. The specific methods for roadway system impact analyses are described in the following sections.

Project Description

The proposed project is a residential development consisting of 191 single-family residences, including 73 detached single-family units, 78 two to three story attached town-home units, and 40 affordable units. As noted earlier, the traffic study uses 259 single-family residences. Figure 4.3-6 depicts the site plan for the proposed project. The project site is located north of Covell Boulevard near the intersection of Covell Boulevard and Monarch Lane. Vehicular access to the site would be provided from two locations, both on East Covell Boulevard. The primary access driveway would be on Covell Boulevard, aligned with Monarch Lane. To achieve an acceptable service level, this intersection is assumed to be signalized. A secondary project driveway is also proposed on Covell, just east of the Covell Boulevard / Monarch Lane intersection. This second project driveway is being designed to provide right-in/right-out access only. It should be noted that a scenario providing just the primary access intersection is analyzed as an alternative.

Existing Plus Project Conditions

Traffic projections for the project are estimated using a three-step process: (1) trip generation; (2) trip distribution; and (3) trip assignment. In the first step, the amount of traffic added to the surrounding roadway system is estimated. In the second step, the directions the trips use to approach and depart the site are estimated. In the third step, the trips are assigned to specific street segments and intersection turning movements.

Trip Generation

Trip generation for the proposed project was estimated by applying daily trip generation rates from the current Davis Travel Demand Model, and by using peak hour percentages from the

Institute of Transportation Engineers (ITE) *Trip Generation Manual* (7th Edition) for single-family detached housing, to derive conservative peak hour trip estimates. Table 4.3-10 presents daily, AM peak hour, and PM peak hour trip generation estimates for the proposed project. As shown in Table 4.3-10, the proposed project is anticipated to generate 254 new trips during the AM peak hour and 336 new trips during the PM peak hour.

Table 4.3-10
Proposed Project Net Trip Generation Estimates

Land Use	Size	Units	Daily Trips	AM Peak Hour Trips [2]			PM Peak Hour Trips [3]		
				In	Out	Total	In	Out	Total
Single Family [1]	259	d.u.	3,320	64	190	254	212	124	336

Notes: d.u. = dwelling units
1. Davis Model Single Family rate = 12.819 daily trips / d.u.
AM and PM splits based on the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (7th Edition) regression equations for Single-Family Detached Housing (Land Use Code 210):
2. AM Peak Hour: 25% Inbound, 75% Outbound
3. PM Peak Hour: 63% Inbound, 37% Outbound

Sources: Davis Travel Demand Model Report, prepared by Fehr & Peers for the City of Davis, March 2003.
Trip Generation Manual (7th Edition), ITE, 2003.

Trip Distribution and Assignment

The directions of approach and departure for the project trips are based on a distribution pattern developed using the Davis Travel Demand Model. The model-based distribution takes into account roadway capacity, trip types, and the locations of major attractions for the residential trips that will be generated by the project (i.e. schools, workplaces, shopping centers, etc.). The model's distribution pattern was compared to actual traffic turning patterns at intersections near the site, and determined to be a reasonable reflection of residential traffic patterns in the immediate project vicinity. The trip distribution pattern is presented in Figure 4.3-7, and is as follows:

- 21 percent of the project traffic is distributed west on Covell Boulevard;
- 16 percent is distributed to the south on Pole Line Road;
- 13 percent is distributed to the north on Pole Line Road;
- 14 percent is distributed to the south on Monarch Lane;
- 12 percent is distributed west on Second Street;
- 6 percent is distributed to the south on L Street;
- 5 percent is distributed to the east on I-80;
- 3 percent is distributed to the west on Eighth Street;
- 3 percent is distributed along Alhambra Drive;
- 2 percent is distributed south on Mace Boulevard;
- 2 percent is distributed to the east on Chiles Road;
- 2 percent is distributed to the west on Chiles Road; and
- 1 percent is distributed along East Covell Boulevard.

Figure 4.3-6
Site Plan for Proposed Wildhorse Ranch Project

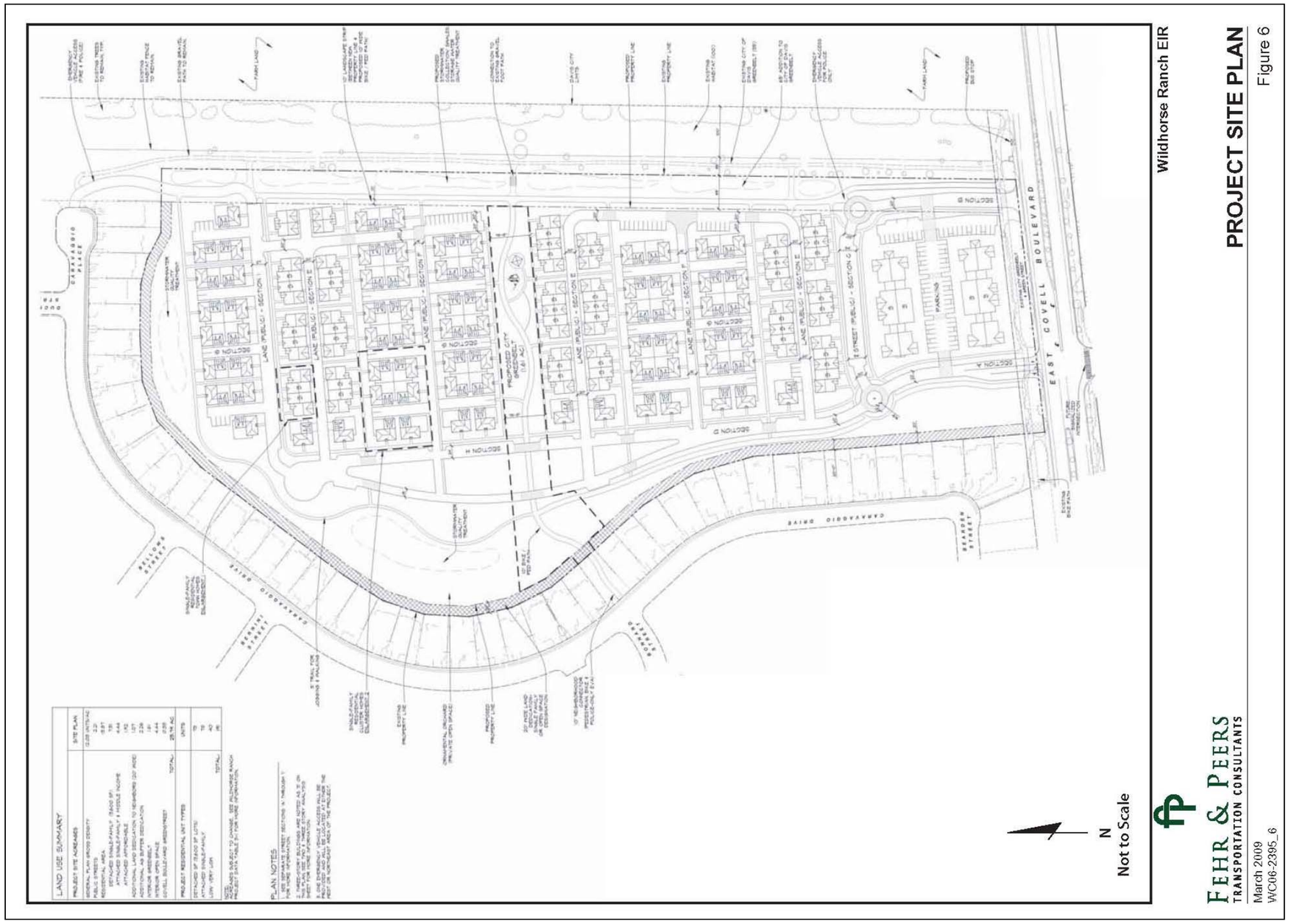
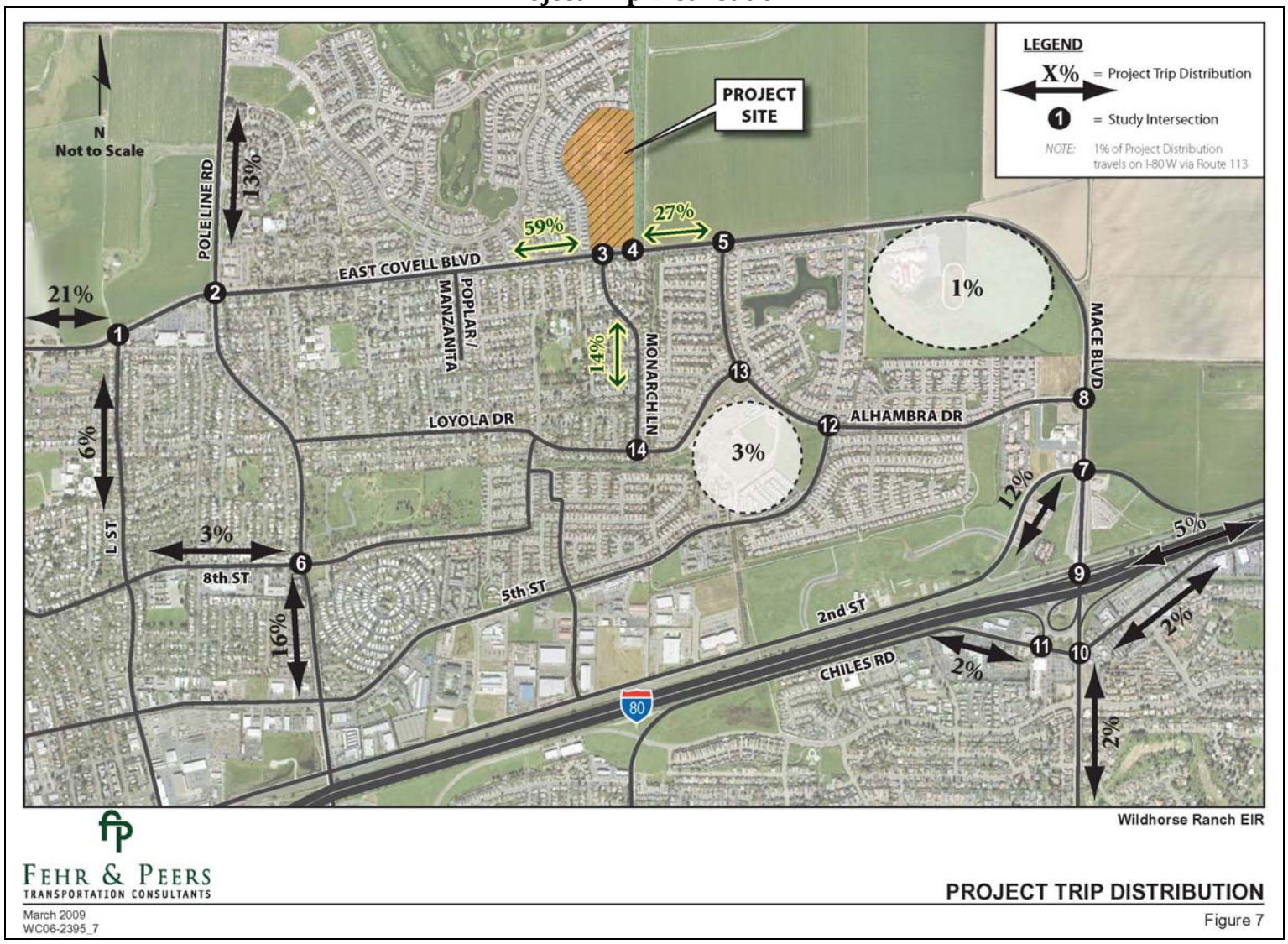


Figure 4.3-7
Project Trip Distribution



Source: Fehr & Peers, March 2009.

Trips generated by the proposed project were assigned to the roadway system based on the direction of approach and departure as described above. Figure 4.3-8 depicts the peak hour project trip assignment, which was combined with existing intersection turning movement volumes to develop Existing Plus Project intersection turning movement volumes. These intersection turning movement volumes are presented in Figure 4.3-9.

Existing Plus Project Intersection Levels of Service

Existing Plus Project conditions were evaluated at each study intersection for the weekday AM and PM peak hours. Table 4.3-11 presents the service levels for the Existing Plus Project conditions. As shown in Table 4.3-11, all study intersections would continue to operate at acceptable levels (LOS E or better) during the weekday AM and PM peak hours.

Peak Hour Volume Traffic Signal Warrant Analysis

The peak hour volume traffic signal warrant (Warrant 3) for urban conditions, found in the *Manual of Uniform Traffic Control Devices* (MUTCD) (Federal Highway Administration, 2000), was evaluated for the unsignalized intersections in the study area, as shown in Table 4.3-12. As in the Existing Conditions evaluation, the Covell Boulevard/L Street intersection is the only intersection that meets the signal warrant. Although the traffic signal warrant is satisfied at this intersection, the intersection operates at an acceptable LOS for the Existing Plus Project condition. Detailed signal warrant calculations are provided in the Traffic Study included as Appendix C of this EIR.

The Covell Boulevard/Monarch Lane/Proposed Project Entrance #1 intersection was assumed to be signalized in the Existing Plus Project scenario. The Existing Plus Project traffic volumes meet the peak hour signal warrant at this location, demonstrating the need for the proposed signal.

Existing Plus Project Mace Boulevard Overcrossing Analysis

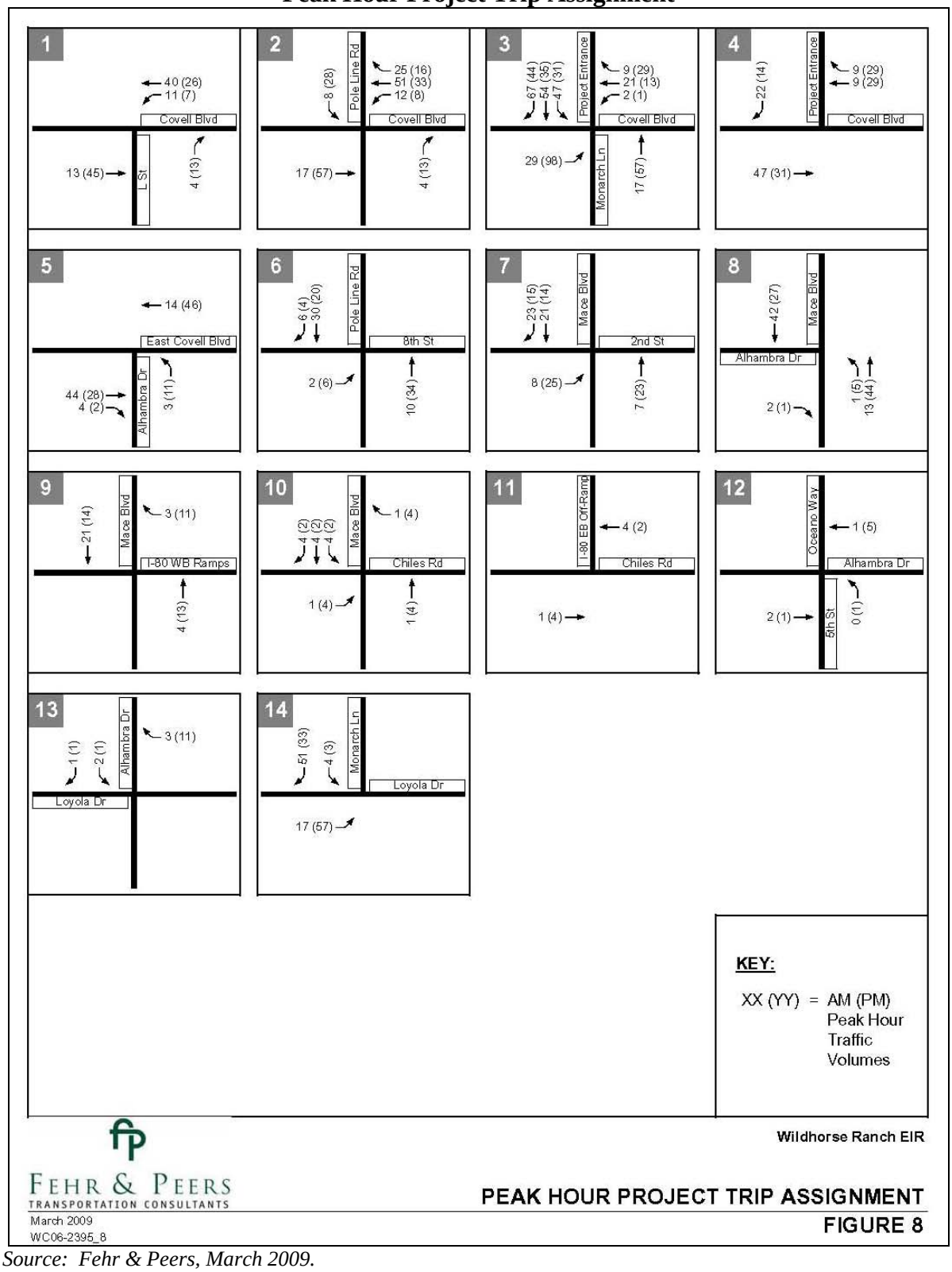
Tables 4.3-13, 4.3-14, and 4.3-15 show the Mace Boulevard Overcrossing Analysis for the Existing and Existing Plus Project cases. The Cumulative and Cumulative Plus Project cases are also shown and are discussed in the cumulative impact section.

Loop Ramp Volume to Capacity Analysis

Un-Metered Analysis

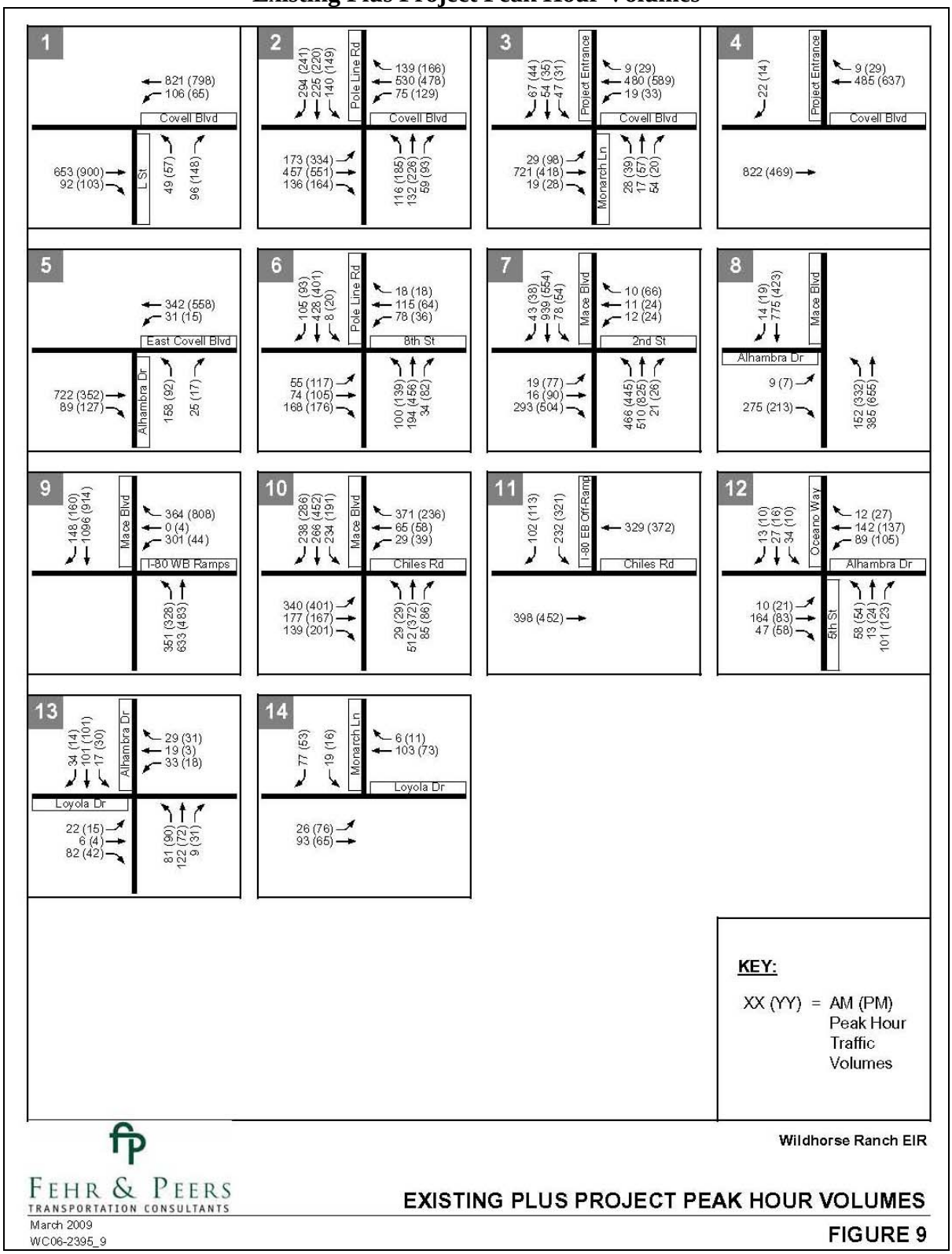
As with the Existing Conditions analysis, a loop ramp capacity of 1,450 vph is assumed. Existing Plus Project peak hour volumes on the loop ramp are 658 vph during the AM peak hour and 425 vph during the PM peak hour. Thus, the ramp volume does not exceed the ramp capacity.

Figure 4.3-8
Peak Hour Project Trip Assignment



Source: Fehr & Peers, March 2009.

Figure 4.3-9
Existing Plus Project Peak Hour Volumes



Source: Fehr & Peers, March 2009.

Table 4.3-11
Existing (2007) and Existing Plus Project
Peak Hour Intersection Levels of Service

	Intersection	Control[1]	Peak Hour	Existing Without Project		Existing With Project	
				Delay [2] (in seconds)	LOS	Delay [2] (in seconds)	LOS
1.	**Covell Boulevard/L Street**	SSSC	AM PM	3 (26) 3 (30)	A (D) A (D)	3 (29) 4 (35)	A (D) A (E)
2.	**Covell Boulevard/Pole Line Road**	Signal	AM PM	25 33	C C	26 34	C C
3.	**Covell Boulevard/Monarch Lane/Proposed Project Entrance #1**	Signal[3]	AM PM	2 (24) 1 (19)	A (C) A (C)	6 6	A A
4.	**Covell Boulevard/Proposed Project Entrance #2**	SSSC	AM PM	N/A	N/A	0 (10) 0 (11)	A (B) A (B)
5.	**Covell Boulevard/Alhambra Drive**	Signal	AM PM	10 7	A A	9 7	A A
6.	**Eighth Street/Pole Line Road**	Signal	AM PM	17 16	B B	18 16	B B
7.	**Second Street/Mace Boulevard**	Signal	AM PM	28 25	C C	29 25	C C
8.	**Mace Boulevard/Alhambra Drive**	Signal	AM PM	12 11	B B	13 11	B B
9.	**Mace Boulevard/I-80 Westbound Ramps**	Signal	AM PM	12 12	B B	13 12	B B
10.	**Mace Boulevard/Chiles Road**	Signal	AM PM	29 22	C C	29 21	C C
11.	**Chiles Road/I-80 Eastbound Off-Ramp**	Signal	AM PM	6 7	A A	6 7	A A
12.	**Alhambra Drive/Fifth Street**	AWSC	AM PM	8 8	A A	8 8	A A
13.	**Alhambra Drive/Loyola Drive**	AWSC	AM PM	9 8	A A	9 8	A A
14.	**Loyola Drive/Monarch Lane**	SSSC	AM PM	2 (10) 2 (9)	A (A) A (A)	4 (10) 4 (10)	A (B) A (A)

Notes:
1. Signal = signalized intersection, SSSC = side street stop controlled intersection, AWSC = all-way stop-controlled intersection
2. For side-street stop-controlled intersections, delay is reported as: Intersection average (worst case approach).
3. Intersection is SSSC in Existing No Project conditions, and assumed to be signalized in Existing Plus Project conditions.

Source: Fehr & Peers, March 2009.

Table 4.3-12
Existing Plus Project Peak Hour Signal Warrant Analysis

Intersection		Control[1]	Without Project	With Project
			Peak Hour Warrant Met?	Peak Hour Warrant Met?
1.	Covell Boulevard/L Street	SSSC	**Yes**	**Yes**
3.	Covell Boulevard/Monarch Lane/Proposed Project Entrance #1	SSSC[2]	No	Yes
4.	Covell Boulevard/Proposed Project Entrance #2	SSSC	N/A	No
12.	Alhambra Drive/Fifth Street	AWSC	No	No
13.	Alhambra Drive/Loyola Drive	AWSC	No	No
14.	Loyola Drive/Monarch Lane	SSSC	No	No

Notes:
1. SSSC = side-street stop-controlled intersection, AWSC = all-way stop-controlled intersection
2. Intersection is SSSC in no Project conditions, and assumed to be signalized in with Project conditions.

Source: Fehr & Peers, March 2009.

Table 4.3-13
Loop Ramp Volume to Capacity Analysis

Scenario	Variable	Existing	Existing Plus Project	Cumulative	Cumulative Plus Project
Without Ramp Metering	Loop Ramp Capacity (vehicles/hr)	1,450	1,450	1,450	1,450
	AM Peak Hour Demand (vehicles/hr)	650	658	959	966
	PM Peak Hour Demand (vehicles/hr)	420	425	983	988
	AM Exceed Capacity?	NO	NO	NO	NO
	PM Exceed Capacity?	NO	NO	NO	NO
With Ramp Metering	AM Metering Rate (vehicles/hr) (1)	650	650	650	650
	PM Metering Rate (vehicles/hr) (1)	440	440	440	440
	AM % HOV (2)	11%	11%	11%	11%
	PM % HOV (2)	12%	12%	12%	12%
	AM Non-HOV Demand (vehicles/hr)	579	586	854	860
	PM Non-HOV Demand (vehicles/hr)	370	374	865	869
	AM Exceed Capacity?	NO	NO	**YES**	**YES**
	PM Exceed Capacity?	NO	NO	**YES**	**YES**

Note: **Bold** = Input Value Shaded = Exceeds Capacity

Source: Fehr & Peers, March 2009.

Table 4.3-14
Mace Overcrossing Queue Analysis

Scenario	Variable	Existing	Existing Plus Project	Cumulative	Cumulative Plus Project
Without Ramp Metering	Capacity of Right-Most Freeway Lane (vehicles/hr)	**2,250**	2,250	2,250	2,250
	Merge Rate (Freeway:Ramp)	**1**	1	1	1
	Capacity for Ramp Vehicles (vehicles/hr)	1,125	1,125	1,125	1,125
	Vol > Capacity AM?	NO	NO	NO	NO
	Vol > Capacity PM?	NO	NO	NO	NO
Queue Length Needed Calculation	AM Vehicles Served by Cycle (vehicles/cycle)	22	23	33	33
	PM Vehicles Served by Cycle (vehicles/cycle)	14	15	34	34
	AM 90% Poisson Distribution	27	28	40	40
	PM 90% Poisson Distribution	18	19	41	41
	Vehicle Length (feet/vehicle)	25	25	25	25
	AM Queue Length Needed	675	700	1,000	1,000
	PM Queue Length Needed	450	475	1,025	1,025
Without Ramp Metering	Length from Gore Point to Mace Road	**1,350**	1,350	1,350	1,350
	Q > Storage AM?	NO	NO	NO	NO
	Q > Storage PM?	NO	NO	NO	NO
With Ramp Metering	AM Metering Rate (vehicles/hr) (1)	650	650	650	650
	PM Metering Rate (vehicles/hr) (1)	440	440	440	440
	Vol>Capacity AM?	NO	NO	**YES**	**YES**

Table 4.3-14 (Continued)
Mace Overcrossing Queue Analysis

Scenario	Variable	Existing	Existing Plus Project	Cumulative	Cumulative Plus Project
	Vol>Capacity PM?	NO	NO	**YES**	**YES**
Queue Length Needed Calculation	AM Vehicles Served by Cycle (vehicles/cycle)	20	20	29	30
	PM Vehicles Served by Cycle (vehicles/cycle)	13	13	30	30
	AM 90% Poisson Distribution	25	25	35	36
	PM 90% Poisson Distribution	17	17	36	36
	Vehicle Length (feet/vehicle)	25	25	25	25
	AM Queue Length Needed	625	625	875	900
	PM Queue Length Needed	425	425	900	900
With Ramp Metering	Length from Ramp Meter to Mace Road	**850**	850	850	850
	Q > Storage AM?	NO	NO	**YES**	**YES**
	Q > Storage PM?	NO	NO	**YES**	**YES**

Note: **Bold** = Input Value Shaded = Exceeds Capacity

Source: Fehr & Peers, March 2009.

Table 4.3-15
Lane Imbalance Analysis

Scenario	Variable	Existing	Existing Plus Project	Cumulative	Cumulative Plus Project
Lane Utilization Factor Calculation	Total Southbound Flow AM	1075	1091	1419	1,434
	Highest Volume Lane AM	650	658	959	966
	Total Southbound Flow PM	900	911	1713	1724
	Highest Volume Lane PM	420	425	983	988
	Lanes	2	2	2	2
	Lane Utilization Factor AM	0.83	0.83	0.74	0.74
	Lane Utilization Factor PM	1.07	1.07	0.87	0.87
	Average Delay AM	12	13	33	35
	Level of Service AM	B	B	C	C
	Average Delay PM (from Synchro worksheets)	12	12	58	60
	Level of Service PM (from Synchro worksheets)	B	B	E	E
	AM Imbalance Problem?	NO	NO	NO	NO
	PM Imbalance Problem?	NO	NO	**YES**	**YES**

Note: **Bold** = Input Value Shaded = Exceeds Capacity

Source: Fehr & Peers, March 2009.

Metered Analysis

As described in the existing conditions analysis, the metered volume is 11 percent and 12 percent less than the total Existing Plus Project volume, or 586 and 374 vph for the AM and PM peak hours, respectively. Thus, the metered ramp volume would not exceed the metered ramp capacities of 650 and 440 vph in the AM and PM peak hours, respectively.

Mace Overcrossing Queue Analysis

Un-Metered Analysis

As with the Existing Conditions analysis, the capacity of the right-most freeway lane is estimated at 2,250 vph. With 1:1 merging on the freeway, 1,125 vph can be served by the ramp. Given the peak hour counts and volume projections described above, a maximum volume of 658 vph would merge onto the freeway from the loop ramp. All of the vehicles would be able to merge onto the freeway, and a queue would not extend back to the Mace overcrossing.

The storage length necessary to serve the ramp volume is also considered, and the assumption is made that the signal at the Mace Boulevard / I-80 westbound ramps intersection continues to operate with a cycle length of 124 seconds. With the timing and peak hour volume of 658 vehicles in the right-hand southbound lane (this assumes that only the ramp volume, which represents 60 percent of the southbound traffic, will be in this lane), approximately 23 vehicles will be released each cycle. To account for the random arrival of vehicles, this number is adjusted using a Poisson distribution. Under these assumptions, a storage length of 700 feet (sufficient for 27 vehicles at 25 feet per vehicle) is recommended to serve the volume arriving on the ramp each signal cycle. The length of the ramp, measured to the merge point on the freeway, is approximately 1,350 feet. This length is sufficient to prevent a queue from extending onto the Mace overcrossing.

Metered Analysis

For the metered case, the queue storage length is shorter, as it is measured from the meter to the merge point on Mace Boulevard. This storage length is approximately 850 feet. This is also longer than the 625-foot maximum queue projected in the metered case (refer to Table 4.3-11). Thus, the length is sufficient to prevent a queue from extending onto the Mace overcrossing.

Notwithstanding this analysis, based on existing observations of the ramps, it is projected that the queue would occasionally reach the right-hand lane on Mace Boulevard, similar to the existing condition, but this would not be a regular, hour-long condition during the peak hours.

Lane Imbalance Analysis

Under Existing Plus Project conditions, the total southbound demand flow during the AM peak hour is 1,091 vph, while the demand in the highest volume lane (the right-most lane) is 658 vph. Because two lanes exist at this approach, the LUF is 1,091 / (658 x 2) = 0.83. Because the LUF is greater than one during the PM peak hour, no lane imbalance is assumed. Under Existing Plus Project conditions, the intersection operates at a LOS B during the AM and PM peak hours. Thus, the AM peak hour lane imbalance does not cause operations at the Mace Boulevard / I-80 westbound ramps intersection to fall below the City's standard.

Existing Plus Project Freeway Analysis

Existing Plus Project freeway mainline segment LOS was analyzed using the same methods as described in the setting. The freeway segment LOS results are summarized in Table 4.3-16. As shown in Table 4.3-16, all study freeway segments operate at LOS D or better.

Table 4.3-16
Existing Plus Project Freeway Segment Level of Service

Segment	Direction of Travel	Peak Hour	# of Lanes	Existing Without Project			Existing With Project		
				Volume	Density[1]	LOS	Volume	Density[1]	LOS
I-80: West of Mace Boulevard	Eastbound	AM PM	3	4,350 4,619	23.8 25.4	C C	4,350 4,619	23.8 25.4	C C
I-80: West of Mace Boulevard	Westbound	AM PM	3	4,242 4,574	23.1 25.1	C C	4,242 4,574	23.1 25.1	C C
I-80: East of Mace Boulevard	Eastbound	AM PM	3	4,906 4,804	27.3 26.6	D D	4,916 4,810	27.4 26.6	D D
I-80: East of Mace Boulevard	Westbound	AM PM	3	4,405 4,931	24.1 27.5	C D	4,408 4,942	24.1 27.5	C D

Note:
1. Density measured in passenger cars per mile per lane.

Source: Fehr & Peers, March 2009.

Cumulative (Year 2015) Traffic Conditions

Cumulative No Project Traffic Forecasts

A cumulative conditions analysis was performed to identify potential impacts in year 2015. Year 2015 is the analysis year forecasted by the City of Davis' Travel Demand Model. The 2015 model incorporates full buildout of the Davis General Plan (which has a 2010 planning horizon), extrapolated residential growth within the City for an additional five years to 2015, and full

buildout of the UC Davis 2003 Long Range Development Plan, including the research park and *Aggie Village*. Other specific projects melded in the 2015 model include the Spring Lake residential development in the City of Woodland and the Woodland Gateway development.

Cumulative No Project Roadway System

Because the Davis Travel Demand Model includes residential and commercial growth in the area north of Covell Boulevard and west of Pole Line Road, the Covell Boulevard / L Street intersection was assumed to be a signal-controlled four-legged intersection for the cumulative analyses (this intersection meets the peak hour volume traffic signal warrant for Existing Conditions). This assumption does not mean that the residential uses have been approved by the City of Davis, or that the signal is planned for installation. These are merely assumptions about the future "background" condition, and they are made to ensure that the future cumulative analysis is adequately conservative. Cumulative intersection geometries and traffic controls are shown on Figure 4.3-10.

Cumulative No Project Intersection Volumes

Two projects in the City of Woodland were identified as developments that could produce and attract trips along Pole Line Road and Covell Boulevard that currently are not accounted for in the City of Davis Travel Demand Model. The Spring Lake development and the Woodland Gateway development combined would add a total of 425 trips during the AM peak hour and 239 trips during the PM peak hour on Pole Line Road. Table 4.3-17 presents trips from these two developments along Pole Line Road.

Table 4.3-17
Year 2015 City of Woodland Projects

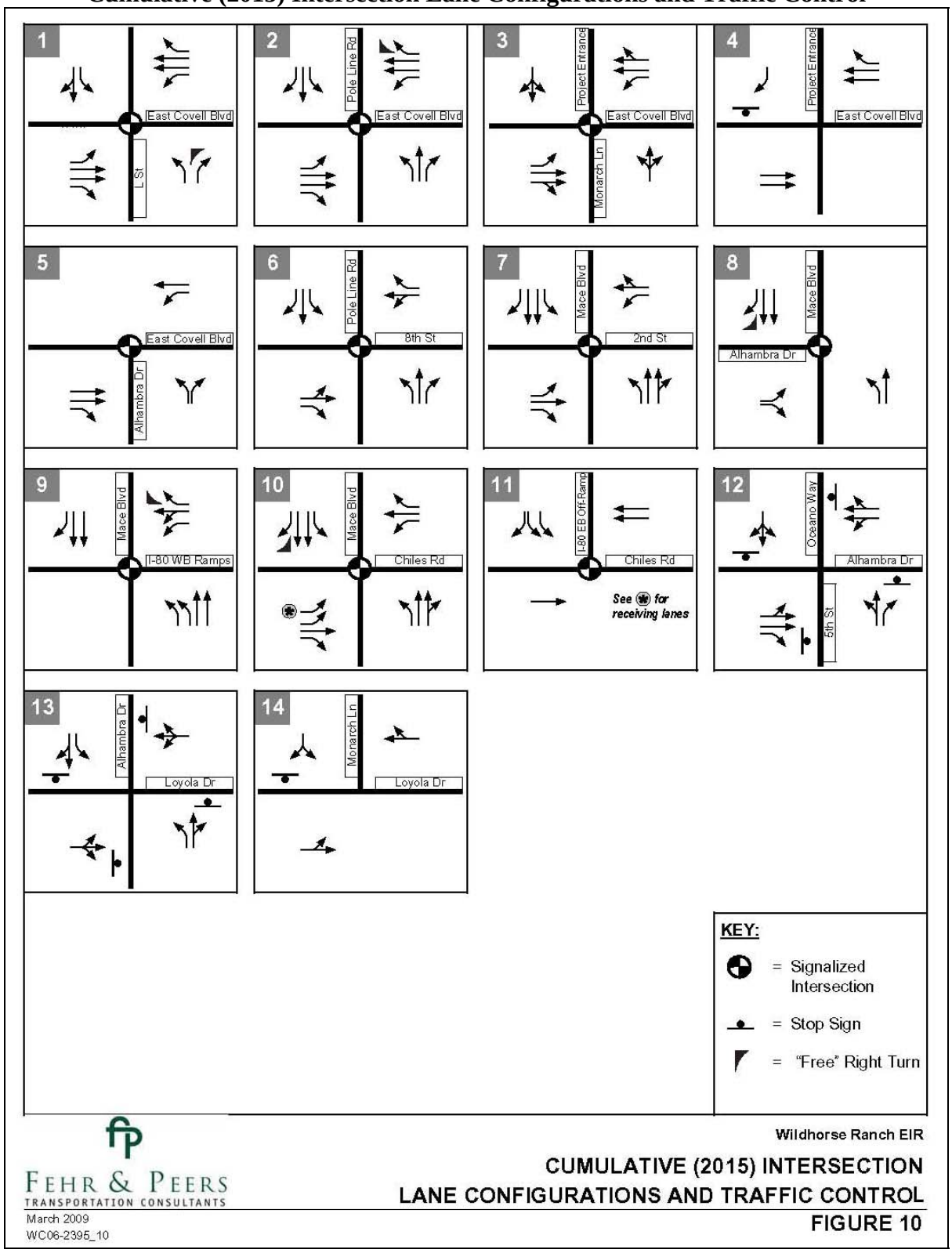
Development	Peak Hour	Northbound on Pole Line Road	Southbound on Pole Line Road
Spring Lake	AM	48	47
	PM	47	72
Gateway Project	AM	160	170
	PM	70	50

Source: Woodland Gateway Project Final TIS, 2006.
Spring Lake Specific Plan - Traffic Impact Analysis Update, 2001.

Trips generated from these two projects were manually distributed along Pole Line Road, Covell Boulevard, and other study locations.

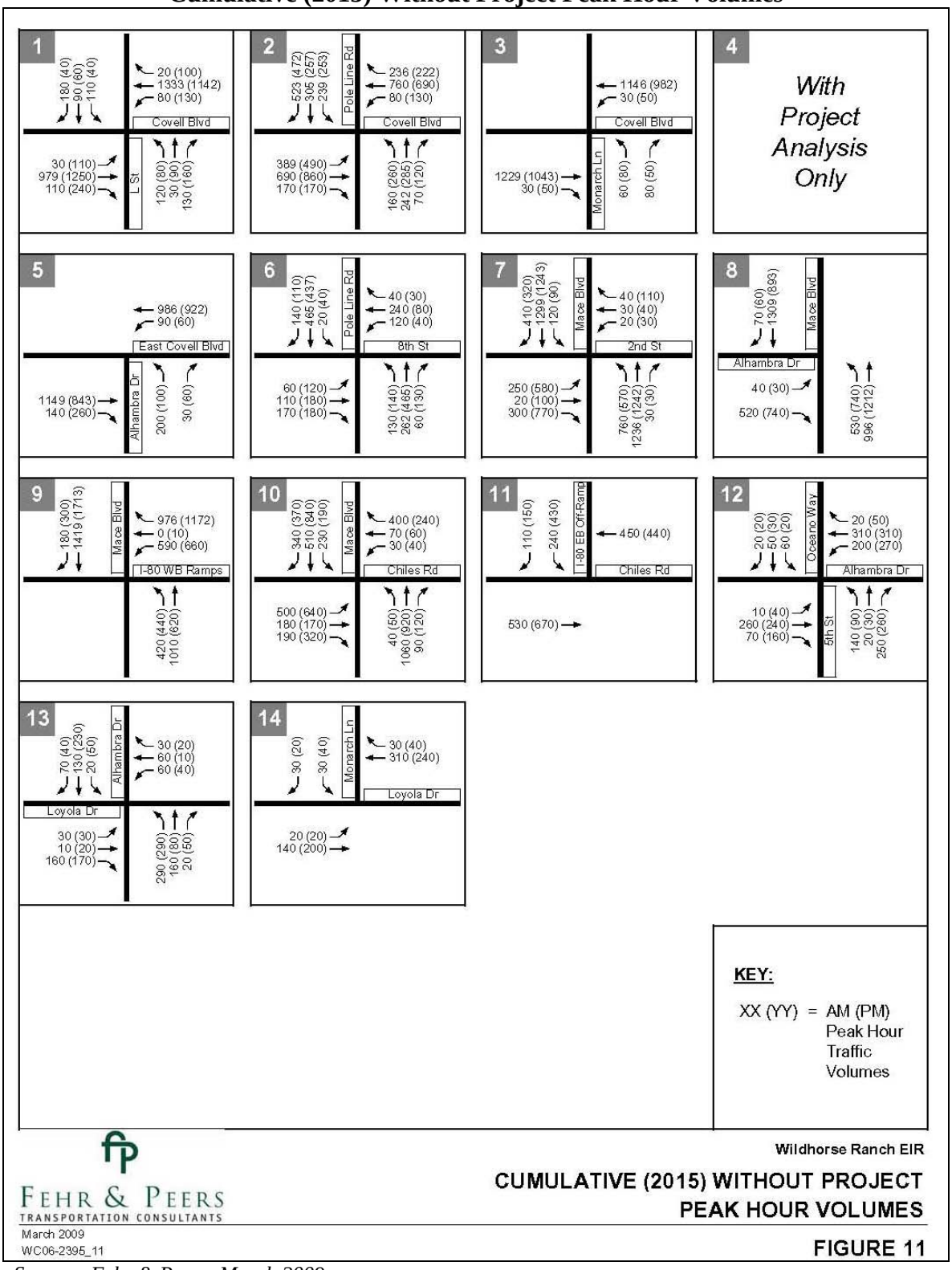
The Cumulative No Project intersection volumes were developed by furnessing existing volumes to produce background cumulative intersection volumes. Furnessing involves extracting AM and PM link (roadway segment) volumes for the existing year and the cumulative (2015) year from the Davis Travel Demand Model, and applying the change in link volumes to the turning movements at each intersection. The distributed Spring Lake and Gateway project trips were then added to the furnessed turning movements to produce the Cumulative Without Project intersection turning movement volumes, which are presented on Figure 4.3-11.

Figure 4.3-10
Cumulative (2015) Intersection Lane Configurations and Traffic Control



Source: Fehr & Peers, March 2009.

Figure 4.3-11
Cumulative (2015) Without Project Peak Hour Volumes



Source: Fehr & Peers, March 2009.

Cumulative Plus Project Intersection Volumes

The peak hour project traffic volumes, as determined previously, were added to the Cumulative (2015) No Project volumes to determine future traffic volumes with the proposed project. Cumulative (2015) Plus Project intersection peak hour traffic volumes are shown on Figure 4.3-12.

Cumulative Conditions Intersection Levels of Service

The Cumulative (2015) intersection analysis results are presented in Table 4.3-18. All study intersections are projected to operate at an overall acceptable level of service range (i.e., LOS E or better) during the Cumulative (2015) No Project scenario except for the following intersections:

- Covell Boulevard / Monarch Lane (unsignalized in the Cumulative No Project scenario); and
- Second Street / Mace Boulevard.

Both intersections operate at an unacceptable service level during the AM and PM peak hours.

With the addition of project traffic, all study intersections would operate at acceptable service levels during the AM and PM peak hours, except at the Second Street / Mace Boulevard intersection. The Covell Boulevard / Monarch Lane intersection operates acceptably in the With Project scenario due to the planned signalization of the main project intersection.

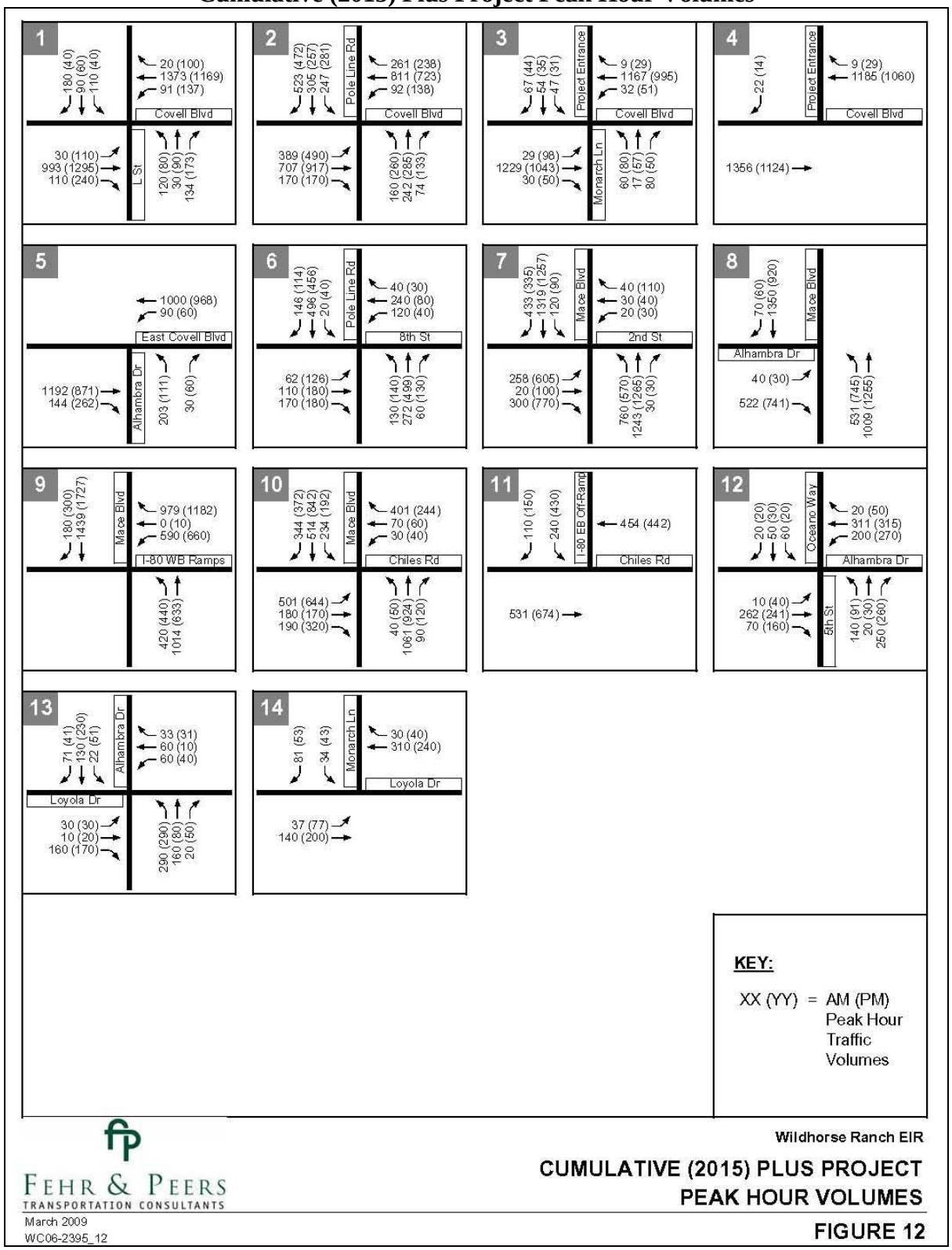
The Cumulative (2015) Plus Project scenario was also analyzed for an alternate project access plan. The alternate plan would provide one primary project driveway, and no secondary right-in/right-out driveway. With the alternate plan, all of the traffic the project is anticipated to generate was assigned to the single project driveway. For this alternate configuration, the intersection of the project entrance and Covell Boulevard continues to operate at LOS A during both the AM and PM peak hours.

Cumulative Conditions Peak Hour Volume Traffic Signal Warrant Analysis

The peak hour volume traffic signal warrant for urban conditions, found in the *Manual of Uniform Traffic Control Devices* (MUTCD) (Federal Highway Administration, 2000), was evaluated for the unsignalized intersections in the study area, as shown in Table 4.3-19. Two unsignalized intersections met the peak hour signal warrant for the Cumulative No Project and Cumulative Plus Project scenarios:

- Covell Boulevard/Monarch Lane; and
- Alhambra Drive/Fifth Street.

Figure 4.3-12
Cumulative (2015) Plus Project Peak Hour Volumes



Source: Fehr & Peers, March 2009.

Table 4.3-18
Cumulative (2015) Without and With Project
Peak Hour Intersection Levels of Service

	Intersection	Control[1]	Peak Hour	Cumulative (2015) Without Project		Cumulative (2015) With Project	
				Delay [2] (in seconds)	LOS	Delay [2] (in seconds)	LOS
1.	**Covell Boulevard/L Street**	Signal	AM PM	10 9	A A	10 10	A B
2.	**Covell Boulevard/Pole Line Road**	Signal	AM PM	59 65	E E	64 69	E E
3.	**Covell Boulevard/Monarch Lane/Proposed Project Entrance #1**	Signal[3]	AM PM	32 **(>50)** 28 **(>50)**	D **(F)** D **(F)**	7 7	A A
4.	**Covell Boulevard/Proposed Project Entrance #2**	SSSC	AM PM	N/A	N/A	0 (14) 0 (13)	A (B) A (B)
5.	**Covell Boulevard/Alhambra Drive**	Signal	AM PM	13 9	B A	13 9	B A
6.	**Eighth Street/Pole Line Road**	Signal	AM PM	21 18	C B	22 19	C B
7.	**Second Street/Mace Boulevard**	Signal	AM PM	**>100** **>100**	**F** **F**	**>100** **>100**	**F** **F**
8.	**Mace Boulevard/Alhambra Drive**	Signal	AM PM	36 52	D D	39 54	D D
9.	**Mace Boulevard/I-80 Westbound Ramps**	Signal	AM PM	33 58	C E	35 60	C E
10.	**Mace Boulevard/Chiles Road**	Signal	AM PM	52 35	D D	53 36	D D
11.	**Chiles Road/I-80 Eastbound Off-Ramp**	Signal	AM PM	7 9	A A	7 9	A A
12.	**Alhambra Drive/Fifth Street**	AWSC	AM PM	12 13	B B	12 13	B B
13.	**Alhambra Drive/Loyola Drive**	AWSC	AM PM	13 13	B B	13 13	B B
14.	**Loyola Drive/Monarch Lane**	SSSC	AM PM	2 (12) 2 (12)	A (B) A (B)	3 (12) 3 (13)	A (B) A (B)

Notes: Results in **bold** represent unacceptable levels of service.
1. Signal = signalized intersection, SSSC = side street stop controlled intersection, AWSC = all-way stop-controlled intersection.
2. For side-street stop-controlled intersections, delay is reported as: Intersection average (worst case approach).
3. Intersection is SSSC in Cumulative No Project conditions, and assumed to be signalized in Cumulative Plus Project conditions.

Source: Fehr & Peers, March 2009.

Table 4.3-19
Cumulative (2015) Peak Hour Signal Warrant Analysis

Intersection		Control[1]	Without Project	With Project
			Peak Hour Warrant Met?	Peak Hour Warrant Met?
3.	Covell Boulevard/Monarch Lane/Proposed Project Entrance #1	SSSC	**Yes**	**Yes**
4.	Covell Boulevard/Proposed Project Entrance #2	SSSC[2]	N/A	No
12.	Alhambra Drive/Fifth Street	AWSC	**Yes**	**Yes**
13.	Alhambra Drive/Loyola Drive	AWSC	No	No
14.	Loyola Drive/Monarch Lane	SSSC	No	No

Notes:
1. SSSC = side-street stop-controlled intersection
2. Intersection is SSSC in no Project conditions, and assumed to be signalized in with Project conditions.

Source: Fehr & Peers, March 2009.

The Covell Boulevard / Monarch Lane intersection operates unacceptably during the AM and PM peak hours; the intersection was assumed to be signalized for the Cumulative Plus Project condition. Although the Alhambra Drive / Fifth Street intersection meets the peak hour traffic signal warrant, the intersection still operates at an acceptable LOS for all scenarios. An evaluation of all applicable warrants should be conducted and additional factors (e.g., congestion, approach conditions, driver confusion) should be considered before the decision to install a signal is made.

Cumulative No Project Mace Boulevard Overcrossing Analysis

Table 4.3-11 presents the Cumulative No Project and Cumulative Plus Project Mace Boulevard Overcrossing Analysis.

Loop Ramp Volume to Capacity Analysis

Un-Metered Analysis

As with the Existing and Existing Plus Project analyses, a loop ramp capacity of 1,450 vph is assumed. Cumulative No Project peak hour volumes on the loop ramp are 959 vph during the AM peak hour and 983 vph during the PM peak hour. Thus, the ramp volume does not exceed the ramp capacity.

Metered Analysis

The metered volume is 11 percent and 12 percent less than the total Cumulative No Project volume, or 854 and 865 vph for the AM and PM peak hours, respectively. Thus, the metered ramp volume would exceed the metered ramp capacities of 650 and 440 vph in the AM and PM peak hours, respectively.

Mace Overcrossing Queue Analysis

Un-Metered Analysis

As with the Existing and Existing Plus Project analyses, the capacity of the right-most freeway lane is estimated at 2250 vph. With 1:1 merging on the freeway, 1,125 vph can be served by the ramp. Given the peak hour counts and future volume projections described above, a maximum volume of 983 vph would merge onto the freeway from the loop ramp. All of the vehicles would be able to merge onto the freeway, and a queue would not extend back to the Mace overcrossing.

The storage length necessary to serve the ramp volume is also considered, and the assumption is made that the signal at the Mace Boulevard / I-80 westbound ramps intersection continues to operate with a cycle length of 124 seconds. With the timing and peak hour volume of 983 vehicles in the right-hand southbound lane (this assumes that only the ramp volume, which represents 57 percent of the southbound traffic, will be in this lane), approximately 34 vehicles will be released each cycle. To account for the random arrival of vehicles, the number was adjusted using a Poisson distribution. Under these assumptions, a storage length of 1,025 feet (sufficient for 41 vehicles with 25 feet of space each) is recommended to serve the volume arriving on the ramp each signal cycle. The length of the ramp (measured to the merge point on the freeway) is approximately 1,350 feet. This length is sufficient to prevent a queue from extending onto the Mace overcrossing.

Metered Analysis

For the metered case, the queue storage length is shorter, as it is measured from the meter to the merge point on Mace Boulevard. This storage length is approximately 850 feet. This is about two car-lengths less than the 900-foot maximum queue projected (refer to table 4.3-11). Thus, the queue would exceed the storage length in the metered case, by about two car lengths.

Lane Imbalance Analysis

Under Cumulative No Project conditions, the total southbound demand flow during the AM peak hour is 1,419 vph, while the demand in the highest volume lane (the right-most lane) is 959 vph. Because two lanes exist at this approach, the LUF is 1,419 / (959 x 2) = 0.74. During the PM peak hour, the southbound demand flow is 1,713, while the demand in the highest volume lane is 983, which results in an LUF of 0.87. Under Cumulative No Project conditions, the upstream intersection of Mace Boulevard/I-80 Westbound Ramps operates at LOS C during the AM peak hour and at LOS E during the PM peak hour. Thus, the lane imbalance does not cause operations at this intersection to fall below the City's standard.

Cumulative Plus Project Mace Boulevard Overcrossing Analysis

Loop Ramp Volume to Capacity Analysis

Un-Metered Analysis

As with the previous cases, a loop ramp capacity of 1,450 vph is assumed. Cumulative Plus Project Peak hour volumes on the loop ramp are 966 in the AM peak hour and 988 in the PM peak hour. Thus, the ramp volume does not exceed the ramp capacity.

Metered Analysis

The metered volume is 11 percent and 12 percent less than the total Cumulative Plus Project volume, or 860 and 869 vph for the AM and PM peak hours, respectively. Thus, the metered ramp volume would exceed the metered ramp capacities of 650 and 440 vph in the AM and PM peak hours, respectively. The project adds 6 AM peak hour single-occupant vehicles (SOVs) to the ramp and 4 PM peak hour SOVs to the ramp.

Mace Overcrossing Queue Analysis

Un-Metered Analysis

As with the previous analyses, the capacity of the right-most freeway lane is estimated at 2,250 vph. With 1:1 merging on the freeway, 1,125 vph can be served by the ramp. Given the peak hour counts and future volume projections described above, a maximum volume of 988 vph would merge onto the freeway from the loop ramp. All these vehicles would be able to merge onto the freeway, and a queue would not extend back to the Mace overcrossing.

The storage length necessary to serve the ramp volume is also considered. The signal at the Mace Boulevard/I-80 westbound ramps intersection was assumed to continue to operate with a cycle length of 124 seconds. With the timing and peak hour volume of 988 vehicles in the right-hand southbound lane (this assumes that only the ramp volume, which represents 57% of the southbound traffic, will be in this lane), approximately 34 vehicles will be released each cycle. To account for the random arrival of vehicles, the number was adjusted using a Poisson distribution. Under these assumptions, a storage length of 1,025 feet (sufficient for 41 vehicles with 25 feet of space each) is recommended to serve the volume arriving on the ramp each signal cycle. The length of the ramp (measured to the merge point on the freeway) is approximately 1,350 feet. This length is sufficient to prevent a queue from extending onto the Mace overcrossing.

Metered Analysis

For the metered case, the queue storage length is shorter, as it is measured from the meter to the merge point on Mace Boulevard. This storage length is approximately 850 feet. This is about two car lengths less than the 900-foot maximum queue projected got the

metered case (See Table 4.3-11). Thus, the maximum queue would exceed the storage length by about two car lengths, which is the same as the exceedence under the Cumulative No Project case.

Lane Imbalance Analysis

Under Cumulative With Project conditions, the total southbound demand flow in the AM peak is 1,434 vph, while the demand in the highest volume lane (the right-most lane) is 966 vph. Because this approach includes two lanes, the LUF is 1,434 / (966 x 2) = 0.74. In the PM peak hour the southbound demand flow is 1,724, while the demand in the highest volume lane is 988, which results in an LUF of 0.87. Under Cumulative Plus Project conditions, the intersection of Mace Boulevard/I-80 Westbound Ramps operates at a LOS C in the AM peak hour and at a LOS E in the PM peak hour. Thus, the lane imbalance does not cause operations at this intersection to fall below the City's Standard.

Cumulative Conditions Freeway Segment Levels of Service

Cumulative No Project and Cumulative Plus Project freeway mainline segment LOS were analyzed using the same methods as described in the setting. The freeway segment LOS results are summarized in Table 4.3-20. As shown, the two mainline segments east of Mace Boulevard operate unacceptably during at least one of the peak periods. However, this is due to cumulative growth rather than project-related traffic growth. In no case, does the project increase freeway traffic volume by more than five percent.

Table 4.3-20
Cumulative (2015) Freeway Segment LOS

Segment	Direction of Travel	Peak Hour	# of Lanes	Cumulative (2015) Without Project			Cumulative (2015) With Project		
				Volume	Density[1]	LOS	Volume	Density[1]	LOS
I-80: West of Mace Boulevard	Eastbound	AM PM	3	5,374 5,671	30.9 33.7	D D	5,374 5,671	30.9 33.7	D D
I-80: West of Mace Boulevard	Westbound	AM PM	3	5,445 6,191	31.5 40.0	D E	5,445 6,191	31.5 40.0	D E
I-80: East of Mace Boulevard	Eastbound	AM PM	3	6,513 6,754	**>45** **>45**	**F** **F**	6,522 6,760	**>45** **>45**	**F** **F**
I-80: East of Mace Boulevard	Westbound	AM PM	3	6,411 7,293	43.5 **>45**	E **F**	6,414 7,303	43.6 **>45**	E **F**

Notes: Results in **bold** represent unacceptable levels of service.
1. Density measured in passenger cars per mile per lane.

Source: Fehr & Peers, March 2009.

Project Impacts and Mitigation Measures

4.3-1 Impacts to study intersections and roadways.

The traffic study analyzed potential impacts to 14 study intersections and four roadway segments within the project area. As shown in Table 4.3-10, the proposed project would not result in any of the study intersections deteriorating from an acceptable LOS (E or better) to LOS F under Existing Plus Project conditions. Nor would the proposed project adversely impact freeway segment LOS levels. Therefore, the addition of project traffic to the surrounding existing roadway traffic volumes would have a ***less-than-significant*** impact on the intersections and roadways studied.

Mitigation Measure(s)
None required.

4.3-2 Impacts related to the provision of efficient site access and circulation.

Description of Site Access and Circulation Plan

Vehicular access to the proposed project site would be provided from Covell Boulevard. Two project driveways are proposed. The first proposed driveway is aligned with Monarch Lane and would provide full access via a new traffic signal, proposed as part of the project. The second proposed driveway is located just east of the main proposed driveway and west of the Covell Boulevard / Alhambra Drive intersection. The second proposed driveway would be restricted to right-in/right-out movements, due to the driveway's close proximity to the main project entrance and the median on Covell Boulevard. The project access intersections are projected to operate at acceptable service levels under both Existing Plus Project and Cumulative Plus Project conditions.

The main entrance road is aligned in a north-south direction and would provide access via several connecting east-west roadways. The northern two-thirds of the main entrance road is proposed to split into separate northbound and southbound alignments, such that many outbound trips would travel in a counter-clockwise loop to exit the site. The secondary entrance would loop in to the main access road just north of the affordable housing section.

Evaluation of Site Circulation Plan

Roadway Widths

The internal roadways typically do not meet the City of Davis minimum curb-to-curb standards for a standard local residential street nor a Village Home local street. The widths and lack of adequate corner radii will not accommodate moving van-sized trucks (AASHTO WB-40, or the larger California Legal WB-50. Specific concerns are noted below.

Primary Entry Roadway – The 40-foot width near East Covell Boulevard is adequate to provide one entry lane and two exit lanes. The northern section of this roadway would function more efficiently if the two directional sections were combined to provide a standard two-way roadway. As designed, with two 16-foot one-way sections, breakdowns are more likely to block traffic, and large truck turns to/from the east-west access roads are impossible. Since this roadway serves most of the traffic generated by the site, the traffic consultant recommends that it meet the City's Local Street Standard, which, with parking only on one side, would provide an 18-foot travel-way, one-foot curbs, and an eight-foot parking lane, for 28 feet total. With this configuration, large trucks turning to and from the cross streets can use part of the opposing lane of traffic to complete their maneuvers. In the southern, two-way section of this roadway, where no parking is provided, the 20- and 22-foot widths are acceptable.

Primary East-West Street (Section C) – This roadway is two feet short of the Local Street standard, at 34 feet with parking on both sides. Adding a one-foot roll curb on both sides would meet the standard. The 20-foot gateway sections to this roadway should be redesigned in conjunction with the roundabout redesign discussed below.

Access Streets (Section E and F) – The 20-foot roadways (Section E) appear to meet the Village Home short cul-de-sac standard, at 20 feet, but these roads serve more than the minimum 9 homes to which that standard applies. The 16-foot roadways are even tighter, and still serve more than 9 units. Moving vans are expected to be the controlling design vehicle for this site, and neither the AASHTO WB-40 nor the California Legal WB-50 can maneuver to/from these streets without significant intrusion onto the curb. The traffic consultant recommends that these sections be increased to, at a minimum, the Village Home Local Street standard of 25 feet (edge of flat curb to edge of roll curb) plus three feet of clear space on each side; or to the Local Street standard if parking is added on these streets (see parking discussion below).

Northern East-West Street (Section I) – The 27-foot section provides for a 20-foot travel way and a seven-foot parking lane. The traffic consultant recommends striping the parking lane at eight feet; leaving 19 feet for two travel lanes.

Corner Radii

No corner radii are shown on the plan except at the entry intersection. A 10- to 15-foot radius should be provided at all corners, along with the wider cross-sections where noted above, to avoid vehicles hitting the curb as they turn.

Roundabouts

The traffic circle on the primary entry road should be redesigned to allow for moving van maneuvers and to conform to a standard "urban compact roundabout." The inscribed diameter of this design can be 90 to 100 feet, and the circulating roadway is typically 15 to 20 feet. The circles shown on the site plan appear to have diameters of approximately 55 feet.

The other traffic circle located on the secondary entry road should be redesigned to be a 15-mph curve, since it serves no conflicting traffic, and may encourage wrong-way movements. The short connector between the path to the north and the traffic circle can be dropped, as it is redundant with the other north-south and east-west path alignments nearby.

Traffic Control

In addition to the signal at the main entrance intersection, stop signs may be desired on the east-west access roadways at their intersections with the primary access roadway. A stop sign should also be provided on secondary access roadway at Covell Boulevard, to regulate outbound right turns onto Covell Boulevard.

Parking

The applicant's parking analysis indicates that there are 512 total parking spaces on-site, including 302 spaces in garages, or two per single-family unit; 89 guest spaces in the single-family area, or 0.59 spaces per single-family unit; an additional 53 public spaces along the primary access road and the southerly east-west road; and 68 spaces in the affordable housing area, or 1.7 spaces per unit. This EIR does not address the adequacy of the quantity of parking spaces per City code, which will be determined by City staff. However, the traffic consultant recommends the following for parking space layout:

- The perpendicular parking areas have only a 20-foot pavement width adjacent to accommodate vehicles maneuvering in and out of spaces. These areas need a minimum of 25 feet, similar to an aisle in a double-loaded perpendicular parking lot.
- The parallel parking bays need a minimum five- to 10-foot radius on the corners at each end.

Sidewalks

The traffic consultant indicated understanding of the design approach of providing separated pedestrian paths behind the housing units, rather than on-street sidewalks on both sides of the east-west streets (sections E and F). However, because pedestrians will walk along the streets for various purposes, including walking to and from the various parking areas, the consultant recommends that a five-foot-wide minimum, six-foot-wide recommended, sidewalk be provided at least on one side of Section E (currently no sidewalk is shown). Ideally, six-foot-wide sidewalks would be provided on all street sections, since much of the guest parking is located some distance from the homes.

Sight Distance at Project Entrances

Sight distance at the two project entrances was also evaluated. Along the project site frontage, a monument wall currently exists, as well as trees and bushes along the sidewalk. Should the project be constructed, the improvements in the vicinity of the

intersection will need to be reviewed, and modified as necessary, to ensure adequate sight distance for safety.

Emergency Vehicle Access

Factors such as proximity to fire stations, number of access points, and roadway width determine whether a project provides sufficient emergency access. Two fire stations are located near the proposed project site. One fire station is located on Mace Boulevard at the Cowell Boulevard intersection, which is approximately two miles from the project site. The other fire station is located approximately two-and-a-half miles southwest of the project site on Fifth Street. The project would provide two primary fire and police access points, both on Covell Boulevard. Two additional emergency vehicle access points are proposed at Caravaggio Place, north of the project site, and at Bonnard Street, east of the project site. These access points would be solely for the use of emergency vehicles, and would not be open to general traffic.

Conclusion

Because provision of adequate site access and circulation cannot be fully ascertained at this stage, and the project site plan requires several design modifications to provide efficient site access and circulation, a ***significant*** impact would result.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

4.3-2 *Prior to approval of the Tentative Map, the project applicant shall ensure that the following items are incorporated into the project design, for the review and approval by the City Engineer:*

- *Provision of adequate sight distance at both project access intersections, by setting back any barrier walls far enough from the curb, and by ensuring that existing and new plantings do not obstruct drivers' views;*
- *Design of the internal roadways to meet City standards, and inclusion of internal traffic calming elements as may be determined to be necessary, subject to the review and approval of the City Engineer; and*
- *Provision of traffic control devices, if and where needed in the internal roadway system, based on an analysis of the internal traffic turning movements to be prepared when the project design is more detailed.*

4.3-3 Impacts related to pedestrian and bicycle access and circulation.

A network of pathways, including limited use of standard sidewalks, are shown on the site plan (see also the discussion above under Sidewalks). The paths would connect to the existing sidewalk network along the project frontage on Covell Boulevard, and to the greenbelt path located just east of the project site. The sidewalk design and connectivity to guest parking would need to meet Americans with Disabilities Association (ADA) standards and City of Davis standards.

The project site plan includes a north-south 10-foot-wide bike path running along the east side of the property, with an east-west 10-foot-wide bike path connecting the north-south path to Bonnard Street through the middle of the project site into another greenbelt connection that leads to the existing north-south greenbelt on the eastern project site frontage. This proposed east-west bike path would be an important connector to the surrounding bicycle and pedestrian network in the area.

A bike undercrossing under Covell Boulevard just east of Monarch Lane connects the existing greenbelt south of Covell Boulevard in the Mace Ranch area to the bike path on the north side of Covell Boulevard. The proposed site plan for the project includes an off-site connection along Covell Boulevard to the bicycle undercrossing. The proposed project site is estimated to generate 25 pedestrian / bicycle trips during the AM peak hour and 15 trips during the PM peak hour. (The AM and PM trip rates were estimated by the traffic study to be 0.08 and 0.05 pedestrian/bicycle trips per dwelling unit, respectively.) The bike undercrossing would serve these trips and provide safer pedestrian/bicycle access to schools and parks located south of Covell Boulevard.

As currently designed, the proposed project includes bicycle and pedestrian facilities. However, the minimal use of standard sidewalks may fall short of the ADA accessibility requirements, primarily because much of the guest parking is provided in lots located some distance from the homes they serve. This is a ***significant*** impact.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

4.3-3 *Prior to approval of the Tentative Map, the project applicant shall ensure that the pathway and sidewalk network meets ADA accessibility requirements, subject to the review and approval by the City Engineer.*

4.3-4 Impacts related to transit access.

Several transit routes run near the project site, as illustrated on Figure 4.3-4. Currently, a transit stop that is used by both Yolobus and Unitrans exists across from the project site at Monarch and Covell Boulevard. The project applicant intends to request that a westbound transit stop be located near the project entrance. Currently, the closest westbound Unitrans stop would be 600 feet away on Monarch Lane at Temple Drive. The

proposed project is not expected to alter any existing transit route, nor does the project conflict with any adopted transit policies. In addition, sidewalks are provided throughout the project site and are proposed to minimize the walking distance from the site to existing transit facilities. Therefore, implementation of the proposed project would have a ***less-than-significant*** impact on transit access.

Mitigation Measure(s)
None required.

4.3-5 Impacts to traffic flow from construction traffic associated with grading and development of the project site.

Trips to the site during construction would be necessary for delivery of materials and hauling of excavated materials. The project sponsor has not provided information detailing the amount of construction traffic that would access the site during each phase of construction. Excess construction traffic could create traffic impacts on the surrounding roadway network; therefore, a ***significant*** impact would result.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

4.3-5 *Prior to any on-site construction activities, the project applicant shall prepare a Construction Traffic Management Plan subject to the review and approval by the City Engineer. The Construction Traffic Management Plan shall include all measures for temporary traffic control, temporary signage and striping, location points for ingress and egress of construction vehicles, haul routes, staging areas, and shall provide for the timing of construction activity that appropriately limits hours during which large construction equipment may be brought onto or taken off of the site.*

Cumulative Impacts and Mitigation Measures

The following impact and associated mitigation measure was identified for the Cumulative Plus Project condition.

4.3-6 Cumulative impacts regarding the deterioration of the Second Street / Mace Boulevard intersection LOS.

As shown in Table 4.3-8, the Second Street / Mace Boulevard intersection operates at LOS C under both the Existing and Existing With Project scenarios. Under Cumulative No Project conditions, background volume growth results in LOS F conditions during both the AM and PM peak hours. The addition of project traffic would cause the overall average control delay to increase by more than five seconds during the PM peak hour. In addition, the proposed project would contribute three percent to the total volume of

growth at the Second Street / Mace Boulevard intersection during the AM and PM peak hours. Therefore, the development of the proposed project would result in a ***significant*** cumulative impact to the Second Street / Mace Boulevard intersection.

Mitigation Measure(s)

Construction of a second left-turn lane on the northbound approach to the intersection of Second Street and Mace Boulevard, re-striping of the eastbound through lane to a shared through-left turn lane, and modification of the signal phasing to allow eastbound and westbound split phasing would improve traffic operations at the intersection to LOS D during the AM peak hour, and LOS E during the PM peak hour. It should be noted that the Davis Second Street Crossing Project is currently under construction and prior to occupancy of the first commercial building, some of these improvements to the intersection of Second Street and Mace Boulevard are required. Additional improvements are required and will be implemented at the time it is determined that the LOS deteriorates beyond E. Implementation of the following mitigation measure would reduce the project's incremental contribution to the cumulatively considerable impact to a *less-than-significant* level.

4.3-6 *Prior to the issuance of building permits, or such other time as may be approved at the time of Tentative Map, the project applicant shall pay a fair share fee, as determined by the City Public Works Department, for improvements to the intersection of Second Street and Mace Boulevard; these improvements may include, but are not necessarily limited to: construction of a second left-turn lane on the northbound approach to the intersection of Second Street and Mace Boulevard, re-striping of the eastbound through lane to a shared through-left turn lane, and modification of the signal phasing to allow eastbound and westbound split phasing.*

Endnotes

[1] *Traffic Impact Study*, Fehr & Peers, March 2009.
[2] *City of Davis General Plan Update*, May 2001.

4.4 AIR QUALITY

INTRODUCTION

The Air Quality section of the EIR describes the impacts of the Wildhorse Ranch project on local and regional air quality. The section includes a discussion of the existing air quality, construction-related air quality impacts resulting from grading and equipment emissions, direct and indirect emissions associated with the project, the impacts of these emissions on both the local and regional scale, and mitigation measures warranted to reduce or eliminate any identified significant impacts. The air quality section is based primarily on an air quality analysis conducted using URBEMIS 2007 (Version 9.2.4) air quality modeling software. Information for this section was also drawn from the *City of Davis General Plan*[1] and CALINE-4 air quality modeling software for the evaluation of carbon monoxide concentrations conducted by Don Ballanti, a certified consulting meteorologist. The results of the URBEMIS 2007 and CALINE-4 modeling analysis are included in Appendix D of this DEIR.

EXISTING ENVIRONMENTAL SETTING

The following setting information provides an overview of the existing air quality in the Wildhorse Ranch area, located in the City of Davis in Yolo County. In addition, the regulatory agencies and required permits associated with air quality are described.

Air Basin Characteristics

The amount of a given pollutant in the atmosphere is determined by the amount of pollutant released and the atmosphere's ability to transport and dilute the pollutant. The major factors affecting transport and dilution are: terrain, wind, atmospheric stability, and, for photochemical pollutants, sunshine.

The project is located in southern Yolo County, which is within the Sacramento Valley Air Basin (SVAB). The basin is relatively flat and bordered by mountains on the east, west and north. Movement of air into the SVAB is through the Carquinez Strait in a northeasterly direction from the Sacramento-San Joaquin River Delta. Quality of the air is either fresh from the marine environment or polluted from the urbanized San Francisco Bay area, depending on the meteorological conditions. Davis' climate includes primarily hot, dry summers and cool, rainy winters. Prevailing winds are from the south-southwest. Atmospheric temperature inversions occur frequently that limit the vertical dispersion of pollutants. These inversions may result in elevated levels of carbon monoxide (CO) during the winter months and high ozone levels during summer and fall.

Ambient Air Quality Standards

Both the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) have established ambient air quality standards for common pollutants. These ambient air quality standards represent safe levels that avoid specific adverse health effects for each contaminant. Pollutants for which air quality standards have been established are called "criteria" pollutants. Table 4.4-1 identifies the major pollutants, characteristics, health effects and typical sources. The federal and California ambient air quality standards are summarized in Table 4.4-2.

The federal and State ambient standards were developed independently with differing purposes and methods. As a result, the federal and State standards differ in some cases. In general, the State of California standards are more stringent, particularly for ozone and particulate matter (PM_{10} and $PM_{2.5}$).

Ozone

Ground-level ozone is the most prevalent of a class of photochemical oxidants formed in the urban atmosphere. Stratospheric ozone occurs in the atmosphere and is generally considered to be beneficial. The creation of ozone is a result of a complex chemical reaction between reactive organic gases (ROG) and nitrogen oxide (NO_X) emissions (ozone precursors) in the presence of sunshine. Unlike other pollutants, ozone is not released directly into the atmosphere from any sources. Factories, automobiles, and evaporation of solvents and fuels are the major sources of ozone precursors. The health effects of ozone include difficulty breathing, lung tissue damage, and eye irritation.

Carbon Monoxide (CO)

Carbon monoxide is a colorless, odorless, poisonous gas produced by incomplete burning of carbon-based fuels such as gasoline, oil, and wood. When CO enters the body, the CO combines with chemicals in the body, which prevents blood from carrying oxygen to cells, tissues, and organs. Symptoms of exposure to CO can include problems with vision, reduced alertness, and general reduction in mental and physical functions. Exposure to CO can result in chest pain, headaches, reduced mental alertness, and death at high concentrations.

Nitrogen Oxide Gases

Nitrogen dioxide is a nitrogen oxide (NO_X) gas that is produced from burning fuels, including gasoline and coal. Nitrogen oxides react with ROG (found in paints and solvents) to form smog, which can harm health, damage the environment, and cause poor visibility. Additionally, NO_X emissions are a major component of acid rain. Health effects related to NO_X include lung irritation and lung damage.

Table 4.4-1
Major Criteria Pollutants

Pollutant	Characteristics	Health Effects	Examples of Sources
Ozone	A strong smelling, pale blue, reactive toxic chemical gas consisting of three oxygen atoms. Ozone exists in the upper atmosphere ozone layer (stratospheric ozone) as well as at the Earth's surface in the troposphere (ozone). Ozone in the troposphere causes numerous adverse health effects and is a criteria air pollutant, and is a major component of smog.	• Breathing difficulties • Lung tissue damage • Damage to rubber and some plastics • Eye and skin irritation	Formed when reactive organic gases (ROG) and nitrogen oxides (NO_X) react in the presence of sunlight. ROG and NO_X sources include any source that burns fuel (e.g., gasoline, natural gas, wood, oil), solvents, petroleum processing and storage, and pesticides.
Carbon Monoxide	A colorless, odorless gas resulting from the incomplete combustion of hydrocarbon fuels. Over 80 percent of the carbon monoxide emitted in urban areas is contributed by motor vehicles.	• Chest pain in heart patients • Headaches and nausea • Reduced mental alertness • High concentration can result in death	Any source that burns fuel such as automobiles, trucks, heavy construction equipment, farming equipment, and residential heating.
Nitrogen Dioxide	Nitrogen dioxide is typically created during combustion processes, and is a major contributor to smog formation and acid deposition.	• Lung irritation and damage • Reacts in the atmosphere to form ozone and acid rain	Any source that burns fuel such as automobiles, trucks, heavy construction equipment, farming equipment, and residential heating.
Sulfur Dioxide	A strong smelling, colorless gas that is formed by the combustion of fossil fuels.	• Increased lung disease and breathing problems for asthmatics • Reacts in the atmosphere to form acid rain	Coal or oil burning power plants and industries, refineries, and diesel engines.
Particulate Matter (PM_{10} and $PM_{2.5}$)	Any material, except pure water, that exists in the solid or liquid state in the atmosphere. The size of particulate matter can vary from coarse, wind-blown dust particles to fine particle combustion products.	• Increased respiratory disease • Lung damage • Premature death • Reduced visibility	Fuel combustion in motor vehicles, equipment and industrial sources, residential and agricultural burning. Particulate matter is also formed from reaction of other pollutants (acid rain, NO_X, SO_X, organics).

Source: http://www.arb.ca.gov/html/gloss.htm, December 2007.

Table 4.4-2
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	Federal Standards	
			Primary	Secondary
Ozone	1 Hour	0.09 ppm	-	Same as primary
	8 Hour	0.07 ppm	0.075 ppm	Same as primary
Carbon Monoxide	8 Hour	9 ppm	9 ppm	None
	1 Hour	20 ppm	35 ppm	
Nitrogen Dioxide	Annual Mean	0.03 ppm	0.053 ppm	Same as primary
	1 Hour	0.18 ppm	-	
Sulfur Dioxide	Annual Mean	-	0.030 ppm	-
	24 Hour	0.04 ppm	0.14 ppm	-
	3 Hour			0.50 ppm
	1 Hour	0.25 ppm		-
Respirable Particulate Matter (PM_{10})	Annual Mean	20 ug/m^3		Same as primary
	24 Hour	50 ug/m^3	150 ug/m^3	
Fine Particulate Matter ($PM_{2.5}$)	Annual Mean	12 ug/m^3	15 ug/m^3	Same as primary
	24 Hour	-	35 ug/m^3	
Sulfates	24 Hour	25 ug/m^3	-	-
Lead	30 Day Average	1.5 ug/m^3	-	-
	Calendar Quarter	-	1.5 ug/m^3	Same as primary
Hydrogen Sulfide	1 Hour	0.03 ppm	N/A	N/A
Vinyl Chloride	24 Hour	0.01 ppm	N/A	N/A

ppm = Parts per Million
ug/m^3 = Micrograms per Cubic Meter
Source: California Air Resources Board, Ambient Air Quality Standards, November 17, 2008.

Sulfur Oxide Gases

Sulfur dioxide is a sulfur oxide (SO_X) gas which constitutes a major element of pollution in the atmosphere. Sulfur oxides are commonly produced by fossil fuel combustion. In the atmosphere, SO_X is usually oxidized by ozone and hydrogen peroxide to form sulfur dioxide and trioxide.

If SO_X is present during condensation, acid rain may occur. Exposure to high concentrations for short periods of time can constrict the bronchi and increase mucous flow, making breathing difficult. Children, the elderly, those with chronic lung disease, and asthmatics are especially susceptible to these effects.

Particulate Matter (PM)

Suspended particulate matter (airborne dust) consists of solid and liquid particles small enough to remain suspended in the air for long periods. "Respirable" PM consists of particles less than 10 microns in diameter, and is defined as "suspended particulate matter" or PM_{10}. Particles between 2.5 and 10 microns in diameter arise primarily from natural processes, such as wind-blown dust or soil. Fine particles are less than 2.5 microns in diameter ($PM_{2.5}$). $PM_{2.5}$, by definition, is included in PM_{10}. Fine particles are produced mostly from combustion or burning

activities. Fuel burned in cars and trucks, power plants, factories, fireplaces, and wood stoves produces fine particles.

Particulate matter is a complex mixture that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These tiny particles vary greatly in shape, size, and chemical composition, and can be made up of many different materials such as metals, soot, soil, and dust. Particulate matter is divided into two classes, primary and secondary. Primary particles are released directly into the atmosphere from sources of generation. Secondary particles are formed in the atmosphere as a result of reactions that involve gases.

Particles greater than 10 microns in diameter can cause irritation in the nose, throat, and bronchial tubes. Natural mechanisms remove many of these particles, but smaller particles are able to pass through the body's natural defenses and the mucous membranes of the upper respiratory tract and enter into the lungs. The particles can damage the alveoli, tiny air sacs responsible for gas exchange in the lungs. The particles may also carry carcinogens and other toxic compounds, which adhere to the particle surfaces and can enter the lungs.

Toxic Air Contaminants

In addition to the criteria pollutants (Table 4.4-1), Toxic Air Contaminants (TACs) are also a category of environmental concern. Toxic Air Contaminants are present in many types with varying degrees of toxicity. Sources of TACs include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Cars and trucks release at least 40 different TACs. In terms of health risks, the most volatile contaminants are diesel particulate, benzene, formaldehyde, 1,3-butadiene and acetaldehyde.

Public exposure to TACs can result from emissions from normal operations as well as accidental releases. Heath effects of TACs include cancer, birth defects, neurological damage, and death.

Attainment Status and Regional Air Quality Plans

The Federal Clean Air Act and the California Clean Air Act require all areas of California to be classified as attainment, non-attainment, or unclassified as to their status with regard to the national and/or State Ambient Air Quality Standards.

The Federal Clean Air Act of 1990 and the California Clean Air Act of 1988 require that the CARB, based on air quality monitoring data, designate portions of the State where the federal or State ambient air quality standards are not met as "nonattainment areas." Because of the differences between the national and State standards, the designation of nonattainment areas is different under the federal and State legislation. Currently, the Yolo-Solano Air Quality Management District (YSAQMD) is classified as a "serious" nonattainment area for the federal eight-hour ozone standard. In addition, the YSAQMD is a nonattainment area for both the one-hour and eight hour State ozone standards, and the PM_{10} standards. The YSAQMD is classified as "attainment" or "unclassified" for the other State and national standards.

Local Air Quality Monitoring

The California Air Resources Board (CARB) operates an air quality monitoring site within the UC Davis campus that monitors the gaseous pollutants of ozone, nitrogen dioxide, and carbon monoxide. The closest particulate monitoring site is operated by the YSAQMD, which operates a monitoring site on Gibson Street in the City of Woodland. The Woodland monitoring site measures several gaseous pollutants, as well as PM_{10}. A three-year summary of air quality data from the two monitoring sites is shown in Table 4.4-3. Table 4.4-3 indicates that the federal and State standards for ozone, $PM_{10,}$ and $PM_{2.5}$ are exceeded in the project area.

Table 4.4-3
Ambient Air Quality at Davis and Woodland

Pollutant/Standard	Year	Days Exceeding Standard	
		Davis Monitoring Site	Woodland Monitoring Site
Ozone/State 1-Hour	2006	3	6
	2007	2	1
	2008	4	4
Ozone/Fed. 1-Hour	2006	0	0
	2007	0	0
	2008	0	0
Ozone/State 8-Hour	2006	9	23
	2007	4	5
	2008	10	12
Ozone/Fed. 8-Hour	2006	4	14
	2007	3	2
	2008	5	4
Carbon Monoxide State/Fed. 8-Hour	2006	0	-
	2007	0	-
	2008	0	-
Nitrogen Dioxide State 1- Hour	2006	0	-
	2007	0	-
	2008	0	-
PM_{10}/State 24-Hour	2006	-	6
	2007	-	3
	2008	-	8
PM_{10}/Federal 24-Hour	2006	-	0
	2007	-	0
	2008	-	1
$PM_{2.5}$/Federal 24-Hour	2006	-	4
	2007	-	4
	2008	-	1

Source: Air Resources Board, Aerometric Data Analysis and Management (ADAM), 2009. (http://www.arb.ca.gov/adam/cgi-bin/db2www/adamtop4b.d2w/start, accessed on January 29,2009)

REGULATORY CONTEXT

Regulation of air quality is achieved through both federal and State ambient air quality standards, and emission limits for individual sources of air pollutants.

Federal Regulations

The United States Environmental Protection Agency (USEPA) is charged with enforcing the Federal Clean Air Act (FCAA). The USEPA has established air quality standards for common pollutants. These ambient air quality standards represent the allowable levels for each contaminant, according to the various thresholds of each pollutant for causing adverse health effects.

The FCAA requires states to classify basins (or portions thereof) as either "attainment" or "non-attainment" with respect to the criteria air pollutants, based on whether or not the national ambient air quality standards (NAAQS) have been achieved, and to prepare air quality plans containing emission reduction strategies for those areas designated as "non-attainment."

The YSAQMD includes all of Yolo County and eastern portions of Solano County. As previously mentioned, the YSAQMD is classified as a "serious" non-attainment area for the federal eight-hour ozone standard. The YSAQMD is classified as attainment or unclassified for other national standards.

Because the SVAB is designated as a non-attainment area for ozone, the air pollution control districts and air quality management districts within the air basin have prepared the Sacramento Area Regional Ozone Attainment Plan as the basin's contribution to the State Implementation Plan (SIP), pursuant to the FCAA. The SIP includes plans for each of the State's non-attainment areas, along with rules and regulations and other control measures adopted by the air districts and the California Air Resources Board (CARB).

State Regulations

California Clean Air Act

The California Clean Air Act (CCAA) requires that air quality plans be prepared for areas of the State that have not met State air quality standards for ozone, CO, NO_X, and SO_X. Among other requirements of the CCAA, the plans must include a wide range of implemental control measures, which often include transportation control measures and performance standards. In order to implement the transportation-related provisions of the CCAA, local air pollution control districts have been granted explicit authority to adopt and implement transportation controls.

California Air Resources Board (CARB)

The CARB is the agency responsible for coordination and oversight of State and local air pollution control programs in California and for the California Clean Air Act (CCAA) adopted in 1988. The CARB has primary responsibility in California to develop and implement air pollution

control plans designed to achieve and maintain the National Ambient Air Quality Standards established by the USEPA.

The CARB, California's air quality management agency, regulates mobile emissions sources and oversees the activities of County Air Pollution Control Districts (APCDs) and regional Air Quality Management Districts (AQMDs). The CARB regulates local air quality indirectly using State standards and vehicle emission standards, by conducting research activities, and through planning and coordinating activities.

California has adopted ambient standards that are in some cases more stringent than the federal standards for the criteria air pollutants shown in Table 4.4-2. Under the CCAA, areas have been designated as attainment or non-attainment with respect to State standards. As previously mentioned, the project region is considered to be in attainment for the State CO standard, non-attainment for the State ozone standard, and non-attainment for the State PM_{10} standard.

Local Regulations

The YSAQMD is the agency responsible for implementing emissions standards and other requirements of federal and State laws in Yolo County. The YSAQMD Yolo-Solano Air Quality Attainment Plan (1992) addresses the requirement to attempt to bring the district into compliance with the federal and State ambient air quality standards. The plan includes carefully planned strategies for progressive reduction of air pollutants by promoting active public involvement, encouraging compliance through positive influence and behavior, and through public education in both the public and private sectors. The YSAQMD also provides a handbook of guidelines for determining air quality thresholds of significance and mitigation measures for proposed development projects that generate emissions from motor vehicles.[2]

The closest monitoring site for other gaseous pollutants such as carbon monoxide and nitrogen dioxide is the UC Davis campus in Davis. Concentrations of these pollutants at this monitoring site are well within the State and federal standards.

General Plan

The following are applicable goals and policies from the Air Quality Element of the City of Davis General Plan related to air quality:

Goal AIR 1 Maintain and strive to improve air quality.

Policy AIR 1.1 Take appropriate measures to meet the AQMD's goal for improved air quality.

IMPACTS AND MITIGATION MEASURES

Standards of Significance

- The District considers increases in emissions, during construction or operation, of 10 tons per year of ozone precursors (ROG or NO_X) or 80 pounds per day of PM_{10} as potentially significant;
- A predicted violation of a State ambient air quality standard for CO would be considered to be potentially significant;
- A project would be considered to result in a potentially significant cumulative impact if the project would individually have a significant air quality impact; or
- A potentially significant cumulative impact related to CO would occur if modeling shows that the combined emissions from the project and other existing and planned projects will exceed air quality standards.

Methods of Analysis

Local Carbon Monoxide Concentrations

The Yolo-Solano AQMD's *Handbook for Assessing and Mitigating Air Quality Impacts*[3] recommends that the statewide protocol for carbon monoxide studies[4] be used to evaluate carbon monoxide impacts.

This statewide protocol provides that within attainment areas for carbon monoxide, signalized intersections having a Level of Service of E or F represent a potential for a CO violation and require further analysis. The traffic analysis for the proposed project shows that existing LOS at signalized study intersections is LOS D or better, but that under the cumulative traffic scenario three signalized intersections would operate at LOS E or F. Two of these intersections were selected for analysis using the CALINE-4 program. It should be noted that the Mace Boulevard/I-80 Westbound ramps intersection was forecast to operate at LOS E in the PM peak hour under the cumulative traffic scenarios, but modeling was not conducted as the intersection is south of a railroad and north of I-80, and sensitive receptors are not located nearby.

The CALINE-4 model is a fourth-generation line source air quality model that is based on the Gaussian diffusion equation and employs a mixing zone concept to characterize pollutant dispersion over the roadway. Given source strength, meteorology, site geometry and site characteristics, the model predicts pollutant concentrations for receptors located within 492 feet of the roadway. The CALINE-4 model allows roadways to be broken into multiple links that can vary in traffic volume, emission rates, height, width, etc.

It should be noted that the CALINE-4 analysis conducted for the proposed project was based on a previous project iteration which would have included 259 residential units. The proposed project is composed of a maximum of 191 residential units. Therefore, project emissions resulting from construction, vehicle trips, and household emissions would be reduced as

compared to the previous iteration. As a result, the following analysis is considered to be conservative, and updated studies are not required.

A CALINE-4 model was constructed for each study intersection and the program was run for three traffic scenarios. The method outlined in Appendix B of the *Transportation Project-Level Carbon Monoxide Protocol* was utilized. The method requires that the intersection be broken into numerous "links." Links are either free-stream, approach, or departure links. Approach links and departure links were assumed to be 492 feet in length, and free stream links were assumed to extend out to approximately 2,460 feet from the center of the intersection. For each approach or departure link an average vehicle speed was obtained from tables in the protocol document utilizing the traffic volume per lane, an average cruise speed (speed away from the intersection) of 30 miles-per-hour and an assumed 60 percent red time (of the signal cycle) for each movement.

The EMFAC-2007 program was used to generate emission factors at various speeds. The EMFAC-2007 runs assumed a 30-degree Fahrenheit ambient temperature and 20 percent relative humidity. The default vehicle mix for the YSAQMD was utilized. A 2008 vehicle mix was used for the existing and project traffic cases and a 2015 vehicle mix was used for the cumulative with project traffic case.

The CALINE-4 model was run on worst-case meteorology and used the worst-case wind direction mode to obtain the highest concentration at each receptor. Receptors were located at each corner of the intersection, 10 feet equidistant from the curb and 32.8 feet away from the corner in each direction, for a total of 12 receptors per model. The highest predicted concentration of the 12 receptors was used in the assessment. The CALINE-4 data is included in Appendix D of this DEIR.

The CALINE-4 model provides a worst-case estimate of 1-hour concentrations of carbon monoxide. The 1-hour concentrations were then converted to estimates of 8-hour averaged concentrations using a "persistence factor" (multiplier) of 0.7.

The other contribution to the total concentration is the background level attributed to more distant traffic. A 1-hour background level of 1.0 parts per million (PPM) was used, as recommended by the YSAQMD.

Construction

The URBEMIS-2007 program was applied to the project to estimate the maximum construction emissions from site grading, equipment exhaust, construction worker vehicle trips and other construction activities. Per consultation with the project engineer, construction was assumed to begin in 2010 and would adhere to the phasing and equipment information provided by the engineer (See Appendix D for the project phasing and equipment lists used in the analysis).

Operation

Estimates of regional emissions generated by project traffic and area sources were made using the URBEMIS-2007 (Version 9.2.2) program. URBEMIS-2007 estimates the emissions that

result from various land use development projects. Land use projects can include residential uses such as single-family dwelling units, apartments and condominiums, and nonresidential uses such as shopping centers, office buildings, and industrial parks. Inputs to the URBEMIS-2007 program include trip generation rates, vehicle mix, average trip length by trip type, and average speed. Average trip lengths and vehicle mixes for the Lower Sacramento Valley air basin were used. Average speed for all types of trips was assumed to be 35 miles-per-hour.

The URBEMIS-2007 program was used to calculate daily operational emissions during the summer months with an ambient temperature of 85 degrees Fahrenheit, and a winter temperature of 40 degrees Fahrenheit. Summer results from URBEMIS-2007 are used to assess ozone precursors and winter results are used for PM_{10} emissions.

Project Impacts and Mitigation Measures

4.4-1 Exhaust emissions and fugitive dust emissions from project-associated construction activities.

Maximum construction emissions would occur during the first phases of construction when clearing, earthmoving, and grading occur. Table 4.4-4 shows expected maximum daily construction emissions for the project without the incorporation of mitigation. According to Table 4.4-4, PM_{10} emissions generated by the project would exceed the YSAQMD thresholds, while ROG and NO_X emissions would not exceed the YSAQMD thresholds. In addition, particulate matter emitted during construction activities would occur near existing residences (thereby causing a nuisance). Residences currently exist north, west, and south of the project site. The residences to the south are separated from the project site by a roadway; however, the project site is immediately adjacent to the backyards of the residences located north and west of the project site.

The majority of the PM_{10} from construction would be soil particles, while a small fraction of the PM_{10} would be from diesel exhaust (during construction, various diesel-powered vehicles and equipment would be used on the site). Diesel exhaust particulate is a pollutant that has come under increased scrutiny in recent years.

Table 4.4-4
Maximum Construction Emissions

Pollutant	Project Emissions (Unmitigated)	YSAQMD Significance Threshold
ROG	0.19 (tons/year)	10.0 (tons/year)
NO_X	1.19 (tons/year)	10.0 (tons/year)
PM_{10}	259.50 (lbs/day)	80.0 (lbs/day)
Source: URBEMIS 2007. (See Appendix D)		

In 1998, CARB identified particulate matter from diesel-fueled engines as a toxic air contaminant (TAC). CARB has completed a risk management process that identified potential cancer risks for a range of activities using diesel-fueled engines.[5] High volume

freeways, stationary diesel engines and facilities attracting heavy and constant diesel vehicle traffic (distribution centers, truckstops) were identified as having the highest associated risk. In terms of the project, the diesel-powered vehicles and equipment used during the construction of the project would generate TACs. Health risks from TACs are a function of both concentration and duration of exposure. The YSAQMD does not have permitting authority over mobile sources of TACs; therefore, a standard of significance has not been established for mobile source emissions of TACs.

Construction emissions are temporary, affecting an area for a period of days or perhaps weeks. However, as the proposed project would exceed the standard of significance established for PM_{10} emissions a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following Mitigation Measure based on the dust control measures recommended in the YSAQMD *Air Quality Handbook* would reduce emissions of PM_{10} to approximately 39.82 lbs/day. Therefore, with implementation of Mitigation Measure 4.4-1, the project would result in a *less-than-significant* impact from construction-related fugitive dust.

4.4-1 *Prior to commencement of any ground disturbing activities, the applicant shall submit a dust control plan to the City Engineer and the Yolo-Solano Air Quality Management District. This plan shall ensure that adequate dust controls are implemented during all phases of project construction. The dust control best management practices (BMPs) may include but are not necessarily limited to the following:*

- *Apply nontoxic soil stabilizers according to manufacturer's specifications to all inactive construction areas (previously graded areas inactive for ten days or more);*
- *Reestablish ground cover in disturbed areas quickly;*
- *Water recently disturbed construction areas (ground disturbed within 10 days) at least twice daily to avoid visible dust plumes;*
- *Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites;*
- *Enclose, cover, water twice daily or apply non-toxic soil binders to exposed stockpiles (dirt, sand, etc.);*
- *Enforce a speed limit of 15 MPH for equipment and vehicles operated in unpaved areas;*
- *All vehicles hauling dirt, sand, soil, or other loose materials shall be covered or should maintain at least two feet of freeboard; and*
- *Sweep streets at the end of the day if visible soil material is carried onto adjacent public paved roads.*

4.4-2 New air pollutant emissions within the air basin resulting from operation of the proposed project.

The construction of up to 191 new residential units in the project vicinity would increase the number of vehicle trips on surrounding roadways. Furthermore, project traffic emissions would not only have an effect on local air quality, but also air quality outside the project vicinity. Trips to and from the project site would result in air pollutant emissions within the air basin. In addition, project residences would also result in an increased number of area pollutant sources, such as natural gas combustion, fireplace/woodstove emissions and maintenance equipment.

The project location and amenities would serve to reduce project emissions. In particular, the proposed project is located near several bus stops, which would provide pedestrian access to transit, thereby reducing vehicle trips. In addition, Class I bike paths are located adjacent to the south and east borders of the project site. The proposed project would also include bicycle and pedestrian facilities such as bicycle lanes and pedestrian walkways. These are all factors that would reduce air pollutants because these features allow capturing of trips within the project site, and promotion of non-automotive travel.

As shown in Table 4.4-5, below, the proposed project would not exceed any of the YSAQMD thresholds of significance. Furthermore, it should be noted that the numbers are considered to be conservative as the trip generation rates provided by the traffic study were based on buildout of a single-family development, and the proposed project includes multi-family residences which generate fewer vehicle trips. Therefore, project regional air quality impacts would be considered ***less-than-significant***.

Mitigation Measure(s)
None required.

Table 4.4-5
Unmitigated Project Emissions

Proposed Project Emission Sources	ROG	NO_X	PM_{10}
Area Sources	2.82	0.58	25.73
Vehicles	4.07	5.80	30.39
Total	6.89	6.38	56.12
YSAQMD Threshold of Significance	**10 (tons/year)**	**10 (tons/year)**	**80.0 (lbs/day)**

Source: URBEMIS 2007.

4.4-3 Increased carbon monoxide concentrations at project-area intersections.

Concentrations of CO are related to the levels of traffic and congestion along streets and at intersections. Future concentrations of CO are determined by two opposing factors. The overall rate of emission of CO for the vehicle fleet has been, and is expected to continue, decreasing as older, more polluting vehicles are retired and replaced with newer, cleaner

vehicles. At the same time increased traffic volumes, deterioration in average speed and increased delay (and resulting idling emissions) all act to increase emissions within and near intersections. Therefore, because of better emissions controls the study intersections are expected to have similar or lower concentrations in 2015 compared to existing concentrations, despite increased traffic volumes.

The concentrations in Table 4.4-6 are for worst-case locations under theoretical worst-case meteorological conditions. Carbon monoxide concentrations at greater distances from the intersections listed in Table 4.4-6 would be substantially lower than the concentrations at the intersections. Table 4.4-6 shows that existing concentrations meet State and federal standards. The development of the proposed project would increase CO concentrations; however, the concentrations would remain below the most stringent air quality standards. Therefore, project impacts on local carbon monoxide concentrations would be ***less-than-significant***.

Table 4.4-6
Estimated Worst-Case Carbon Monoxide Concentrations (Parts Per Million)

Intersection	Existing (2008)		Existing + Project (2008)		Cumulative + Project (2015)	
	1-Hour	8-Hour	1-Hour	8-Hour	1-Hour	8-Hour
Covell Blvd./ Pole Line Road	3.1	2.2	3.1	2.2	2.6	1.8
Mace Blvd./ Second Street	2.9	2.0	3.0	2.1	2.9	2.0
Standard of Significance						
State	**20.0**	**9.0**	**20.0**	**9.0**	**20.0**	**9.0**
Federal	**35.0**	**9.0**	**35.0**	**9.0**	**35.0**	**9.0**

Source: Don Ballanti, 2007.

Mitigation Measure(s)
None required.

Cumulative Impacts and Mitigation Measures

4.4-4 Long-term air quality impacts from the proposed project in combination with existing and future developments in the Davis area.

The cumulative air quality impacts of development projects are primarily related to automobile traffic, as well as area sources of pollutants, such as fuel combustion for heating, maintenance equipment emissions, certain consumer products, evaporation of solvents, etc. The proposed project's cumulative emissions would be the same as the project-specific impacts as the project would not add uses or increase density in the future. The possibility exists that project-specific emissions would decrease over time as stricter environmental controls reduce tailpipe and consumer product emissions. Emissions from development projects have several cumulative impacts. In particular,

growth in emissions will delay attainment of the ambient air quality standards for which the region is non-attainment (ozone, particulate matter) and contribute to visibility reduction.

Because ozone, particulate matter and some constituents of ROG have been shown to be correlated with adverse heath effects, cumulative emissions increases in the region would have potential cumulative health effects. Studies have shown that children who participated in several sports and lived in communities with high ozone levels were more likely to develop asthma than active children living in areas with less ozone pollution. Other studies have found a positive association between some volatile organic compounds and symptoms in asthmatic children. A large body of evidence has shown significant associations between measured levels of particulate matter outdoors and worsening of both asthma symptoms and acute and chronic bronchitis. However, predicting increases in severity of disease, hospital visits or deaths from respiratory diseases such as asthma, bronchitis or lung cancer is not possible because of the following reasons:

- Estimating long-term concentrations of pollutants such as ozone, the TAC components of ROG, or particulate matter (PM_{10} and $PM_{2.5}$) resulting from an indirect source such as the project is not currently possible; and
- Dose-response relationships are lacking that would allow a quantitative analysis of health effects.

In recognition of the incremental health effects associated with these pollutants, the YSAQMD has established thresholds for each pollutant, which indicate the limits of acceptability in terms of effect on health. Based on the YSAQMD standards of significance the proposed project would result in a significant cumulative impact if the project would result in an individually significant impact to air quality. As indicated in Impact 4.4-3, carbon monoxide concentrations, the proposed project would not result in a potentially significant impact because it would not generate emissions in excess of YSAQMD thresholds for operational emissions. In addition, the proposed project would ultimately result in a less-than-significant impact to air quality as a result of construction emissions with implementation of Mitigation Measure 4.4-1. Therefore, the project's incremental contribution to the long-term cumulative air quality impact would not be cumulatively considerable, resulting in a ***less-than-significant*** cumulative air quality impact.

Mitigation Measure(s)
None required.

Endnotes

[1] *City of Davis General Plan*, May 2001.
[2] Yolo-Solano Air Quality Management District, *Air Quality Handbook*, May 1996.

[3] Yolo-Solano Air Quality Management District, Handbook for Assessing and Mitigating Air Quality Impacts, July 11, 2007.

[4] Garza, Vincente J.; Peter Granly; Daniel Sperling, Transportation Project-Level Carbon Monoxide Protocol, Institute of Transportation Studies, University of California, Davis; Report UCD-ITS-RR-97-21, December 1997.

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

4.5 NOISE

INTRODUCTION

The Noise section of the EIR discusses the existing noise environment in the immediate project vicinity and identifies potential noise-related impacts and mitigation measures associated with the proposed project. Specifically, this section analyzes potential noise impacts due to and upon development within the project site relative to applicable noise criteria and to the existing ambient noise environment. This section is primarily based on the *Environmental Noise Assessment* prepared by Bollard Acoustical Consultants, Inc.,[1] as well as the City of Davis *General Plan Update*.[2]

EXISTING ENVIRONMENTAL SETTING

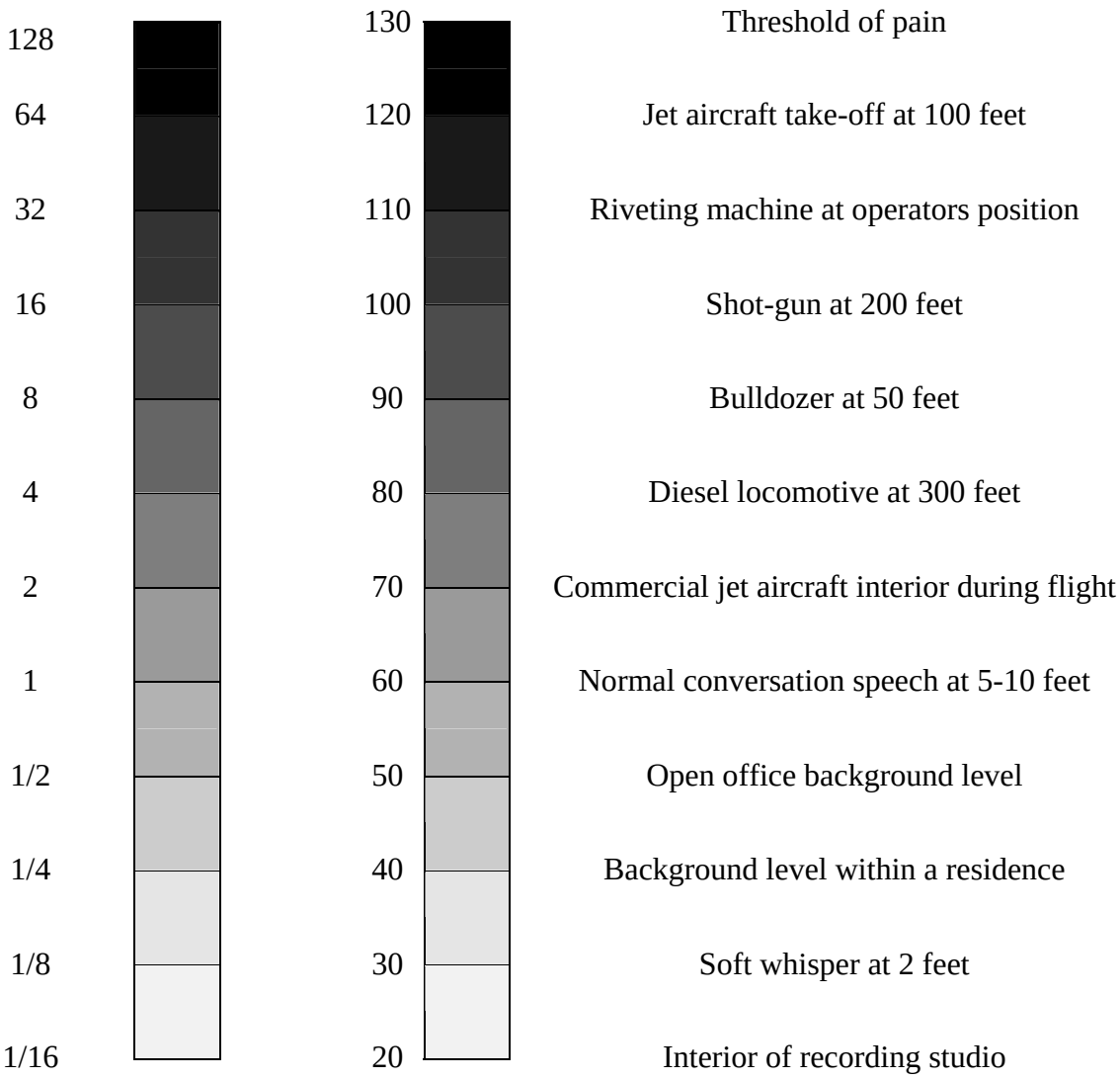
Acoustical Terminology

Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur at least 20 times per second, they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second, called Hertz (Hz).

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel (dB) scale was devised. The decibel scale uses the hearing threshold (20 micropascals), as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent on many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by the A-weighing network. A strong correlation exists between A-weighted sound levels (expressed as dBA) and the way the human ear perceives noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels.

Figure 4.5-1
Typical A-Weighted Sound Levels of Common Noise Sources



Source: Environmental Noise Assessment, Bollard Acoustical Consultants, Inc., January 2009.

Community noise is commonly described in terms of the "ambient" noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (Leq), which corresponds to a steady-state, A-weighted sound level containing the same total energy as a time-varying signal over a given time period (usually one hour). The Leq is the foundation for the Day/Night Average Noise Level (Ldn). See Figure 4.5-1 for typical A-weighted sound levels of common noise sources.

The Ldn is based on the average noise level over a continuous 24-hour period, with a +10 dB weighting applied to noise occurring during nighttime (10 p.m. to 7 a.m.) hours. The nighttime penalty is based on the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because the Ldn represents a 24-hour average, the Ldn tends to disguise short-term variations in the noise environment.

Existing Land Uses in the Project Vicinity

The project site is currently a horse ranch with associated outbuildings located in the north-central portion of the site. The project site is bordered on three sides (north, west, and south) by existing urban/suburban uses, including residences, a park, and a golf course. To the east, the site is bordered by existing habitat/agricultural buffer and agricultural uses. Noise-sensitive land uses in the immediate project vicinity include existing single-family residences to the north, west, and south.

Existing Ambient Noise Environment

The existing ambient noise environment in the immediate project vicinity is defined primarily by traffic on East Covell Boulevard. On September 8, 2007, Bollard Acoustical Consultants, Inc. conducted noise level measurements and concurrent counts of East Covell Boulevard traffic at the project site. The purpose of the short-term traffic noise level measurement and traffic counts is to determine the accuracy of the FHWA model in describing the existing noise environment at the project site, accounting for shielding from local topography, actual travel speeds, and roadway grade. Noise measurement results were compared to the FHWA model results by entering the observed traffic volume, speed, and distance as inputs to the FHWA model.

Instrumentation used for the measurement was a Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meter, which was calibrated in the field before use with an LDL CAL 200 acoustical calibrator.

The results of this calibration process indicate that the FHWA model was found to accurately predict East Covell Boulevard traffic noise levels within 1 dB. Therefore, adjustments were not applied to the model in the prediction of future traffic noise levels at the project site.

To predict existing noise levels due to traffic, the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA RD-77-108) was used. The Noise Prediction Model is based on the Calveno reference noise factors for automobiles, medium trucks, and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the

receiver, and the acoustical characteristics of the project site. The FHWA Model was developed to predict hourly Leq values for free-flowing traffic conditions. A day/night traffic distribution of 85 percent / 15 percent was factored into the calculations to determine Ldn. In addition, a medium/heavy truck split of 2 percent / 1 percent was assumed, along with a traffic speed of 40 miles per hour (mph).

Traffic volumes for existing conditions were obtained from the *Traffic Impact Study* prepared for the project by Fehr & Peers Transportation Consultants. Table 4.5-2 shows the existing traffic noise levels, in terms of Ldn, at a reference distance of 100 feet from the centerlines of existing project-area roadways. These are considered to be the baseline conditions. Table 4.5-2 also includes the distances to existing traffic noise contours.

Ambient noise level survey results for the proposed project are presented in Tables 4.5-1 and 4.5-2, below.

Table 4.5-1
Short-Term Ambient Noise Monitoring Results

Site	Location	Leq	Lmax
1a	Northeast of the project area	37	50
2a	East-Central of the project area	42	49
1b	Northeast of the project area	40	47
2b	East-Central of the project area	42	48
3	Southern site boundary	62	74

Notes:
1. Noise measurement locations are shown on Figure 4.5-2.
2. Sites 1 and 2 were monitored on a short-term basis (15-minute sample) along the greenbelt, whereas Site 3 was monitored short-term as a traffic calibration along East Covell Boulevard.
3. Monitoring for (a) was at noon and for (b) was at mid-afternoon.

Source: Environmental Noise Assessment, Bollard Acoustical Consultants, Inc., January 2009.

Table 4.5-2
Continuous Ambient Noise Monitoring Results (Location A)

	Daytime (7 a.m.-10 p.m.)		Nighttime (10 p.m.-7 a.m.)		
Measurement Date	Average (Leq)	Maximum (Lmax)	Average (Leq)	Maximum (Lmax)	Ldn
September 8	48	79	44	62	51
September 9	50	79	44	70	52
September 10	46	73	44	62	51
September 11	45	75	45	66	51
September 12	50	81	44	67	52

Source: Environmental Noise Assessment, Bollard Acoustical Consultants, Inc., January 2009.

In addition, active agricultural uses exist adjacent to the project's eastern boundary (though the agricultural lands are separated from the project site by the existing Davis agricultural/habitat buffer), and agricultural operations will likely continue to occur on adjacent properties into the foreseeable future. As a result, agricultural-related equipment and processes contribute to the existing ambient noise environment in the project area. Due to the wide array of equipment types

and conditions under which the equipment is used in the agriculture industry, noise generated by agricultural processes can vary substantially. Maximum noise levels generated by farm-related tractors typically range from 77 to 85 dB at a distance of 50 feet from the tractor, depending on the horsepower of the tractor and the operating conditions.

Due to the seasonal nature of the agricultural industry, extended periods of time often exist when noise is not generated on properties that are actively being farmed, followed by short-term periods of intensive mechanical equipment usage and corresponding noise generation. Due to the high degree of variability of agricultural activities, reliably quantifying the noise generation of agricultural uses in terms of noise standards commonly utilized to assess impacts of other noise sources is not feasible. However, these uses generate short-term periods of elevated noise during all hours of the day and night and possess the potential to generate adverse public reaction during intensive farm-related activities.

REGULATORY CONTEXT

In order to limit population exposure to physically and/or psychologically damaging noise levels, the State of California, various county governments, and most municipalities in the State have established standards and ordinances to control noise. The City of Davis *General Plan Noise Element* and the California Environmental Quality Act (CEQA) Guidelines provide regulations regarding noise levels for uses relevant to the proposed project. The following provides a general overview of the existing regulations established by the State and the City.

State Regulations

California Environmental Quality Act

The California Environmental Quality Act (CEQA) Guidelines, Appendix G, indicate that a significant noise impact may occur if a project exposes persons to noise levels in excess of local general plans or noise ordinance standards, or cause a substantial permanent or temporary increase in ambient noise levels.

Local Regulations

The following are applicable goals and policies from the Noise Element of the City of Davis General Plan related to noise:

Goal NOISE 1 Maintain community noise levels that meet health guidelines and allow for a high quality of life.

- Policy NOISE 1.1 Minimize vehicular and stationary noise sources, and noise emanating from temporary activities.
- Policy NOISE 1.2 Discourage the use of sound walls whenever alternative mitigation measures are feasible, while also facilitating the construction of sound walls

where desired by the neighborhood and there is no other way to reduce noise to acceptable exterior levels shown in Table 19 [of the Davis General Plan]. See the separate General Plan policy interpretation document titled "Major Arterial Landscaping, Noise Attenuation Design and Greenstreets."

Policy NOISE 1.3 Develop and implement procedures for the accurate measurement and prediction of noise levels in Davis.

Goal NOISE 2 Provide for indoor noise environments that are conducive to living and working.

Policy NOISE 2.1 Take all technically feasible steps to ensure that interior noise levels can be maintained at the levels shown in Table 20 [of the Davis General Plan].

City of Davis Noise Ordinance

The City of Davis Noise Ordinance establishes a maximum stationary noise level standard of 55 dB between the hours of 7:00 a.m. and 9:00 p.m., and 50 dB between the hours of 9:00 p.m. and 7:00 a.m. These criteria are interpreted by Bollard Acoustical Consultants, Inc. to be average hourly levels (Leq).

IMPACTS AND MITIGATION MEASURES

Standards of Significance

Generally, a project may have a significant effect on the environment if the project would substantially increase the ambient noise levels at adjoining areas or expose people to severe noise levels. In practice, more specific professional standards have been developed, as discussed below. These standards state that a noise impact may be considered significant if noise that would conflict with local planning criteria is generated, or if noise levels at noise-sensitive land uses are substantially increased.

City of Davis General Plan Noise Thresholds

The City of Davis General Plan Noise Element requires that interior noise exposure from exterior noise sources (traffic) within residential dwellings not exceed 45 dB Ldn (or Community Noise Equivalent Level (CNEL)), regardless of exterior noise exposure. This standard is increased to 55 dB Ldn or less for office/professional uses.

The City of Davis has established an exterior noise level criterion of less than 60 dB Ldn (or CNEL) within outdoor activity areas of residential land uses (i.e. back yards). These are

considered to be the Normally Acceptable criteria, and may be adjusted upward (60-70 dB Ldn for residential) based on compliance with the interior noise criterion and the City's discretion.

Significance of Changes in Ambient Noise Levels

Table 4.5-3 is based on recommendations made in August 1992 by the Federal Interagency Committee on Noise (FICON) to provide guidance in the assessment of changes in ambient noise levels resulting from aircraft operations. The recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by the noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, the recommendations are applicable to all sources of noise described in terms of cumulative noise exposure metrics, such as the Ldn.

Table 4.5-3
Significance of Changes in Cumulative Noise Exposure

Ambient Noise Level Without Project, Ldn	Increase Required for Significant Impact
<60 dB	+ 5.0 dB or more
60-65 dB	+ 3.0 dB or more
>65 dB	+ 1.5 dB or more

Source: Federal Interagency Committee on Noise (FICON).

According to Table 4.5-3, an increase in the traffic noise level of 1.5 dB or more would be significant where the ambient noise level exceeds 65 dB Ldn. The rationale for the Table 4.5-3 criteria is that, as ambient noise levels increase, a smaller increase in noise resulting from a project is sufficient to cause significant annoyance.

The CEQA Guidelines and the City of Davis *General Plan* state that implementation of the project would result in significant noise impacts if the project would result in any of the following:

- Exposure of persons to or generation of noise levels in excess of standards established in the City of Davis Noise Element, defined as 60 dB Ldn at outdoor activity areas and 45 dB Ldn within residential structures;
- A substantial *permanent* increase in ambient noise levels in the project vicinity above levels existing without the project, as defined in Table 4.5-3; or
- Exceed the City of Davis Noise Ordinance significance thresholds.

Methods of Analysis

A combination of use of existing literature, noise level measurements, and application of accepted noise prediction and sound propagation algorithms, were used to predict changes in ambient noise levels resulting from development within the project area. Specific noise sources evaluated in this section include traffic and future noise sources which will be developed within the project area. Noise impacts of each of these major noise sources are described below.

Existing Ambient Noise Assessment

To quantify the existing ambient noise environment in the project vicinity, short-term and continuous (24-Hr) ambient noise level measurement surveys were conducted. The short-term noise level measurements were taken at three locations in the project vicinity on January 22, 2007. The continuous noise level measurements were taken in the project site in the backyard of an existing home (3027 East Covell Blvd) on September 8-12, 2007. Figure 4.5-2 depicts the three short-term measurement locations, as well as the continuous measurement location.

A Larson-Davis Laboratories (LDL) Model 820 precision integrating sound level meter was used for the noise level measurement surveys. The meter was calibrated before use with a LDL Model CAL200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute (ANSI) for Type 1 (precision) sound level meters (ANSI S1.4).

Traffic Noise Impact Assessment Methodology

To assess traffic noise impacts, traffic noise levels are predicted at a representative distance for both existing and future, and with project and without project conditions. Noise impacts are identified at existing noise-sensitive areas if the noise level increases resulting from the project would exceed the significance thresholds shown in Table 4.5-3. Noise impacts at future noise-sensitive land uses located within the project site are identified if the predicted future plus project traffic noise levels would exceed the City's noise standards applicable to new residential uses, as described previously in this section. To assess traffic noise impacts at new noise-sensitive land uses proposed within the project area, the calculated noise contour distances for cumulative plus project conditions are used.

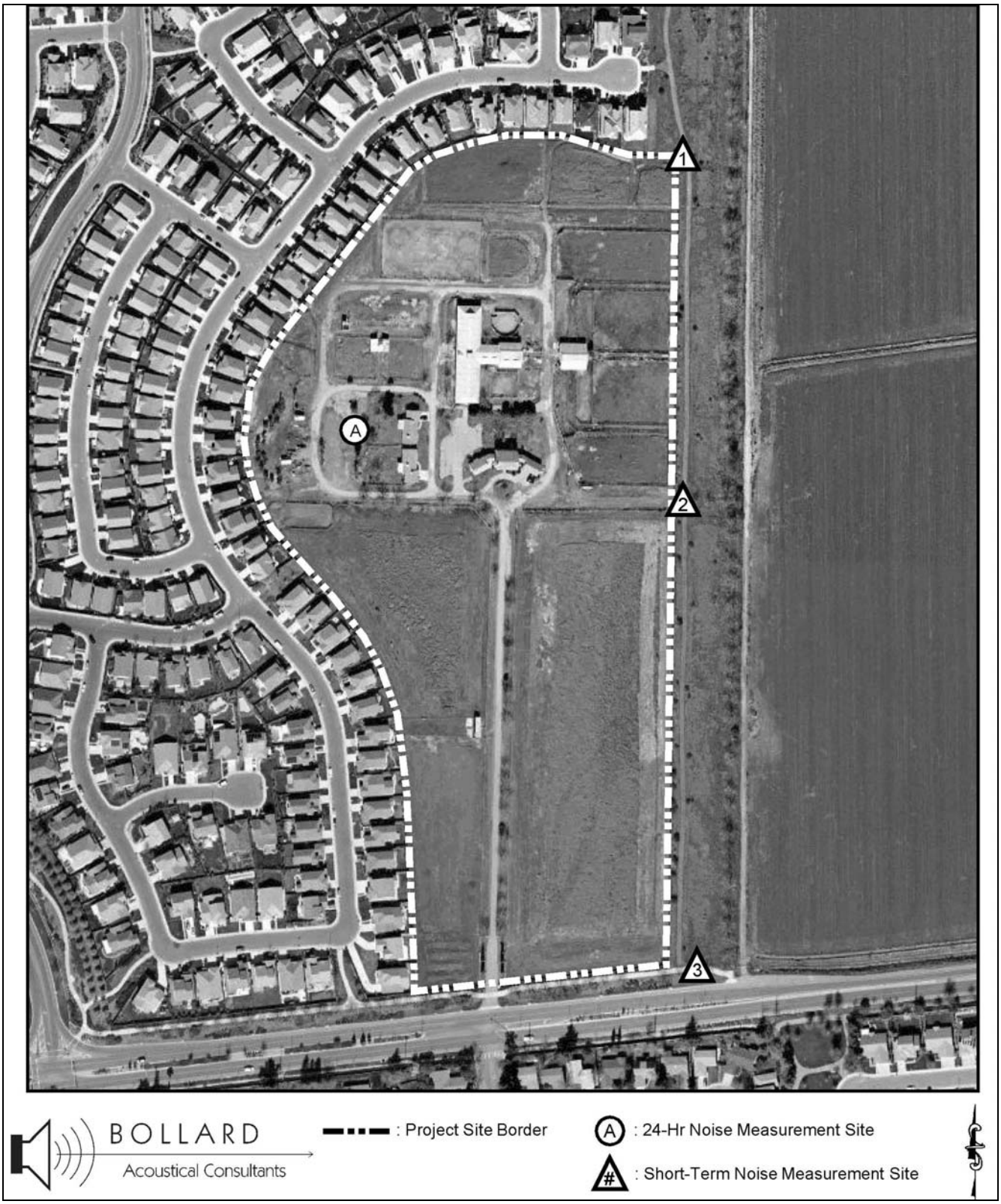
To describe existing and projected noise levels due to traffic, the FHWA Traffic Noise Prediction Model (FHWA RD-77-108) was used. The model is based upon the Calveno reference noise factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. The FHWA model was developed to predict hourly Leq values for free-flowing traffic conditions. To predict traffic noise levels in terms of Ldn, the input volume must be adjusted to account for the day/night distribution of traffic. Traffic volumes for future conditions and scenarios are contained in the Transportation and Circulation section of this Draft EIR, Section 4.3.

Project Impacts and Mitigation Measures

4.5-1 Impacts associated with an increase of existing traffic noise levels on surrounding roadways.

The development of the proposed project would result in the addition of residential uses to the project site, which currently contains three residences and two barns. Very few trips are generated by the current on-site uses. Development of the proposed project would generate increased traffic levels on some roads within the existing local roadway network.

Figure 4.5-2
Noise Measurement Locations



As shown in Table 4.5-4, project-related traffic noise increases on local area roadways would range from 0 to 3 dB Ldn. Pursuant to the project significance criteria, a substantial increase in traffic noise levels is defined as 1.5 to 5 dB, depending on the pre-project traffic noise level.

Table 4.5-4
Predicted Traffic Noise Levels and Project-Related Traffic Noise Level Increases

Roadway	Segment Description	Ldn @ 100 Feet					
		Exist	Exist + Project	Change	Cumulative	Cumulative + Project	Change
East Covell Blvd.	West of L Street	65	65	0	67	67	0
	L Street to Pole Line Road	65	65	0	67	67	0
	Pole Line Road to Monarch Lane	64	64	0	67	67	0
	Monarch Lane to Project Entrance	64	64	0	67	67	0
	Project Entrance to Alhambra Drive	64	64	0	67	67	0
	East of Alhambra Drive	63	63	0	66	66	0
Alhambra Drive	East Covell Blvd. To Loyola Drive	57	58	1	59	59	0
	Loyola Drive to 5th Street/Oceano Way	59	59	0	62	62	0
	5th Street/Oceano Way to Mace Blvd.	59	59	0	63	63	0
Loyola Drive	West of Monarch Lane	56	57	1	60	60	0
	Monarch Lane to Alhambra Drive	57	57	0	61	61	0
	East of Alhambra Drive	53	53	0	56	56	0
Pole Line Road	North of East Covell Blvd.	63	63	0	66	66	0
	East Covell Blvd. To East 8th Street	61	61	0	63	63	0
	South of East 8th Street	63	63	0	64	64	0
Mace Blvd.	North of Alhambra Drive	63	63	0	67	67	0
	Alhambra Drive to 2nd Street	65	65	0	68	68	0
	South of 2nd Street	66	66	0	68	68	0
Monarch Lane	East Covell Blvd. To Loyola Drive	53	56	3	56	57	1

Source: FHWA-RD-77-108 with inputs from Bollard Acoustical Consultants, Inc.

In the existing plus project scenario, noise levels would exceed the 60 dB Ldn threshold at 100 feet from the centerline of several of the roadway segments listed in Table 4.5-4. However, it should be noted that existing noise levels at these roadway segments already exceed the 60 dB Ldn threshold and the project would not create an increase in these levels; therefore, this impact would not be considered significant.

Existing noise levels on roadways affected by the proposed project are under 60 dB Ldn; therefore, in order for a significant impact to result, an increase of 5 dB must occur. Because the highest predicted change in noise levels is 3 dB, a ***less-than-significant*** impact would result.

Mitigation Measure(s)
None required.

4.5-2 Noise impacts associated with existing agricultural activities.

Open agricultural lands currently exist near the eastern boundary of the proposed project site. Noise-producing activities at the adjacent agricultural lands will likely continue to be intermittent, with brief periods of increased noise generation during various aspects of the planting and harvesting seasons, including potential late night and early morning activities. The project would include the dedication of 65 additional feet of greenbelt to the existing 135-foot greenbelt, creating a 200-foot greenbelt, to provide a buffer between such activities and noise-sensitive uses within the project site. Noise attenuation from setbacks is limited by the characteristics of the noise source, but is generally approximately 4 to 6 dB per doubling of distance from the source. Therefore, if a tractor generates 77 to 85 dB at 50 feet, the 200-foot greenbelt can be expected to reduce the noise level by 8 to 12 dB. This would result in an instantaneous noise level of 65 to 77 dB at the residential edge of the greenbelt. However, as shown in Table 4.5-1 the Lmax measured adjacent to the existing greenbelt is substantially lower than the maximum noise level estimate shown above. In addition, the estimate identified a instantaneous noise level that would not occur on a frequent basis. Furthermore, the above estimate conservatively assumes that the tractor is located on the property line; therefore, tractor noise would not exceed the City of Davis ambient noise standards. However, should agricultural activities not be disclosed to future residents of the project site, adverse reactions related to agricultural noise could result. Therefore, Mitigation Measure 4.1-4 of the Land Use and Agricultural Resources section of this EIR requires that prospective buyers within 1,000 feet of agricultural land be notified in writing of existing agricultural operations in the immediate area. As a result, a ***less-than-significant*** impact related to agricultural noise would result.

Mitigation Measure(s)
None required.

4.5-3 Short-term noise impacts from construction activities.

Activities associated with construction of the proposed project would result in elevated noise levels and could generate noise levels in excess of the City of Davis *General Plan* and *Noise Ordinance* standards, thereby exposing future residents within the project area to substantial short-term increases in ambient noise levels. Activities associated with construction typically generate maximum noise levels ranging from 85 to 90 dB at a distance of 50 feet, as shown in Table 4.5-5.

Table 4.5-5
Construction Equipment Noise

Type of Equipment	Maximum Level, dB at 50 Feet
Bulldozers	87
Heavy Trucks	88
Backhoe	85
Pneumatic Tools	85

Source: Environmental Noise Pollution, Patrick R. Cunniff, 1977.

During the construction phases of the Wildhorse Ranch project, noise from construction activities would add to the noise environment in the immediate project vicinity. Activities involved in construction would generate maximum noise levels, as indicated in Table 4.5-5, ranging from 85 to 90 dB at a distance of 50 feet. Construction activities would be temporary in nature and are anticipated to occur during normal daytime working hours.

Noise would also be generated during the construction phase by increased truck traffic on area roadways. A significant project-generated noise source would be truck traffic associated with transport of heavy materials and equipment to and from construction sites. These noise levels would be audible at the nearest existing residences; however, the levels would be temporary in nature and would likely occur during normal daytime working hours. Nonetheless, because construction activities would result in periods of elevated noise levels, the impact is considered to be ***significant***.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

4.5-3 Compliance with the following measures shall be incorporated within the Final Planned Development with specific criteria and standards to be reviewed and approved by the Planning Commission:

- *Construction activities shall be scheduled to occur during normal daytime working hours (i.e., 7:00 AM to 7:00 PM Monday through Friday and 8:00 AM to 8:00 PM Saturday and Sunday). These criteria shall be included in the Improvement Plans prior to initiation of construction. Exceptions to allow expanded construction activity hours shall be*

reviewed on a case-by-case basis as determined by the Community Development Director;

- *All heavy construction equipment and all stationary noise sources (such as diesel generators) shall be fitted with factory-specified mufflers; and*
- *Equipment warm up areas, water tanks, and equipment storage areas shall be located in an area as far away from existing residences as feasible.*

4.5-4 Noise impacts associated with greenbelt and orchard maintenance activities.

Activities associated with the proposed project's 65-foot internal greenbelt and orchard areas are not anticipated to be noise-generating, but maintenance of the greenbelt and orchard areas could result in intermittent periods of elevated noise levels. In addition, periodic maintenance of the existing Davis agricultural/habitat buffer to the east may result in elevated noise levels. The duration required to maintain the portion of the greenbelt that would be in close proximity to future residences is expected to be brief; therefore, City thresholds are not expected to be exceeded. Maximum noise levels generated by maintenance equipment could, however, be considered a nuisance if residents living adjacent to the greenbelt were unaware that such activities occur on a regular basis. Therefore, noise associated with greenbelt maintenance would be considered a ***significant*** impact.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

4.5-4 Prior to recordation of final map, disclosure statements advising that periods of orchard and greenbelt maintenance could result in elevated noise levels, shall be prepared and submitted for the review and approval of the Community Development Director. A copy of the approved disclosure statements shall be provided to all prospective buyers of property within the Wildhorse Ranch Subdivision. Language shall be included on the Final Map to ensure that the disclosure of elevated noise levels are provided at the time of all future sales.

Cumulative Impacts and Mitigation Measures

4.5-5 Cumulative impact of traffic noise levels.

Cumulative plus project conditions within the project area would include the generation of increased traffic on roads within the local roadway network, which would result in changes of traffic noise levels between 0 and 1 dB, relative to cumulative no-project conditions (See Table 4.5-4). Pursuant to the project significance criteria, a substantial increase in traffic noise levels is defined as 1.5 to 5 dB, depending on the pre-project traffic noise level.

Table 4.5-4 shows the predicted traffic noise levels for existing and cumulative conditions, and the changes in traffic noise levels that would result from implementation of the proposed project. The levels are provided in terms of Ldn at a standard distance of 100 feet from the centerline of the project-area roadways for existing and future, with project and without project conditions.

Due to the relatively small number of trips that are predicted to be generated by the project as compared to existing and future trips without the project, traffic noise level increases are not predicted to be significant on any of the roadway segments evaluated. Therefore, the cumulative impact of increased traffic-related noise associated with the proposed project would be ***less-than-significant***.

Mitigation Measure(s)
None required.

4.5-6 Cumulative impact of traffic noise levels at outdoor activity areas proposed within the 60 dB Ldn contours.

Future cumulative plus project traffic noise levels would exceed the City's 60 dB Ldn exterior noise level standard at proposed uses within the 60 dB Ldn contours shown in Table 4.5-6. The future cumulative plus project traffic noise level at the project site, at a distance of 100 feet from Covell Boulevard, would be 67 dB Ldn (See Table 4.5-4). Table 4.5-6 indicates that the distance from the Covell Boulevard centerline to the cumulative plus project 60 dB Ldn contour is 284 feet. However, primary outdoor activity areas are not proposed between the southernmost multi-family residential uses and East Covell Boulevard. All proposed common outdoor activity areas would be partially shielded by the multi-family residences and would be located a considerable distance from East Covell Boulevard. As a result, the proposed outdoor activity areas would not be exposed to future traffic noise levels above 60 dB Ldn exterior noise level standard of the City of Davis. Therefore, cumulative impacts related to traffic noise levels at outdoor activity areas would be considered ***less-than-significant***.

Mitigation Measure(s)
None required.

Table 4.5-6
Predicted Distances to Cumulative Plus Project Noise Contours

Roadway	Segment Description	Distance from Centerline to Noise Contour (in feet)		
		70 dB	65 dB	60 dB
East Covell Blvd.	West of L Street	65	140	302
	L Street to Pole Line Road	64	139	299
	Pole Line Road to Monarch Lane	62	133	286
	Monarch Lane to Project Entrance	61	132	285
	Project Entrance to Alhambra Drive	61	132	284
	East of Alhambra Drive	57	123	266
Alhambra Drive	East Covell Blvd. To Loyola Drive	20	42	91
	Loyola Drive to 5th Street/Oceano Way	29	62	133
	5th Street/Oceano Way to Mace Blvd.	36	78	168
Loyola Drive	West of Monarch Lane	22	48	104
	Monarch Lane to Alhambra Drive	24	51	111
	East of Alhambra Drive	11	25	53
Pole Line Road	North of East Covell Blvd.	51	111	239
	East Covell Blvd. To East 8th Street	34	73	156
	South of East 8th Street	38	82	176
Mace Blvd.	North of Alhambra Drive	60	129	278
	Alhambra Drive to 2nd Street	74	160	344
	South of 2nd Street	78	168	362
Monarch Lane	East Covell Blvd. To Loyola Drive	14	30	64

Note: Distances to traffic noise contours are measured in feet from the centerlines of the roadways.

Source: FHWA-RD-77-108 with inputs from Bollard Acoustical Consultants, Inc.

4.5-7 Cumulative impact of traffic noise levels at interior residential areas proposed within the 60 dB Ldn contours.

Table 4.5-4 indicates that the cumulative plus project traffic noise, at a distance of 100 feet from Covell Boulevard, would be 67 dB Ldn. The nearest proposed residential building would be approximately 120 feet from the roadway centerline, where first floor building façade exposure would be approximately 66 dB Ldn. Because upper-floor noise exposure is typically two dB higher than first-floor exposure due to reduced ground absorption, upper-floor façades of the proposed residences could be exposed to future traffic noise levels of approximately 68 dB Ldn. Given this exterior exposure, a building façade traffic noise level reduction of 23 dB would be required to ensure compliance with the City of Davis interior noise level standard of 45 dB Ldn or less.

However, new residential development typically provides a building façade noise level reduction of 25 to 30 dB; therefore, future traffic noise levels at the interior spaces of these residential uses are predicted to be 45 dB Ldn or less, and the impact would be considered ***less-than-significant***.

Mitigation Measure(s)
None required.

Endnotes

[1] Bollard Acoustical Consultants, Inc., *Environmental Noise Assessment*, January 7, 2009.
[2] City of Davis, *General Plan Update*, May 2001.

4.6 BIOLOGICAL RESOURCES

INTRODUCTION

The Biological Resources section of the EIR evaluates potential biological resource impacts associated with the implementation of the proposed Wildhorse Ranch project and includes a discussion of the mitigation measures necessary to reduce impacts to a less-than-significant level. In addition to analyzing potential on-site impacts to biological resources, the Biological Resources Section analyzes the potential off-site impacts created by the development of project infrastructure based on data collected during field surveys of the proposed site and a review of existing literature, maps, and aerial photography pertaining to the biological resources of the area. This section is primarily based on a *Biological Resource Analysis* (Appendix F),[1] a *Habitat Assessment and Focused Winter Season Survey for Burrowing Owl* (Appendix G),[2] and *Focused Breeding Season Survey for Burrowing Owl* (Appendix G)[3] prepared by EDAW, Inc., a *Tree Appraisal* (Appendix H)[4] prepared by Tree Associates, as well as the *City of Davis General Plan*.[5]

ENVIRONMENTAL SETTING

The following sections describe the regional and local setting of the site, as well as the biological resources occurring on the proposed Wildhorse Ranch project site.

Regional Setting

The proposed project is located within the Great Central Valley region of California, within southeastern Yolo County. The Great Central Valley is a north-south oriented valley that extends approximately 430 miles from southern Tehama County to south-central Kern County in southern California. Elevations in the Great Central Valley range from approximately zero to 400 feet above mean sea level (msl). In general, the borders of the Great Central Valley are considered to be those areas where alluvial soils grade into bedrock features. The landscape is dominated by woodland biological communities, typically referred to as the foothills. Now predominantly agricultural, biological communities in the Great Central Valley once supported vast areas of grassland, marshes, and riparian woodland.

The dominant biological community found throughout the Great Central Valley is annual grassland. This type of habitat generally occupies what was once a native grassland dominated by native perennial bunch grasses. However, annual grassland habitats today are composed largely of non-native annuals, which have effectively displaced the native perennial species. Typical herbaceous species observed throughout the Great Central Valley are non-native grasses and forbs such as medusa head (*Taeniatherum caput medusae*), soft chess (*Bromus hordeaceus*), wild oats (*Avena fatua*), and star thistle (*Centaurea solstitialis*). Freshwater marsh habitat typically occurs in flatlands where water accumulates in shallow depressions and supports a

predominance of rushes (*Juncus* spp.), bulrushes (*Scirpus* spp.), sedges (*Carex* spp.), and willows (*Salix* spp.). Riparian woodland occurs along permanent bodies of freshwater and is dominated by water-loving trees and shrubs, such as western sycamore (*Platanus racemosa*), box elder (*Acer negundo*), cottonwood (*Populus fremontii*), willows (*Salix* spp.), and valley oak (*Quercus lobata*). In addition, the Great Central Valley is situated in the Pacific Flyway, a major migration route for waterfowl and other birds in North America (City of Davis General Plan, 2001).

Local Setting

The proposed Wildhorse Ranch project is located at 3003, 3027, and 3075 East Covell Boulevard in the City of Davis (City), Yolo County, California (See Figure 4.6-1). The proposed Wildhorse Ranch property (hereafter referred to as the project site) is identified as Assessor's Parcel Number (APN) 071-140-11, and is located in Section 2, Township 8 North, Range 2 East, as depicted on the Davis USGS 7.5-minute topographic quadrangle.

The proposed project lies north of East Covell Boulevard and consists of approximately 26 acres of generally level land that is located about one mile north of Interstate 80 in the northeastern corner of the City. Elevations of the project site range from approximately 35 to 40 feet above msl. The project site is completely encircled by board and wire fencing, and numerous cross fences divide the property within the perimeter. The site is approximately 0.3 miles south of an unnamed drainage tributary that flows in a northeasterly direction, emptying into Willow Slough Bypass, which is approximately two miles northeast of the property. Natural drainages are not within the boundary of the project site.

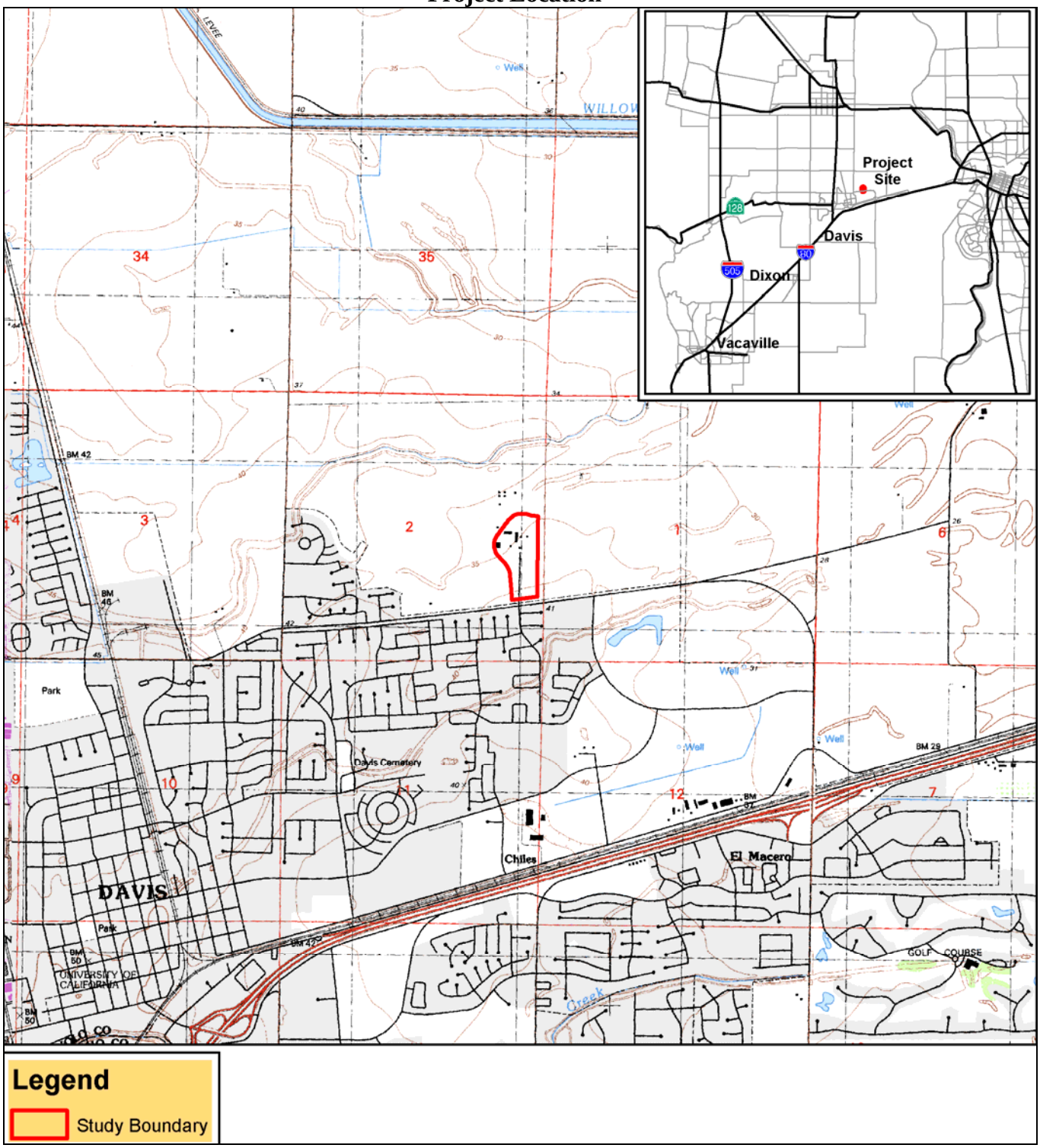
The ground surface within the project site appears to be highly disturbed by human activities including compaction, grading, paving, or gravelling of roadways and parking areas, as well as the construction of barns, paddocks, corrals, and other facilities in association with an ongoing horse boarding and riding operation. Several on-site residences are also present. In addition, fill is evident by the observation of uneven, elevated ground surfaces, dirt piles, and the presence of gravel and broken concrete fragments in widely scattered locations. The stockpiling and spreading of manure on the property is also evident, especially in the northeastern corner of the site. An aerial photograph also reveals evidence of widespread ground disturbance within the study area (See Figure 4.6-2).

The site is bounded to the north, west, and south by residential development. Along the eastern boundary of the project site is an existing City agricultural/habitat buffer that is approximately 135 feet in width. East of the buffer is an existing farm road and then open agricultural lands cultivated in alfalfa at the time of the site reconnaissance. The buffer is currently composed of a 35-foot greenbelt/buffer that includes a pedestrian path/trail, and a 100-foot habitat area.

Biological Communities

The project site is highly disturbed and does not appear to support any natural vegetation communities aside from ruderal, non-native annual grassland. Vegetation on-site is restricted to planted ornamental, agricultural tree, and shrub species, as well as ruderal herbaceous plants (See Figure 4.6-3). In addition, naturally occurring trees or shrubs are not present on-site.

Figure 4.6-1
Project Location

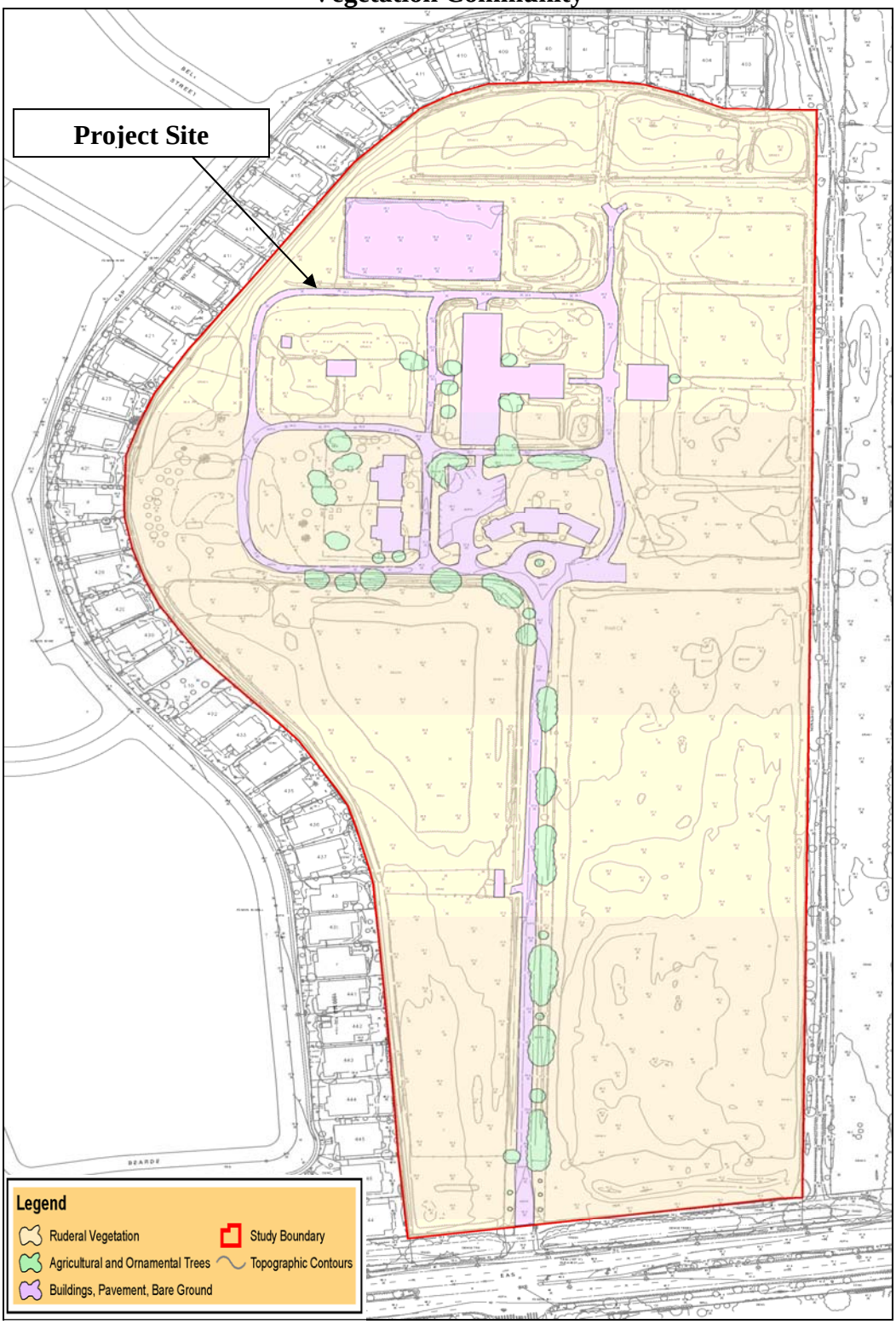


Source: EDAW, Inc., 2007.

Figure 4.6-2
Aerial Photograph of Project Site

Source: EDAW, Inc., 2007

Figure 4.6-3
Vegetation Community



Source: EDAW, Inc., 2007

The most commonly represented tree on-site is English walnut (*Juglans regia*). Other typical landscape trees and shrubs present include the Northern California black walnut (*Juglans californica var. hindsii*), Italian cypress (*Cupressus sempervirens*), olive (*Olea europaea*), Washington fan palm (*Washingtonia filifera*), common fig (*Ficus carica*), ornamental pine (*Pinus* sp.), London plane tree (*Platanus acerifolia*), myoporum (*Myoporum laetum*), temple bamboo (*Semiarundinaria fastuosa*), and ornamental rose (*Rosa* sp.).

Many areas of the project site are subjected to frequent and intensive grazing and trampling by horses, and support little or no vegetation. In open areas where disturbance is less intensive, sparse to fairly dense herbaceous vegetation was present, consisting primarily of non-native, ruderal species typical of disturbed places. Characteristic non-native species observed on-site include: Russian thistle (*Salsola tragus*), hare barley (*Hordeum murinum* ssp. *leporinum*), yellow star-thistle (*Centaurea solstitialis*), prickly lettuce (*Lactuca serriola*), broad-leaf peppergrass (*Lepidium latifolium*), red-stem filaree (*Erodium cicutarium*), cut-leaved geranium (*Geranium dissectum*), common groundsel (*Senecio vulgaris*), milk thistle (*Silybum marianum*), bristly ox-tongue (*Picris echioides*), black mustard (*Brassica nigra*), hoary mustard (*Hirschfeldia incana*), and bull mallow (*Malva nicaeensis*).

Native plant species on-site do not appear to be well represented, but include: tall willow-herb (*Epilobium brachycarpum*), miner's lettuce (*Claytonia perfoliata* ssp. *perfoliata*), and common fiddleneck (*Amsinckia menziesii* var. *intermedia*), all common species of disturbed habitats.

Non-native annual grassland like that found on-site is generally found in open areas in valleys and foothills throughout coastal and interior California, and typically occurs on soils consisting of fine-textured loams or clays that are somewhat poorly drained. This vegetation type is dominated by non-native annual grasses, weedy annual grasses, and perennial forbs primarily of Mediterranean origin, which have replaced native perennial grasslands. Scattered native wildflower species, representing remnants of the original vegetation may also be common.

Ruderal habitat is that from which the native vegetation has been completely removed by grading, cultivation, or other surface disturbances. Such areas, if left undeveloped, may become recolonized by exotic species, as well as native species. The native vegetation may ultimately become at least partially restored if the soils are left intact and there is no further disturbance.

Grassland habitats, both native and non-native, attract reptiles and amphibians such as alligator lizard (*Gerrhonotus* spp.), western fence lizard (*Sceloporus occidentalis*), and Pacific slender salamander (*Batrachoseps attenuatus*), which feed on invertebrates found within and beneath fallen logs and other debris in the vegetation community. This habitat also attracts seed-eating and insect-eating species of birds and mammals. California quail (*Callipepla californica*), mourning dove (*Zenaida macroura*), and western meadowlark (*Sturnella neglecta*) are a few granivores that nest and forage in grasslands. Insectivores such as the western scrub-jay (*Aphelocoma californica*), barn swallow (*Hirundo rustica*), and northern mockingbird (*Mimus polyglottos*) use the habitat for foraging only. Grasslands are important foraging grounds for insectivorous bats such as myotis (*Myotis* spp.) and pallid bats (*Antrozous pallidus*).

A large number of other mammal species such as the California vole (*Microtus californicus*), deer mouse (*Peromyscus maniculatus*), Botta's pocket gopher (*Thomomys bottae*), California ground squirrel (*Spermophilus beecheyi*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), striped skunk (*Mephitis mephitis*), and black-tailed jackrabbit (*Lepus californicus*) also forage, nest, and/or den within grasslands. Small rodents attract raptors (*i.e.*, birds of prey) such as owls, which hunt at night, as well as day-hunting raptors, such as the red-tailed hawk (*Buteo jamaicensis*) and the red-shouldered hawk (*Buteo lineatus*). In addition, burrowing owls (*Athene cunicularia*) nest in grassland habitats characterized by short vegetation and ground squirrel activity.

Special-Status Biological Resources

Prior to conducting fieldwork, the California Natural Diversity Data Base (CNDDB) was reviewed for the most recent distribution information for special-status plant and animal species within the Davis quadrangle and eight adjacent quadrangles.

Information on special-status plant species was compiled through a review of the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Plants of California*, the California Department of Fish and Game's (CDFG) *State and Federally Listed Endangered, Threatened, and Rare Plants of California* and *Special Vascular Plants, Bryophytes, and Lichens List*, and the U.S. Fish and Wildlife Service's (USFWS) *Endangered and Threatened Wildlife and Plants; Proposed Rule* and *Federal Endangered and Threatened Species List* for the region.

Information on special-status animal species was compiled through a review of the CNDDB, CDFG's *State and Federally Listed Endangered and Threatened Animals of California* and *Special Animals List*, and the USFWS's *Endangered and Threatened Wildlife and Plants; Proposed Rule* and *Federal Endangered and Threatened Species List* for the region.

Sensitive Natural Communities

Sensitive natural communities are those that are considered rare in the region, support special-status plant or wildlife species, or receive regulatory protection (*i.e.*, §404 of the Clean Water Act (CWA) and/or §§1600 *et seq.* of the CDFG Code). In addition, the CNDDB has designated a number of communities as rare; these communities are given the highest inventory priority.

Due to the high level of disturbance on-site, no native vegetation communities are evident. Soils on the property are mapped as belonging to three units: Sycamore silt loam, drained; Sycamore silty clay loam, drained; and Tyndall very fine sandy loam, drained. Soils in the Sycamore series are considered to be hydric on alluvial fans, as are inclusions of Laugenour and Sycamore soils found within areas mapped as Tyndall units.

These soil types consist of somewhat poorly drained silty clay loams and fine sandy loams formed on alluvial fans. Where relatively undisturbed, but even where cultivated, such soils can support seasonal wetlands where poor drainage allows water to pond on the surface, or where seasonal flooding occurs adjacent to watercourses. Such conditions do not appear to be present

on-site under the current use conditions. Given the lack of native vegetation communities and absence of aquatic habitats on-site, sensitive natural communities are not present.

Special-Status Plants

Special-status plant species include those listed as Endangered, Threatened, Rare, or those species proposed for listing by the USFWS. The California Native Plant Society listing is sanctioned by the CDFG and serves essentially as their list of "candidate" plant species. California Native Plant Society List 1B and List 2 species are considered eligible for state listing as endangered or threatened under the CDFG Code. Such species should be fully considered during preparation of environmental documents subject to the California Environmental Quality Act (CEQA). California Native Plant Society List 3 and List 4 species are considered to be either plants about which more information is needed or are uncommon enough that their status should be regularly monitored. Such plants may be eligible or may become eligible for state listing, and the CNPS and CDFG recommend that these species be evaluated for consideration during the preparation of CEQA documents.

Based on a literature review and a familiarity with the flora within the project region, a total of 11 special-status plant species were considered to have at least some potential to occur within 10 miles of the project site or have been recorded historically in the project vicinity (See Table 4.6-1). Special-status plant species occurrences within 10 miles of the project site are shown in Figure 4.6-4. A majority of these plant species are known to be associated with alkaline soils, vernal pools, seasonal wetlands, and/or habitats that are not evident within the project site. Although focused botanical surveys were not performed as a part of this study, none of these species is expected to occur on-site due to an absence of suitable habitat. Other special-status plant species are not considered to have any potential to occur on-site.

Special-Status Wildlife

Special-status animal species include those listed by the USFWS under the Federal Endangered Species Act (FESA) and by the CDFG under the California Endangered Species Act (CESA). The United States Fish and Wildlife Service officially lists species as either Threatened, Endangered, or as Candidates for listing. Additional species receive federal protection under the Bald Eagle Protection Act (*e.g.*, bald eagle, golden eagle), the Migratory Bird Treaty Act (MBTA) and state protection under CEQA §15380(d). All birds, except European starlings, English house sparrows, rock doves (pigeons), and non-migratory game birds such as quail, pheasant, and grouse, are protected under the Migratory Bird Treaty Act. However, non-migratory game birds are protected under CDFG Code §3503 and many other species are considered by the CDFG to be California Species of Special Concern. In addition, the California Department of Fish and Game and the CNDDB track species within California for which there is a conservation concern, including many that are not formally listed, and assign them a CNDDB Rank. Although California Species of Special Concern and species that are tracked by the CNDDB are not formally listed, they may receive special consideration during the CEQA review process.

Table 4.6-1
Special-Status Plant Species Potentially Occurring within 10 Miles of the Project Site

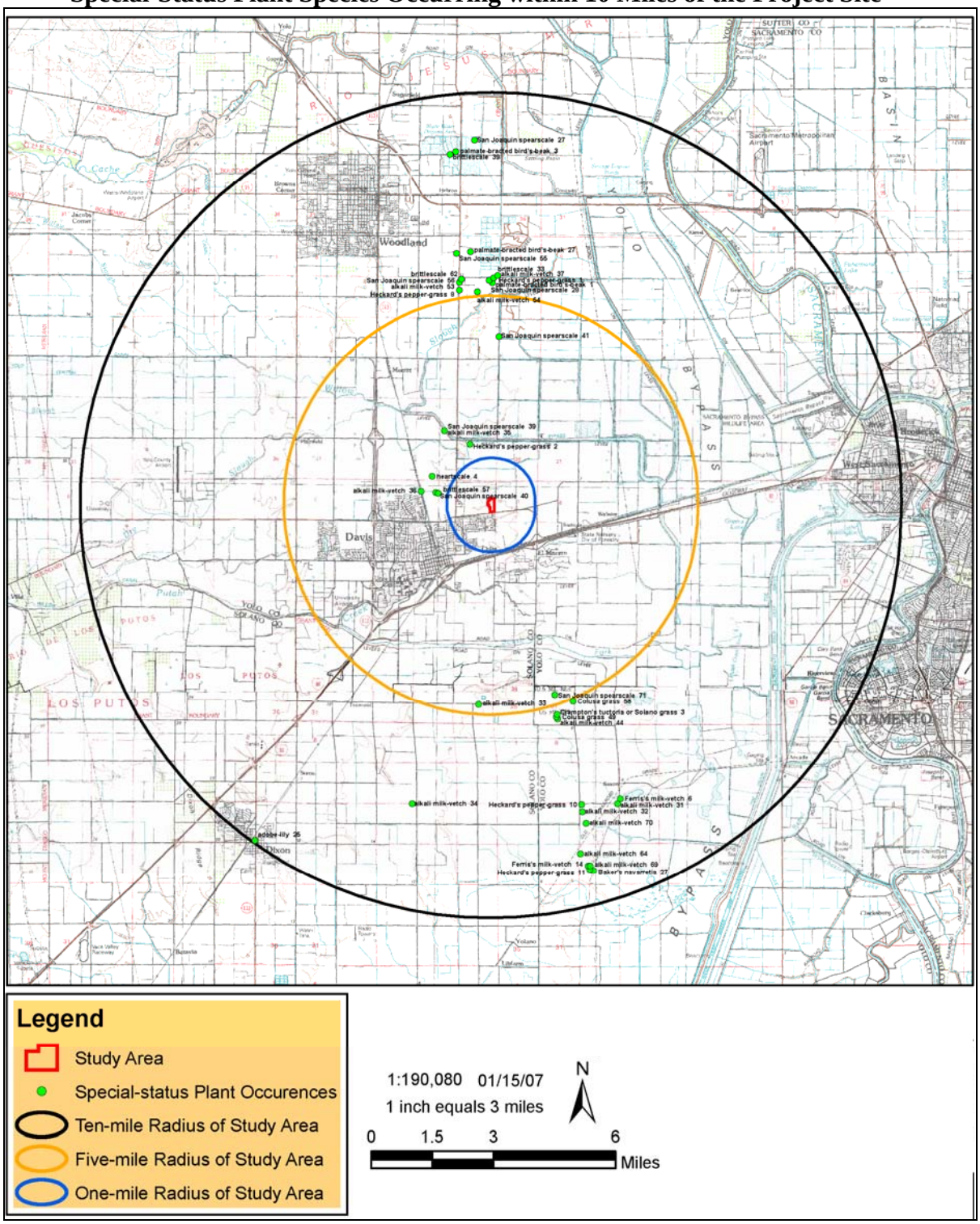
Common Name	Scientific Name	Status*	Potential for Occurrence on Project Site
Adobe-lily	*Fritillaria pluriflora*	CNPS 1B.2	Not expected
Alkali milk vetch	*Astragalus tener* var. *tener*	CNPS 1B.2	Not expected
Baker's navarretia	*Navarretia leucocephala* ssp. *bakeri*	CNPS 1B.1	Not expected
Brittlescale	*Atriplex depressa*	CNPS 1B.2	Not expected
Colusa grass	*Neostapfia colusana*	FT, CE, CNPS 1B.1	Not expected
Crampton's tuctoria	*Tuctoria mucronata*	FE, CE, CNPS 1B.1	Not expected
Ferris's milk vetch	*Astragalus tener* var. *ferrisiae*	CNPS 1B.1	Not expected
Heartscale	*Atriplex cordulata*	CNPS 1B.2	Not expected
Heckard's pepper-grass	*Lepidium latipes var. heckardii*	CNPS 1B.2	Not expected
Palmate-bracted birds's-beak	*Cordylanthus palmatus*	FE, CE, CNPS 1B.1	Not expected
San Joaquin spearscale	*Atriplex joaquiniana*	CNPS 1B.2	Not expected

*Status Codes

FE = Listed as Endangered by the Federal Government
FT = Listed as Threatened by the Federal Government
CE = Listed as Endangered by the State of California
CT = Listed as Threatened by the State of California
CR = Listed as Rare by the State of California
CNPS 1B.1 = Rare, threatened, or endangered; seriously endangered in California
CNPS 1B.2 = Rare, threatened, or endangered; fairly endangered in California
CNPS 2 = Eligible for State listing, not rare outside California, CEQA review
CNPS 3 = Review list, more information needed, recommended for CEQA review
CNPS 4 = Watch list, recommended for CEQA review

Source: EDAW, Inc., 2007.

Figure 4.6-4
Special-Status Plant Species Occurring within 10 Miles of the Project Site



Source: EDAW, Inc., 2007.

Based on a literature review and a familiarity with the fauna within the project region, a total of 45 special-status animal species were considered to have at least some potential to occur within 10 miles of the project site or have been recorded historically in the project vicinity. Special-status wildlife species occurring within 10 miles of the project site are shown in Figure 4.6-5, Figure 4.6-6, and Figure 4.6-7. In addition, special-status wildlife species associated with habitats not present on-site are not discussed in this Draft EIR. Those species that have a potential to occur on-site and/or are prominent in today's regulatory environment are discussed below (See Table 4.6-2).

Invertebrates

Several special-status invertebrate species were considered during the preparation of this Draft EIR because occurrences have been reported in the region or because the study area falls within or in the vicinity of the historical range of these species. Included in this category are the Antioch mutillid wasp (*Myrmosula pacifica*) and the Sacramento Valley tiger beetle, (*Cicindela hirticollis abrupta*); both species are tracked by the CNDDB. However, based on the absence of suitable sand dune and sandy riparian habitat, these species are not expected to occur on-site.

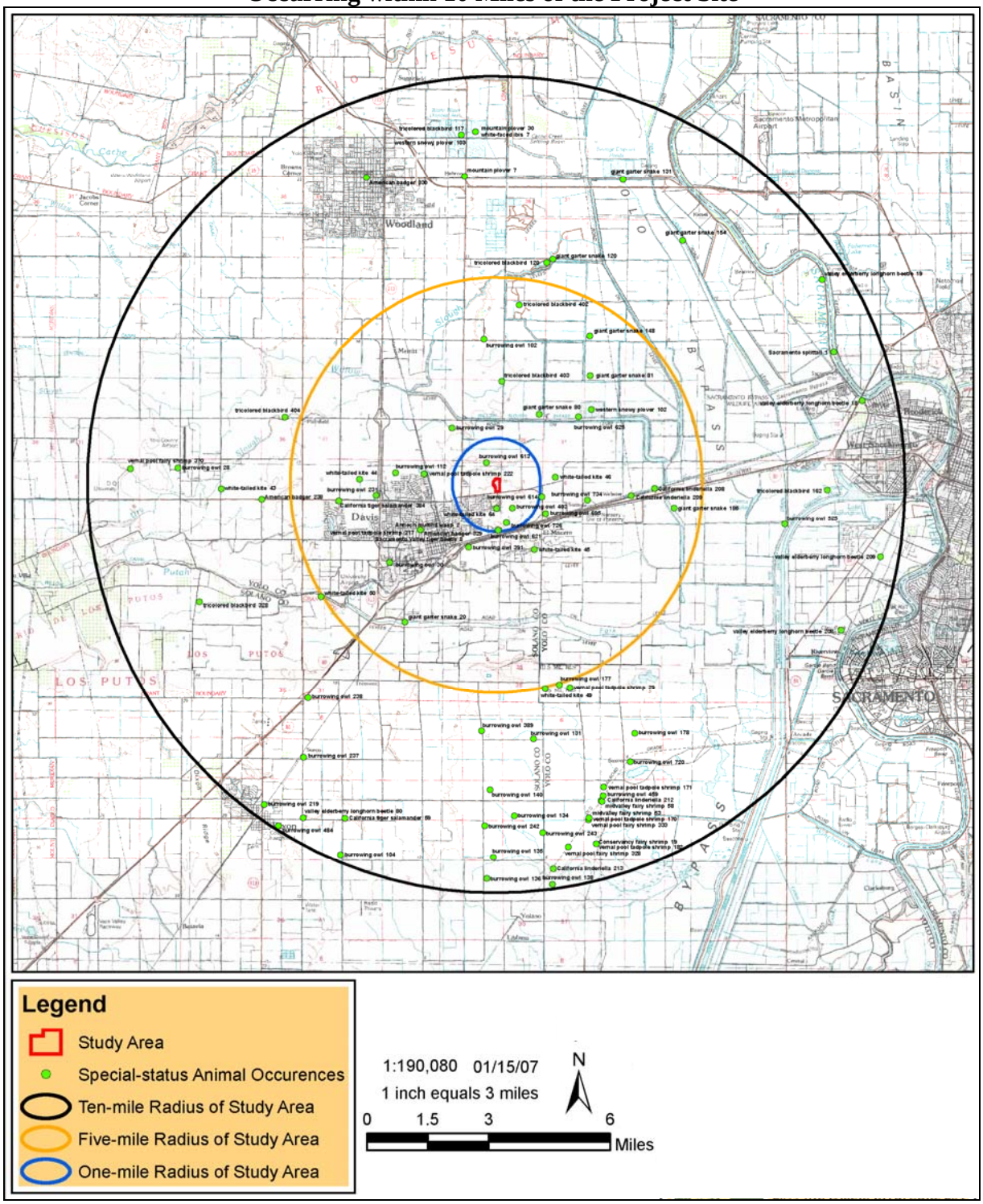
Vernal Pool Crustaceans

Fairy shrimp and tadpole shrimp are aquatic crustaceans associated with vernal pools, grassy swales, and other temporarily ponded bodies of water in California. As a taxonomic group, they are collectively referred to as branchiopods. Fairy shrimp and tadpole shrimp represent two different orders, Anostraca and Notostraca respectively, within the crustacean class Branchiopoda. Most branchiopods are small freshwater organisms with limited specialization of their appendages.

Vernal pools form in regions with Mediterranean climates where shallow depressions fill with water during fall and winter rains, which evaporate in the spring. Downward percolation is prevented by the presence of an impervious subsurface layer, such as claypan, hardpan, or volcanic stratum. Fairy shrimp and tadpole shrimp are ecologically dependent upon these seasonal fluctuations in their environment.

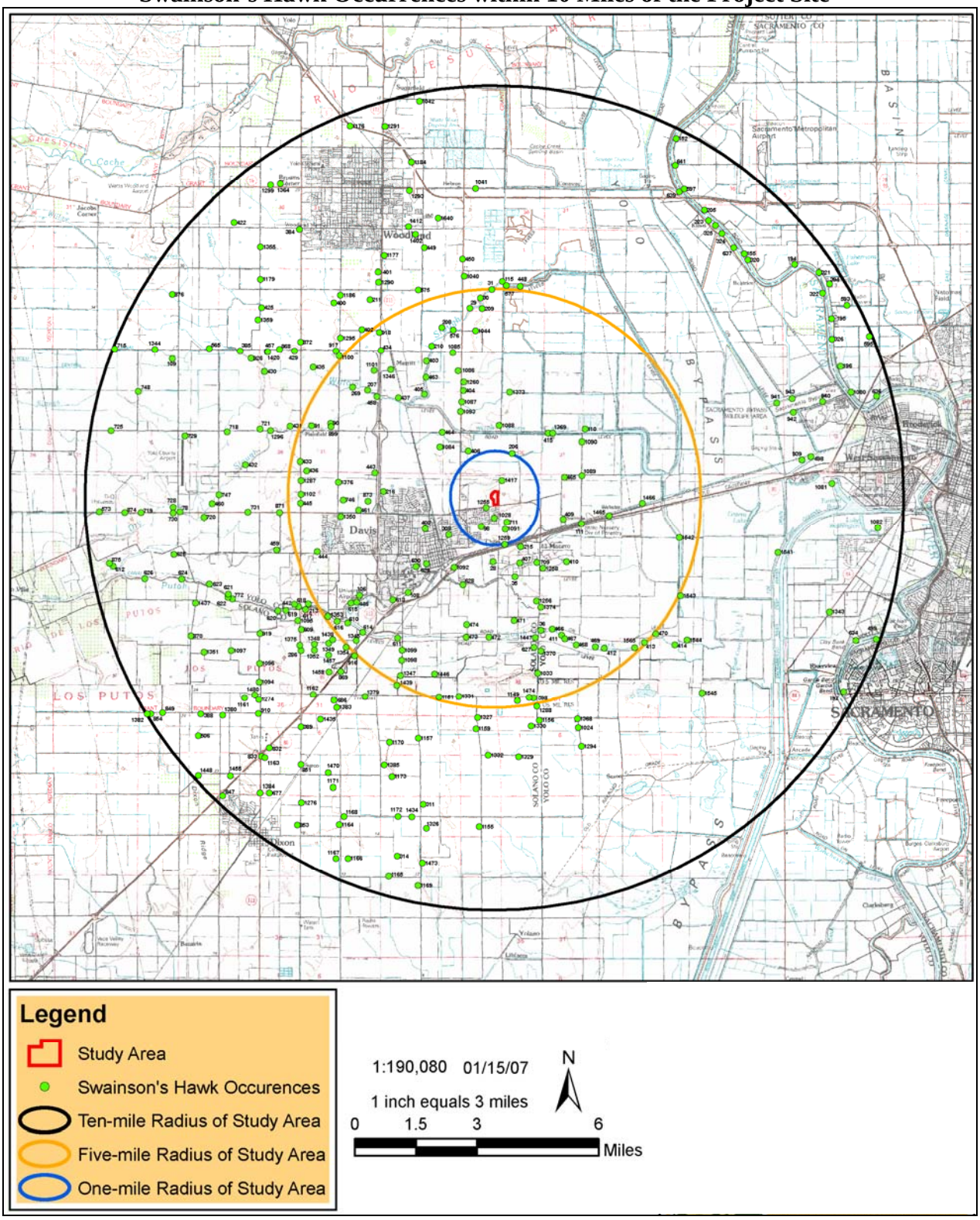
Three vernal pool invertebrate species were listed in 1994 by the USFWS as Endangered: vernal pool tadpole shrimp (*Lepidurus packardi*), Conservancy fairy shrimp (*Branchinecta conservatio*), and longhorn fairy shrimp (*Branchinecta longiantenna*). In addition, the vernal pool fairy shrimp (*Branchinecta lynchi*) was federally-listed as Threatened. The Federal Register document finalizing their listing under the FESA states that these species "are in danger of extinction principally by the result of urban development, conversion of native habitats to agriculture, and stochastic (random) extinction by virtue of the small isolated nature of many of the remaining populations."

Figure 4.6-5
Special-Status Wildlife Species Excluding Swainson's Hawk Occurring within 10 Miles of the Project Site



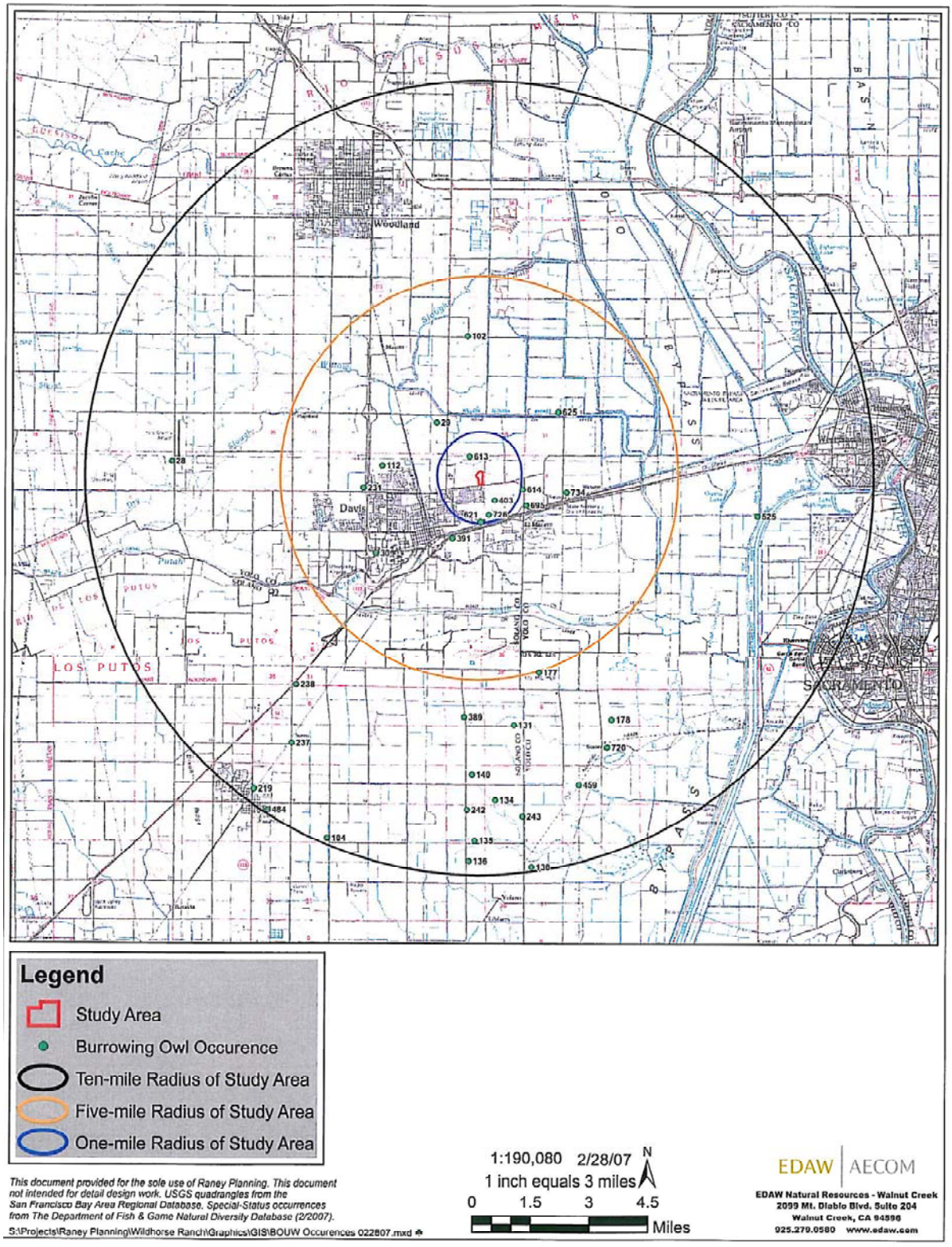
Source: EDAW, Inc., 2007.

Figure 4.6-6
Swainson's Hawk Occurrences within 10 Miles of the Project Site



Source: EDAW, Inc., 2007.

Figure 4.6-7
Burrowing Owl Occurrences within 10 Miles of the Project Site



Source: EDAW, Inc., 2007.

Table 4.6-2
Special-Status Wildlife Species
Potentially Occurring within 10 Miles of the Project Site

Common Name	Scientific Name	Status*	Potential for Occurrence on Project Site
State or Federally Endangered or Threatened Species			
Invertebrates			
Conservancy fairy shrimp	*Branchinecta conservatio*	FE	Not expected
Vernal pool fairy shrimp	*Branchinecta lynchi*	FT	Not expected
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	FT	Not expected
Vernal pool tadpole shrimp	*Lepidurus packardi*	FE	Not expected
Amphibians			
California tiger salamander	*Ambystoma californiense*	FT; CSC	Not expected
California red-legged frog	*Rana aurora draytonii*	FT; CSC	Not expected
Reptiles			
Giant garter snake	*Thamnophis gigas*	FT, ST	Not expected
Birds			
Swainson's hawk	*Buteo swainsoni*	ST	High
Western snowy plover	*Charadrius alexandrinus nivosus*	FT; CSC	Not expected
American peregrine falcon	*Falco peregrinus anatum*	SE; CFP	Low
Greater sandhill crane	*Grus canadensis tabida*	ST; CFP	Not expected
California Species of Special Concern, State Protected, Federal Candidate, or CNDDB Species			
Invertebrates			
no common name (a solitary bee)	*Andrena blennospermatis*	CNDDB	Not expected
no common name (a solitary bee)	*Andrena subapasta*	CNDDB	Not expected
Midvalley fairy shrimp	*Branchinecta mesovallensis*	CNDDB	Not expected
Sacramento Valley tiger beetle	*Cicindela hirticollis abrupta*	CNDDB	Not expected
Ricksecker's water scavenger beetle	*Hydrochara rickseckeri*	CNDDB	Not expected
California linderiella	*Linderiella occidentalis*	CNDDB	Not expected
Antioch mutillid wasp	*Myrmosula pacifica*	CNDDB	Not expected
Amphibians			
Western spadefoot toad	*Spea hammondii*	CSC	Not expected
Reptiles			
Western pond turtle	*Clemmys marmorata*	CSC	Not expected

Table 4.6-2
Special-Status Wildlife Species
Potentially Occurring within 10 Miles of the Project Site

Common Name	Scientific Name	Status*	Potential for Occurrence on Project Site
Birds			
Cooper's hawk	*Accipiter cooperii*	CSC	Moderate
Sharp-shinned hawk	*Accipiter striatus*	CSC	Low
Tricolored blackbird	*Agelaius tricolor*	CSC	Low
Golden eagle	*Aquila chrysaetos*	CSC; CFP	Low
Short-eared owl	*Asio flammeus*	CSC	Low
Burrowing owl	*Athene cunicularia*	CSC	Observed on-site
Ferruginous hawk	*Buteo regalis*	CSC	Moderate
Mountain plover	*Charadrius montanus*	CSC	Moderate
Lark sparrow	*Chondestes grammacus*	CNDDB	Low
Northern harrier	*Circus cyaneus*	CSC	Observed on-site
White-tailed kite	*Elanus leucurus*	CFP	High
California horned lark	*Eremophila alpestris actia*	CSC	Moderate
Merlin	*Falco columbarius*	CSC	Low
Prairie falcon	*Falco mexicanus*	CSC	Moderate
Loggerhead shrike	*Lanius ludovicianus*	CSC	Moderate
Long-billed curlew	*Numenius americanus*	CSC	Moderate
American white pelican	*Pelecanus erythrorhynchos*	CSC	Observed in site vicinity, but not expected on-site
Yellow-billed magpie	*Pica nutalli*	CNDDB	Observed on-site
White-faced ibis	*Plegadis chihi*	CSC	Low
Mammals			
Pallid bat	*Antrozus pallidus*	CSC	Low
Ringtail	*Bassariscus astutus*	CFP	Very low
Townsend's western big-eared bat	*Corynorhinus townsendii townsendii*	CSC	Low
Western red bat	*Lasiurus blossevillii*	CNDDB	Low
Hoary bat	*Lasiurus cinereus*	CNDDB	Low
Yuma myotis bat	*Myotis yumaensis*	CNDDB	Low
American badger	*Taxidea taxus*	CSC	Low

Table 4.6-2
Special-Status Wildlife Species
Potentially Occurring within 10 Miles of the Project Site

Common Name	Scientific Name	Status*	Potential for Occurrence on Project Site

*Status Codes
FE = Listed as Endangered by the Federal Government
FT = Listed as Threatened by the Federal Government
FPT = Proposed Listed as Threatened by the Federal Government
FC = Federal Candidate Species
SE = Listed as Endangered by the State of California
ST = Listed as Threatened by the State of California
CSC = California Species of Special Concern
CFP = Fully protected under the California Fish and Game Code
CNDDB = Tracked by the CNDDB

Source: EDAW, Inc., 2007.

The midvalley fairy shrimp (*Brachinecta mesovalliensis*) was denied federal listing in 2004, but is still tracked by the CNDDB. The California linderiella (*Linderiella occidentalis*) was proposed by the USFWS for federal listing along with those species listed in 1994; however, the proposal to list the California linderiella was withdrawn after a comment period. This species is on the IUCN (World Conservation Union) red list as a Lower Risk Near Threatened species, and is tracked by the CNDDB.

The nearest occurrence of vernal pool crustaceans to the study area was an occurrence of vernal pool tadpole shrimp reported in 1952 near Davis. This occurrence was mapped approximately 1.75 miles west of the study area. Another historical occurrence is located approximately two miles to the southwest in central Davis, which has also been developed into a residential area. More recent occurrences of vernal pool tadpole shrimp, vernal pool fairy shrimp, Conservancy fairy shrimp, midvalley fairy shrimp, and California linderiella have been reported approximately 3.5 miles to the east near the Union Pacific Railroad (UPRR) tracks, 5.3 miles to the southeast near County Road (CR) 36, between eight and 10 miles to the south in an area east of Dixon, and nine miles to the west near CR 95. The proposed project falls outside of Critical Habitat for vernal pool crustaceans as designated by the USFWS. On-site hydrology does not support vernal pool habitat, and though water may pond seasonally in the horse pastures and other ruderal grasslands on-site, water is unlikely to persist long enough to support populations of vernal pool crustaceans. Based on the lack of suitable habitat and the lack of recent occurrences within the vicinity, vernal pool crustaceans are not expected to occur within the study area.

Valley Elderberry Longhorn Beetle

The valley elderberry longhorn beetle (*Desmocerus californicus dimorphus)*, federally-listed Threatened, inhabits elderberry (*Sambucus* spp.) shrubs and trees in a variety of habitats, and most often occurs in riparian, elderberry savannah, or moist oak woodlands in the Sacramento River Valley and northern San Joaquin Valley low hills of central California. The elderberry beetle occurs from sea level to as high as 2,500 feet from Redding south to Bakersfield, with a patchy distribution. All or portions of 31 counties are included in the valley elderberry longhorn beetle distribution.

Valley elderberry longhorn beetle larvae feed on the soft core of elderberry stems and excavate passages in the wood as they feed. Eggs are laid in May on elderberry stems greater than one inch in diameter. Valley elderberry longhorn beetles may remain in larval stage for as long as two years before emerging from the host elderberry plant as adults. Additionally, the adult life-stage is short lived, with the entire life cycle taking approximately one to two years to complete. In March and early June, adults feed in riparian areas in which they breed on the foliage and possibly the flowers of elderberry trees or shrubs. The elderberry is the host plant for this species, and valley elderberry longhorn beetle require the plant as a food source for the larval stages of development as well as permanent habitat.

Threats to the valley elderberry longhorn beetle include: loss of habitat due to urbanization, insecticides, herbicides, and fluctuations in stream water levels. The abundance of valley elderberry longhorn beetles has drastically declined throughout the Central Valley due to the widespread elimination of streamside woodlands that support elderberry.

The nearest occurrences of valley elderberry longhorn beetle were recorded as recently as 2006 along the Sacramento River, approximately nine miles east of the study area. In addition, another occurrence is present approximately nine miles to the southwest near Dixon. Elderberry plants were not detected within the project site; however, one small blue elderberry was detected approximately 100 feet east of the site, within the Wildhorse Agricultural Buffer. The blue elderberry bush appeared to have been planted, and had several stems with a diameter over one inch. Exit holes were not observed on the elderberry bush. Because elderberry plants are not present within the study area, and because valley elderberry longhorn beetle depend on the presence of elderberry for all stages of their life cycle, no suitable habitat is present on-site. Based on a lack of suitable habitat on-site, valley elderberry longhorn beetle are not expected to occur within the study area.

Ricksecker's Water Scavenger Beetle

Ricksecker's water scavenger beetle (*Hydrochara rickseckeri*), a species tracked by the CNDDB, is an aquatic beetle in the Family Hydrophilidae. They range from 10-12 millimeters in length and are black in color, with yellowish legs and a yellowish margin around their thorax and elytra (wing covers). Ricksecker's water scavenger beetle is

known to occur in scattered locations in the greater Sacramento area and the greater San Francisco Bay area. The complete range of the species is not fully understood; however, as no specific surveys have been conducted to thoroughly assess the species' distribution.

Ricksecker's water scavenger beetle are dependent on the seasonal wet-dry cycle of vernal pool and seasonal freshwater marsh habitats to complete their life cycle, and are not found in permanent waters. Larvae first appear in pools three to four weeks after they fill with water during the rainy season. Larvae are voracious predators which grow quickly and then leave their natal pool, crawling a short distance to dig a burrow in the moist soil of adjacent uplands. Here they pupate into their adult stage, and upon emerging from the burrow fly to a vernal pool different from their original natal pool. Adults of Ricksecker's water scavenger beetle are also aquatic, but are omnivorous, unlike the strictly predatory larvae. Adults mate and lay eggs within the pool and oviposition (egg-laying) has not been observed in Ricksecker's water scavenger beetle. Eggs remain in a dormant state throughout the dry season, and hatch when the pool fills with water again the following year. Only one generation is produced per year. Ricksecker's water scavenger beetles are known to co-occur with vernal pool crustaceans, including federally-listed fairy shrimp and tadpole shrimp species.

Occurrences of Ricksecker's water scavenger beetle have not been reported within 10 miles of the study area. Hydrology on-site does not support the formation of vernal pools or seasonal wetlands; therefore, suitable habitat is not present within the study area. Based on a lack of suitable habitat, Ricksecker's water scavenger beetle is not expected to occur within the study area.

Andrena blennospermatis & Andrena subapasta

Andrena blennospermatis and *Andrena subapasta* (Hymenoptera: Andrenidae), both species tracked by the CNDDB, are solitary bees that are specialist pollinators of grassland plants in the Central Valley and coastal areas of northern California. *A. blennospermatis* is approximately seven to 10 millimeters in length, *A. subapasta* is approximately six to eight millimeters in length, and both are dark olive-drab/green in color. *A. blennospermatis* has been observed taking pollen from both common blennosperma (*Blennosperma nanum*) and the federally-listed Endangered Sonoma sunshine (*Blennosperma bakeri*). *A. subapasta* has been observed taking pollen primarily from California sandwort (*Minuartia californica*), but also from johnnytuck (*Triphysaria eriantha*) and goldfields (*Lasthenia* spp.). These plant species are all found in grassland and scrub habitats in the Central Valley and coastal regions of California, though the bees themselves dig nests in uplands near vernal pools. Both species excavate subterranean nests during spring, where they provision their larvae with balls of pollen from their hostplants. Larvae consume the pollen after hatching from eggs within the nest, and undergo several instars (molts) before pupating into an adult. The newly hatched adult bees remain in their natal nests throughout the winter, emerging to mate in early spring.

There are no reported occurrences of either the *Andrena blennospermatis* or the *Andrena subapasta* within 10 miles of the proposed project site. Although EDAW's site visit did not occur during a time when these species' known host plants would have been

detectable, observation of these plants is unlikely due to the highly degraded and disturbed nature of the grasslands within the project site. In addition, on-site hydrology does not appear to support the presence of vernal pools or seasonal wetlands that could attract nesting special-status *Andrena* species. Based on a lack of suitable habitat and a lack of occurrences in the region, *Andrena blennospermatis* and *Andrena subapasta* are not expected to occur within the proposed project site.

Amphibians

Several special-status amphibian species were considered during the preparation of the Biological Resources Assessment because the project site falls within the vicinity of the historical range of these species, including the California red-legged frog (*Rana aurora draytonii*), federally-listed Threatened and a California Species of Special Concern. However, based on the absence of suitable pond or stream habitat, and the fact that California red-legged frogs have been extirpated from the Central Valley, the California red-legged frog is not expected to occur on-site.

California Tiger Salamander

The California tiger salamander (*Ambystoma californiense*) (Central Valley DPS (Distinct Vertebrate Population Segment)), federally-listed Threatened and a California Species of Special Concern, is a relatively large, terrestrial salamander that inhabits grasslands and oak savanna habitats in the valleys and low hills of central and northern California. The California tiger salamander has been recorded in all nine Bay Area counties at elevations ranging from approximately 10 to 3,500 feet above msl. California tiger salamanders appear to be in the initial stages of habitat fragmentation and decline. The salamanders require vernal pools, ponds (natural or man-made), or semi-permanent calm waters (where ponded water is present for a minimum of three to four months) for breeding and larval maturation, and adjacent upland areas that contain small mammal burrows or other suitable refugia for aestivation.

Adult California tiger salamanders spend most of their lives underground in small mammal burrows, typically those of California ground squirrels (*Spermophilus beecheyi*). Adults emerge from underground retreats to feed, court, and breed during warm winter rains typically from November through March. Adults may migrate long distances, up to a kilometer or more, to reach pools for breeding and egg laying. The eggs are attached singly or in small groups of two to four to vegetation under water or directly on the bottom of the pool if emergent vegetation is sparse or nonexistent. The eggs hatch after about 10-14 days and the larvae continue to develop in the pools for several months until they metamorphose, which takes a minimum of 10 weeks.

Following metamorphosis, juvenile salamanders seek refugia, traveling distances of approximately one mile or more from their breeding sites, where they may remain until they emerge during a subsequent breeding season. California tiger salamanders do not reach sexual maturity for four to five years. After completion of breeding, adult California tiger salamanders retreat to underground burrows. However, during some

years in which the conditions are sub-optimal, adult females have been known to forego reproduction completely. California tiger salamander populations and breeding habits are vitally influenced by environmental conditions including seasonal rainfall and pond duration. California tiger salamanders are dependent on the integrity of both breeding ponds and adjacent upland habitat, especially long-lasting vernal pool complexes. The alteration of either habitat component through the introduction of exotic predators or the construction of barriers (e.g. roads, berms, and certain types of fences) that fragment habitat and reduce connectivity can be detrimental to the survival of the California tiger salamander.

The nearest occurrence of California tiger salamander to the project site was recorded in 1993 near CR 99, approximately four miles west of the site (See Figure 4.6-5). This occurrence is questionable based on the urbanization and surrounding agricultural nature of the area and an apparent lack of breeding habitat in the vicinity, suggesting that the occurrence may be a result of a misidentification. One other historical occurrence was recorded nine miles to the southwest near Dixon.

Although abundant upland aestivation habitat for California tiger salamander is present throughout the site in the form of numerous ground squirrel burrows, no ponds or vernal pools capable of supporting breeding salamanders is present on-site or within dispersal distance of the site. The nearest aquatic feature to the site is Willow Slough, located approximately 0.3 mile to the north, which does not constitute suitable breeding habitat based on the presence of fish predators and the fact that California tiger salamanders breed in the still waters of ponds and vernal pools, not flowing waters of creeks and streams. Based on the lack of suitable breeding habitat and a lack of known breeding populations in the vicinity, California tiger salamander are not expected to occur within the study area.

Western Spadefoot Toad

The western spadefoot toad (*Spea hammondii*), a California Species of Special Concern, is a medium-sized toad that inhabits the Central Valley and adjacent foothills and valleys, as well as the central and south coastal region of California from Monterey Bay to Baja California. The color of the western spadefoot toad is green to grey with irregular stripes on the back, pale gold eyes, and a distinctive glossy black spade on the hind feet. Insects, especially caterpillars and beetles, are the primary components of the adult's diet, though the toad may also consume worms, ants, and other invertebrates. Adult forms are almost entirely terrestrial and prefer areas of open vegetation and short grasses with sandy or gravelly soils. Western spadefoot toads are found in grasslands, open chaparral and pine-oak woodland.

Following a period of dormancy that can last as long as eight to nine months, western spadefoot toads become active and leave their burrows following warm rains in the late winter/spring and fall (between October and April). Vernal pools or sometimes pools within ephemeral streamcourses that last longer than three weeks are used for breeding. Sometimes western spadefoot toads form large, highly vocal breeding aggregations of up

to 1,000 individuals, though they are generally much smaller. Females lay their eggs between February and late May. Tadpoles metamorphose to adults during late spring and disperse after spending up to a few days near the pond margin. Declines throughout the western spadefoot toad's range have been documented, and the loss of habitat is one of the primary concerns.

Occurrences of western spadefoot toad have not been reported within 10 miles of the study area. Because the study area contains no aquatic features and does not support any vernal pool habitat, no suitable habitat for western spadefoot toad is present on-site. Based on a lack of reported occurrences in the region and a lack of suitable habitat, western spadefoot toads are not expected to occur within the study area.

Reptiles

Western Pond Turtle

The western pond turtle (*Clemmys marmorata*), a California Species of Special Concern, is the only fresh-water turtle native to greater California. The literature describes two subspecies of western pond turtle; the northwestern pond turtle (*C. m. marmorata*) and the southwestern pond turtle (*C. m. pallida*). Overall, western pond turtles are habitat generalists, and have been observed in slow-moving rivers and streams (*e.g*. in oxbows), lakes, reservoirs, permanent and ephemeral wetlands, stock ponds, and sewage treatment plants. The turtles prefer aquatic habitat with refugia such as undercut banks and submerged vegetation, and require emergent basking sites such as mud banks, rocks, logs, and root wads to thermoregulate their body temperature.

Western pond turtles regularly utilize upland terrestrial habitats, most often during the summer and winter, especially for oviposition (females), overwintering, a seasonal terrestrial habitat use, and overland dispersal. Females have traveled as far as 500 meters (1,640 ft) from a watercourse to find suitable nesting habitat. Nest sites are most often situated on south or west-facing slopes, are sparsely vegetated with short grasses or forbs, and are scraped in sands or hard-packed, dry, silt or clay soils. Western pond turtles exhibit high site fidelity, returning in sequential years to the same terrestrial site to nest or overwinter.

Females lay their clutch as early as late April in southern and Central California to late July, although they predominantly lay in June and July. In the early morning or late afternoon, gravid females leave the water and move upland to nest. Natural incubation times vary, ranging from 80 – 100+ days in California. In northern California and Oregon, hatchlings remain in the nest after hatching and overwinter, emerging in the spring. In southern and central California, those that do not overwinter emerge from the nest in the early fall.

Occurrences of western pond turtle have not been reported to the CNDDB within 10 miles of the study area. However, western pond turtles are known to be present in the arboretum waterway on the University of California Davis campus, approximately three

miles southwest of the study area. This occurrence is separated from the proposed project site by the dense urbanization of downtown Davis. In addition, aquatic features are not on-site that would be capable of supporting western pond turtles. Although soil within the proposed project site may be suitable for nest building, known breeding populations in the region would not nest on-site due to the disconnection from waterways. Willow Slough, which runs approximately 0.3 mile north of the site, contains suitable aquatic habitat for western pond turtles, though they have not been reported in this waterway in the region of the site. Even if western pond turtles were present nearby in Willow Slough, they would be highly unlikely to nest on-site because the study area is separated from much of this waterway by dense urbanization and actively farmed agricultural fields. Based on a lack of suitable aquatic habitat and isolation from known populations, western pond turtles are not expected to occur within the study area.

Giant Garter Snake

The giant garter snake (*Thamnophis gigas*), state and federally-listed Threatened, historically occurred throughout the Central Valley of California, from Kern County in the south to Butte County in the north, within the boundaries of the Coastal and Sierra Nevada ranges. The current range of the giant garter snake is confined to the Sacramento Valley and isolated parts of the San Joaquin Valley, with scattered sightings in the Sacramento-San Joaquin Delta. Currently the highest densities of giant garter snake are found in the Sacramento Valley within the American Basin, where the species persists largely in seasonally flooded agricultural fields, primarily rice, and irrigation ditches. Loss of critical habitat has occurred throughout the range as a result of urban expansion, agricultural practices, such as intensive vegetation control along canal banks that potentially fragment available habitat and changes in crop composition, and livestock grazing at waters edge, which can degrade the habitat available to giant garter snakes.

The giant garter snake is highly aquatic and primarily feeds on fish, tadpoles, and frogs. Historically, giant garter snake prey items included thick-tailed chub (*Gila crassicuada*) and the Sacramento blackfish (*Orthodox microlepidus*), both of which have been extirpated from the giant garter snake's current range. The habitat requirements of the giant garter snake include wetland areas such as sloughs, streams and other waterways, ponds or small lakes, marshes, and agricultural wetlands. In addition to natural waterways, the giant garter snake has been found to use altered habitats such as irrigation ditches and rice fields. Furthermore, giant garter snakes tend to avoid larger rivers or waterways that support populations of invasive or introduced predatory fish, as well as wetlands that have sand, gravel or rocky substrates. Giant garter snakes are less active, or dormant from October until April when they emerge to breed and forage. The snakes are viviparous, giving birth to as many as 10 to 46 young from late July through early September. The giant garter snake is the largest member of the genus, reaching lengths of 165 centimeters and become sexually mature in three (males) to five (females) years. Giant garter snakes are vulnerable to predation from both native (raccoons, skunks, opossums, foxes, hawks, egrets and herons) and invasive (bullfrogs, catfish, large mouth bass, and feral cats) species. Additionally the snakes face threats from parasites and

contaminants. Giant garter snakes are found sympatrically with the western terrestrial garter snake (*Thamnophis elegans*) and the common garter snake (*Thamnophis sirtalis*).

The nearest occurrence of giant garter snake to the study area was recorded in 1987 in the Willow Slough Bypass, approximately two miles northeast of the project site. Other occurrences have been reported approximately four miles to the southwest in the South Fork of Putah Creek, approximately 4.5 miles to the east in the Willow Slough Bypass, as well as between 4.5 and eight miles to the northeast, near the Yolo Bypass. Aquatic features capable of supporting giant garter snake are not located on-site. A slough running roughly east-west is present approximately 0.3 mile north of the project site. This slough is hydrologically connected to occurrences of giant garter snake in the Willow Slough Bypass. Although numerous rodent burrows are present throughout the site, the likelihood that the burrows would be used as upland refugia by giant garter snakes is unexpected, as their distance from suitable aquatic habitat is 0.3 mile, and because much of the area between the slough and the project site has been developed into a dense residential neighborhood. Based on the lack of suitable aquatic habitat and lack of connectivity to known populations, giant garter snakes are not expected to occur within the study area.

Birds

Several special-status bird species were considered during the preparation of this Draft EIR because the study area falls within the vicinity of the historical range of these species, including western snowy plover (*Charadrius alexandrinus nivosus*), federally-listed Threatened and a California Species of Special Concern, and greater sandhill crane (*Grus canadensis tabida*), state-listed Threatened and a California Fully Protected Species. However, based on the absence of sandy shore and marsh habitat, these species are not expected to occur on-site.

Raptors

Most raptors, such as golden eagles (*Aquila chrysaetos*), white-tailed kites (*Elanus leucurus*), red-tailed hawks (*Buteo jamaicensis*), red-shouldered hawks (*Buteo lineatus*), and Cooper's hawk (*Accipiter cooperii*) nest in mature, large coniferous or deciduous trees and use twigs or branches as nesting material. Smaller raptors such as American kestrel (*Falco sparverius*) and western screech owl (*Otus kennicottii*) may nest in cavities in anthropogenic structures and trees. Short-eared owls (*Asio flammeus*) and northern harriers (*Circus cyaneus*) nest on the ground in grassland, marshes, and agricultural fields with tall vegetation. Burrowing owls (*Athene cunicularia hypugea*) typically nest in small mammal burrows in open dry lands, but have been known to utilize any ground cavity of similar size, as well as anthropogenic structures. Common raptors such as American kestrels, great horned owl (*Bubo virginianus*), common barn owl (*Tyto alba*), and red-tailed hawks could nest on-site, and are afforded protection under the Migratory Bird Treaty Act and California Department of Fish and Game code. The nesting period for raptors generally occurs between December 15 and August 31.

The various walnut and other ornamental trees lining the driveway on-site and in the greenway immediately off site, as well as the buildings and ruderal grasslands in the pastures and corrals provide suitable nesting and foraging habitat for Cooper's hawk (*Accipiter cooperii*), a California Species of Special Concern, northern harrier (*Circus cyaneus*), a California Species of Special Concern, and white-tailed kite (*Elanus leucurus*), a California Fully Protected Species. Northern harriers have been observed nesting in both cultivated and uncultivated fields in Yolo County; therefore, harriers may nest either on or adjacent to the site. Several occurrences of nesting white-tailed kite within 10 miles of the study area have been reported, including one occurrence from 2003 located approximately 0.4 mile to the south, in a densely urbanized part of Davis.

In addition, the sharp-shinned hawk (*Accipiter striatus*), a California Species of Special Concern, golden eagle (*Aquila chrysaetos*), a California Fully Protected Species and a California Species of Special Concern, short-eared owl (*Asio flammeus*), a California Species of Special Concern, ferruginous hawk (*Buteo regalis*), a California Species of Special Concern, merlin (*Falco columbarius*), a California Species of Special Concern, prairie falcon (*Falco mexicanus*), a California Species of Special Concern, American peregrine falcon (*Falco peregrinus anatum*), state-listed Endangered and a California Fully Protected Species, might utilize the study area for foraging habitat.

Because of their prominence in today's regulatory environment and the likelihood that these species could occur on-site, burrowing owl and Swainson's hawk are addressed in further detail below.

Burrowing Owl

In California, the western burrowing owl (*Athene cunicularia hypugaea*), a California Species of Special Concern, occurs in the Central Valley, inner and outer Coastal region, portions of the San Francisco Bay Area, southern California Coast, from southern California to the Mexico border, the Imperial Valley and in portions of the desert and high desert habitats in southeastern and northeastern California. Burrowing owls usually inhabit desert and grassland habitat, and in some cases, urban and agricultural landscapes. These habitats are flat, open areas characterized by dry vegetation that is typical of heavily grazed grasslands, low stature grasslands or desert vegetation that also include available burrows. The burrowing owl's preferred habitats are deserts, plains, and open grasslands and in some cases, urban and agricultural landscapes. As burrowing owls require underground burrows or artificial structures for shelter and nesting, they are associated with other burrowing animals such as prairie dogs, ground squirrels, badgers, and some smaller canids. In the Bay Area, these owls typically utilize California ground squirrel (*Spermophilus beecheyi*) burrows and man-made artificial structures, sometimes in highly disturbed areas, for shelter and nesting. Burrows are used year-round by both resident and winter migrant owls. Burrows are an essential component to the life history of burrowing owls.

Burrowing owls are chiefly active during the early morning and early evening hours, but may be observed during the day standing above a burrow entrance or on a low perch

nearby. In general, burrowing owls primarily consume insects, amphibians, reptiles, and small mammals. The breeding season for burrowing owls begins in the early spring and extends through late summer. Courtship is evident when males decorate burrow entrances with artifacts such as dung, feathers, bits of shiny things, and desiccated skins of various animals. In California, egg laying may begin as early as March in some areas, but typically begins in late April and early May. However, for regulatory purposes in California, the CDFG identifies the breeding season as February 1 to August 31. Once eggs are laid, the female does the majority of incubating, which lasts approximately three to four weeks.

In preparation for disking of two large fields on-site in early 2006, the City conducted a burrowing owl survey on-site in January 2006 (McNerney 2006). Two burrowing owls were detected during the 2006 survey, both of which were passively relocated by Edward Whisler Biological Consulting prior to disking (Edward Whisler 2006). Several artificial burrows that were constructed in the adjacent Wildhorse Agricultural Buffer during the early 2006 relocation effort are still present immediately off-site. Numerous occurrences of burrowing owl have been reported within 10 miles in all directions of the study area, including four recent occurrences (less than three years old) within one mile to the south, southeast, and north. Abundant suitable habitat for burrowing owl is present throughout the site among numerous ground squirrel burrows found in the pastures, corrals, and along fence lines. The southern half of the site, which consists of two large horse pastures, contains more suitable habitat than the northern half of the site, due to less direct human activity and a greater concentration of ground squirrel burrows. The Biological Resource Assessment observed one burrowing owl on-site during the site reconnaissance, inhabiting a burrow in the northern portion of the western horse pasture, and detected burrowing owl sign near at least two additional burrows in the northern portion of the eastern horse pasture. A Habitat Assessment, Focused Winter Season Survey, and Focused Breeding Survey for Burrowing Owl were conducted by EDAW according to guidelines outlined by the California Burrowing Owl Consortium (CBOC 1993).

Qualified biologists performed a burrowing owl habitat assessment on December 15, 2006, and found abundant owl habitat on-site in the form of ground squirrel burrows. Burrows were most densely concentrated in the southeastern field and the northern portion of the southwestern field, as well as along the wooden fences flanking the long driveway that leads to on-site residences. Other concentrations were located among the horse paddocks east of the on-site residences, as well as in open area west of the on-site residences. One burrowing owl was observed during the habitat assessment inhabiting a burrow in the northern potion of the southwestern field, and owl burrows with burrowing owl signs were observed in the central potion of the southeastern field. Approximately 250 burrows were present in the southeastern field, with another 200 along the fence and in the northern portion of the southwestern field. Approximately 50 burrows were present in horse paddocks in the eastern part of the site, and extremely abundant in the Wildhorse Agricultural Buffer adjacent to the site, likely numbering over 1,000. Burrows within the buffer were most densely concentrated on the ground below the row of trees lining the buffer's eastern side.

Four focused winter season surveys were performed on December 28th, 2006, and January 9th, 16th, and 24th, 2007. Three additional burrows to the one observed during the habitat assessment were observed inhabited by burrowing owls. Four additional burrows with burrowing owl signs were detected on-site, though burrowing owls were not observed using them during the surveys.

Three focused breeding surveys were performed on April 24, June 7, July 2, and 5, 2007. Two burrows with potential burrowing owl signs were observed on-site. While burrowing owls were not observed on-site, suitable burrowing habitat and ground squirrel activity was evident.

Swainson's Hawk

The Swainson's hawk (*Buteo swainsoni*), state-listed Threatened, occurs in open habitats throughout much of the western United States, Canada, and northern Mexico. Swainson's hawks breed in North America and winter in the open grassland areas of southern South America (pampas) as well as parts of Mexico. In the Central Valley, Swainson's hawks arrive at nesting areas in late February and early March, four to six weeks earlier than they arrive at nesting sites in northeastern California. The hawks begin to depart for wintering areas in early September.

In California, Swainson's hawk breed in desert, shrub steppe, agricultural, and grassland habitats. Swainson's hawks construct their nests in a variety of tree species in existing riparian forests, remnant riparian trees, shade trees at residences and alongside roads, planted windbreaks, and solitary upland oaks. However, the hawks typically do not nest in large continuous patches of woodland other than along edges next to open habitats. The diet of the Swainson's hawk varies considerably during breeding and non-breeding seasons. Swainson's hawks depend largely on small mammals during the breeding season and shift to feeding on insects during the non-breeding season, in particular crickets and grasshoppers. During the breeding season, Swainson's hawks will travel long distances (up to 18 miles) in search of suitable foraging habitat that provides abundant prey. Most of the State's breeding sites are located in the northeastern and Central Valley regions. The largest population in the State is located in the midsection of the Central Valley in the area between Sacramento and Modesto. In addition, Swainson's hawk regularly nest in urban settings in Sacramento, Solano, Yolo, and San Joaquin counties, provided that suitable foraging habitat surrounds the city (i.e. Davis, Woodland, Stockton).

Swainson's hawk are very prevalent among the agricultural fields of the Central Valley, and there are over 200 reported occurrences within 10 miles of the proposed project in all directions (See Figure 4.6-6), most of which are nest sites. Seven occurrences of nesting Swainson's hawk have been reported within one mile of the study area, the closest of which was reported in 2002 in an urban area of Davis, approximately 0.2 miles southwest of the site. Potential nesting habitat for Swainson's hawk is present on-site among the approximately 30 walnut trees lining the main driveway, as well as roughly 10 additional trees present among the residences in the northern half of the property. Approximately 15.5 acres of suitable foraging habitat is present on-site, which includes the horse

pastures in the southern portion of the study area where ground squirrel activity is abundant, as well as the open areas of the northern part of the site, away from the residences. In addition, Swainson's hawk may nest and forage immediately off site within the Wildhorse Agricultural Buffer east of the property. Based on the presence of suitable nesting and foraging habitat, and the abundance of occurrences in the region, Swainson's hawk are considered to have a high potential to occur within the study area.

Special-Status Passerine and Non-Passerine Landbirds

Passerines (perching birds) are a taxonomic grouping that consists of several families including swallows (*Hirundinidae*), larks (*Alaudidae*), crows, ravens and jays (*Corvidae*), shrikes (*Laniidae*), vireos (*Vireonidae*), finches (*Fringillidae*) and Emberizids (*Emberizidae*). Non-passerine land birds are a non-taxonomic based grouping typically used by ornithologists to categorize a loose assemblage of birds. Families grouped into this category include kingfishers (*Alcedinidae*), woodpeckers (*Picidae*), swifts (*Apodidae*), hummingbirds (*Trochilidae*), and pigeons and doves (*Columbidae*), among others. Habitat, nesting, and foraging requirements for these species are wide ranging. These species typically use most habitat types and are known to nest on the ground, in shrubs and trees, on buildings, under bridges, and within cavities, crevices, and manmade structures. All species except starlings, English house sparrows, and rock doves (pigeons), are protected under the federal Migratory Bird Treaty Act (MBTA) and CDFG Code. The nesting period for passerines and non-passerine land birds occurs between February 1 and August 31.

Suitable nesting and foraging habitat is present on-site for special-status passerines found in ruderal grasslands and agricultural fields, and numerous migratory and wintering bird species have potential to forage or seek refuge on-site. The tricolored blackbird (*Agelaius tricolor*), a California Species of Special Concern, lark sparrow (*Chondestes grammacus*), a species tracked by the CNDDB, and white-faced ibis (*Plegadis chihi*), a California Species of Special Concern, are considered to have a low potential to occur on-site. The mountain plover (*Charadrius montanus*), a California Species of Special Concern, California horned lark (*Eremophila alpestris actia*), a California Species of Special Concern, loggerhead shrike (*Lanius ludovicianus*), a California Species of Special Concern, and long-billed curlew (*Numenius americanus*), a California Species of Special Concern, are considered to have a moderate potential to occur on-site. One special-status passerine species, the yellow-billed magpie (*Pica nutalli*), a species tracked by the CNDDB, was observed on-site during the site reconnaissance. In addition, an American white pelican (*Pelecanus erythrorhynchos*), a California Species of Special Concern, was observed in flight in the vicinity of the project site; however, the American white pelican is a winter migrant to this region found only in marsh and lake habitats, and is not expected to occur within the proposed project site.

Mammals

Ringtail

The ringtail (*Bassariscus astatus*), a California Fully Protected Species, is a slender cat-like mammal with a long, black-and-white ringed tail. The ringtail habitat range covers a majority of the western United States, including most of California. The ringtail can be found in a variety of habitats, including riparian areas, rocky hillsides, and chaparral; however, they are not typically found more than one kilometer from permanent water. Although the ringtail has historically been trapped for fur, the ringtail was given Fully Protected status in California in 1968. The ringtail is opportunistic and omnivorous, eating insects, fruit, berries, small mammals, birds, and reptiles, and does much of its foraging in trees.

The ringtail is not tracked by the CNDDB, but distributional studies suggest that the whole of Yolo County falls within the species' range. In addition, an occurrence of ringtail was recorded in 1975, from a section of Putah Creek, approximately eight miles west of the study area. In the Central Valley, the ringtail is primarily found in riparian areas. Although there have not been any documented occurrences in Willow Slough, any ringtails residing in the slough's riparian corridor may forage on-site. Furthermore, due to the high level of human disturbance, the proposed project site contains marginally suitable foraging habitat for ringtails. Based on the presence of marginal foraging habitat and the fact that the site is within the species' range, ringtails are considered to have a very low potential to occur on-site.

American Badger

The American badger (*Taxidea taxus*), a California Species of Special Concern, is a carnivore in the family Mustelidae (weasels). The American badger range throughout California, except for the humid forested regions in the State's extreme northwest. The American badger is most abundant in drier areas of shrub, forest, and herbaceous habitats, but could be found anywhere with friable soils and a suitable prey base. American badgers have decreased substantially in abundance throughout their range since historic times, particularly in the Central Valley and northern Coast Range.

American badgers spend much of the time underground, where they prey primarily upon ground squirrels (*Spermophilus* spp.) and pocket gophers (*Thomomys* spp.). American badgers may also consume other rodents, reptiles, birds, eggs, insects, and carrion. The badger's front legs bear large claws adapted for digging after their prey in underground burrows, and they may dig extensively within levees, fields, and other areas with high concentrations of fossorial rodents. American badgers are active year-round, though they tend to have smaller home ranges in winter than in other seasons. Mating takes place in late summer, and one to four young are born in spring within a burrow complex.

American badgers have been recorded historically in Davis, as well as in Woodland, approximately 8.5 miles northwest of the project site. A more recent occurrence of

American badger was recorded in 1997, near the intersection of CR 31 and CR 97, approximately six miles west of the study area. Suitable foraging habitat for badger is present in the horse pastures in the southern portion of the project site, and a large prey base is present in the form of ground squirrel colonies both on and adjacent to the site. However, badgers are unlikely to den on-site due to the high level of human disturbance. Based on the presence of suitable foraging habitat and their known presence in the region, American badgers are considered to have a low potential to occur within the study area.

Special-Status Bat Species

Five special-status bat species have at least some potential to occur on-site, including pallid bat (*Antrozus pallidus*), a California Species of Special Concern, Townsend's western big-eared bat (*Corynorhinus townsendii townsendii*), a California Species of Special Concern, western red bat (*Lasiurus blossevillii*), a species tracked by the CNDDB, hoary bat (*Lasiurus cinereus*), a species tracked by the CNDDB, and Yuma myotis bat (*Myotis yumaensis*), a species tracked by the CNDDB. These five species all occur in the region, and may use mature trees, snags, crevices, or man-made structures (such as buildings) for roosting, either for winter roosting (hibernacula) or for forming nursery colonies. Additionally, bats are generally site faithful and would not abandon an established roosting area unless disturbed. Special-status bats may roost in any of the trees or buildings present within the project site. Based on the presence of suitable habitat and the fact that the study area lies within these species' ranges, five special-status bats are considered to have a low potential to occur on-site.

Wildlife Species Observed

Wildlife species observed or detected by sign within or in the vicinity of the study area during the site reconnaissance include: great egret (*Ardea alba*), a species tracked by the CNDDB; burrowing owl (*Athene cunicularia*), a California Species of Special Concern; northern harrier (*Circus cyaneus*), a California Species of Special Concern; American white pelican (*Pelecanus erythrorhynchos*), a California Species of Special Concern; yellow-billed magpie (*Pica nuttallii*), a species tracked by the CNDDB; California ground squirrel (*Spermophilus beecheyi*); Audubon's cottontail (*Sylvilagus audubonii*); western scrub-jay (*Aphelocoma californica*); cattle egret (*Bubulcus ibis*); red-tail hawk (*Buteo jamaicensis*); house finch (*Carpodacus mexicanus*); turkey vulture (*Cathartes aura*); killdeer (*Charadrius vociferous*); northern flicker (*Colaptes auratus*); rock dove (*Columba livia*); American crow (*Corvus brachyrhynchos*); yellow-rumped warbler (*Dendroica coronata*); Say's phoebe (*Sayornis saya*); western meadowlark (*Sturnella neglecta*); European starling (*Sturnus vulgaris*); mourning dove (*Zenaida macroura*); white-crowned sparrow (*Zonotrichia leucophrys*); and western fence lizard (*Sceloporus occidentalis*).

Wildlife Movement Corridors and Habitat Fragmentation

Wildlife movement includes migration, inter-population movement, and small travel pathways. While small travel pathways usually facilitate movement for daily home range activities, such as

foraging or escape from predators, pathways also provide connection between outlying populations and the main corridor, permitting an increase in gene flow between populations.

The linkages between habitat types could extend for miles between the primary habitat areas. Habitat linkages facilitate movement between populations located in discrete areas and populations located within larger habitat areas. The mosaic of habitats found within a large-scale landscape results in wildlife populations that consist of discrete sub-populations comprising a large single population, often referred to as a meta-population. Even where patches of pristine habitat are fragmented, the movement between wildlife populations is facilitated through habitat linkages (i.e. migration corridors and movement corridors).

The greater the condition of the corridor, gene flow between populations may be higher in frequency, thus allowing for high genetic diversity within the population. However, the lower the condition of the corridor, the lower the gene flow would be and potentially low frequency gene flow, which may lead to complete isolation and, if pressures are strong, potential local extinction.

Habitat fragmentation, by definition, is an event that creates a greater number of habitat patches that are smaller in size than the original contiguous tract(s) of habitat. Fragmentation of primary habitat types can hinder regional wildlife movements. The resulting reduced interaction between individuals changes the long-term dynamics of populations distributed among fragments and an inability to genetically adapt or respond to environmental pressures. This increases the probability of extinction for these populations compared to those associated with non-fragmented landscapes. The effects of fragmentation on the movement or dispersal of organisms is crucial to composition and diversity, and considering the impacts resulting in potential fragmentation of primary habitat types and loss of valuable dispersal corridors is important when assessing the potential biological impacts of a project.

Aquatic features are not present within or adjacent to the proposed project site; thus, impacts to movement corridors for aquatic species are not anticipated with development of the site. Because the project site is surrounded on three sides by dense urban development, the project site is unlikely to offer a corridor of movement between areas of suitable habitat for terrestrial species. However, the proposed project site is located immediately adjacent to a section of the Wildhorse Agricultural Buffer, which is an approximately 135-foot wide greenbelt of relatively high quality wildlife habitat that most likely benefits from the open nature of the property. The property offers foraging opportunities for terrestrial species that may be resident in or traveling through the agricultural buffer, such as coyotes, raccoons, rabbits, and numerous reptile species, thereby enhancing the buffer's overall quality as a wildlife corridor. Numerous migratory bird species may also forage on-site during seasonal migrations.

REGULATORY CONTEXT

The following is a description of federal, state, and local environmental laws and policies that are relevant to the CEQA review of the proposed project.

Federal

Federal Endangered Species Act

The United States Congress passed the FESA in 1973 to protect those species that are endangered or threatened with extinction. The FESA is intended to operate in conjunction with the National Environmental Policy Act (NEPA) to help protect the ecosystems upon which endangered and threatened species depend.

The FESA prohibits the "take" of endangered or threatened wildlife species. "Take" is defined as harassing, harming (including significantly modifying or degrading habitat), pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting wildlife species, or any attempt to engage in such conduct (16 USC 1532, 50 CFR 17.3). Taking can result in civil or criminal penalties.

The FESA and NEPA Section 404 guidelines prohibit the issuance of wetland permits for projects that would jeopardize the existence of threatened or endangered wildlife or plant species. The U.S. Army Corps of Engineers must consult with the USFWS and National Oceanic and Atmospheric Administration (NOAA) when threatened or endangered species may be affected by a proposed project to determine whether issuance of a Section 404 permit would jeopardize the species.

Migratory Bird Treaty Act

Raptors (birds of prey), migratory birds, and other avian species are protected by a number of State and federal laws. The federal MBTA prohibits the killing, possessing, or trading of migratory birds except in accordance with regulations prescribed by the Secretary of Interior. Section 3503.5 of the CDFG Code states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto."

State

California Endangered Species Act

The State of California enacted the CESA in 1984. The CESA is similar to the FESA but pertains to State-listed endangered and threatened species. CESA requires state agencies to consult with the CDFG when preparing CEQA documents to ensure that the state lead agency actions do not jeopardize the existence of listed species. CESA directs agencies to consult with CDFG on projects or actions that could affect listed species, directs CDFG to determine whether jeopardy would occur, and allows CDFG to identify "reasonable and prudent alternatives" to the project consistent with conserving the species. Agencies can approve a project that affects a listed species if they determine that "overriding considerations" exist; however, the agencies are prohibited from approving projects that would result in the extinction of a listed species.

The CESA prohibits the taking of State-listed endangered or threatened plant and wildlife species. CDFG exercises authority over mitigation projects involving state-listed species, including those resulting from CEQA mitigation requirements. CDFG may authorize taking if an approved habitat management plan or management agreement that avoids or compensates for possible jeopardy is implemented. CDFG requires preparation of mitigation plans in accordance with published guidelines.

California Department of Fish and Game Species of Special Concern

In addition to formal listing under FESA and CESA, plant and wildlife species receive additional consideration during the CEQA process. Species that may be considered for review are included on a list of "Species of Special Concern" developed by the CDFG. CDFG tracks species in California whose numbers, reproductive success, or habitat may be threatened.

Natural Community Conservation Planning Act

The Natural Communities Conservation Planning (NCCP) Act program is an unprecedented effort by the State of California, as well as numerous private and public partners that takes a broad-based ecosystem approach to planning for the protection and perpetuation of biological diversity. The program, which began in 1991 under the NCCP Act, is broader in orientation and objectives than CESA and ESA. These laws are designed to identify and protect individual species that are already listed as threatened or endangered. The primary objective of the NCCP Act is to conserve natural communities at the ecosystem scale while accommodating compatible land use.

Local

In 1991, Yolo County and the County's member cities began the process of developing a Habitat Conservation Plan (HCP) to obtain an incidental take permit under §10(a)(1)(B) of ESA. The Yolo Natural Heritage Plan, which is the county's HCP, is currently in its early planning phases. A draft Ecological Baseline Report (HT Harvey 2006), and an Independent Science Advisors' Report (Independent Science Advisors 2006) have been produced, and the Yolo County HCP/NCCP Joint Powers Agency (JPA) is currently developing conservation strategies and preservation design alternatives for the HCP/NCCP using these reports. Though the recommendations of the Independent Science Advisors' Report are not binding, the JPA may incorporate them into their conservation strategies in whole or in part. Although it is not possible to assess how the Wildhorse Project would be affected by the Yolo Natural Heritage Plan until a draft has been published, the affect of the Independent Science Advisors' Report could be assessed with the understanding that recommendations may or may not be adopted in the final HCP/NCCP. The report recommends development of agricultural areas be clustered near existing urbanized cities, out of floodplains, and in agricultural types having limited biodiversity value, and also recommends the preservation of sensitive habitat types such as vernal pools, alkaline areas, and riparian forests. Because the Wildhorse Ranch is located adjacent to heavily urbanized parts of Davis and does not contain any sensitive habitat types addressed in the report, the project is not likely to be affected by these recommendations. The report also recommends nest-tree availability for Swainson's hawk be increased in areas of suitable foraging habitat. This

recommendation may be applicable to the Wildhorse Project because suitable foraging habitat is present in the alfalfa field immediately east of the project site. Finally, the report recommends surveys are conducted for burrowing owl in areas of optimal habitat. Focused surveys for burrowing owl have been completed for the project during the winter season 2006/2007 and breeding season 2007.

In addition to the recommendations of the Independent Science Advisors' Report, the Wildhorse Project will likely be subject to the provisions of the JPA's *Agreement Regarding Mitigation for Impacts to Swainson's Hawk Foraging Habitat in Yolo County*, which requires mitigation for the loss of Swainson's hawk foraging habitat either in the form of a conservation easement, or the payment of a per acre in-lieu fee. The Swainson's hawk foraging habitat agreement is an interim document which will be incorporated into the final HCP/NCCP.

The Yolo County Habitat Conservation Joint Powers Agency

The Yolo County Habitat Conservation Joint Powers Agency (JPA) was formed in August 2002 for the purposes of acquiring habitat conservation easements and to serve as the lead agency for the preparation of a Natural Communities Conservation Plan/Habitat Conservation Plan for all of Yolo County. The JPA governing Board is comprised of representatives from Member Agencies, which include two members of the Yolo County Board of Supervisors, one member from each of the City Councils of Davis, Woodland, Winters, and West Sacramento, and one ex-officio member from the University of California, Davis. As a local governmental agency, the JPA has two primary roles:

1. Facilitate mitigation for impacts to the foraging habitat of the Swainson's hawk by assisting in the acquisition of conservation easements. The Swainson's hawk forages in open areas, fallowed lands, and throughout various row crops and agricultural fields. Through the collection of impact fees by its member agencies, the JPA is responsible for identifying and acquiring conservation easements, in partnership with the Yolo Land Trust. The Yolo Land Trust will hold the easements, under a cooperative arrangement with the JPA.

2. Assist in the planning, preparation and subsequent administration of a County-wide Natural Communities Conservation Plan/Habitat Conservation Plan (NCCP/HCP).

On the first role, the JPA has been making strides toward the identification of potential lands for acquiring conservation easements. This effort has been managed by the JPA's Land Agent, with support and guidance from a multi-party Technical Advisory Committee, and has focused on direct mailings and a brochure regarding the benefits of conservation easements.

With respect to the preparation of a County-wide NCCP/HCP, the JPA is in the process of beginning this effort. The JPA, working with the Department of Fish and Game and US Fish and Wildlife Service is in the process of negotiating a Planning Agreement. Correspondingly, the JPA has issued a Request for Qualifications for NCCP/HCP consulting assistance, and is soliciting names for membership on the NCCP Steering Committee.

Throughout the County there are many conservation efforts, both past and present, which have specific purposes. These conservation efforts cover a range of activities and organizations for the protection and preservation of farmland, creeks, watershed areas, riparian corridors, water quality, flood control, and habitat for various plant and animal species.

While each of these efforts is integral to the health of the County, the JPA seeks to be inclusive of all relevant conservation activities and participate in a cooperative partnership, while fulfilling its two specific roles.

City of Davis General Plan

In addition to federal and State regulations, the City of Davis General Plan (May 2001) identifies the following goals, objectives, and policies to provide further protection to biological resources within the City's limits:

Habitat and Natural Areas

Goal HAB 1 — Identify, protect, restore, enhance, and create natural habitats. Protect and improve biodiversity consistent with the natural biodiversity of the region.

- Policy HAB 1.1 — Protect existing natural habitat areas, including designated Natural Habitat Areas.
- Policy HAB 1.2 — Enhance and restore natural areas and create new wildlife habitat areas.
- Policy HAB 1.3 — Commit adequate City resources and staff time so as to protect habitat and other natural resources.

Goal HAB 2 — Increase public awareness of habitat, wildlife, and sensitive species.

- Policy HAB 2.1 — Develop environmental educational programs and public access areas and programs to allow viewing of wildlife and habitat through controlled interactions of people with natural areas.

Other Statutes, Codes, and Policies Affording Limited Species Protection

California Native Plant Society

The California Native Plant Society (CNPS) maintains a list of plant species native to California that have low numbers, limited distribution, or are otherwise threatened with extinction. This information is published in the Inventory of Rare and Endangered Plants of California. Potential impacts to populations of CNPS-listed plants receive consideration under CEQA review. The following identifies the definitions of the CNPS listings:

List 1A:	Plants believed extinct.
List 1B:	Plants rare, threatened, or endangered in California and elsewhere.
List 2:	Plants rare, threatened, or endangered in California, but more numerous elsewhere.
List 3:	Plants about which we need more information - a review list.
List 4:	Plants of limited distribution - a watch list.

City of Davis Zoning Ordinance

Trees

The City acknowledges the importance of trees to the community's health, safety, welfare, and tranquility. Much of the City's admired and valued appearance and ambiance is due to its tree canopy, a dominant visual and spatial element of the landscape and urban form. Trees maintain an aesthetically pleasing environment and can provide environmental, aesthetic, social, and economic benefits. Specifically, trees increase property values, provide visual continuity, provide shade and cooling, decrease wind velocities, provide erosion control, conserve energy, reduce stormwater runoff, act as filters for airborne pollutants, reduce noise, provide privacy, provide habitat and food value, and release oxygen. The community forest shall be prudently protected and managed to secure these benefits.

The intent of Chapter 37 of the Municipal Code, *Tree Planting, Preservation, and Protection,* is to regulate the planting of new trees and the preservation and protection of street trees, City trees (trees in parks, greenbelts, open spaces, on City property or easements, etc.), landmark trees, trees of significance, parking lot trees, and certain private trees in order to retain and augment the health of the existing community forest.

Per Sections 37.02.050 and 37.02.070 of the *Tree Planting, Preservation, and Protection* Chapter, project applicants must obtain a Tree Removal Request and/or Tree Modification Permit from the City prior to removing trees.

Grading

City of Davis Ordinance No. 2091 is an ordinance prohibiting disking, tilling or grading of property within the City except as set forth in Ordinance 2091. The Ordinance establishes penalties for violation and declares that the ordinance is necessary to the public health, safety, and welfare, which shall provide continued protection for sensitive wildlife species and remain in effect until a comprehensive grading and disking ordinance is adopted by the City Council.

IMPACTS AND MITIGATION MEASURES

Standards of Significance

For the purposes of this EIR, impacts are considered potentially significant if implementation of the proposed project would do any one or more of the following:

- Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory (CEQA Guidelines Section 15065(a));
- Adversely affect, either directly or through habitat modification, any endangered, threatened or rare species, as listed in Title 14 of the California Code of Regulations (Section 670.5) or in Title 50, Code of Regulations (Sections 17.11 or 17.12) or their habitats (including but not limited to: plants, fish, insects, animals, and birds);
- Have a substantial adverse impact, either directly or through habitat modification, on any species identified as a candidate, sensitive or special-status species in local or regional plans, policies, or regulations or by the CDFG or USFWS, including CNPS plants listed as 1B;
- Have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulation or by the CDFG or USFWS;
- Allow development that would be inconsistent with the City's General Plan;
- Allow development that would be inconsistent with other City plans, policies, or ordinances;
- Adversely affect federally protected wetlands (including but not limited to: marsh, vernal pool, coastal) either individually or in combination with the known or probable impacts of other activities through direct removal, filling, hydrological interruption, or other means;
- Have a substantial adverse effect on significant ecological resources including:
    - Wetland areas including vernal pools;
    - Large areas of non-fragmented natural communities that support endangered, threatened or rare species;
    - Wildlife environment zones, avian and mammalian routes, and known concentration movement zones, including but not limited to non-fragmented stream areas of waterfowl within the Pacific Flyway;
- Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors, or impede the use of wildlife nursery sites;
- Conflict with any local or regional policies or ordinances designed to protect or enhance biological resources, such as a tree preservation policy or ordinance;
- Substantially fragment, eliminate or otherwise disrupt foraging areas, access to food sources, range and/or movement;
- Disrupt critical time periods (i.e., nesting and breeding) for fish and other wildlife species; or
- Conflict with local, state, or federal resource conservation plans, goals, or regulations that would result in a physical impact on the environment.

An evaluation of whether or not an impact on biological resources would be substantial must consider both the resource itself and how that resource fits into a regional or local context. Substantial impacts would be those that would diminish or result in the loss of an important biological resource, or those that would obviously conflict with local, State, or federal resource conservation plans, goals, or regulations. Impacts are sometimes locally important, but not significant according to CEQA. The reason for this is that although the impacts would result in

an adverse alteration of existing conditions, they would not substantially diminish or result in the permanent loss of a defined important resource on a population-wide or region-wide basis (CEQA Guidelines – Article 5, Section 15065).

Methods of Analysis

A reconnaissance-level site assessment of the Wildhorse Ranch property was conducted by EDAW biologists Angie Harbin-Ireland, Christopher Thayer, and Dana Terry on December 15, 2006. The proposed project site was surveyed on foot and all distinct habitat types were visited and identified. All plant and wildlife species observed or detected by sign were recorded. Prior to conducting fieldwork, a search was made of the CNDDB for biological studies previously conducted. The previous studies reviewed for information regarding the project site and other properties in the vicinity include a previous Environmental Impact Report drafted for the larger Wildhorse project (WPM 1994), previous burrowing owl reports (McNerney 2006; Ed Whisler 2006), a tree assessment (Tree Associates 2006), and an Environmental Impact Report for the nearby Covell Village development proposal (Raney 2004).

Because of the high potential for burrowing owl (*Athene cunicularia*), a California Species of Special Concern, to occur on-site and their recent documented presence on-site (McNerney 2006; Edward Whisler 2006), EDAW conducted a habitat assessment for burrowing owl concurrent with the Biological Resources Assessment initial site reconnaissance, in preparation for protocol-level focused surveys. Ground squirrel burrows were mapped and enumerated, and any occupied burrows or burrowing owl signs (feathers, whitewash, pellets) were noted.

The assessment was intended as an initial evaluation of on-site habitat types and an assessment of the potential for occurrence of special-status plant and wildlife species. Focused wildlife surveys or botanical surveys were not conducted as part of the reconnaissance-level site evaluation. The methods employed would not necessarily rule out some special-status species; however, based on the surveys conducted to date and an assessment of habitats on-site, certain special-status plant and animal species are not expected to occur or can be entirely ruled out.

EDAW biologists Angie Harbin-Ireland, Dana Terry, and Christopher Thayer conducted the burrowing owl habitat assessment on December 15, 2006. EDAW biologists Kristin Asmus, Erin McDermott, Dana Terry, and Christopher Thayer conducted focused winter season surveys on December 28, 2006, and January 9, 16, and 23, 2007. In addition, EDAW biologists Dana Terry, Erin McDermott, Christie Young, Sean Avent, and Vick Germany conducted focused breeding season surveys on April 24, June 7, July 2, and July 5, 2007. The Wildhorse Ranch project site, as well as the 135-foot wide Wildhorse Agricultural Buffer immediately to the east, were surveyed for the presence of suitable burrowing habitat by walking transects no more than 30 meters apart. Areas north, south, and west of the project area were not surveyed, as they are densely urbanized and presumed not to contain any noteworthy burrowing owl habitat. Locations of ground squirrel burrows were coarsely mapped and enumerated, and all burrows were inspected for the presence of burrowing owl signs such as pellet, whitewash and feathers. Burrows with burrowing owl signs were recorded with a Trimble GeoXT GPS unit. Focused winter surveys were conducted on four separate days and three from two hours before sunset to

one hour after. Focused breed surveys were conducted on each of the four separate days for three consecutive hours (two hours before sunset and one hour after sunset for each survey).

Project Impacts and Mitigation Measures

The following discussion of impacts is based on the implementation of the proposed Wildhorse Ranch project. Because the proposed project incorporates open space, but would alter existing on-site natural resources, this impact discussion reflects full buildout of the project.

4.6-1 Potential Impacts to the American Badger.

The American badger, a California Species of Special Concern, has a low potential to occur on-site. Suitable foraging habitat for badger consists of horse pastures, which are located on the proposed project site, and a large prey base is present in the form of ground squirrel colonies both on and adjacent to the site. Permanent loss of habitat would occur if American badger were burrowing on-site. The proposed project may result in impacts to potential habitat for American badger; however the loss of habitat is not considered a potentially significant impact as the site is considered to be marginal for inhabitation by badgers due to its disturbed nature. In addition, the site is surrounded by development on three sides, limiting its use as a movement corridor. However, potential loss of individuals of this species if present within construction areas could have a ***significant*** impact.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

4.6-1(a) *A qualified biologist shall conduct pre-construction surveys for American badger in all construction areas identified as potential habitat located within the project area two weeks prior to initiation of construction activities. If an American badger or active burrow, indicated by the presence of badger sign (i.e. suitable shape and burrow-size, scat) is found within the construction area during pre-construction surveys, the CDFG shall be consulted to obtain permission for animal relocation.*

4.6-1(b) *If the qualified biologist determines that potential dens are inactive, the biologist shall excavate these dens by hand with a shovel to prevent badgers from re-using them during construction.*

4.6-1(c) *If the qualified biologist determines that potential dens may be active, the entrances of the dens shall be blocked with soil, sticks, and debris for three to five days to discourage use of these dens prior to project disturbance. The den entrances shall be blocked to an incrementally greater degree over the three to five day period. After the qualified biologist determines that badgers have stopped using active dens within*

the project boundary, the dens shall be hand-excavated with a shovel to prevent re-use during construction.

4.6-1(d) *If badger are determined to be actively using the site, a qualified biologist shall provide project contractors and construction crews responsible for site demolition and/or grading operations with a worker-awareness program before any ground disturbance work within the project area. This program shall be used to describe the species, its habits and habitats, its legal status and required protection, and all applicable mitigation measures.*

4.6-2 Potential Impacts to Western Burrowing Owl.

Suitable nesting and foraging habitat for western burrowing owl, a California Species of Special Concern, is present within the project area, and burrowing owl are present on-site. A habitat assessment was conducted on December 15, 2006, focused winter surveys were conducted on December 28, 2006, January 9, 16, and 23, 2007, and focused breeding surveys were conducted on April 24, June 7, July 2, and July 5, 2007. During the habitat assessment, one burrowing owl was observed inhabiting a burrow, and two other burrows with burrowing owl signs were detected. During the focused winter survey, two burrowing owls were observed inhabiting a variety of burrows, and two additional burrows with burrowing owl sign were observed. The focused breeding survey did not observe burrowing owls on-site, and found two burrows with potential burrowing owl signs. Disturbance of over-wintering or nesting owls and habitat loss would have a ***significant*** impact on burrowing owls.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

4.6-2(a) *Prior to commencement of construction-related activities for the project including, but not limited to, grading, staging of materials, or earthmoving activities and within 15 days of initiation of any grading or other construction activities, pre-construction surveys of all potential burrowing owl habitat shall be conducted by a qualified biologist within the project area and within 250 feet of the project boundary. Presence or sign of burrowing owl and all potentially occupied burrows shall be recorded and monitored according to the CDFG and California Burrowing Owl Consortium guidelines. If burrowing owls are not detected by sign or direct observation, construction may proceed.*

4.6-2(b) *If potentially nesting burrowing owl are present during pre-construction surveys conducted between February 1 and August 31, grading or other construction related disturbance shall not be allowed within 250 feet of any active nest burrows during the nesting season (February 1 – August 31) unless approved by CDFG.*

4.6-2(c) *If burrowing owl are detected during pre-construction surveys outside the nesting season (September 1 – January 31), passive relocation and monitoring may be undertaken by a qualified biologist following the CDFG and California Burrowing Owl Consortium guidelines, which involve the placement of one-way exclusion doors on occupied and potentially occupied burrowing owl burrows. Owls shall be excluded from all suitable burrows within the project area and within a 250-foot buffer zone of the impact area. A minimum of one week shall be allowed to accomplish this task and allow for owls to acclimate to alternate burrows. These mitigation actions shall be carried out prior to the burrowing owl breeding season (February 1 - August 31) and the site shall be monitored weekly by a qualified biologist until construction begins to ensure that burrowing owls do not re-inhabit the site.*

4.6-2(d) *If burrowing owl or sign of burrowing owl are detected at any time on the project site, a minimum of 6.5 acres of foraging habitat per pair or individual resident bird, shall be acquired and permanently protected to compensate for the loss of burrowing owl habitat. The acreage shall be based on the maximum number of owls observed inhabiting the property for any given observation period, pre-construction survey, or other field visit. The protected lands shall be occupied burrowing owl habitat and at a location acceptable to CDFG. A report shall be submitted to the City describing the agreed upon location. First priority for habitat preservation shall be accomplished on-site. If the required acreage cannot be preserved on-site, second priority shall be given to habitat preservation at an off-site location within the Davis city limits that shall be acquired and preserved in perpetuity. Third priority shall be given to another off-site location outside of the Davis city limits. Habitat in the amount specified above shall be acquired, permanently protected, and enhanced through management for the benefit of the species, to compensate for the loss of burrowing owl habitat on the project site. Alternatively, the applicant can provide the required mitigation either through an in-lieu fee program, purchase of the required acreage in an approved mitigation bank, or an approved Habitat Conservation Plan (HCP).*

4.6-2(e) *If burrowing owl are determined to be actively using the site, a qualified biologist shall conduct an education session for project contractors and construction crews responsible for site demolition and/or grading operations before any ground disturbance work within the project area. The education session, shall include includes photos of burrowing owl for identification purposes, habitat description, limits of construction activities in the project area, and guidance regarding general measures being implemented to conserve burrowing owl as they relate to the project. A qualified biologist shall provide materials and instructions to train new workers whose jobs involve initial ground disturbance, grading,*

or paving. Training for personnel finalizing exteriors and interiors would not be required.

4.6-2(f) *A monitoring report of all activities associated with pre-construction surveys, avoidance measures, and passive relocation of burrowing owls shall be submitted to the City and CDFG no later than three days before initiation of grading.*

4.6-3 Potential Impacts to Nesting Birds.

Suitable nesting and foraging habitat is present on-site for special-status passerines found in ruderal grasslands and agricultural fields, and numerous migratory and wintering bird species have potential to forage or seek refuge on-site. The mountain plover (*Charadrius montanus*), California horned lark (*Eremophila alpestris actia*), loggerhead shrike (*Lanius ludovicianus*), and long-billed curlew (*Numenius americanus)* are considered to have a moderate potential to occur on-site. These special-status and common bird species have the potential to nest in existing vegetation, including trees, shrubs, ruderal habitats, or grassland within the study area, and within existing structures on-site. Any removal of buildings, trees or shrubs, grading, disking, or other construction activities in the vicinity of active passerine or non-passerine land bird nests, or active raptor nests, could result in nest abandonment, nest failure, or premature fledging. Destruction or disturbance of active nests would be in violation of the MBTA and CDFG Code. Such disturbance would be considered a ***significant*** impact.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

4.6-3(a) *The removal of any buildings, trees, or shrubs shall occur from September 1 through December 15, outside of the avian nesting season. If removal of buildings, trees, or shrubs occurs, or construction begins between February 1 and August 31 (nesting season for passerine or non-passerine land birds) or between December 15 and August 31 (nesting season for raptors), a nesting bird survey shall be performed by a qualified ornithologist within 15 days prior to the removal or disturbance of a potential nesting structure, tree, or shrub, or the initiation of other construction activities. During this survey, a qualified biologist shall inspect all potential nesting habitat (trees, shrubs, structures, grasslands, etc.) for nests in and immediately adjacent to the impact areas. A report of the survey findings shall be provided to the City and CDFG.*

4.6-3(b) *All vegetation and structures with active nests shall be flagged and an appropriate non-disturbance buffer zone shall be established around the nest site. The size of the buffer zone shall be determined by the project biologist in consultation with CDFG and shall depend on the species involved, site conditions, and type of work to be conducted in the area.*

4.6-3(c) *A qualified biologist shall monitor active nests to determine when the young have fledged and are feeding on their own. The project biologist and CDFG shall be consulted for clearance before construction activities resume in the vicinity.*

4.6-4 Potential Impacts to Special-Status Bat Species.

Five special-status bat species have at least some potential to occur on-site. These include the pallid bat (*Antrozus pallidus*), Townsend's western big-eared bat (*Corynorhinus townsendii townsendii*), western red bat (*Lasiurus blossevillii*), hoary bat (*Lasiurus cinereus*), and Yuma myotis bat (*Myotis yumaensis*). These species all occur in the region and may use mature trees, snags, crevices, or man-made structures (such as buildings) for roosting, either for winter roosting (hibernacula) or for forming nursery colonies. Bats are generally site faithful and will not abandon an established roosting area unless disturbed. Because existing buildings and mature trees are located within the study area, the proposed project may provide potential roosting habitat for several special-status bat species that have a low potential to occur on-site. If special-status bats are found roosting on-site, the project could have a ***significant*** impact.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

4.6-4(a) *A pre-construction survey for roosting bats shall be performed by a qualified biologist within 30 days prior to any removal of trees or structures on the site. If no active roosts are found, then no further action would be warranted. If either a maternity roost or hibernacula (structures used by bats for hibernation) is present, the following mitigation measures shall be implemented.*

4.6-4(b) *If active maternity roosts or hibernacula are found in trees or structures which will be removed as part of project construction, the project shall be redesigned to avoid the loss of the tree or structure occupied by the roost to the extent feasible as determined by the City. If an active maternity roost is located and the project cannot be redesigned to avoid removal of the occupied tree or structure, demolition shall commence before maternity colonies form (i.e., prior to March 1) or after young are volant (flying) (i.e., after July 31). Disturbance-free buffer zones, as determined by a qualified biologist in coordination with CDFG, shall be observed during the maternity roost season (March 1 - July 31).*

4.6-4(c) *If a non-breeding bat hibernacula is found in a tree or structure scheduled for removal, the individuals shall be safely evicted, under the direction of a qualified biologist (as determined by a Memorandum of Understanding with CDFG), by opening the roosting area to allow airflow through the cavity. Demolition shall then follow at least one night after initial*

disturbance for airflow. This action should allow bats to leave during darkness, thus increasing their chance of finding new roosts with a minimum of potential predation during daylight. Trees or structures with roosts that need to be removed shall first be disturbed at dusk, just prior to removal that same evening, to allow bats to escape during the darker hours.

4.6-4(d) *If special-status bats are found roosting within trees or structures on-site that require removal, appropriate replacement roosts shall be created at a suitable location on site or off site in coordination with a qualified biologist, CDFG, and the City.*

4.6-5 Potential Impacts to Nesting Swainson's Hawk.

In the Central Valley, Swainson's hawks arrive at nesting areas in late February and early March, and typically breed in desert, shrub steppe, agricultural, and grassland habitats. Swainson's hawks construct their nests in a variety of tree species in existing riparian forests, remnant riparian trees, shade trees at residences and alongside roads, planted windbreaks, and solitary upland oaks. The proposed project has approximately 40 mature trees that could provide suitable nesting habitat within the study area for Swainson's hawk, which are state-listed as Threatened. In addition, suitable nest trees are also present immediately east of the site. As seen in Figure 4.6-6, well over 200 Swainson's hawk nests and other occurrences have been reported within 10 miles of the proposed project site. Dryland pasture, irrigated pasture, grasslands, and other suitable foraging habitats such as row crops, in particular alfalfa fields, are abundant in the vicinity of the study area. If Swainson's hawks are found nesting on or near the site, the project could have a ***significant*** impact.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

4.6-5(a) *In order to ensure that nesting Swainson's hawks will not be affected by construction on the project site, a qualified biologist shall conduct pre-construction surveys according to the CDFG and Swainson's hawk Technical Advisory Committee guidelines (2000). Survey Period I occurs from January 1 – March 20, Period II from March 20 – April 5, Period III from April 5 – April 20, Period IV from April 21 – June 10, and Period V from June 10 – July 30. Three surveys shall be completed in at least each of the two survey periods immediately prior to a project's initiation and shall encompass the area within one half mile of the project site.*

4.6-5(b) *Because of the potential for Swainson's hawk to nest on-site, potential adverse affects to this species shall be avoided by establishment of CDFG approved buffers around any active nests. No construction activities shall take place within 0.25 mile of the nest until the young have fledged, or*

authorization has been obtained from CDFG. Weekly monitoring reports summarizing nest activities shall be submitted to the City and CDFG until the young have fledged and the nest is determined to be inactive. Trees containing nests that must be removed as a result of project implementation shall be removed during the non-breeding season (late September to March) and in accordance with the CDFG "Staff Report Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California," November 8, 1994.

4.6-5(c) *Replacement trees for any potential Swainson's hawk nest trees removed as part of project construction must be planted either on-site or at a nearby site, and/or an in-lieu fee must be paid to the City of Davis Tree Preservation Fund as detailed in Mitigation Measure 4.6-7.*

4.6-6 Potential Impacts to Swainson's Hawk Foraging Habitat.

Swainson's hawk are very prevalent among the agricultural fields of the Central Valley and are there are over 200 reported occurrences within 10 miles of the project site in all directions. Approximately 15.5 acres of suitable foraging habitat is present on-site, including the horse pastures in the southern portion of the project site where ground squirrel activity is abundant, as well as the open areas of the northern part of the site, away from the residences. The pasturelands on the project site provide potential foraging habitat for Swainson's hawk. Development of the project site would result in the loss of approximately 15.5 acres of potential Swainson's hawk foraging habitat. Loss of potential Swainson's hawk foraging habitat is a ***significant*** impact.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

4.6-6(a) *The applicant shall be responsible for mitigating the loss of any Swainson's hawk foraging habitat. The extent of any necessary mitigation shall be determined by the City in consultation with CDFG; past recommended mitigation for loss of foraging habitat has been at a ratio of one acre of suitable foraging habitat for every one acre utilized by the proposed project. An "Agreement Regarding Mitigation for Impacts to Swainson's Hawk Foraging Habitat in Yolo County" was executed in August, 2002, between the Cities of Davis, West Sacramento, Winters, Woodland, the County of Yolo, and CDFG. The agreement currently requires 1.0 acre of habitat management lands as mitigation for each 1.0 acre of Swainson's hawk foraging habitat lost.*

4.6-6(b) *The project proponent will compensate for the loss of Swainson's hawk foraging habitat by providing Habitat Management lands (HM lands) to CDFG as defined in the Staff Report Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California (published by*

California Department of Fish and Game in 1994). If the proposed project is located within 1 mile of an active nest (to be determined with preconstruction surveys) the loss of habitat will be compensated at a ratio of 1:1 (HM lands:urban development). The project proponent will provide HM lands through an in-lieu fee process prior to groundbreaking per the Agreement to Yolo County HCP/NCCP Joint Powers Agency. Credits will be purchased through the in-lieu fee program due to the lack of mitigation credits currently available at a bank. As of January 2007, the cost per acre for the in-lieu fee is $8,660 payable to the Joint Powers Agency. Should the in-lieu fee be increased prior to clearance to grade the project site, the project proponent shall pay the in-lieu fee in effect at that time. The project proponent will issue a check to the Joint Powers Agency if mitigation is required. It is estimated that a total of 15.5 acres of Swainson's hawk foraging habitat would be removed as a result of the project. The applicant shall pay the in-lieu fee for the 15.5 acres based on the removal of this Swainson's hawk foraging habitat.

-Or-

Prior to commencement of construction-related activities for the project including, but not limited to, grading, staging of materials, or earthmoving activities, the project proponent shall place and record one or more Conservation Easements that meet the acreage requirements of CDFG's Swainson's Hawk foraging habitat mitigation guidelines. The conservation easement(s) shall be executed by the project proponent and a Conservation operator. The City may, at its discretion, also be a party to the conservation easement(s). The conservation easement(s) shall be reviewed and approved in writing by CDFG prior to recordation for the purpose of confirming consistency. The purpose of the conservation easement(s) shall be to preserve the value of the land as foraging habitat for the Swainson's hawk.

4.6-7 Potential Impacts to Tree Removal.

The tree appraisal of the proposed project site (Tree Associates 2006) identified 51 Trees of Significance, which are defined by Chapter 37 of the City of Davis Municipal Code (Tree Planting, Preservation, and Protection) as trees five inches and greater in diameter at breast height (DBH). Thirty-one of the trees received a fair to good health rating; all others were rated in fair or poor health. A total of seventeen trees were considered not suitable for preservation. The Tree Appraisal, included as Appendix G, evaluated the trees on-site and determined the total appraisal value to be $113,819 or $88,990 for trees recommended for preservation. The tree appraisal did not find Landmark Trees on-site. The City of Davis Municipal Code Chapter 37 contains provisions for tree removal and replacement, including an application process. Depending upon the configuration of the approved site plan, and the final extent of grading, and the determination of which trees are to be removed, impacts to trees would be considered ***significant***.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

4.6-7(a) *Prior to commencement of construction-related activities for the project including, but not limited to, grading, staging of materials, or earthmoving activities, a tree preservation plan, in compliance with Ordinance 37.03.010 in the City of Davis Municipal Code, shall be submitted to the Community Development Department and City Arborist for review and approval, which shall ensure the following measures:*

- *Trees shall be cordoned off with chain link fence prior to construction as specified;*
- *Soil compaction under trees is to be avoided;*
- *The fence shall prevent equipment traffic and storage under the trees and should extend beyond the drip-line;*
- *Excavation within this zone shall be accomplished by hand, and roots ½" and larger shall be preserved;*
- *Proper fertilization and irrigation prior to and during the construction period shall be provided as specified;*
- *New landscaping under existing trees shall be carefully planned to avoid any grade changes and any excess moisture in trunk area. Existing plants which have compatible irrigation requirements and which complement the trees' color, texture and form are to be saved;*
- *Trenching within the drip-line shall be performed only with prior approval of the Park and General Services Department. Boring is preferred when feasible;*
- *All paving plans and specifications shall clearly prohibit the use of soil sterilants adjacent to preserved trees; and*
- *Grade changes greater than one foot within the drip-line shall be avoided, and nothing other than a saw shall be used for root cutting.*

4.6-7(b) *Prior to commencement of construction-related activities for the project including, but not limited to, grading, staging of materials, or earthmoving activities, a sheet shall be included with the project plans, which indicates all of the trees identified. The tree report with corresponding descriptions of each tree by species, health, etc. should also be included. In addition, notes shall be included on the plans which clearly state protection procedures for trees that are to be preserved. Any tree care practices, such as cutting of roots, pruning the top, etc., shall be adequately described and shall have the approval of a representative of the Parks and General Services Department prior to execution. In the event of damage to existing trees, a penalty clause shall be replacement tree(s) of equal size*

in D.B.H. unless specified otherwise by the Parks and General Services Department.

4.6-7(c) *Trees identified on the site as Trees of Significance, that are proposed for removal, shall be replaced either on site or at a nearby site deemed acceptable by the Director of the City of Davis Parks and General Services Department. The Director may require an in-lieu fee to be paid to the City of Davis Tree Preservation Fund instead of or in addition to tree replacement. The recommendations for avoidance of trees contained in Chapter 37 of the City of Davis Municipal Code (Tree Planting, Preservation, and Protection) should be adopted if feasible. If infeasible, the applicant should identify trees slated for removal on the site plan, including those with encroachments within 30-feet of the drip line of trees and develop a tree replacement plan that shall be reviewed and approved by the City prior to issuance of the grading permit. Tree replacement shall be implemented according to options outlined in Section 37.03.070 of the City's Municipal Code as follows:*

(i) *Replanting a tree(s) on site: Trees shall be planted in number and size so that there is no net loss in tree diameter at breast height (DBH). For example, if one tree is removed with a 12-inch DBH size, mitigation may consist of a replacement of equal size, two trees each 6-inch DBH, or four trees each 3-inch DBH. The replanted tree(s) shall be minimum 5 gallon size and of a species that will eventually equal or exceed the removed tree in size.*

(ii) *Replanting a tree(s) off site: If there is insufficient space on the property for the replacement tree(s), required planting shall occur on other property in the applicant's ownership or in City-owned open space or park, subject to the approval of the City Arborist and authorized property owners.*

(iii) *Payment to the Tree Preservation Fund in lieu of replacement: If in the City Arborist's determination no feasible alternative exists to plant the required mitigation, or there are other considerations for alternative mitigation, the applicant shall pay into the Tree Preservation Fund an amount determined by the Director based upon the ISA appraisal guidelines or other approved method. If the Director approves another method of appraisal guideline, the Director shall publish notice of that approval and notify the permit applicant at the time the permit application is issued.*

Cumulative Impacts and Mitigation Measures

4.6-8 Cumulative loss of biological resources in the City of Davis and the effects of ongoing urbanization in the region.

The project site consists of various habitat types including cropland, grazing land, and developed/landscaped areas. These biological communities provide habitat and foraging areas for endangered, threatened, and special concern animal species. Many of the sensitive habitats and species found on-site are not only a concern in the City, but also regionally throughout Yolo County. Population growth and large amounts of clearing for new roads and urban development within the next 20 years would likely be experienced regionally as well. Therefore, the cumulative impact on the environment must consider not only development within the project site, but also those developments occurring in surrounding areas such the City of West Sacramento, City of Winters, the City of Woodland, as well as surrounding counties.

Impacts likely to result from the implementation of the proposed project include disturbance to special-status plant and wildlife species, and migratory and listed bird species. While additional impacts may result from the implementation of individual projects within the City and surrounding areas, mitigation would be required of any discretionary projects impacting natural resources. These impacts would be adequately addressed by the establishment of mitigation measures, such as those recommended in this document. The pending Yolo County HCP and the City of Davis General Plan policies and guidelines for preservation of wildlife habitats would ensure that the cumulative impacts would be properly mitigated for by preserving mitigation lands for wildlife and sensitive communities within Yolo County. With these measures in place the proposed project would not have substantial adverse effects to the populations of the special-status species and sensitive habitats, and therefore ***less-than-significant*** cumulative impacts are expected.

Mitigation Measure(s)
None required.

Endnotes

[1] EDAW, Inc., *Biological Resource Analysis,* February 13, 2007.
[2] EDAW, Inc., *Habitat Assessment and Focused Winter Season Survey for Burrowing Owl,* April 9, 2007.
[3] EDAW, Inc., *Focused Breeding Season Survey for Burrowing Owl,* September 26, 2007.
[4] Tree Associates, *Tree Appraisal,* September 15, 2006.
[5] City of Davis, *City of Davis General Plan,* May 2001.

4.7 AESTHETICS

INTRODUCTION

The Aesthetics section of the EIR describes existing visual and aesthetic resources for the project site and the region, and evaluates potential impacts of the proposed project with respect to urbanization of the area. In addition, the Davis General Plan goals and policies pertaining to aesthetics are described. The California Environmental Quality Act (CEQA) describes the concept of aesthetic resources in terms of scenic vistas, scenic resources (such as trees, rock outcroppings, and historic buildings within a State scenic highway), the existing visual character or quality of the project site, and light and glare impacts. The following impact analysis is based on information drawn from the *City of Davis General Plan*[1] and the *Program EIR for the City of Davis General Plan Update and Program EIR for Establishment of a New Junior High School* (General Plan Update EIR).[2]

ENVIRONMENTAL SETTING

The following setting information provides an overview of the existing condition of visual resources in the Wildhorse Ranch project area, located within the northern Davis city limits approximately at the intersection of East Covell Boulevard and Monarch Lane (please refer to Figure 3-1, Regional Location Map and Figure 3-2, Project Location Map).

Regional Local Setting

The City of Davis is located 11 miles west of Sacramento and approximately 79 miles northeast of San Francisco. The Davis Planning Area consists of approximately 160 square miles, and is characterized by agricultural/open space landscapes to the north, west, and south; developed urban landscapes within the City limits; and open space lands, including the Yolo Bypass Wildlife Area to the east. Views from agricultural fields are enclosed on the west by the Coast Range hills. Views to other directions are open to the horizon, although the Sierra Nevada Mountains, Sutter Buttes, and Mount Diablo can be seen on clear days. The UC Davis campus is located adjacent to the southwest corner of the City and occupies a total of 2,900 unincorporated acres. General Plan land uses within the planning area include Residential (low, medium, and high density); Neighborhood Retail; Community Retail; General Commercial; Business Park; Industrial; Public/Semi-Public; Parks and Recreation; Urban Agriculture Transition Areas; Agriculture; and Natural Habitat.

The Planning Area does not have officially designated scenic highways, corridors, vistas, or viewing areas (Davis General Plan Update EIR, p. 5A-1). Landscapes in and near the City are predominantly urban, with the core area of the community having more established neighborhoods and urban landscaping. Newer developed areas on the edges of the community are more noticeable from a distance due to the immaturity of the landscaping. The City's

Planning Area buffers the City on all sides by extending into areas that are dominated by agricultural uses, and views in this area are open and rural in nature.

Project Area Setting

The project site consists of approximately 25.79 acres of land within the City of Davis. The site consists of a 25.79-acre parcel identified by Yolo County Assessor's Parcel Number (APN) 071-140-11. The current City of Davis General Plan (adopted May 2001) designation for the site is Agriculture.

The proposed site is located in the southeast corner of the Wildhorse subdivision. The east boundary of the site consists of an agricultural buffer, to the south is the Davis Manor neighborhood, and to west and north are established residential portions of the Wildhorse subdivision (See Figures 4.7-1, 4.7-2, and 4.7-3 for views looking across the project site). The residences directly west and north of the project site consist of 5,000 square foot lots with single-family residences.

The 135-foot City of Davis agricultural/habitat buffer establishes the eastern boundary of the project site. Land directly beyond the buffer consists of an existing farm road and open agricultural lands. The buffer currently is composed of a 35-foot greenbelt/buffer that includes a gravel pedestrian path/trail (See Figure 4.7-4), and a 100-foot fenced natural habitat area, including numerous trees, shrubs, and grasses of various species (See Figure 4.7-5). The trees within the buffer act as a visual barrier reducing views of the Sierra Nevada Foothills, which may be seen through small breaks in the trees on a clear day, from the residences to the west. In addition, vehicles traveling east on East Covell Boulevard would be able to see the Sierra Nevada Foothills and open agricultural lands after passing the site and on a clear day.

Figure 4.7-1
View Looking East across the Project Site

Figure 4.7-2
View Looking South across the Project Site

Figure 4.7-3
View Looking North across the Project Site

Figure 4.7-4
35-Foot Greenbelt/Buffer

Figure 4.7-5
100-Foot Greenbelt/Buffer (Fenced Habitat Area)

In addition, the proposed project site includes a 50-foot greenstreet corridor along East Covell Boulevard. The green street corridor in includes a row of walnut trees and various shrubs, which act as a visual barrier, reducing the views looking across the site from the south to the north and northeast (See Figure 4.7-6).

Figure 4.7-6
View Looking Northeast across East Covell Boulevard

Unique Visual Features

The project site slopes gently to the north and is characterized by open, productive and non-productive agricultural land consisting of grasses and ruderal vegetation. Several trees are located on the project site leading up to the on-site residence. The residence and related horse boarding buildings are located in the mid-northern portion of the site.

REGULATORY CONTEXT

Specific federal or State regulations do not directly pertain to the visual quality of an area.

Local Regulations

The following applicable goals and policies related to aesthetics are taken from the Urban Design and Neighborhood Preservation Element of the *City of Davis General Plan Update*.

Goal UD 1 Encourage community design throughout the City that helps to build community, encourage human interaction, and support non-automobile transportation.

Policy UD 1.1 Promote urban/community design which is human-scaled, comfortable, safe, and conducive to pedestrian use.

Goal UD 2 Maintain an aesthetically pleasing environment and manage a sustainable community forest to optimize environmental, aesthetic, social, and economic benefits.

Policy UD 2.1 Preserve and protect scenic resources and elements in and around Davis, including natural habitat and scenery and resources reflective of place and history.

Policy UD 2.2 Maintain and increase the amount of greenery, especially street trees, in Davis, both for aesthetic reasons and to provide shade, cooling, habitat, air quality benefits, and visual continuity.

Policy UD 2.3 Require an architectural "fit" with Davis' existing scale for new development projects.

Policy UD 2.4 Create affordable and multi-family residential areas that include innovative designs and on-site open space amenities that are linked with public bicycle/pedestrian ways, neighborhood centers, and transit stops.

Policy UD 2.5 Ensure attractive functional signs.

Goal UD 3 Use good design as a means to promote human safety.

Policy UD 3.2 Provide exterior lighting that enhances safety and night use in public spaces, but minimizes impacts on surrounding land uses.

Goal UD 4 Create an urban design framework that would strengthen the physical form of the city.

Policy UD 4.1 Develop an urban design framework plan to consolidate and clarify the relevant design concepts in this chapter and other chapters to promote a positive and memorable image for the city and to

reinforce the functional systems of the city such as land use, circulation, and open space.

Goal UD 5 Create and enforce clear and reasonable design guidelines that operationalize the relevant goals, policies, and actions of this general plan.

Policy UD 5.1 Develop and implement new design guidelines, which are reviewed periodically.

Goal UD 6 Strengthen the city's neighborhoods to retain desirable characteristics while allowing for change and evolution, promoting public and private investments, and encouraging citizen involvement in neighborhood planning.

Policy UD 6.1 Recognize the existence of individual neighborhoods with general boundaries and facilitate the development of neighborhood strategies in partnership with residents and property owners. The strategies should recognize the unique characteristics of the individual neighborhood and the potential for change, within the context of a well-planned city. The strategies should be directed toward solving unique neighborhood problems and implementing neighborhood priorities and enhancing livability.

Outdoor Lighting Control Ordinance

The City enacted the Outdoor Lighting Control Ordinance in 1998. The ordinance, commonly referred to as the City's "Dark Sky Ordinance," provides standards for outdoor lighting in an effort to minimize light pollution, glare, and light trespass caused by inappropriate or misaligned light fixtures, while improving nighttime public safety, utility, security, and preserving the night sky as a natural resource and thus facilitating people's enjoyment of stargazing. This ordinance does not apply to interior lighting, including lighting at greenhouse facilities. Single-family and duplex properties are exempted.

IMPACTS AND MITIGATION MEASURES

Standards of Significance

An impact to the aesthetic values of the proposed project area would be considered significant if any of the following conditions would potentially result from implementation of the proposed project:

- Degradation of the existing visual character or quality of the site and surroundings;

- Creation of a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area;
- Substantially damage trees, rocks, and outcroppings and historic buildings within a state scenic highway; or
- Individual residents with a current open vista of open space would have this view completely obstructed by placement of structures in the immediate foreground.

Method of Analysis

The section below gives full consideration to the development of the project site and acknowledges the physical changes to the existing setting. Impacts to the existing environment of the project site are to be determined by the contrast between the site's visual setting before and after proposed development. In this analysis, emphasis has been placed on the transformation of the existing rural setting into a landscape characterized by proposed surface grading and residential buildout. Although few standards exist to singularly define the various individual perceptions of aesthetic value from person to person, the degree of visual change can be measured and described in a reasonably objective manner in terms of visibility and visual contrast, dominance, and magnitude. Current residents adjacent to the project site and travelers along Covell Boulevard would be considered sensitive to the visual and aesthetic alteration of the Wildhorse Ranch area.

Project-Specific Impacts and Mitigation Measures

4.7-1 Impacts related to altering the existing character of the project site and obstructing views from existing homes.

The proposed project involves the development of an approximately 25.79 acre residential community. The project involves the development of up to 191 residential units, including the following mix of residential uses and densities:

- 73 detached single-family residences;
- 78 two- to three-story attached single-family units (including 36 middle-income units) on 11.95 acres; and
- 1.92 acres of attached affordable housing for a maximum of 40 units at 21 dwelling units per acre (du/ac).

The project site currently has the appearance of being rural in nature, which is consistent with the current Agriculture General Plan land use designation for the project site. Implementation of the proposed project would replace the rural horse ranch character of the project site with an urban residential setting. The change of the site from a rural to urban environment would constitute a permanent alteration of the existing visual character, impacting surrounding properties.

Existing Views from Residences to the West

The applicant has proposed a 20-foot land dedication to each residential property adjacent to the west and northwest boundary of the site, which would server to increase the privacy and open area between the two subdivisions. Beyond the 20-foot dedication, the project includes development of a main access roadway and open space area where trees would be planted in an orchard style, providing additional buffer space to the existing neighborhood and a passive open space area (see Figure 4.7-7). Currently, existing residences along Caravaggio Drive adjacent to the project site's western and northwestern boundary are afforded partial views through the project site of the agricultural lands to the east and Sierra Foothills further beyond. These views are partial because the large trees that line the eastern edge of the Davis Greenbelt/Ag buffer, which is immediately east of the project site, block full visibility.

The project includes up to 78 two- to three-story attached townhomes located throughout the development, which would partially impede any existing views to the east afforded to current residents along the project's western and northwestern boundary (see Figure 4.7-8). However, the project would provide limited view corridors for existing residences to the west. The view corridors would consist of roadways which traverse the site in an east-west direction, paseos, and the greenbelt extension. It should be noted that although the proposed project includes the conversion of the project site from an agricultural setting to an urban setting, the project does include the dedication of an additional 65 feet to the existing Davis agricultural/habitat buffer, resulting in a total buffer width of 200 feet.

Existing Views from the South

Residences located south of the project site in the Mace Ranch development currently do not have open views of the project site. As illustrated in Figure 4.7-6 above, views of the site are currently impeded by the line of trees located along the north edge of East Covell Boulevard, at the southern boundary of the project site. In addition, because of the line of trees, vehicles driving east on East Covell Boulevard currently do not have views through the project site of the agricultural lands and Sierras to the east.

Conclusion

The project would result in the change in character of the project site from an agricultural horse ranch setting to an urban setting. Although the character of the project site would be permanently altered, the project would include a central greenbelt, which would connect to the existing Wildhorse Subdivision greenbelt. The project also includes the dedication of 1) an additional 65 feet to the existing Davis agricultural/habitat buffer, resulting in a total buffer width of 200 feet; 2) an additional 20 feet of backyard area to the homes along the western and northwestern boundary of the project site; and 3) an open space area beyond the 20-foot dedication. The landscaping and open space areas of the project would increase the aesthetic quality of the project, and would thereby reduce the impacts the project would have on the conversion of the site from an agricultural setting to an urban setting.

Figure 4.7-7
Open Space

Figure 4.7-8
Proposed Two- and Three-Story Locations

However, because the proposed Wildhorse Ranch project would permanently alter the character of the project site and block significant views to the east of the site, which are currently afforded to some of the existing residents west of the project site, a ***significant*** aesthetic impact would occur.

Mitigation Measure(s)
Development of the site would result in an irreversible change in the character from agricultural/horse ranch to urban development and would obstruct existing views of Sierra Foothills to the east afforded to residents west of the project boundaries. Because feasible mitigation measures are not available, this impact would be considered *significant and unavoidable.*

4.7-2 Impacts related to light and glare.

The project site consists predominantly of agricultural land, a single residence and associated horse boarding and breeding structures; therefore, very little light or glare is currently emitted from the structures on the project site. The development of residential units would generate new sources of light and glare such as residential lighting, streetlights, and lighting associated with the greenbelt amenity. While the types of lighting and their specific locations are not specified, the proposed project would increase the amount of light and glare. In order to reduce impacts from light and glare, as well as increase neighborhood cohesion, the applicant has proposed the dedication of an additional 20 feet to each property owner adjacent to the north and west boundary of the project. In addition, the project includes an orchard and open space area between the residences to the west and proposed residences. The greenbelt dedication and open space area would help to reduce light and glare impacts resulting from the project. In addition, the exterior lighting for the project would be appropriately shielded and would therefore be consistent with General Plan Policy UD 3.2, Action c. However, without details regarding proper shielding and placement of all on-site lighting, a ***significant*** impact could occur.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

4.7-2(a) *Prior to issuance of the first building permit, the developer shall submit a street lighting plan for review and approval by the City Engineer. Street lightning shall be limited to reduced height low-profile fixtures. The Plan shall comply with Chapter 6 of the Davis Municipal Code- Article VIII: Outdoor Lighting Control.*

4.7-2(b) *Prior to the issuance of building permits, the developer shall submit a lighting plan for the review and approval of the Chief Building Official of the City of Davis. The lighting plan shall include shielding on all light fixtures and shall address-limiting light trespass and glare through the use of shielding and directional lighting methods, including but not limited to,*

fixture location and height. The Plan shall comply with Chapter 6 of the Davis Municipal Code- Article VIII: Outdoor Lighting Control.

4.7-3 Impacts to scenic resources.

The project site is not designated as a scenic resource. Additionally, several trees exist on-site; however, rock outcroppings, historic buildings or State scenic highways are not in the project vicinity. Development of the site would require removal of trees, see section 4.6, Biological Resources, for further detail regarding impacts to on-site trees. Therefore, as the site is not designated as a scenic resource or near the vicinity of a scenic highway a ***less-than-significant*** impact would occur to scenic resources.

Mitigation Measure(s)
None required.

Cumulative Impacts and Mitigation Measures

4.7-4 Long-term impacts to the visual character of the region from the proposed project in combination with existing and future developments in the Davis area.

The proposed project would contribute to the cumulative change in visual character of an agricultural area within the City of Davis. The properties in the immediate vicinity of the project site are currently developed for residential uses with the exception of the land east of the project site, which is used for agricultural purposes. Therefore, in terms of the change to the visual character of the project area, development on the project site would be typical of what currently exists north, west, and south of the project site. Should development be allowed, the character of the area would change from flat fields and roadways to residences with trees and a greenbelt area. Development in the City, in addition to the development on the project site, would contribute to a change in the visual character of the area.

The Davis General Plan designates the project site as Agriculture. Conversion of agricultural land to residential development would result in permanent viewshed changes for properties to the west and would be considered significant and unavoidable. Although the conversion of rural lands is anticipated in the General Plan, the impact is still considered significant. Therefore, the conversion of the project site, in addition to other lands in the project area, from a rural to an urban setting would be considered ***significant***.

Mitigation Measure(s)
Because feasible mitigation measures are not available, this impact would be considered *significant and unavoidable.*

Endnotes

[1] City of Davis, *City of Davis General Plan*, May 2001.
[2] City of Davis, *Program EIR for the City of Davis General Plan Update and Project EIR for Establishment of a New Junior High School*, January 2000.

4.8 HYDROLOGY, WATER QUALITY, AND DRAINAGE

INTRODUCTION

The Hydrology, Water Quality, and Drainage section of the EIR describes existing drainage and water resources for the project site, and evaluates potential impacts of the project with respect to flooding, surface water resources, and groundwater resources. The Hydrology, Water Quality, and Drainage section is based primarily on the *Water, Sanitary Sewer and Storm Drain Conceptual Improvements Memo* prepared by Cunningham Engineering[1] and submitted by the project applicant to the City of Davis. Information was also drawn from the *City of Davis General Plan*.[2]

EXISTING ENVIRONMENTAL SETTING

The section below describes the existing hydrological features of the surrounding region and the project site, and the water quality of the existing resources in and around the project site.

Regional Flooding

Flooding tends to increase in the Davis area when either or both of the following occur: 1) flood waters from western Yolo County exceed the capacity of creeks and sloughs flowing easterly near Davis (e.g., flows in Dry Creek west of Davis have frequently caused flooding in the Davis area); and 2) flood waters from the Sacramento River back up into the Yolo and Willow Slough Bypasses, impeding gravity flow from these systems. Floodwaters from local drainages subsequently back up and pond behind the levees of the bypasses until flood flows in the bypasses recede. In addition, a dam inundation study prepared for the Bureau of Reclamation shows that flooding would occur in Davis if Monticello Dam (Lake Berryessa) on Putah Creek, 23 miles west of Davis, were to fail (City of Davis 1987a).

Catastrophic flood protection for the City from the Sacramento River is provided by storage and flood control projects upstream on the Sacramento River and on tributaries to the Sacramento River. Internal drainage within the Davis City Limits is captured by various storm drain collection systems and detention ponds. The ponds provide storage and reduce peak flood flows to the channels that flow to Willow Slough Bypass or the Yolo Bypass.

The soils in the eastern portion of Yolo County contain appreciable amounts of clay that limit infiltration rates and consequently cause high runoff rates. Flooding has frequently occurred in Willow Slough, Dry Slough, and Davis area watersheds north of Putah Creek. Yolo County has been mapped by the Federal Emergency Management Agency (FEMA) as being part of the National Flood Insurance Program (NFIP). This program identifies areas of potential flooding and their associated risks.

Regional Drainage

The City of Davis lies within the Sacramento Valley between the Coast Ranges and the Sacramento River. The climate of this area is characterized by hot, dry summers and cool, wet winters. The temperature range is approximately 30 to 105 degrees Fahrenheit. Annual average rainfall in this region is around 16 inches and occurs primarily between November and March.

The City is situated on the valley floor where slopes are as flat as 5 to 10 feet per mile. Yolo County is drained by the Sacramento River and the Yolo Bypass, which is part of the Sacramento River Flood Control Project. The major streams that drain the unincorporated County areas around Davis are Putah Creek to the south and Willow Slough Bypass to the North, both of which empty into the Yolo Bypass. Willow Slough Bypass is a leveed channel that drains approximately 204 square miles and receives flows from Willow, Cottonwood, Chickahominy, and Dry Sloughs south of Cache Creek.

Local Flooding

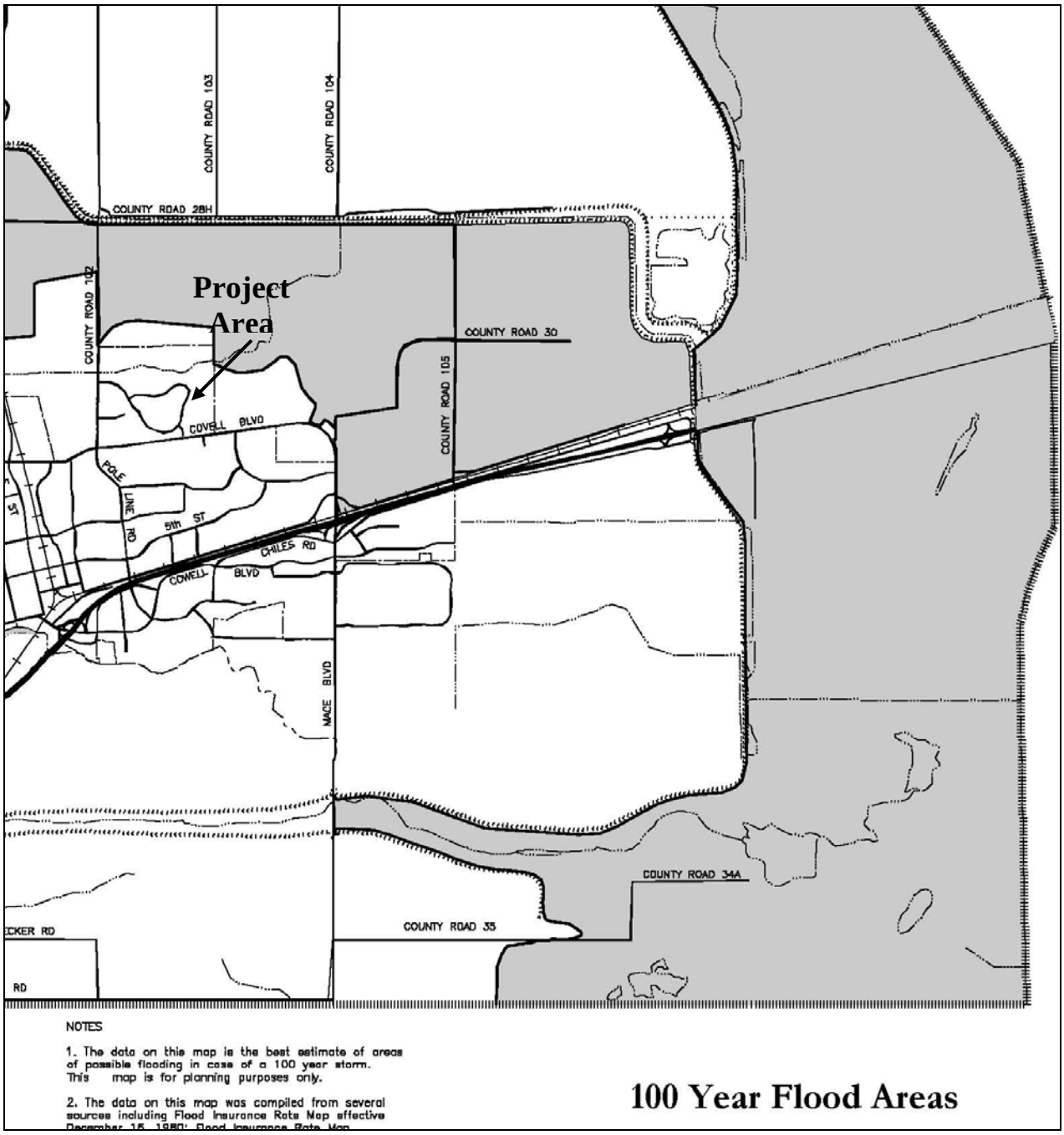
The City of Davis General Plan indicates that the project site does not lie in the 100-year floodplain (See Figure 4.8-1). Figure 4.8-1 was compiled from multiple sources including the FEMA Flood Insurance Rate Maps (FIRM) for the City of Davis and Yolo County. Areas north and east of the project site do lie within the 100-year flood plain as identified by FEMA.

Local Drainage

The project site comprises a drainage area of approximately 25 acres, and is currently undeveloped land. The project site is located within the Covell Drain watershed, near the downstream end of the drainage basin. The project site drains in a northern direction, discharging to an inlet near the site's northeast corner. The inlet drains to an existing 36-inch storm drain pipe, which outfalls into Channel "A" near the northeast corner of the adjacent Wildhorse residential development. The 36-inch pipe was originally designed to convey the project site's 10-year peak discharge, assuming agricultural use. The 36-inch pipe was sized to convey 6.2 cubic feet per second (cfs) of flow from the project site. Channel "A" carries drainage waters to the Willow Slough Bypass (WSB), and is connected to the WSB via three 48-inch diameter flap-gated culverts.

The Covell Drain is a channel that diverts runoff north of Davis from roughly an 11-square-mile watershed west of the City, including storm flows from the western portion of Davis as well as portions of Yolo County west of Davis. The Covell Drain was designed for the 100-year runoff event, to carry flows on the order of 1,500 cfs. The Channel "A" undercrossing at Pole Line Road and the Wildhorse golf course reach of Channel "A" were both sized to accommodate upstream flows (1,400 cfs). However, east of the Wildhorse Ranch site, Channel "A" follows a historic drainage route to the Willow Slough Bypass. The capacity of this historical conveyance is less than the 100-year existing peak runoff rate.

Figure 4.8-1
100-Year Flood Areas



Source: City of Davis General Plan, May 2001.

In addition to flow from Covell Drain, Channel "A" receives drainage water from the City via a channel along F Street, and also from the North Area Detention Pond. The F Street Channel drains most of central Davis between SR 113 and J Street (via the H Street pumping station), and the North Area Pond receives waters from the northern portion of the City. Channel "A" receives additional urban runoff from storm drain outfalls collecting stormwater from the Davis Manor drainage Shed. These outfalls are located north of Manzanita Lane.

Local Surface Water Quality

The General Plan Update EIR (p. 5G-3) states that pollutant concentrations in Davis surface water are highly variable, depending on urban densities, land uses, and the time since the last rains that produced surface runoff. The Covell Drain, Channel "A," and other surface drainage ditches are typically intermittent and often do not have appreciable surface flow during the dry season. During the low-flow periods, surface water from the Covell Drain and Channel "A" may contain detectable amounts of agricultural pollutants, such as pesticides, herbicides, and fertilizers from agricultural return water. The Covell Drain could also contain some pollutants associated with urban runoff from the Stonegate watershed in west Davis. Surface water from the F Street Channel contains pollutants from central Davis urban runoff.

Urban runoff is typically higher in concentrations of copper, lead, cadmium, chromium, and zinc than U.S. Environmental Protection Agency (EPA) water quality criteria for the protection of aquatic life. The sources of these metals are typically linked to automobile use. In addition, new land development and improvements can have impacts on storm water quality as human activity can contribute many pollutants to receiving waterways, including oils and hydrocarbons from automobile use, pesticides, fertilizers, and sediment.

According to the U.S. EPA National Pollutant Discharge Elimination System (NPDES),[3] the Stormwater Phase II Final Rule (December 8, 1999) requires operators of regulated small municipal separate storm sewer systems (MS4s) to obtain a National Pollutant Discharge Elimination System (NPDES) permit and develop a stormwater management program designed to prevent harmful pollutants from being washed by stormwater runoff into the MS4 (or from being dumped directly into the MS4) and then discharged from the MS4 into local waterbodies. The City of Davis is considered an operator of a regulated small municipal separate storm sewer system.

The U.S. EPA NPDES stormwater program requires operators of municipal storm drainage systems to implement a stormwater management program designed to reduce pollutants being discharged from their systems. According to the U.S. EPA NPDES, a stormwater management plan must include the following six minimum control measures:

1. Public Outreach and Education;
2. Public Participation and Involvement;
3. Illicit Discharge Detection and Elimination;
4. Construction Site Runoff Control;
5. Post-Construction Runoff Control; and
6. Pollution Prevention/Good Housekeeping.

Construction-related runoff and post-construction runoff control have the potential to result in a direct impact on the facilities that the Wildhorse Ranch project would discharge to. In order to maintain water quality, the storm drainage system operator is required to develop and implement strategies that include a combination of structural and/or non-structural Best Management Practices (BMPs).

Non-structural controls include planning procedures that manage growth in sensitive areas and minimize the imperviousness of developments. These types of BMPs, if implemented, would be incorporated into the onsite design of the project.

Structural BMPs include: detention basins that allow suspended particles to settle out prior to discharge, infiltration practices which promote percolation of runoff through the soil, and vegetative BMPs which are landscaping features such as grassy swales and artificial wetlands which promote pollutant removal. The City of Davis' current treatment system in this watershed relies on the artificial wetlands approach. Low flows are pumped out of Channel "A" just upstream of the Willow Slough Bypass and delivered to a wetland area just west of the Yolo Bypass.

Site Surface Water Quality

The proposed project would include approximately three acre-feet of distributed onsite stormwater detention storage for flooding protection and water quality purposes. Onsite runoff would be conveyed to distributed local detention areas via overland drainage and underground piping. A portion of the detention storage would be within the proposed onsite neighborhood greenbelt, and the remainder in the western part of the expanded Davis Greenbelt, abutting the east edge of the site. Instead of relying on detention ponds, the project would incorporate vegetative swales, rain gardens, and pervious pavement to detain stormwater flows.

Groundwater Quality

Groundwater in the Davis Planning Area is generally high in total dissolved solids and hardness, causing scaling in plumbing systems and affecting taste and odor. Over one-half of the residential homes in Davis use water softeners to lower hardness levels. Overall, groundwater in the Davis Planning Area is of fair quality when compared to current drinking water regulations. According to the General Plan Update EIR (p. 5G-4), the possibility exists that acceptable standards for certain contaminants could be exceeded in the future. Therefore, long-term development of wells over 1,500 feet deep is planned to improve total dissolved solids concentrations and to meet increasingly stringent drinking water standards. (See Section 4.9, Public Services and Facilities, for further discussion of water quality related to groundwater).

REGULATORY CONTEXT

The following is a description of federal, State, and local environmental laws and policies that are relevant to the California Environmental Quality Act (CEQA) review process.

Federal

Federal Clean Water Act

The NPDES permit system was established in the federal Clean Water Act (CWA) to regulate municipal and industrial discharges to surface waters of the U.S. Sections 401 and 402 of the CWA contain general requirements regarding NPDES permits. Section 307 of the CWA describes the factors that EPA must consider in setting effluent limits for priority pollutants.

Nonpoint sources are diffuse and originate over a wide area rather than from a definable point. Nonpoint pollution often enters receiving water in the form of surface runoff, but is not conveyed by way of pipelines or discrete conveyances. As defined in the federal regulations, such nonpoint sources are generally exempt from federal NPDES permit program requirements.

However, three types of nonpoint source discharges are controlled by the NPDES program: nonpoint source discharge caused by general construction activities, the general quality of stormwater in municipal stormwater systems, and discharges associated with industrial operations. The 1987 amendments to the CWA directed the federal EPA to implement the stormwater program in two phases. Phase I addressed discharges from large (population 250,000 or above) and medium (population 100,000 to 250,000) municipalities and certain industrial activities. Phase II addresses all other discharges defined by EPA that are not included in Phase I.

Construction Site Runoff Management

In accordance with NPDES regulations, in order to minimize the potential effects of construction runoff on receiving water quality, the State requires that any construction activity affecting one (1) acre or more must obtain a General Construction Activity Stormwater Permit. Permit applicants are required to prepare a Stormwater Pollution Prevention Plan (SWPPP) and implement BMPs to reduce construction effects on receiving water quality by implementing erosion control measures. Because construction of the Wildhorse Ranch project, through buildout, would collectively disturb more than one acre, the project would be subject to permit requirements. Implementation of such measures would be included in contract specifications.

Examples of typical BMPs completed in SWPPPs include: using temporary mulching, seeding, or other suitable stabilization measures to protect uncovered soils; storing materials and equipment to ensure that spills or leaks cannot enter the storm drain system or surface water; developing and implementing a spill prevention and cleanup plan; installing traps, filters, or other devices at drop inlets to prevent contaminants from entering storm drains; and using barriers, such as straw bales or plastic, to minimize the amount of uncontrolled runoff that enter drains or surface water.

State

State Water Resources Control Board

The State Water Resources Control Board (SWRCB) develops statewide policy and regulations for water quality control and allocates water rights. The Regional Water Quality Control Boards (RWQCBs) provide local implementation of policy and regulations, develop long-range plans for their areas, issue waste discharge permits and take enforcement actions against violators.[1] The project site is situated within the jurisdiction of the Central Valley RWQCB (Region 5). The Central Valley RWQCB (CVRWQCB) has the authority to implement water quality protection standards through the issuance of permits for discharges to waters at locations within the CVRWQCB's jurisdiction.

Water quality objectives for the Sacramento River and the Sacramento River's tributaries (e.g., Cache Creek, Willow Slough, and Yolo Bypass) are specified in the Water Quality Control Plan for the Sacramento River Basin and San Joaquin River Basin (Basin Plan) prepared by the CVRWQCB in compliance with the federal CWA and California's Porter-Cologne Act. The Basin Plan establishes water quality objectives and implementation programs to meet stated objectives and to protect the beneficial uses of water in the Sacramento-San Joaquin River Basin. Because the City of Davis is located within the CVRWQCB's jurisdiction, all discharges to surface water or groundwater are subject to the Basin Plan requirements.

Local Regulations

The following applicable goals and policies related to hydrology, water quality, and drainage are taken from the Water Element of the *City of Davis General Plan Update.*

Water Element

Goal WATER 2	Ensure sufficient supply of high quality water for the Davis Planning Area.	
	Policy WATER 2.1	Provide for the current and long-range water needs of the Davis Planning Area, and for protection of the quality and quantity of groundwater resources.
	Policy WATER 2.2	Manage groundwater resources so as to preserve both quantity and quality.
	Policy WATER 2.3	Maintain surface water quality.
Goal WATER 3	Design stormwater drainage and detention facilities to maximize recreational, habitat, and aesthetic benefits.	

[1] http://www.swrcb.ca.gov/publications_forms/publications/factsheets/docs/dozenthings.pdf

Policy WATER 3.1 Coordinate and integrate development of storm ponds and channels Citywide, to maximize recreational, habitat, and aesthetic benefits.

Policy WATER 3.2 Coordinate and integrate design, construction, and operation of proposed stormwater retention and detention facilities City-wide, to minimize flood damage potential, and improve water quality.

Goal WATER 4 Monitor issues in the region that affect quality and quantity of water in the Davis Planning Area.

Policy WATER 4.1 Research, monitor, and participate in issues in Yolo County and the area of origin of the City's groundwater that affect the quality and quantity of water.

Policy WATER 4.2 Maintain contact with other appropriate State, Federal, and local agencies.

City of Davis Pollution Prevention Program

The City of Davis established its Pollution Prevention Program (also known as the Pollution Load Reduction Program) in 1994 to protect the environmental integrity of wetland resources. The program's goal is to reduce pollutant discharges to sewers and storm drains. The reduction is being accomplished through increased residential, business, and municipal awareness and practice of pollution prevention methods.

In 1994, the program's initial work effort was associated with identifying pollutants that have the potential to cause a detrimental impact to local wetlands and the sources of these pollutants. Based on the pollutant and source identification, implementation plans have been developed that specifically address tributyltin, selenium, and pesticides. Specific program elements include control strategies for commercial sources of tributyltin, an environmental business program, and a residential pesticide outreach program (i.e., the Healthy Gardens Program).

IMPACTS AND MITIGATION MEASURES

Standards of Significance

For the purposes of this EIR, impacts are considered potentially significant if implementation of the proposed project would:

- Result in a change in absorption rates or drainage patterns that would substantially increase the rate and amount of onsite or offsite surface runoff, or expose downstream locations to increased risk of flooding;

- Substantially degrade groundwater or surface water quality as a result of construction or operation of the project by exceeding adopted RWQCB Basin Plan water quality objectives, applicable NPDES permit requirements, or local standards; or
- Result in a net increase in downstream volumes.

Methods of Analysis

The information contained in this section was derived primarily from the Water, Sanitary Sewer and Storm Drain Conceptual Improvements Memo prepared for the project by Cunningham Engineering (December 2008). Cunningham Engineering used the 100-year flood with a 24-hour duration for the design storm in the development of the HEC-HMS hydrologic model for the preliminary design.

The storm drainage and water quality infrastructure designs proposed for the project are evaluated against the standards of significance listed above. Impacts are identified if the proposed design would result in a standard of significance being exceeded. As the project design is conceptual, the EIR analyzes impacts related to hydrology, water quality, and drainage at a program level. A more detailed analysis will be submitted concurrent with the submission of the Tentative Map.

Project Impacts and Mitigation Measures

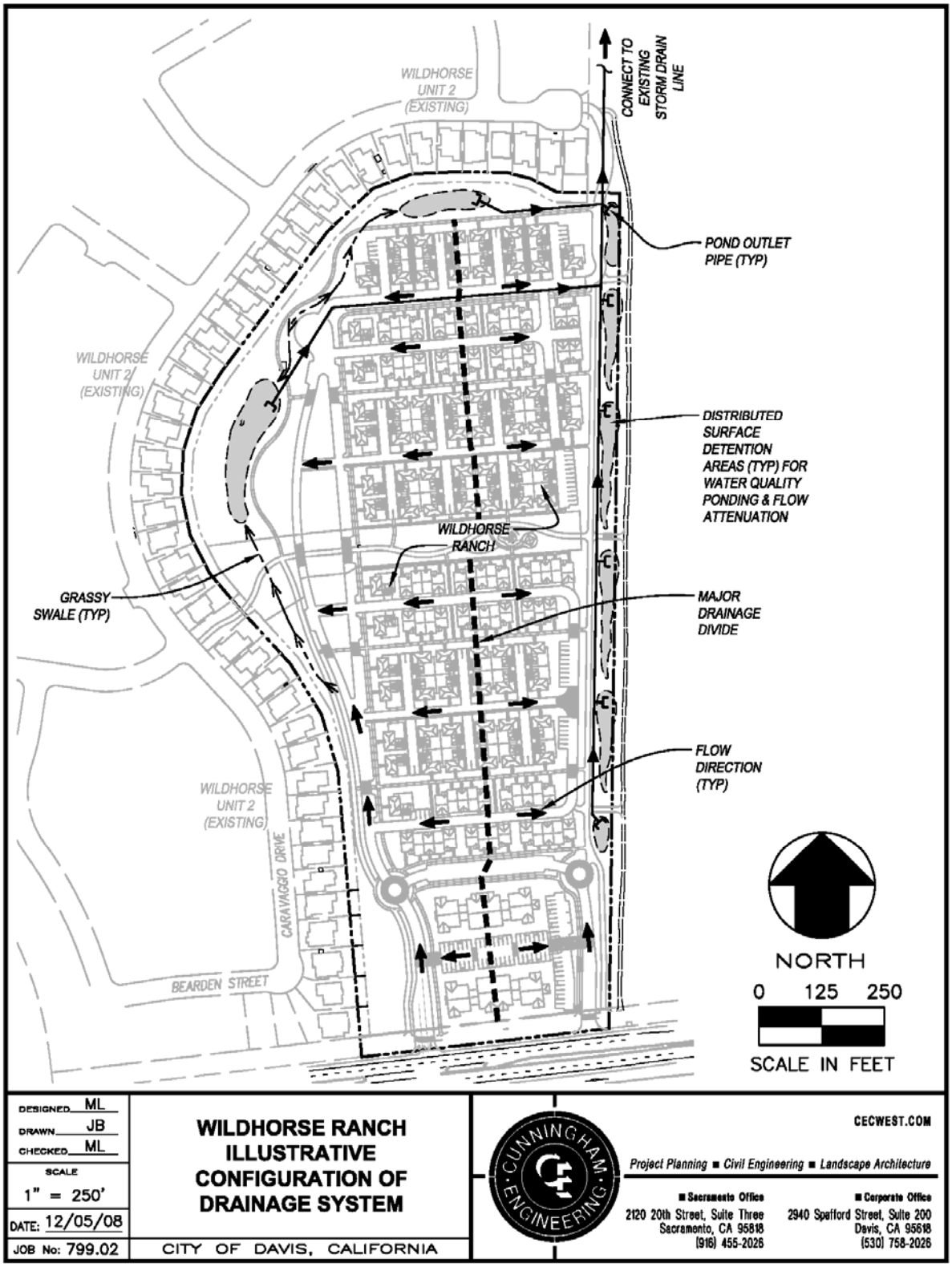
4.8-1 Exposure of people and structures to flood hazards on the project site.

As indicated above in Figure 4.8-1, the project site is not located within the 100-year floodplain as identified in the Davis General Plan. The proposed project would incorporate on-site storm drain infrastructure, including gravity drainage pipes, to collect stormwater runoff and convey it into Channel "A" (See Figure 4.8-2).

The proposed project site is not located within the 100-year floodplain. In addition, preliminary drainage plans indicate that the proposed project would be able to detain post-development peak flows onsite so that peak flows leaving the developed site would equal current peak flows (peak flows from the undeveloped site). Detaining stormwater flows reduces the peak flow leaving the site such that the capacity of the 36-inch pipe to which the site will discharge will not be exceeded. Therefore, the project would not expose people or structures to flood hazards, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)
None required.

Figure 4.8-2
Conceptual Storm Drain System



4.8-2 Increased stormwater runoff from the project site contributing to downstream flooding.

Currently, the project site's drainage outlet to Channel "A" is sized for a maximum of 6.2 cfs. Development of the project site with urban uses would increase the amount of impervious surfaces, and would result in an increase in the volume of peak stormwater flows. Hydrological calculations, conducted using the HEC-HMS computer model, found that post development flows for the 100-year 24-hour design storm would result in a peak flow of 54 cfs. In order to reduce peak flows to the drainage outlet to a maximum of 6.2 cfs, a reduction of 47.8 cfs would be required. To achieve this reduction, the project incorporates three acre-feet of onsite detention storage. Stormwater detention ponds are not included in the project design. Rather a distributed stormwater detention system is planned that would incorporate designs emphasizing the Low Impact Development standards of the City of Davis, including gently sloping vegetative swales, rain gardens, and pervious pavements.

Onsite runoff would be conveyed to the local detention areas via overland drainage and underground piping. A portion of the three acre-feet of detention storage would be within the proposed orchard area, and the remainder in the western part of the expanded 200-foot agricultural buffer abutting the east edge of the site.

The project's contribution to peak flows within Channel "A" was evaluated to ensure that the proposed project would not result in Channel "A" exceeding its design capacity. Cunningham Engineering compared the timing of peak flows into and within Channel "A" for the 100-year, 10-day storm. The project site's peak outflow would precede peak flows within Channel "A" by approximately six hours. By the time peak flows within Channel "A" are attained, the project site's outflow had receded by approximately 50 percent. As such, the project site's post-development flows are not expected to have an adverse effect on 100-year peak flows in Channel "A."

The incorporation of new drainage infrastructure, including detention areas would result in a reduced chance of flooding downstream from the project site. However, the drainage plans do not include site-specific design features or a complete engineering evaluation to ensure that the project site does not result in flooding risks to project residents from insufficient stormwater conveyance and detention infrastructure. Therefore, should the final project design not incorporate sufficient drainage infrastructure, including detention areas, a ***significant*** flooding impact could result.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level by ensuring that the proposed project would not contribute to downstream flooding.

4.8-2 *In conjunction with the submittal of a tentative map, the project applicant shall submit a design-level engineering report on the stormwater detention and conveyance system to the City Engineer demonstrating that the*

proposed project peak flows into the existing 36-inch storm drain would not exceed 6.2 cfs. The report shall also demonstrate that peak flows from the site do not coincide with peak flows within Channel "A" and demonstrate how the system would function to adequately treat stormwater runoff prior to being discharged into Channel "A." Stormwater detention and conveyance plans shall be reviewed and approved by the City Engineer.

4.8-3 Construction-related impacts to surface water quality.

The development of the proposed project would involve the construction of houses, roadways, parking lots, and infrastructure, which would require grading, excavation, and other construction-related activities that could cause soil erosion at an accelerated rate during storm events. All of these activities have the potential to affect water quality by contributing to localized violations of water quality standards, if stormwater runoff from construction sites enters receiving waters.

Construction activities such as grading, excavation, and trenching for site improvements would result in disturbance of soils at the project site or at offsite locations (including proposed connections to the drainage and wastewater systems and roadway areas). Construction site runoff can contain soil particles and sediments from these activities. Dust from construction sites can also be transported to other nearby locations, where the dust can enter runoff or water bodies. Spills or leaks from heavy equipment and machinery, staging areas, or building sites can also enter runoff. Typical pollutants could include petroleum products and heavy metals from equipment and products such as paints, solvents, and cleaning agents that could contain hazardous constituents. Sediment from erosion of graded or excavated surface materials, leaks or spills from equipment, or inadvertent releases of building products could result in water quality degradation if runoff containing the sediment entered receiving waters in sufficient quantities to exceed water quality objectives. Impacts from construction-related activities would generally be short-term and of limited duration.

Because the proposed project would require construction activities resulting in a land disturbance of more than one acre, the applicant is required by the State to obtain a NPDES General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit), which pertains to nonpoint source pollution from grading and project construction. Compliance with the Permit requires the project applicant to file a Notice of Intent (NOI) with the SWRCB and prepare a Storm Water Pollution Prevention Plan (SWPPP) prior to construction. The SWPPP would incorporate BMPs to prevent, or reduce to the greatest feasible extent, adverse impacts to water quality from erosion and sedimentation. BMPs may include: scheduling or limiting activities to certain times of year, prohibitions of practices, maintenance procedures, and other management practices.

Although impacts from construction-related activities would generally be short-term and of limited duration, should appropriate stormwater BMPs not be implemented, a ***significant*** impact would result.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

4.8-3 *Prior to commencement of construction, the applicant shall obtain a NPDES General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit), which pertains to pollution from grading and project construction. Compliance with the Permit requires the project applicant to file a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) and prepare a Storm Water Pollution Prevention Plan (SWPPP) prior to ground disturbance. The SWPPP would incorporate Best Management Practices (BMPs) in order to prevent, or reduce to the greatest extent feasible, adverse impacts to water quality from erosion and sedimentation. A copy of the SWPP including BMP implementation provisions shall be submitted to the Chief Building Official.*

4.8-4 Long-term water quality degradation associated with urban runoff from the project site.

Implementation of the proposed project would be expected to result in long-term impacts to surface water quality due to urban runoff from the site. The increased impervious area created by the development of the proposed project would alter the types and levels of pollutants that could be present in project site runoff. Runoff from streets, driveways, parking lots, and landscaped areas typically contains 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.

The City of Davis General Plan Update contains specific policies designed to avoid impacts to water quality. Specifically, General Plan Policy WATER 3.2 (“Maintain surface water quality”) includes the following actions, designed in part to ensure compliance with applicable federal, State, and local water quality regulations:

- Continue to implement best management practices and policies incorporated in the Urban Water Management Plan and other adopted plans;

- Continue to monitor and enforce, at the local level, provisions to control nonpoint source water pollution contained in the United States Environmental Protection Agency NPDES program; and
- Continue to enforce provisions to control erosion and sediment from construction sites.

The proposed project would incorporate appropriate BMPs for minimizing long-term urban runoff impacts, including but not necessarily limited to the following:

- Street and parking lot cleaning;
- Oil traps on stormwater inlets;
- Vegetated swales; and
- Public outreach and education materials.

In addition, on-site runoff would be conveyed to distributed local detention areas via overland drainage and underground piping. A portion of the detention storage would be within the proposed on-site neighborhood greenbelt, and the remainder in the western part of the expanded Davis Greenbelt, abutting the east edge of the site. Instead of relying on detention ponds, the project would incorporate vegetative swales, rain gardens and pervious pavement to detain stormwater flows. Furthermore, implementation of Mitigation Measure 4.8-2 would ensure that the stormwater system is adequately designed to minimize pollutants entering the downstream water system. Therefore, the proposed project would have a ***less-than-significant*** impact.

Mitigation Measure(s)
None required.

Cumulative Impacts and Mitigation Measures

4.8-5 Long-term increases in peak stormwater runoff flows from the proposed project in combination with existing and future developments in the Davis area.

Implementation of the proposed project would result in the construction of up to 191 residential units on the project site, thereby creating impervious surfaces where none currently exist. The addition of impervious surfaces to the project site could increase peak stormwater runoff rates and volumes on and downstream of the site. However, the proposed project would include on-site collection and detention facilities to accommodate the increased flows.

As indicated on page 5G-15 of the General Plan Update EIR, a proposed land use would be considered to have a significant impact if the new land use would "result in a substantial increase in the rate or amount of surface runoff in a manner that would result in on- or off-site flooding; or create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage facilities." The effect of the proposed project plus other development in the project area, leading to buildout of the General

Plan, could be to increase stormwater flows to a degree that would exceed existing drainage system capacity and cause flooding downstream. The proposed project would include a stormwater detention system that would ensure that the proposed project would not result in a cumulatively considerable incremental increase in stormwater flows that would result in flooding downstream of the project site. Furthermore, future development within the City of Davis would be required to comply with City drainage plans and polices to ensure that each project would not cause a significant negative impact to other drainage facilities in the watershed. Although the final design of the storm drainage system is conceptual at this time, final storm drainage design would be reviewed by the City Engineer for consistency prior to implementation of the project. Therefore, a ***less-than-significant*** cumulative impact would result from implementation of the proposed project.

Mitigation Measure(s)
None required.

4.8-6 Cumulative impacts related to degradation of water quality.

Construction of the proposed project would contribute to a cumulative increase in urban pollutant loading, which would adversely affect water quality. Cumulative development in the Davis area, including the proposed project, would also result in increased impervious surfaces that could increase the rate and amount of runoff, thereby potentially adversely affecting existing surface water quality through increased erosion and sedimentation. The primary sources of water pollution include: runoff from roadways and parking lots; runoff from landscaping areas; non-stormwater connections to the drainage system; accidental spills; and illegal dumping. Runoff from roadway and parking lots could contain oil, grease, and heavy metals; additionally, runoff from landscaped areas could contain elevated concentrations of nutrients, fertilizers, and pesticides.

The mitigation measures for the project-specific impacts identified in Impact Statements 4.8-3 and 4.8-4 would reduce the pollutants in the stormwater from this project to a level lower than in the runoff from most developed areas within the Davis area, because most of these areas were constructed before stormwater quality BMPs were required. Additionally, future development projects would be required to implement BMPs comparable to the BMPs identified in this project. However, without implementation of proper BMPs, this project and other future projects would result in a continued decrease in the water quality of the local Davis natural drainage system. As a result, the incremental contribution from the proposed project to the cumulative water quality impact is ***significant***.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

4.8-6 Implement Mitigation Measures 4.8-2 and 4.8-3.

Endnotes

[1]Cunningham Engineering, *Parlin Wildhorse Ranch – Water, Sanitary Sewer and Storm Drain Conceptual Improvements*, March 13, 2007.
[2] City of Davis, *City of Davis General Plan*, May 2001.
[3] U.S. Environmental Protection Agency, http://cfpub.epa.gov/npdes/home.cfm?program_id=3, accessed January 7, 2007.

4.9 PUBLIC SERVICES AND FACILITIES

INTRODUCTION

The Public Services and Facilities section of the EIR describes the public services and utilities provided in the City of Davis, including domestic water supply, wastewater treatment, fire protection, law enforcement, solid waste disposal, gas and electric service, telecommunications, schools, and parks and recreation. Documents referenced to prepare this section include the *City of Davis General Plan*[1]; the *Program EIR for the City of Davis General Plan Update and Project EIR for Establishment of a New Junior High School* (General Plan Update EIR)[2]; the City of Davis Public Works Department website[3], *City of Davis Urban Water Management Plan 2005 Update*[4], *Davis-Woodland Water Supply Project DEIR*[5], as well as other sources noted within the section. Information related to the City's current and future water supply and capacity has been drawn from an internal letter directed to Bob Weir, City Public Works Director, on April 1, 2009.[6] This letter is provided in Appendix I of the Draft EIR.

ENVIRONMENTAL SETTING

The Environmental Setting section describes the existing conditions of each of the aforementioned public services and utilities in the City of Davis.

Domestic Water Supply

The City of Davis water service area, bordered by UC Davis and West Sacramento, includes the City of Davis, El Macero (located south of Interstate 80), and additional areas to the north, south, east, and west of the City. The service area has a population of approximately 67,270. The City currently uses groundwater as its only potable water supply source. The City pumps groundwater from the Sacramento Valley groundwater basin, which is not adjudicated, and there are no legal restrictions to groundwater pumping.

Two aquifers, each with unique characteristics, supply the City and UC Davis with groundwater. Water-producing zones less than 700 feet deep are referred to as the intermediate depth aquifer. A slowly-permeable clay layer confines underlying water-producing zones, which are referred to as the deep aquifer. Currently, fifteen of the City's wells tap into the intermediate aquifer system at a depth of approximately 300 to 600 feet. The City has six wells that draw water from the deep aquifer at depths between 1,490 feet and 1,800 feet (See Table 4.9-1). Due to more stringent water quality regulations and concerns, the City has been gradually shifting its groundwater pumping through its 21 wells from the intermediate to deep (below 700 foot depth) aquifers. Newer wells 28, 29, 30, 31, 32 are therefore completed in the deep aquifer to depths ranging from 1,400 to 1,800 feet (Winzler and Kelly, 2005).

Table 4.9-1
Existing Wells

Well No.	Location	Year Constructed	2008 Average Capacity (gpm)	Aquifer / Depth of Well (ft bgs)
1	Central	1982	950	Intermediate / 522
7	Central	1952	1000	Intermediate / 340
11	Central	1961	1320	Intermediate / 344
14	Central	1970	1600	Intermediate / 352
15	East	1965	1750	Intermediate / 520
19	North	1973	1330	Intermediate / 615
20	West	1976	1100	Intermediate / 456
21	South	1977	1130	Intermediate / 450
22	East	1977	1140	Intermediate / 510
23	Central	1980	1750	Intermediate / 419
24	Central	1982	1600	Intermediate / 460
25	West	1987	1200	Intermediate / 466
26	South	1987	1480	Intermediate / 492
27	North	1989	1300	Intermediate / 366
EM3	South	1991	1030	Intermediate / 471
28	West	1991	820	Deep / 1491
29	East	1996	1190	Deep / 1502
30	West	2001	2600	Deep / 1780
31	West	2001	2410	Deep / 1802
33	Central	2007	1840	Deep / 1520
32	South	2008	1450	Deep / 1600

The City's active wells range in age from nearly new to over 50 years old. Since 1987, the City has removed six intermediate wells from service due to age, poor water quality, production, and/or operation and maintenance problems. The City's average annual well production since the year 2000 is approximately 4,800 million gallons (MG).

Detailed Groundwater Basin Description

The City has few physical constraints on its groundwater supply other than the pumping capacities of existing wells. However, the Plainfield Ridge creates a minor restriction to east-west groundwater flow just west of the City. There are no other major restrictions to horizontal groundwater flow in the area (DWR "Bulletin 118," 2004). The following description of the City's groundwater basin offers potential physical considerations to the system.

The City's deep aquifer zone appears to exist throughout the service area, and is more predominant to the north and west. The deep aquifer zone slopes downward from the Plainfield Ridge, 3.5 miles west of the service area, with gradual flattening towards the east.

The productive aquifers in the Davis area of Yolo County occur in Tehama and younger formations. In most areas of Yolo County, the sands and gravel of the Tehama Formation are thin, discontinuous layers between silt and clay deposits. In much of the eastern portion of the

county, productive aquifers are found up to 700 feet below ground surface with few productive aquifers in the 700-foot to 1,000-foot depth range. In the study area (especially to the west), good quality water is also found in the Tehama Formation at depths of approximately 1,200 feet to 1,500 feet. Aquifers in the Davis area are recharged by a number of sources. Deep percolation of rainfall and to a lesser extent irrigation water, are major components of groundwater recharge. Other significant sources include infiltration in streambeds, channels, and the Yolo Bypass. Relatively course-grained deposits line both Putah and Cache Creeks, allowing substantial infiltration.

Water moves very slowly between aquifers at different depths. In some places, water moves between aquifers through wells that have been screened at a number of different depths to enhance production. This causes the well columns to act as open pipes to equalize the water pressure of aquifers at different depths. The deep aquifer has a much longer recharge period as compared to the intermediate depth aquifer, on the order of thousands of years versus hundreds of years, respectively. Both the City and UC Davis are increasingly reliant on the deep aquifer due to its superior quality compared to water produced from the intermediate depth aquifer. Furthermore, noticeable impacts on pumping from surrounding agricultural land use exist; however, quantification is not yet available.

Water Quality

The quality of the existing groundwater supply sources and planned surface water supply sources over the next 25 years is expected to be adequate. In recent years, a number of City intermediate depth wells have been removed from service due to water quality problems, including high concentrations of total dissolved solids, nitrates, iron, manganese, and selenium. These problems have caused the City to drill additional wells into the deep aquifer. Groundwater will continue to be chlorinated, and treated as necessary to meet drinking water standards. Water quality deficiencies are expected to be a major challenge in the next 10 to 15 years as long as the City relies solely on untreated groundwater. In addition, wellhead treatment poses challenges associated with brine disposal and other issues.

Pumping from intermediate depth aquifers in Yolo County has caused about two feet of subsidence in the area of the City over the past 10 years. In addition, some City intermediate depth wells appear to have been damaged by subsidence or other subterranean movement based on well screen failures. This information is based on actual field observations (e.g. levee elevations) and validated by studies done by other agencies such as the United States Geological Survey (USGS). The Yolo County Subsidence Network was established in 1999 (a joint regional effort) to provide the opportunity for county agencies to periodically monitor and measure subsidence effects. Subsidence could cause a number of adverse impacts, including reduced water quality because water removed from the clay inter-layers during subsidence is typically poorer quality than water in the course-grained layers. This lower quality water would eventually reach the pumping wells.

One of the main reasons for constructing wells in the deep aquifer is to obtain water with higher overall quality versus the current quality of water from the intermediate depth aquifer. Water from the deep aquifer has moderate levels of hardness and total dissolved solids. Available

information indicates that while boron exists in the aquifer, hexavalent chromium, selenium, and nitrates are not problematic constituents. Arsenic levels do not exceed current drinking water limits, but may exceed possible future limits for this constituent. Manganese does exist in this deeper aquifer, and treatment will be necessary at some of the deep well sites. The deep aquifer zone appears to exist throughout most of the Davis area; however, it may be less predominant toward the east and may not have sufficient water quality to meet future standards.

Additional water quality concerns include the concentration of some objectionable trace constituents in the deep aquifer, which is higher for wells in the far eastern portion of the service area. Parameters of greatest concern in the deep aquifer zone are hardness, arsenic, manganese, and high temperature. Manganese levels in some deep strata exceed secondary drinking water standards. Arsenic levels averaging 4.6 parts per billion (ppb) are within current drinking water standards (10 ppb in effect as of January 2006), but could be problematic if the limit is substantially reduced as may be promulgated by the California Environmental Protection Agency (Cal EPA) (Davis, 2004). Though wellhead treatment processes could be installed to remove arsenic and manganese or adjust temperature at the wellhead, it is very expensive, and would add capital and operating costs to intermediate or deep wells (West Yost, 2002).

Water Demand

The amount of groundwater projected to be pumped in the next 25 years is shown in Table 4.9-2. The City is investigating alternative potable water supplies such as surface water, and projects having a surface water supply source online by 2020 to meet all urban potable water demands. With their groundwater supply system designed to meet peak hour demands, until the surface water is available in 2020, the City projects pumping magnitudes to match total demand projections as shown in Table 4.9-3.

Table 4.9-2
Projected Normal Year Water Supplies (ac-ft/yr)

Water Supply Sources	2005	2010	2015	2020	2025	2030
Surface water[a]	0	0	0	18,800	20,000	20,000
Supplier produced groundwater[b]	15,600	16,700	17,700	0	0	1,200
Recycled water[c]	0	0	0	0	0	0
Water supply loss due to water quality	0	0	0	0	0	0
Transfers in or out	0	0	0	0	0	0
Exchanges in or out	0	0	0	0	0	0
Desalination water	0	0	0	0	0	0
Total	**15,600**	**16,700**	**17,700**	**18,800**	**20,000**	**21,200**

[a] Once surface water supply is available in 2020, projected demands are expected to be fully met by surface water.
[b] However, groundwater supply will be available to supplement surface water supplies to meet peak summer demands.
[c] Recycled water is discussed in Chapter 5 of this Plan.
Source: City of Davis Urban Water Management Plan, 2005.

Table 4.9-3
Projected Normal Year Water Supply and Demand Comparison (ac-ft/yr)

	2005	2010	2015	2020	2025	2030
Supply Totals	15,600	16,700	17,700	18,800	20,000	21,200
Demand Totals	15,600	16,700	17,700	18,800	20,000	21,200
Difference (supply minus demand)	0	0	0	0	0	0
Difference as a percent of supply	0	0	0	0	0	0
Difference as a percent of demand						

Source: City of Davis Urban Water Management Plan, 2005.

Normal Dry Year

Normal-year water demands through the year 2030 are estimated based on a 1.2 percent growth estimate. By 2030, water demands are expected to increase by 36 percent, from 15,600 ac-ft/yr in 2005 to 21,200 ac-ft/yr in 2030. Impacts to water use due to conservation measures that meet demand reduction goals are reflected in the projected water demands.

Single Dry Year

The City assumes that overall demands will not change during a single dry year. Any demand reductions due to the implementation of the City's water shortage contingency plan are not included in the single dry year demand estimates.

Multiple Dry Years

The overall water demand is assumed not to change during a single dry year, thus the first year demand of a multiple dry year drought is 100 percent of normal. Furthermore, it is assumed that overall demands will decrease 10 percent during a multiple dry year. Any demand reductions due to the implementation of the City's water shortage contingency plan are not included in the multiple dry year demand estimates. The projected multiple dry year water demands in ac-ft/yr for the period ending in 2030 are shown in Table 4.9-4.

Table 4.9-4
Projected Multiple Dry Year Water Demands - Period Ending in 2030 (ac-ft/yr)

	2026	2027	2028	2029	2030
Total demand	20,200	18,400	18,600	18,900	19,100
Percent of project normal	100	90	90	90	90

Note: Water savings from future water conservation is not included in demand projections.
Source: City of Davis Urban Water Management Plan, 2005.

Water Distribution System

In addition to the 21 city wells previously identified, the City of Davis water distribution system includes water tanks, booster pumps, and water main pipelines throughout the city necessary to provide the a system capacity to meet peak water demands.

Water Storage

The City currently has two storage facilities; a 200,000 gallon elevated storage tank near Elmwood Drive and Eighth Street, and a 4 MG ground-based storage reservoir along John Jones Road in west Davis, adjacent to Sutter Davis Hospital. This west area water storage tank, as well as a new booster pump station, was built in 2002. An additional 4 MG tank is currently being planned in east Davis near Mace Boulevard and I-80.

Water Distribution

The City distributes water to its customers through approximately 175 miles of 4-inch through 14-inch diameter pipelines. The hydraulic grade line in the system is primarily determined by the water level in the 200,000 gallon elevated storage tank at Eighth Street. Water levels in the elevated tank generally vary between 95 and 115 feet above ground level, maintaining system pressure between 40 and 50 pounds per square inch (psi) under most demand conditions. All facilities are monitored by a Supervisory Control and Data Acquisition (SCADA) system, which activates wells and booster pump facilities based on storage tank water levels or pressure at selected locations in the distribution system (Winzler and Kelly, 2005).

Water Supply Projects and System Upgrades

This section provides a description of the City's water supply projects and water supply programs that may be undertaken to meet the total projected water use and provide system reliability. The City of Davis has identified a series of water distribution system upgrades that will provide sufficient system capacity to meet the City's future peak demands. The City is also investigating and pursuing supplemental water supplies to mitigate local groundwater quality concerns and create the possibility for conjunctive use of both groundwater and surface water. This would improve long term water supply reliability, reduce the potential negative impact of future water shortage conditions, and reduce reliance on the groundwater source to avoid potential future negative impacts as a result of increased regional groundwater pumping as well as subsidence and quality concerns for both drinking water and wastewater systems.

City Well Capacity Replacement Project

To replace the lost capacity of several recently removed wells (as discussed in Section 2.3.1 of the City's Urban Water Management Plan), the Davis Well Capacity Replacement project consists of the installation of two or three deep aquifer wells with a combined maximum pumping capacity of 4,500 gallons per minute (gpm) and a water storage tank facility. The purpose of this well replacement project is to maintain an adequate water supply to meet current peak demands in the water system. The City's future water demands, whether due to the loss of existing wells and/or growth, are expected to be met with treated surface water supply and peak demand deep wells by 2020 (Winzler and Kelly, 2005).

East Area Tank

The City is currently in the design phase of the East Area Water Storage Tank (4 million gallons) and booster station located in East Davis. Construction is anticipated to begin in summer of 2009 and be complete in summer of 2010. The booster station was originally designed to bring 3 pumps on-line in 2010, and then add an additional pump to meet future demands. The current distribution system pipe sizes in the area will not support the full flow of future capacity, so additional system piping is needed to transport the water. The City of Davis has determined that this additional capacity is needed now, and the fourth pump is being added at the same time as the other three. The additional piping has been added as an additional project to the City's program (see *East Area Main Upsize* below). Water delivery from the tank will be 4,000 gpm in 2010, and 6,000 gpm as soon as the pipe upsizing is complete (no later than 2011).

East Area Main Upsize

With the installation of the East Area Tank, the City of Davis will need the pump station operational to full capacity immediately in order to meet projected demands. The full capacity of the booster pump station is 6000 gpm. The distribution system piping near the tank is not large enough to transport that much flow at acceptable pressures. In order to fully utilize the pump station build out capacity, an additional pipeline must be added from the tank site to the north, around the Mace Boulevard Curve to Alhambra Drive. This will distribute the additional water to system at acceptable pressures.

This large pipeline was anticipated to be needed once the surface water was brought on-line to transport surface water from the Terminal Reservoir to the tank. Both the Terminal Reservoir and the Corp Yard Tank are components identified in the Davis Woodland Water Supply Project (DWWSP). Funding for the pipeline was previously identified as part of the DWWSP. Building a portion of the pipeline now accelerates the need for the funds that have already been identified and have been included in the City's rate schedule.

West Area Main Upsize

The existing West Area Tank site is located in West Davis. The current pump station capacity is 3,000 gpm and because connection to the distribution system is located so closely to Well 31, the booster pumps can not be run at the same time as the well. The distribution system piping along John Jones Road and partially down Covell Boulevard needs to be upsized to transport the combined flow at acceptable pressures. When the pipe upsize is complete, we'll be able to move forward with a future project of increasing the pump station capacity to 6,000 gpm (not on the list yet).

This large pipeline was anticipated to be needed once the surface water was brought on-line to transport surface water from the Terminal Reservoir to the tank. Because of this, funding was previously identified as part of the Davis Woodland Water Supply Project (DWWSP). Building a portion of the pipeline at this time accelerates the need for the funds that have already been identified and have been included in the City's rate schedule.

Surface Water Supply

The City of Davis, the City of Woodland, and the University of California, Davis (UC Davis) are facing a mutual challenge in meeting forecasted future water quality and supply needs for their customers. The project partners currently rely on groundwater as the sole source for meeting municipal and industrial water needs. Each of the partners operates its own water system, including groundwater wells, wellhead chlorination facilities, water storage, and water transmission pipelines.

On October 16, 2007, the Davis City Council approved Resolution 07-168 to certify the FEIR prepared for the Davis-Woodland Water Supply Project (SCH 2006042175). Based on the studies completed to date, the Davis-Woodland Water Supply Project (DWWSP) could ultimately divert up to 46.1 thousand acre-feet per year (TAF/yr) of surface water from the Sacramento River by the year 2040 to meet most of the municipal and industrial demands of the project partners. The DWWSP would divert water under new water rights that would be based on the project partners' pending water-right applications and through water transfers from holders of existing senior water rights (diverted surface water).

The DWWSP would construct and operate a water diversion facility near the Sacramento River. The DWWSP includes the construction of untreated-water conveyance pipeline facilities, a water treatment plant, treated water conveyance pipelines, and water storage facilities. The water diverted from the Sacramento River would vary from 15 to 46 TAF/yr with an annual average of 31.6 TAF/yr. The diverted surface water and Sacramento River intake water would be processed at the proposed water treatment plant. The water treatment plant would be constructed in two stages, with an ultimate capacity of 51.8 million gallons per day (mgd). Furthermore, the DWWSP would result in the construction of treated water transmission pipelines, pump stations, water storage facilities, vaults, and other water facilities within the City of Davis, City of Woodland, and UC Davis.

The total amount of water rights and entitlements that would be acquired and the capacities of the key project facilities are proposed to meet the needs of the project partners through 2040; other project facilities would be developed in stages corresponding to population growth and development that is anticipated will take place in accordance with local land use plans and growth policies.

Wastewater Treatment

Wastewater treatment for the project area is provided by the City of Davis Public Works Department. The City's wastewater treatment plant is located approximately six miles northeast of Davis on County Road 28H, and is supplied by over 150 miles of sewer line. The plant was designed to accommodate an average dry weather flow of 7.5 mgd. In June 2005, the City of Davis estimated that the Plant's wastewater flows were 6.25 mgd. Treated effluent is discharged into the Willow Slough Bypass, a tributary to the Yolo Bypass. In the summer, the discharge is used for irrigation; in winter, the discharge flows into the Delta.

The treatment plant's design was based upon the 1987 City of Davis General Plan estimate of a Year 2010 population of approximately 75,000. The City of Davis Wastewater Master Plan Executive Summary lists the 2004 service area population as 65,890 and projected 2010 population served as 70,122. The 2000 Davis General Plan Update EIR states that the plant is expected to accommodate demand through 2010; however, little excess capacity would remain to handle additional development. Developers are required to pay for trunk sewers and all other lines needed to accommodate new development, so that the only cost borne by the City would be for maintenance of the lines.

Increased demand is not the only wastewater treatment concern faced by the City. In the *Status Report on Municipal Wastewater Treatment Facilities* (March 2003), the Public Works Department anticipates that increasingly strict State and federal wastewater discharge regulations would require major upgrades to the existing treatment facilities.[7] The main component of the treatment plant consists of 120 acres of eight-foot-deep secondary treatment oxidation ponds, which were constructed beginning in 1972. Ponds are less than ideal due to the following: they tend to grow algae, do not remove some types of contaminants, and are subject to uncontrolled variables such as weather and ecological factors. Later improvements to the system, including an overland flow system, aeration equipment, and a wetlands system (the Davis Wetlands) have resulted in treated municipal wastewater effluent containing concentrations of organic and suspended solids ranging from 45 to 90 mg/L, which is typical of older wastewater facilities.

Modern plants, such as the one recently constructed by U.C. Davis, produce much cleaner effluent water, with suspended solids concentrations in the three to ten mg/L range. Although the City has thus far been able to adapt to changing regulatory requirements, the *Status Report* states that the City's combination of natural and modified natural wastewater treatment processes may not be sustainable, reliable, or consistent with the State's wastewater treatment and disposal objectives. For instance, the system is not capable of meeting upcoming treatment standards for nitrogen (such as ammonia) and pathogens, including viruses.

Furthermore, compliance with more restrictive wastewater discharge standards may be dependent in part upon improved drinking water quality. Wastewater discharge requirements for some contaminants (for instance, copper) are much more stringent than standards for the same contaminants in drinking water; thus, water quality problems of the potable water supply may actually compound the difficulty of producing wastewater discharge which meets standards.

The *Status Report* calls for the City to make major improvements to the wastewater treatment system to achieve the following objectives if the City is to continue discharging its treated wastewater into the Willow Slough Bypass:

- Production of effluent with organic and suspended solids concentrations comparable to typical background values.
- Production of effluent essentially free of human pathogenic organisms.
- Production of effluent meeting California Toxics Rule (CTR) and related toxicity criteria.
- Construction of wastewater treatment facilities that have reliable wastewater performance characteristics.

- Construction of wastewater treatment facilities that maximize removal of contaminants and minimize addition of (or concentration of) contaminants during the wastewater treatment process.

Fire Protection

Fire protection for the project area is provided by the City of Davis Fire Department. According to the Fire Department website, the Fire Department serves a 133-square mile area containing a population of over 68,138 people, on a total annual budget of approximately $9.7 million.[8] The Fire Department provides prevention services and emergency response services. The prevention services include: fire safety inspections, fire investigations, plan review, public education, weed abatement, youth fire diversion, water supply issues, and permits. The emergency response services include: pre-hospital emergency medical services, fire suppression, hazardous materials response, technical rescue, and public assistance.

The Fire Department maintains a staff of 45 shift personnel (nine captains and 36 firefighters), one fire chief, three division chiefs, one fire prevention captain, and four administrative staff, for a total of 54 employees. Raney Planning & Management, Inc. contacted the Davis Fire Department Headquarters to obtain the most recent information for the Fire Department. A letter from the Fire Department (dated May 29, 2007) stated that the current service ratio for the Fire Department is 0.67 firefighters per 1,000 population for the entire service area and 0.70 within City limits.[9]

The Department's three fire stations are located in Central, West, and South Davis. The shift personnel (firefighters) are divided into three shifts, each shift working a 24-hour day (56-hour work week). Fire Department equipment consists of three engines, one rescue unit, one squad unit, two grass/wildland units, one water tender, and two reserve engines, as well as two antique fire apparatus units.

The Davis Fire Department has contractual agreements with the East Davis County Fire Protection District, the Springlake Fire Protection District, and the No Man's Land Fire Protection District to provide emergency response to these areas. The City and these three districts are divided into three emergency first-response areas. These areas provide clearly defined territories for dispatching the nearest fire and EMS personnel and equipment to an emergency. The Fire Department also has automatic aid agreements with the University of California at Davis Fire Department and the cities of Woodland, West Sacramento, and Dixon, as well as other fire protection agencies throughout California.

Insurance Services Office (ISO) ratings are used by insurance companies to determine fire insurance rates. The rating takes into account the number of firefighting personnel and equipment available to an area and the average emergency response times. Ratings range from one through ten, with one indicating excellent fire service and ten indicating minimal or no protection. The May 2007 letter from the Fire Department indicates that the City of Davis Fire Department's current ISO rating is four (4).

The 2001 General Plan states that the Fire Department attempts to operate within a standard of a five-minute response time 90 percent of the time. According to the May 2007 letter provided by the Fire Department as well as an updated response time map provided to City staff in March 2009 by the Department, the Department would be able to get to the project access point at East Covell Boulevard and Monarch Lane within 5 minutes if Engine 33 (from Station 33 on Mace Boulevard) is not already assigned. However, the internal streets of the project would be outside of the five minute response time area.

According to the Department, in 1999 the need for a fourth engine company and station was identified for the northern portion of the City. However, funding for the ongoing annual operation costs of said fourth company has not been identified. As a result, the fourth fire station is on hold, pending identification of an ongoing revenue source to fund the personnel and maintenance of the station.

Law Enforcement

The Davis Police Department (DPD) operates out of a modern station located at 2600 Fifth Street, approximately 1.25 miles south of the project site. The Police Department serves an area of approximately nine (9) square miles and provides service to approximately 68,000 City residents. Of the 101 full-time employees, 60 are sworn officers and 45 are civilians.[10] The sworn officers perform law enforcement tasks as well as administration and supervision, while the civilian personnel perform tasks including administration, support, supervision, dispatch, parking enforcement, and community service duties. The Police Department maintains 14 marked patrol vehicles, two marked civilian vehicles assigned to patrol, and 14 unmarked cars assigned to investigations and administration.

The City's service ratio standard is 1.2 officers per 1,000 population; the existing service level is roughly 0.88 officers per 1,000 population.[11] The City's target response time for emergencies and non-emergencies are five to six minutes and 20-30 minutes, respectively. The actual response time for emergency and non-emergencies are four minutes and 20 minutes, respectively. The DPD averages 8,400 priority calls per year and 48,600 non-priority calls.

Solid Waste Disposal

Solid waste collection and disposal in the City of Davis (including the project site) is provided by Davis Waste Removal, Inc. (DWR). DWR has a drop-off and buy-back center and provides residential curbside, apartment, and business collection services. In addition to the weekly garbage service, DWR provides green waste and recycling pickup and street sweeping service. Recoverable items include: mixed paper, glass, aluminum cans, steel and tin cans, some plastics, corrugated cardboard, yard waste, and used motor oil.

Local solid waste management planning is governed by the Integrated Waste Management Act of 1989. The Act established strict mandates for local agencies to achieve a 25 percent reduction in solid waste disposed of by 1995 and a 50 percent reduction by the year 2000. Each city is required to prepare, adopt, and submit to the County a Source Reduction and Recycling Element (SRRE). Counties must also prepare a SRRE for unincorporated areas.

All non-recyclable waste generated by the City of Davis is disposed of at the 770-acre Yolo County Central Landfill, which is located off County Road 28H near its intersection with County Road 104. The landfill is owned and operated by the Yolo County Department of Public Works and Transportation. As of May 2007, the landfill had a remaining capacity of 20 million cubic yards and is projected to reach capacity in the year 2045.[12] Under the landfill's existing permit, the facility is allowed to receive up to 1,800 tons per day, 360 days a year. The landfill receives approximately 900 tons of solid waste per day. The landfill also includes a recycling drop-off facility, a wood processing facility, and a methane gas collection facility, and accepts drop-offs of household hazardous waste at no charge to County residents on designated Saturdays throughout the year.

Gas and Electric Service

Gas and electric service in the City of Davis is provided by Pacific Gas & Electric (PG&E) under a franchise granted to PG&E by the City.

Telecommunications

The 2001 City of Davis General Plan states that telecommunication infrastructure and services have been identified as important community resources, which are likely to be as important to the continuing economic development of the community as basic infrastructure such as water, sewer, and road systems. The use of advanced telecommunications technologies provide a means to reduce traffic (telecommuting and telework), strengthen business and attract potential high-tech business (economic development), and increase citizen participation in local government (electronic democracy), as well as generally improve the quality of life for residents.

The City of Davis oversees the development of telecommunications infrastructure through the City Telecommunications Ordinance. The City is in the process of revising the existing franchise ordinance to reflect the substantial changes that have taken place in telecommunications in the 15 years since the original ordinance was last updated.

The City is also a partner in the Yolo Area Regional Network (YARN), an organization promoting and coordinating the development of regional information infrastructure and services in a manner intended to most fully benefit the residents of the Yolo County area.

Schools

<u>Grades K-12</u>

The City of Davis is served by the Davis Joint Unified School District (DJUSD). The DJUSD covers an area of 126 square miles and employs approximately 1,000 people. The district maintains eight (8) standard elementary schools, one (1) small "magnet" elementary school, three (3) junior high schools, one (1) comprehensive high school, one small "magnet" high school, one School for Independent Study, and one continuation school. The City also has four (4) private schools: Davis Waldorf School (K-8); St. James School (K-8); Montessori-Portage

Bay (K-3); and Merryhill Country Day School (K-8). Table 4.9-5 provides the current enrollment for the schools within the DJUSD.

Table 4.9-5
Davis Joint Unified School District: 2009 School Enrollment and Capacity

School	Enrollment	District-Adopted Size	Space Available (+/_)
Elementary Schools	**4,332**	**4,650**	**318**
Birch Lane (K-6)	616	641	25
Cesar Chavez (K-6)	591	612	21
Fairfield (K-3)	58	58	0
Korematsu (K-6)	472	503	31
Montgomery (K-6)	475	494	19
North Davis (K-6)	590	619	29
Patwin (K-6)	469	572	103
Pioneer (K-6)	570	590	20
Valley Oak (K-6)	0	0	0
Robert Willet (K-6)	491	561	70
Junior High Schools (7-9)	**1,999**	**2,675**	**676**
Ralph Waldo Emerson	490	810	320
Oliver Wendell Holmes	728	950	222
Frances Ellen Watkins Harper	781	915	134
High Schools (10-12)	**1,990**	**2,443**	**453**
Davis Senior High	1,658	2,199	541
Da Vinci High	332	244	576
King High (continuation school)	N/A	N/A	-
TOTAL	**8,321**	**9,768**	**1,447**

Source: Michael Adell, Director of Facilities, DJUSD, March 2009.

The school district has experienced declining enrollments and has had to close one school beginning in the 2008/2009 school year and is currently working on an elementary boundary change to accommodate the school consolidation. The District does not currently use any bussing programs and/or will not be placing any portable classrooms to accommodate overcrowded schools at this time due to recent declining enrollments.

Parks and Recreation

The Davis Parks and General Services Department manages parks, urban forest and recreation facilities in the City. The Davis Community Services Department is responsible for a variety of recreational programs. Additionally, City schools, UC Davis, and private organizations provide recreational facilities and services to the City.

The City of Davis Parks & General Services Department maintains over 400 acres of parks and greenbelts throughout the community. The 32 neighborhood and community parks and the extensive system of greenbelts include 43 different play areas, 12 large reservable picnic areas

and many smaller ones, 33 tennis courts, and many other amenities such as horse shoe pits, disc golf, basketball courts, exercise courses, etc. Examples of recreational programs operated by the Community Services Department include swimming, gymnastics, arts and crafts, and dance classes. In addition, various groups use City recreational facilities, including high school sports teams, adult softball and basketball, the gymnastics team, little league, and the youth soccer league. The UC Davis athletic program is home to a wide variety of intramural and intercollegiate sports, many of which provide spectator opportunities for the public.

The City's General Plan establishes a standard of 5 acres of parkland per 1,000 residents (Table 14, p. 231). The General Plan also establishes standards for a community park (minimum 15 net acres) within 1.5 miles of all dwelling units and a neighborhood park (minimum 5 acres) within 3/8 mile of all dwelling units (pp. 220 and 221).

In addition, according to Action item POS 3.1(l) of the General Plan, greenbelt requirements should be calculated separately from park acreage dedication or in-lieu fee payment requirements that are specifically authorized by the Quimby Act (Gov. Code 66477). The General Plan standard for greenbelt provision is as follows: 10 percent of newly developing residential land should be developed as open space, primarily greenbelt. Greenbelt land is required to be improved by the developer of the residential project. Parks and Open Space Standard 3.1(h) establish a minimum greenbelt width of 35 feet, with an overall average width of 100 feet.

The City's standard for the provision of parkland acreage for new developments is codified in Chapter 36 of the Davis Municipal Code, Subdivision Ordinance, Section 36.08.040 - Parkland dedication. The standard requires the provision of 0.0131 acres of parkland per dwelling unit. Fees may be paid in-lieu of parkland dedication.

REGULATORY CONTEXT

Existing policies, laws, and regulations related to public services and utilities that would apply to the proposed project are summarized below.

Federal

Clean Water Act (CWA) / National Pollutant Discharge Elimination System (NPDES) Permits

The CWA is the cornerstone of water quality protection in the United States. The statute employs a variety of regulatory and nonregulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. These tools are employed to achieve the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters so that they can support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water."

The CWA regulates discharges from "non-point source" and traditional "point source" facilities, such as municipal sewage plants and industrial facilities. Section 402 of the Act creates the NPDES regulatory program which makes it illegal to discharge pollutants from a point source to the waters of the United States without a permit. Point sources must obtain a discharge permit

from the proper authority (usually a state, sometimes EPA, a tribe, or a territory). NPDES permits cover industrial and municipal discharges, discharges from storm sewer systems in larger cities, storm water associated with numerous kinds of industrial activity, runoff from construction sites disturbing more than one acre, mining operations, and animal feedlots and aquaculture facilities above certain thresholds.

Permit requirements for treatment are expressed as end-of-pipe conditions. This set of numbers reflects levels of three key parameters: (1) biochemical oxygen demand (BOD), (2) total suspended solids (TSS), and (3) pH acid/base balance. These levels can be achieved by well-operated sewage plants employing "secondary" treatment. Primary treatment involves screening and settling, while secondary treatment uses biological treatment in the form of "activated sludge."

All so-called "indirect" dischargers are not required to obtain NPDES permits. An indirect discharger is one that sends its wastewater into a city sewer system, so it eventually goes to a sewage treatment plant. Although not regulated under NPDES, "indirect" discharges are covered by another CWA program called pretreatment. "Indirect" dischargers send their wastewater into a city sewer system, which carries it to the municipal sewage treatment plant, through which it passes before entering surface water.

State

Fire Services

Uniform Fire Code

The Uniform Fire Code with the State of California Amendments contains regulations relating to construction, maintenance, and use of buildings. Topics addressed in the California Fire Code include fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, hazardous materials storage and use, provisions intended to protect and assist fire responders, industrial processes, and many other general and specialized fire-safety requirements for new and existing buildings and the surrounding premises. The Fire Code contains specialized technical regulations related to fire and life safety.

California Health and Safety Code

State fire regulations are set forth in Sections 13000 et seq. of the California Health and Safety Code, include regulations for building standards (as also set forth in the California Building Code), fire protection and notification systems, fire protection devices such as extinguishers and smoke alarms, high-rise building and childcare facility standards, and fire suppression training.

Schools

California Code of Regulations

The California Code of Regulations, Title 5 Education Code, governs all aspects of education within the State.

Proposition 1A/Senate Bill 50

Proposition 1A/Senate Bill (SB) 50 (Chapter 407, Statutes of 1998) is a school construction measure authorizing the expenditure of State bonds totaling $9.2 billion through 2002, primarily for modernization and rehabilitation of older school facilities and construction of new school facilities. $2.5 billion is for higher education facilities and $6.7 billion is for K-12 facilities. Proposition 1A/SB 50 implemented significant fee reforms by amending the laws governing developer fees and school mitigation.

- Establishes the base (statutory) amount (indexed for inflation) of allowable developer fees at $1.93 per square foot for residential construction and $0.31 per square foot for commercial construction.
- Prohibits school districts, cities, and counties from imposing school impact mitigation fees or other requirements in excess of or in addition to those provided in the statute.
- Suspends for a period of at least eight years (2006) a series of court decisions allowing cities and counties to deny or condition development approvals on grounds of inadequate school facilities when acting on certain types of entitlements.

Proposition 1A/SB 50 prohibits local agencies from using the inadequacy of school facilities as a basis for denying or conditioning approvals of any "[…] legislative or adjudicative act […] involving […] the planning, use, or development of real property" (Government Code 65996(b)). Additionally, a local agency cannot require participation in a Mello-Roos for school facilities; however, the statutory fee is reduced by the amount of any voluntary participation in a Mello-Roos. Satisfaction of the Proposition 1A/SB 50 statutory requirements by a developer is deemed to be "full and complete mitigation." The law identifies certain circumstances under which the statutory fee can be exceeded, including preparation and adoption of a "needs analysis," eligibility for State funding, and satisfaction of two of four requirements (post-January 1, 2000) identified in the law including: year-round enrollment, general obligation bond measure on the ballot over the last four years that received 50 percent plus one of the votes cast, 20 percent of the classes in portable classrooms, or specified outstanding debt. Assuming a district qualifies for exceeding the statutory fee, the law establishes ultimate fee caps of 50 percent of costs where the State makes a 50 percent match, or 100 percent of costs where the State match is unavailable. District certification of payment of the applicable fee is required before the City or County can issue the building permit.

Proposition 55

Proposition 55 is a school construction measure passed in 2004 authorizing the sale of approximately $12.3 billion in bonds to fund qualified K-12 education facilities to relieve overcrowding and to repair older schools. Funds target areas of the greatest need and must be spent according to strict accountability measures. These bonds would be used only for eligible Projects. Approximately ten billion dollars would be allocated to K-12 schools.

Department of Education Standards

The California Department of Education published the Guide to School Site Analysis and Development to establish a valid technique for determining acreage for new school development. Rather than assigning a strict student/acreage ratio, this guide provides flexible formulas that permit each district to tailor the Department's ratios as necessary to accommodate each district's individual conditions. The Department of Education also recommends that a site utilization study be prepared for the site, based on these formulas.

Local Regulations

The following are applicable goals and policies from the Water Element of the City of Davis General Plan related to public services and facilities:

Goal WATER 1 Minimize increases in water use. Reduce per capita water consumption by 20 percent as compared to historic use through programs encouraging water conservation.

- Policy WATER 1.1 Give priority to demand reduction and conservation over additional water resource development.
- Policy WATER 1.2 Require water conserving landscaping.
- Policy WATER 1.3 Do not approve future development within the City unless an adequate supply of quality water is available or will be developed prior to occupancy.

Goal WATER 2 Ensure sufficient supply of high quality water for the Davis Planning Area.

- Policy WATER 2.1 Provide for the current and long-range water needs of the Davis Planning Area, and for protection of the quality and quantity of groundwater sources.
- Policy WATER 2.2 Manage groundwater resources so as to preserve both quantity and quality.
- Policy WATER 2.3 Maintain surface water quality.

Goal WATER 5 Remain within the capacity of the City wastewater treatment plant.

Policy WATER 5.1 Evaluate the wastewater production of new large-scale development prior to approval to ensure that it will fall within the capacity of the plant.

Policy WATER 5.2 Provided that the existing plant capacity is not exceeded, require new large-scale development to pay its fair share of the cost of extending sewer service to the site.

Goal WATER 3 Design stormwater drainage and detention facilities to maximize recreational, habitat, and aesthetic benefits.

Policy WATER 3.1 Coordinate and integrate development of storm ponds and channels Citywide, to maximize recreational, habitat, and aesthetic benefits.

Policy WATER 3.2 Coordinate and integrate design, construction, and operation of proposed stormwater retention and detention facilities City-wide, to minimize flood damage potential, and improve water quality.

The following are applicable goals and policies from the Police and Fire Element of the City of Davis General Plan related to public services and facilities:

Goal POLFIRE 1 Provide high quality police and fire protection services to all areas of the City.

Policy POLFIRE 1.1 Recruit and maintain a staff of high-quality police officers and firefighters.

Policy POLFIRE 1.2 Develop and maintain the capacity to reach all areas of the City with emergency police and fire service within a five-minute emergency response time, 90% of the time. Response time includes alarm processing, turnout time, and travel time.

The following are applicable goals and policies from the Materials, Solid Waste, and Recycling Element of the City of Davis General Plan related to public services and facilities:

Goal MAT 1 Enhance the quality of the environment by conserving resources and minimizing waste by reducing, reusing, recycling, and re-buying.

Policy MAT 1 Promote reduced consumption of non-renewable resources.

Goal MAT 2 Provide adequate waste disposal capacity for Davis.

Policy MAT 2.1 Plan for the long-term waste disposal needs of Davis.

The following are applicable goals and policies from the Energy Element of the City of Davis General Plan related to public services and facilities:

Goal ENERGY 1 Reduce per capita energy consumption in Davis.

Policy ENERGY 1.1 Develop programs to increase energy conservation on the household and business levels.

Policy ENERGY 1.2 Develop a comprehensive program to reduce City government energy consumption.

Policy ENERGY 1.3 Promote the development and use of advanced energy technology and building materials in Davis.

Policy ENERGY 1.4 Continue to enforce landscaping requirements that facilitate efficient energy use or conservation.

Policy ENERGY 1.5 Encourage the development of energy-efficient subdivisions and buildings.

The following are applicable goals and policies from the Computers and Telecommunications Element of the City of Davis General Plan related to public services and facilities:

Goal C&T 1 Encourage development of new infrastructure and service to allow all who live, work, and study in Davis to utilize new technologies to communicate with individuals and institutions locally, regionally, nationally, and globally.

Policy C&T 1.3 Encourage educational opportunities regarding science, computers, and technology for Davis residents.

Goal C&T 2 Pursue telecommunications as a means to reduce transportation impacts that can improve air quality and personal convenience and reduce dependency on non-renewable resources.

The following are applicable goals and policies from the Youth and Education Element of the City of Davis General Plan related to public services and facilities:

Goal Y&E 7 Work with the Davis Joint Unified School district and private school operators to provide for public schools and educational facilities that serve

as neighborhood focal points and maintain a quality learning and recreational environment.

Policy Y&E 7.1 It shall be the policy of the City to integrate public schools physically and functionally as focal points of their surrounding neighborhoods.

Goal Y&E 8 Plan for the costs of new school facilities when planning for specific new residential developments.

Policy Y&E 8.1 It shall be the policy of the City to require to the extent legally permissible the full mitigation of school impacts resulting from new residential development within the boundaries of the City.

Goal Y&E 9 Construct new public schools to meet the needs of residential growth.

Policy Y&E 9.1 It shall be the policy of the City to take all legally permissible steps to ensure the full mitigation of impacts of new development on school facilities

The following are applicable goals and policies from the Parks, Recreation, and Open Space Element of the City of Davis General Plan related to public services and facilities:

Goal POS 3 Identify and develop linkages, corridors, and other connectors to provide an aesthetically pleasing and functional network of parks, open space areas, greenbelts, and bike paths throughout the City.

Policy POS 3.1 Require creation of neighborhood greenbelts by project developers in all residential projects, in accordance with Policy LU A.5.

Policy POS 3.3 Implement specific projects to augment the existing greenbelt/open space system.

Goal POS 4 Distribute parks, open spaces, and recreation programs and facilities throughout the City.

Policy POS 4.1 Preserve existing parks, greenbelts, and open space areas.

Policy POS 4.2 Construct new parks and recreation facilities.

f. Acquire and develop park land to meet the standards for neighborhood and community parks outlined above, with highest priority for park development in those areas that do not

currently meet the distance-from-dwelling standard.

Goal POS 5 Respect natural habitat areas and agricultural land in planning and maintaining the City's park system.

Policy POS 5.1 Protect and retain wildlife habitat, agricultural land, and open space when planning and maintaining City park lands.

Goal POS 6 Encourage local organizations, the Davis Joint Unified School District, UC Davis, and the private sector to provide, develop, and maintain needed parks, open space, recreation facilities, programs, activities, and special events to the greatest extent possible.

Policy POS 6.2 Require dedication of land and/or payment of an in-lieu fee for park and recreational purposes as a condition of approval for subdivisions, as allowed by the Quimby Act (Government Code 66477).

Goal POS 7 Reflect a balance between preservation, education, recreation, and public health and safety in park and open space planning.

Policy POS 7.1 Proceed with park and open space planning in a balanced fashion, pursuing all the varying and sometimes competing uses of Open Space as opportunities are identified. These competing uses include resource conservation (farm land and groundwater recharge), wildlife and habitat needs, buffering of the agricultural and urban interface, alternative transportation corridors, and active and passive recreation uses.

IMPACTS AND MITIGATION MEASURES

Standards of Significance

An impact to the public services and utilities of the proposed project area would be considered potentially significant if the proposed project would:

- Require substantial expansion of water supply treatment or distribution facilities;
- Require substantial expansion of water pollution control facilities;
- Require extension of sewer mains with capacity to serve new development;
- Result in the degradation of existing wastewater infrastructure;

- Require additional fire protection staff and equipment to maintain acceptable levels of service;
- Require additional law enforcement staff and equipment to maintain acceptable service ratios;
- Allow residences in areas that cannot be adequately served with police or fire services;
- Produce solid waste in excess of available landfill capacity;
- Result in the need for a new system or substantial alteration to power or natural gas utilities;
- Require expansion of the existing school system; or
- Not provide adequate parkland or greenbelt acreage.

Methods of Analysis

The Impacts and Mitigation Measures section evaluates the impacts of the proposed project on the existing public services that would occur if the project is developed as currently proposed. Impact significance is determined by comparing project conditions to the existing conditions. The responsible agencies for each service have been contacted regarding the potential impacts on their facilities.

Project Impacts and Mitigation Measures

4.9-1 Ability of Existing Water Conveyance Facilities to Meet Project Water Demands.

The City's water supply and distribution system is currently operating below its desired capacity at times of peak demand. The City's goal is to provide adequate system capacity to meet flow requirements to respond to a major fire occurring at a time of maximum consumption demand, with sufficient residual system pressure in accordance with State guidelines, and industry standards. For example, if the largest capacity well typically used for meeting demand (ex. Well 30) was offline, and if Well 31 cannot be used due to distribution system constraints, and a major fire occurred at the peak hour of water system demand, system pressure is anticipated to be below the minimum value, under the guidelines. The City is pursuing ways to alleviate this situation, and is looking at several measures that could provide more water during peak demands. For example, the City can accelerate the construction of a number of master-planned lines in the vicinity of tanks. This could allow Well 31 to be used during peak water demand periods and also allow for the addition of a fourth pump at the proposed East Tank and booster station at Mace Blvd/I-80. The City would also initiate an expansion of its inter-tie agreement with UC Davis to provide additional supplies during peak periods of demand.

The completion of the East Area Tank, the East Area Main Upsize, and the West Area Main Upsize are scheduled to occur by 2011. When completed, these water supply system capacity improvements will meet the City's peak water demand for its current residents combined with the additional demands of the proposed project. These capacity improvements currently are proposed to be accelerated from originally anticipated schedules. This may require the City to incur additional interest obligations or other

unanticipated costs to construct the improvements. Without these improvements, the project would contribute to the need to identify new sources of water to serve current residents and the proposed project, resulting in a ***significant*** impact on the ability of the City's water conveyance facilities to meet the water demand.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

4.9-1(a) *Prior to issuance of building permits, the East Area Tank, the East Area Main Upsize, and the West Area Main Upsize shall be included within the City's Capital Improvement Plan and fully funded for construction.*

4.9-1(b) *If the following is not included in the City's water connection charge at the time the water charge is paid for any unit in the project, then, in addition to the water connection charge, the project shall pay fair share fees for the above-listed improvements at the time of building permit issuance. This fair share shall include any additional costs that the City may incur to accelerate the timing of the above-listed projects.*

4.9-2 Long-term availability of water supply to meet the project water demand.

Normal-year water demands through the year 2030 are estimated based on a 1.2 percent growth estimate. By 2030, water demands are expected to increase by 36 percent, from 15,600 ac-ft/yr in 2005 to 21,200 ac-ft/yr in 2030. With the City's groundwater supply system designed to meet peak hour demands, until surface water is available in 2020, the City projects pumping magnitudes to match total demand projections. The Sacramento Valley groundwater basin is not adjudicated, and there are no legal restrictions to groundwater pumping. However, according to the City of Davis 2005 Well Capacity Replacement EIR, recent studies of long-term quality and yield of the deep aquifer suggest that the reliability of the deep aquifer could be at risk of overpumping if both the City of Davis and UC Davis rely on it as their only water supply source.[13] As a result, the City of Davis and UC Davis (as well as the City of Woodland) are currently working to secure surface water supply sources. The joint surface water supply project, known as the Davis-Woodland Water Supply Project, is described in the setting section above. In conjunction with several approved or submitted projects, such as the Chiles Ranch Subdivision and Grande School site, the City's anticipated water demand beyond 2020 would exceed the groundwater supply. Should the current delivery date of the surface water project exceed 2020, the City will need to identify alternative water supply and infrastructure projects to meet water supply demand and water quality needs.

The City of Davis relies solely on groundwater drawn from 21 wells located throughout the City to meet 100 percent of its potable water demands. Fifteen of these wells tap into the intermediate depth aquifer, and the remaining six are in the deep aquifer. The intermediate wells have high total dissolved solids values and previous intermediate wells have been abandoned due to high nitrates and chromium. The deep aquifer wells

generally have better water quality, although the most recently completed deep well, Well 32, is not online yet as the concentration of manganese currently being drawn from the well exceeds secondary health standards for this constituent. Investigations are currently in progress to remedy and bring the well online by summer 2009.

The water from the wells does not pass through a central treatment or distribution facility, but rather is filtered naturally by the sand and gravel in the aquifers from which it is drawn. The only treatment administered is the addition of chlorine (sodium hypochlorite) at all wells for disinfection. Well 29 also has activated carbon filtration tanks to alleviate an odor problem. Pumping rates from each well vary with seasonal groundwater levels and distribution system hydraulic conditions.

By 2010-11, wells 32 (completed, but not yet online), 34 and 35 (exploration has begun and if the chosen sites are viable, production wells would be completed) are expected to be online. The eight deep wells would enable the City to meet all non-peak demands and the intermediate depth wells would assist in meeting peak demands. Well 31 is not currently available to meet peak demands because of existing distribution system hydraulic constraints, due to the vicinity of other wells and to the West Area Tank. Well 31 fills the West Area Tank at night, and then the booster pumps at the tank provide water to the system throughout the day.

Based on information provided by City of Davis Public Works Department, existing average domestic water use in the City is typically around 190 gallons per capita per day (gcd). However, the project engineer has stated that a per-capita rate of 190 gcd is very conservative for the proposed project, given the smaller house and yard sizes inherent in the project's higher density; and the incorporation of several water reduction measures. The proposed projected demand, with separate evaluations of inside and outside use were performed, as summarized below.

To reduce projected demand, the project proposes to implement a number of water conservation and efficiency measures. Domestic inside-use water-saving measures will include low-flow fixtures, low water use dishwashers and efficient hot water delivery systems. If mainline water pressure conditions so warrant, pressure regulators will be installed at domestic water meters. When included as part of the appliance package of homes or apartments, builders will be directed to select low water factor clothes washers. It is anticipated that the above measures would reduce inside usage by approximately 20%. Assuming inside use constitutes around 40% of overall use for single-family homes, and using the City's average usage of 190 gcd as a baseline, the project's average inside use would be around 80 gcd. Therefore, a 20% reduction will result in an *inside* use in the region of 65 gcd.

For *outside* use, the proposed project would limit the amount of turf coverage per lot and/or adopt a 'water-budget' approach landscape design. Homeowner education on water use and conservation would also help to achieve and maintain water savings.

Assuming 191 dwelling units at a typical occupancy of 2.48 persons/du, the average residential *irrigation* demand (excluding the orchard and City-irrigated areas) translates to an additional 40 gcd, utilizing the following assumptions:

- Average irrigation demand (residential only) = 18,845 gpd
- Residential irrigation per-capita demand = 18,845 gpd/(191 du x 2.48 persons/du) = 40 gcd (approx)

With the orchard and City-irrigated areas included, the overall site-wide irrigation demand is estimated at approximately 85 gcd. Thus the project's entire per-capita inside plus outside average use is estimated at approximately 65 gcd (inside residential use) plus 85 gcd (total irrigation use), totaling 150 gcd. According to the project engineer, given that the proposed landscaping is anticipated to have lower irrigation demands than a standard existing Davis residence, and that the project also has substantial non-residential areas, an Evapotranspiration (Et0) approach was used to calculate irrigation usage, rather than assuming the irrigation would be 60 percent of existing residential use. As demonstrated above these calculations yield 40 gcd for residential irrigation, and 85 gcd for total irrigation (i.e. Residential, HOA, City Greenbelt, City Streets and Orchard).
To further reduce the demand on the City's water supply infrastructure, the project proposes that some or all of the HOA-maintained landscape be irrigated via the existing shallow agricultural well on the property, provided the well proves reliable and practical to operate. A connection to the City's domestic water system could be made to provide backup and/or supplementary supply to the HOA irrigation system. Irrigation equipment would be 'purple pipe' and pipe runs would be largely contained within the HOA areas, with periodic street crossings as required. The equipment would be operated and maintained by the HOA. Irrigation would occur mostly at night, and water quality would be monitored to ensure that minimum standards for safety are met. The irrigation of the orchard and other HOA areas via the onsite agricultural well could reduce the demand on the City supply by as much as 30 gcd, resulting in a net average City demand of approximately 150 gcd minus 30 gcd, totaling 120 gcd.

The onsite demand reduction combined with improvements to the City's existing water system and implementation of the DWWSP, or other project(s) subsequently adopted by the City in order to meet demand and water quality, would result in the City having adequate water to supply the project. Further, the addition of the 191 units from the project would provide additional funding for the future water supply projects.

The City of Davis Urban Water Management Plan (UWMP) determined that the City does not have sufficient groundwater to supply the City beyond 2020. The City of Davis collaborated with the City of Woodland and UC Davis to create the DWWSP to provide long-term water supply. As the proposed project would create additional water demand than originally anticipated in the General Plan, the project would contribute toward the need to construct new water supply and treatment facilities, resulting in a ***significant*** impact would occur.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

4.9-2 *The project applicant shall pay fair share fees for the future water supply project(s) required to meet City demand beyond 2020 at the time of building permit issuance.*

4.9-3 Increased demand for wastewater disposal.

Wastewater Treatment

The project's sewer demand has been calculated by the project engineer as follows:

> 191 units * 2.5 people/unit * 95 gallons/capita/day = 0.045 million gallons per day.[14]

The City of Davis Wastewater Treatment Plant has a capacity of 7.5 mgd. In June 2005, the City of Davis estimated that the Plant's wastewater flows were 6.25 mgd. Since June 2005, little additional development has occurred in the Davis city limits. Considering this and the fact that buildout of the General Plan is projected to result in a total sewer demand of 7.0 mgd, the project would not adversely impact the Plant's current total capacity.

Wastewater Conveyance

A public sewer line does not serve the project site. According to the project engineer, four preliminary options exist for sanitary sewer (SS) service to the project site:[15]

1. A gravity system connecting to the existing Wildhorse Subdivision sewer system. The two possible points of connection are the 6-inch SS main at the end of Caravaggio Place and the 6-inch SS main at the intersection of Caravaggio/Bonnard. Capacity of the downstream pipes and connection point elevations would need to be confirmed to determine the feasibility of either of the options. However, given the shallow depths of the connection points, large quantities of fill would be required to allow gravity discharge. Given the cost and design challenges of elevating the site, this option is not considered viable.

2. A gravity drain connecting to the existing 42-inch trunk sewer north of the Wildhorse Golf Course. The 42-inch line is a primary conveyance leading directly to the Davis Wastewater Treatment Plant and City Public Works staff had previously indicated additional capacity is available in the line.

3. Construction of an on-site central lift station and force main to the 42-inch trunk sewer north of Wildhorse Golf Course. Given the cost to construct a sewer pump

station to current City standards, Option 3 is likely to be more expensive than Options 2 and 4.

4. Construction of a gravity sewer to an existing line in Monarch Lane. Option 4 involves collecting Wildhorse Ranch wastewater at the south end of the property, then running a connecting line across Covell Boulevard to an existing 8-inch line at the intersection of Monarch Lane and Bryant Avenue. The capacity and depths of the downstream lines, as well as the capacity of the Manzanita Sewer Lift Station would need to be confirmed.

The above options have only been reviewed as preliminary and more detailed analysis of costs, grading, and constructability would be performed during the Tentative Map stage. The preferred sanitary sewer system is Option 2 and the secondary system is Option 4.

Option 2 would result in the development of a drainage system which drains to the north. A gravity sewer outfall pipe would be constructed at the northeast corner of the site, running along the east edge of the Wildhorse golf course, and connect to the existing 42-inch trunk sewer north of the golf course.

Option 4 would result in the development of a drainage system which drains to the south. A pipeline would be constructed under Covell Boulevard to connect the drainage system to the existing six-inch line in Monarch Lane. Downstream improvements would include the installation of additional pumping capacity at the existing Manzanita lift station.

It should be noted that several septic systems exist on the project site. The systems would need to be properly removed per the procedures of the Yolo County Public Health Services, Environmental Health Division. This issue is addressed in Section VII (b) of the Initial Study (see Appendix B to this DEIR).

Conclusion

Adequate capacity exists at the Davis wastewater treatment plant to accommodate the project's wastewater demand. However, although two wastewater conveyance alternatives appear viable, additional information is needed to determine the feasibility of either alternative. As a result, the project would have a ***significant*** impact related to wastewater conveyance.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

4.9-3 *Prior to the approval of a tentative map for the Wildhorse Ranch project, the applicant shall submit a design-level wastewater report for the proposed project that demonstrates how the project's wastewater will be delivered to the Wastewater Treatment Plant. Included in the report shall be a determination of the capacity of downstream sewer lines and what*

improvements, if any, need to be constructed to accommodate and convey the project's additional wastewater, and the construction and operational costs of the options. The wastewater report shall be subject to approval by the City Engineer. The applicant shall be required to fully fund and construct the necessary wastewater improvements determined by the wastewater report.

4.9-4 Increased demand for fire protection services.

The proposed project involves the construction of 191 residential units, which would result in a population increase in the City of Davis of approximately 474. The current service ratio for the Fire Department within the Davis City limits is 0.70 firefighters per 1,000 population. Utilizing the Department's service ratio standard, the proposed project would generate the need for an additional 0.33 personnel (Personnel required = total project population (474)/1,000 x 0.70).

As discussed above, the May 2007 letter and the March 2009 response time map provided by the Fire Department indicated that the internal streets of the proposed project lie just outside of the Department's 5 minute response time area. Furthermore, response times to the project site could be greater if Engine 33 (from Station 33 on Mace Boulevard) is already assigned. The Davis General Plan specifically identified the Wildhorse development as having deficient response times. The proposed project is located within the Davis General Plan area, adjacent to the Wildhorse development area, within the area identified as having a deficient response time. The General Plan EIR identified a significant and unavoidable cumulative impact related to the adequacy of the fire protection infrastructure, as buildout of the General Plan would result in development in areas that are outside of the General Plan update performance standards. The City Council found that feasible mitigation measures did not exist to reduce the impact to a less-than-significant level, and, as a result, fire response times would remain deficient until such time as a fourth fire station is constructed to serve the northwestern portion of the City of Davis. The Davis City Council adopted Findings of Fact and a Statement of Overriding Considerations that found that the specific economic, legal, social, technological, and other considerations supported approval of the General Plan despite the significant and unavoidable impact. Therefore, consistent with the analysis of the Davis General Plan and General Plan EIR, the proposed project would have a ***significant*** impact to fire protection services.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce impacts to fire protection provision by providing funding for fire department facilities and operations. However, as the project would be located outside of the five minute response time area, consistent with the analysis of the General Plan EIR, the above impact would remain *significant and unavoidable.*

4.9-4 Prior to the issuance of building permits, the applicant shall contribute funds to the Davis Fire Department for the provision of facilities needed to

provide adequate fire protection service to the proposed project. These facilities may include but are not necessarily limited to a fourth City fire station and a ladder truck. The amount of funding shall be determined by the Community Development Director and the Davis Fire Chief.

4.9-5 Increase demand for law enforcement protection services.

The proposed project involves the construction of 191 residential units, which would result in a population increase in the City of Davis of 474 persons. According to the Davis Police Department, the City's service ratio standard is 1.2 officers per 1,000 population and the existing service level is roughly 0.88 officers per 1,000 population. Utilizing the City's service ratio standard, the project would generate the need for an additional 0.57 officers (Officers required = total project population/1,000 x 1.2). The Davis Police Department has indicated that it does not have adequate resources to meet its current obligations.[16] Therefore, the additional demand created by the proposed project would have a ***significant*** impact to police protection services.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

4.9-5 *Prior to the issuance of building permits, the project applicant shall contribute funding to the Davis Police Department needed to provide an additional 0.57 officer. Funding options include, but are not necessarily limited to the following:*

1) *Provide an endowment fund that would provide for the hiring of approximately 60 percent law enforcement officer and the support equipment and materials for the officer;*
2) *Contribute toward hiring new officers, their equipment and materials with the goal of improving community relations as a good steward of the community; or*
3) *The project applicant shall present an alternative and acceptable means, as determined by the Police Chief, whereby the required law enforcement officer will be provided in the long-term.*

The final funding mechanism and dollar amount shall be reviewed and approved by the Community Development Director and the Davis Police Chief.

4.9-6 Increased demand for school resources.

The proposed project includes the development of up to 191 residential units, which would result in the introduction of additional students to the Davis Joint Unified School District. Table 4.9-6 shows the number of students by grade that would be expected to be generated by the Wildhorse Ranch project.

Table 4.9-6
Student Generation Estimates for Proposed Project

Housing Type	# of Units	K-6 Yield/Enrollment	7-9 Yield/Enrollment	10-12 Yield/Enrollment	Total Yield/Enrollment
Single Family	191	0.41 / 78	0.15 / 29	0.13 / 25	0.69 / 132
Total	**191**	**78**	**29**	**25**	**132**

Source: Michael Adell, Director of Facilities, DJUSD, November 2007.

As can be seen in Table 4.9-6, the Wildhorse Ranch project would be expected to generate 132 additional students, which would attend the DJUSD. Currently, adequate capacity exists to service the additional demand that would be created by the proposed project.[17] In addition, this project's student population increase will be considered during the current boundary change considerations.

Furthermore, the project applicant would be required per SB 50 and AB 16 to pay school impact fees. Levels of developer fee contribution are determined by the State Allocation Board and increase annually. Current State statutes dictate that school districts have the authority to levy fees (known as statutory or Level I fees) on new development. The current DJUSD rate for new residential development is $2.63 per square foot. Therefore, without payment of development impacts fees, the proposed project would have a ***potentially significant*** impact to existing District facilities.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

4.9-6 *Prior to the issuance of building permits, the applicant shall show proof to the Community Development Department of payment of current SB50 and AB 16 school impacts fees.*

4.9-7 Increased demand for solid waste disposal/recycling services.

Solid waste services (collection and recycling) are provided to the City of Davis by Davis Waste Removal, a private firm under contract with the City. All non-recyclable wastes collected from the City are disposed of at the 770-acre Yolo County Central Landfill in the northeast portion of the Davis Planning Area. The City does not contain any special landfill sites. Average solid waste generation rates are calculated using a per capita factor derived by dividing total solid waste by the current population. Although done on a per capita basis, this rate reflects all land uses within the City. The "per person generation rate" in the City was estimated at 3.12 pounds per day in the 2000 General Plan Update EIR (p. 5C-9).

According to the General Plan Update EIR, the landfill has an estimated capacity of 25 million cubic yards. As of May 2007, the remaining lifespan of the landfill is estimated to be 20 million cubic yards or 38 years at current levels of disposal. The estimated year

2045 closure of the landfill is based on population projections for Yolo County and its cities, factored by current levels of waste production.

The project would introduce approximately 474 people to the City of Davis. Using the General Plan Update EIR's generation rate of 3.12 pounds per person per day (see pg. 5C-44, General Plan Update EIR), this results in the project generating approximately 1,479 pounds (approximately 0.00000088 million cubic yards per day or 0.00032 million cubic yards per year). Although the project site was not anticipated to be built-out in the 2001 Davis General Plan, an additional 0.00032 million cubic yards per year would not exceed the Landfill's remaining capacity of 20 million cubic yards. Therefore, the proposed project would have a ***less-than-significant*** impact on solid waste disposal and recycling.

Mitigation Measure(s)
None required.

4.9-8 Increased demand for park and recreation services and facilities.

The City's parks, open space, and recreation system includes several types of parks. The 2001 General Plan defines a Community Park as a minimum of 15 net acres, with 25 net acres being the preferred size. The General Plan (pg. 220) states "There should be a community park within 1½ miles of all dwelling units." The General Plan also defines Neighborhood Park as a minimum of five net acres, and states that "There should be a neighborhood park within 3/8 mile of all dwelling units." The existing community and neighborhood parks satisfy the above outlined park proximity requirements for the project. The project's additional residential units would result in additional demand to park facilities uses. However, the subject site is not of sufficient size, and the population anticipated (191 x 2.48 = 474 persons based on 2.48 persons per household), would not generate enough demand to warrant a need for additional park facilities. One Community Park, Mace Ranch Community Park, is located within a half mile or less of the subject site, and two Neighborhood Parks, Slide Hill Park, and Robert Arneson Park, are located within a quarter of a mile of the subject site.

Although the project does not require the provision of a park based upon the above City standards, the project would be required to pay Quimby Act fees. As stated above, the City's standard for the provision of parkland acreage for new developments is codified in Chapter 36 of the Davis Municipal Code, Subdivision Ordinance, Section 36.08.040 - Parkland dedication. The standard requires the provision of 0.0131 acres of parkland per dwelling unit. Fees may be approved in-lieu of parkland dedication.

The General Plan standard for greenbelts requires a provision of ten percent of newly developing residential land. Consistent with the General Plan interpretation guidelines, the Ag Buffer (2.26 ac), the Covell Boulevard Greenstreet (0.33 ac), and neighbors' land dedication (1.07 acres) are excluded from the gross density calculation. Using this approach, a total of 3.92 acres was subtracted from the 25.78-acre total site acreage, resulting in project acreage of 21.88 acres. Using the City Community Development

Department's preferred guidelines for calculating the greenbelt dedication; the greenbelt acreage is 10 percent of the gross residential area which includes the internal streets in the total acreage. As a result, the applicant proposes to dedicate 1.61 acres of the project for City greenbelt. It should be noted that the 10 percent calculation currently provided as part of the project description (i.e., 1.61) does not appear to meet the City's GP interpretation guidelines; review of the project applications will address this potential inconsistency as part of its analysis prior to project approval.

Although adequate park are located proximate to the project site per the standards outlined in the General Plan, without the project's payment of applicable in-lieu Quimby fees, a ***significant*** impact would result.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

4.9-8 *Prior to the issuance of building permits, the applicant shall pay in-lieu Quimby fees for required park acreage.*

4.9-9 Impacts to gas and electric facilities.

The proposed project would result in the construction of 191 residential units. As a result, the proposed project would require gas and electric service for the residences proposed for the project site. Mrs. Rebecca Kelly from PG&E has indicated that adequate capacity exists to serve the project site should the appropriate infrastructure be constructed.[18] The applicant would be required to construct the necessary infrastructure to serve the project site, which would ensure that impacts are ***less-than-significant***.

Mitigation Measure(s)
None required.

Cumulative Impacts and Mitigation Measures

4.9-10 Long-term impacts to public services and facilities from the proposed project in combination with existing and future developments in the Davis area.

Implementation of the proposed project would contribute toward an increased demand for public services and facilities within the City of Davis. Public service and facility needs for the City of Davis have been evaluated in the Davis General Plan, and the goals and policies included in the General Plan ensure that adequate services will be available for build-out of the General Plan according to the current Land Use Diagram. The current Land Use Diagram shows the project site as Agriculture. Therefore, development of the project site with urban uses would exceed the demand for public services and facilities anticipated in the Davis General Plan. However, as demonstrated in this Draft EIR, with the incorporation of mitigation measures, impacts to public services and facilities as a result of the proposed project would be less-than-significant. Therefore, the project's

cumulative contribution to the City's public service and facility needs would also be less-than-significant. Furthermore, other future development projects would be required by the City to pay their fair share fees toward the expansion and creation of public services and facilities. Therefore, although certain facilities would be adversely impacted as a result of project implementation, cumulative impacts associated with public services and facilities would be considered ***less-than-significant*** with mitigation incorporated.

Mitigation Measure(s)
None required.

Endnotes

[1] *City of Davis General Plan*, May 2001.
[2] *Program EIR for the City of Davis General Plan Update and Project EIR for Establishment of a New Junior High School* (General Plan Update EIR). January 2000.
[3] http://www.city.davis.ca.us/pw/
[4] *City of Davis Urban Water Management Plan 2005 Update*. March 2006.
[5] City of Davis, *Davis-Woodland Water Supply Project Draft Environmental Impact Report*, April 2007.
[6] City of Davis, *Water Supply Demand / Capacity Forecasting*, April 1, 2009.
[7] City of Davis Public Works. *Status Report on Municipal Wastewater Treatment Facilities* (March 2003)
[8] Davis Fire Dept Website: http://www.city.davis.ca.us/fire/GeneralInfo.cfm, accessed March 2009.
[9] Davis Fire Department, Fire Chief Rose Conroy, Letter Correspondence, May 29, 2007.
[10] Davis Police Department Website: http://cityofdavis.org/police/; accessed March 2009.
[11] Ibid.
[12] Yolo County Division of Integrated Waste Management, Linda Sinderson, e-mail correspondence, May 29, 2007.
[13] Draft Environmental Impact Report Davis Well Capacity Replacement, City of Davis, February 2005.
[14] Ibid.
[15] Parlin Wildhorse Ranch – Water, Sanitary Sewer and Storm Drain Conceptual Improvements, Cunningham Engineering, Inc., March 13, 2007.
[16] Davis Police Department, Landy Black, Davis PD, May 30, 2007.
[17] Michael Adell, Director of Facilities, DJUSD, Letter Correspondence, November 2007.
[18] Personal communication with Mrs. Rebecca Kelly, PG&E, December 21, 2007.

4.10 CLIMATE CHANGE

INTRODUCTION

The Climate Change section of the EIR describes the potential impacts of the Wildhorse Ranch project related to greenhouse gas emissions and climate change. The chapter includes a discussion of the potential impacts of these emissions on both local and regional scales, and mitigation measures warranted to reduce any identified significant impacts to the extent feasible. The Climate Change section is based primarily on an air quality analysis conducted by Raney Planning & Management, Inc. using URBEMIS-2007 (Version 9.2.4) air quality modeling software. The results of the URBEMIS-2007 analysis are included in Appendix D of this Draft EIR. In addition, information for this section was drawn from *Carbon Development Allowances, Final Report*[1] prepared by Deb Niemeier, Ph.D., P.E. for the City of Davis and the *City of Davis General Plan.*[2]

EXISTING ENVIRONMENTAL SETTING

The following setting information provides an overview of the existing air quality in the Wildhorse Ranch area, located in the City of Davis in Yolo County. In addition, the regulatory agencies and required permits associated with air quality are described.

Greenhouse Gas Emissions & Climate Change

Greenhouse gases (GHGs) are those that trap heat in the atmosphere. Greenhouse gases are emitted by both natural processes and human activities. The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without natural GHGs, scientists estimate that the Earth's surface would be approximately 61 degrees Fahrenheit cooler.[3] However, scientists also believe that the combustion of fossil fuels (coal, petroleum, natural gas, etc.) for human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond naturally occurring concentrations. The increase in atmospheric concentrations of GHG has resulted in more heat being held within the atmosphere, which is the accepted explanation for global climate change (GCC).

According to the United States Environmental Protection Agency (USEPA), the global warming potential of a gas, or aerosol, to trap heat in the atmosphere is the "cumulative radiative forcing effects of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas." Common GHG components include water vapor, carbon dioxide (CO_2), methane, nitrous oxides, chlorofluorocarbons, hydro-fluorocarbons, perfluorocarbons, sulfur hexafluoride, ozone, and aerosols. Carbon dioxide is widely used as the reference gas for comparison of equivalent global warming potential. The CO_2 equivalent is a good way to assess emissions because the use of an equivalent gives weight to the global warming potential of the gas. Methane gas, for example, is estimated by the Association of Environmental Professionals

and the USEPA to have a comparative global warming potential 21 times greater than that of CO_2, as shown in Table 4.10-1.

Table 4.10-1
Global Warming Potentials and Atmospheric Lifetimes Of Select GHGs

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310
HFC-23	264	11,700
HFC-134a	14.6	1,300
HFC-152a	1.5	140
PFC: Tetrafluoromethane (CF_4)	50,000	6,500
PFC: Hexafluoroethane (C_2F_6)	10,000	9,200
Sulfur Hexafluoride (SF_6)	3,200	23,900

Source: U.S. Environmental Protection Agency. 2006. Non CO_2 Gases Economic Analysis and Inventory. Global Warming Potentials and Atmospheric Lifetimes. Website http://www.epa.gov/nonco2/econ-inv/table.html. Accessed December 28, 2007.

At the extreme end of the scale, sulfur hexafluoride is estimated to have a comparative global warming potential 23,900 times that of CO_2. The "specified time horizon" is related to the atmospheric lifetimes of GHGs, which are estimated by the USEPA to vary from 50-200 years for CO_2, to 50,000 years for tetrafluoromethane. Longer atmospheric lifetimes allow GHG to buildup in the atmosphere; therefore, longer lifetimes correlate with the global warming potential of a gas.

One teragram (equal to one million metric tonnes) of CO_2 equivalent (Tg CO_2 Eq.) is defined by the USEPA as the emissions of the reference GHG multiplied by the equivalent global warming potential. In 2004, total worldwide GHG emissions were estimated to be 20,135 Tg of CO_2 equivalents, and the U.S. contributed the greatest percentage of worldwide GHG emissions (35 percent). In addition, in 2004, the USEPA estimated that GHG emissions in the U.S. were 7074.4 Tg of CO_2 equivalents, which is an increase of 15.8 percent from 1990 emissions. California is a substantial contributor of GHG as the State is the second largest contributor in the U.S. and the sixteenth largest in the world. In 2004, California is estimated to have produced seven percent of the total U.S. emissions. The major source of GHG in California is transportation, which contributes 41 percent of the State's total GHG emissions, followed by electricity generation, which contributes 22 percent of the State's GHG emissions.

Beginning in 1999, the City of Davis has been at the forefront of municipalities advocating for steps to reduce GHGs. In 2006, the City joined the US Conference of Mayors Climate Protection Agreement that called for local and national action to reduce GHG emissions; and in 2007 the City Council voted unanimously to adopt a strategy to reduce citywide emissions of GHGs. The Natural Resources Commission is currently developing an action plan and early action items to reduce GHG emissions.

Potential Global Changes

The Intergovernmental Panel on Climate Change (IPCC) *Climate Change 2007*[4] report indicates that the average global temperature is likely to increase between 3.6 and 8.1 degrees Fahrenheit by the year 2100, with larger increases possible but not likely. The increase in temperature is expected to lead to higher temperature extremes (hotter in summer and colder in winter), precipitation extremes resulting in both flooding from large individual storms and droughts from infrequent rain, ocean acidification from increased carbon content, and rising sea levels. Because the effects of warming are likely to include making dry areas drier, and rising sea levels may inundate coastal areas, subtropical and low-lying areas are expected to be the areas most affected by climate change.

Potential Changes in the Western United States and California Climate

Climate models indicate that if GHG emissions continue to proceed at a medium or high rate, temperatures in California are expected to increase by 4.7 to 10.5 degrees Fahrenheit by the end of the century.[5] Lower emission rates would reduce the projected warming to an increase of 3.0 to 5.6 degrees Fahrenheit. Almost all climate scenarios include a continuing trend of warming through the end of the century given the vast amounts of GHGs already released, and the difficulties associated with reducing emissions to a level that would stabilize the climate. According to the 2006 Climate Action Team Report,[6] the following climate change effects are predicted in California over the course of the next century:

- A diminishing Sierra snowpack declining by 70 percent to 90 percent, threatening the State's water supply;
- Increasing temperatures from eight to 10.4 degrees Fahrenheit, under the higher emission scenarios, leading to a 25 to 35 percent increase in the number of days ozone pollution levels are exceeded in most urban areas;
- Increased coastal erosion along the length of California and seawater intrusion into the Delta from a four to 33-inch rise in sea level. This would exacerbate flooding in already vulnerable regions;
- Increased vulnerability of forests to forest fires due to pest infestation and increased temperatures;
- Increased challenges for the State's important agriculture industry from water shortages, increasing temperatures, and saltwater intrusion into the Delta; and
- Increased electricity demand, particularly in the hot summer months.

Therefore, temperature increases would lead to environmental impacts in a wide variety of areas including: reduced snowpack resulting in changes to the existing water resources, increased risk of wildfires, changing weather expectations for farmers and ranchers, and public health hazards associated with higher peak temperatures, heat waves, and decreased air quality.

Water Resources

Depending on the climate model, precipitation for temperate climates is expected to decrease with an increased potential for drought. Topographical and geographical factors will likely result

in substantial variation in the net change in precipitation. However, the form in which precipitation occurs is anticipated to change substantially. Warmer winters would lead to less snow and more rain. As a result, the Sierra snowpack would be reduced and would melt earlier. This change could lead to increased flood risks as more water flows into reservoirs and rivers during the winter rainy period. Furthermore, earlier melting of the snowpack would reduce late spring and summer flows to reservoirs, which combined with hotter, drier summers, could lead to water shortages and restricted water supplies for cities, agriculture, and rivers.

Increased temperatures would also lead to a rise in the sea level, from both thermal expansion and the melting of land-based glaciers. During the past century, sea levels along the California coast have risen by approximately seven inches. Climate forecasts indicate the sea level would rise by seven to 23 inches over the next 100 years depending on the climate model.[7] Substantial melting of either the Greenland or Antarctic ice sheets would lead to an even greater increase; however, the IPCC models do not indicate that this would occur within the next 100 years, which is the boundary of most climate models. Longer forecast periods are inherently less reliable as they require more assumptions, and tend to compound the effects of assumptions that may be incorrect. Substantial increases in sea level would lead to increased coastal flooding, salt water intrusion into aquifers, and disruption of wetlands and estuaries.

Wildfires

Increased temperatures would lead to increased evapotranspiration. The summers would likely be drier, and vegetation would also be more likely to dry out, resulting in increasingly more flammable forests and wildlands. In addition, warmer temperatures could lead to the expansion of pests that kill and weaken trees, leading to increases in the amount of highly flammable dead trees and increasing the risk of large forest fires.

Weather Extremes

As a result of GCC, the weather is expected to become more variable, with larger extremes. In California, the increase in temperatures is expected to lead to more days with temperatures in excess of 95 degrees. More days of extreme heat has implications for public health, as Californians would face greater risk of death from dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat. In addition, increased temperatures have implications for agricultural crops, particularly long-term crops such as grapes and fruit trees that are planted in particular locations to take advantage of micro-climates.

Air Quality

Increased temperatures create the conditions in which ozone formation can increase, which would lead to adverse impacts to air quality. In addition, hotter temperatures would likely result in increased electricity use to power air conditioners and refrigerators. Increased power use has the potential to result in increased air pollutant emissions, as more electrical generation is needed to meet the demand.

Uncertainty Regarding Global Climate Change

The scientific community has largely agreed that the earth is warming, and that humans are contributing to that change. However, the earth's climate is composed of many complex mechanisms including: ocean currents, cloud cover, and the jet-stream and other pressure/temperature weather guiding systems. These systems are in turn influenced by changes in ocean salinity, changes in the evapotranspiration of vegetation, the reflectivity (albedo) of groundcover, as well as numerous other factors. Some changes have the potential to reduce climate change, while others could form a feedback mechanism that would speed the warming process beyond what is currently projected. The climate system is inherently dynamic; however, the overall trend is toward a gradually warming planet.

Prediction of impacts to specific localities is not yet possible. Improvements to Global Climate Models have led to Regional Climate models. However, the accuracy of these models is limited. In particular, the weather patterns at a particular site are guided by micro-climates that include such influences as elevation, prevailing wind patterns, and humidity among many other factors. Therefore, potential impacts to the proposed project resulting from climate change are based on inferences out of climate models that provide generalized impacts for a large area.

REGULATORY CONTEXT

Regulation of air quality is achieved through both federal and State ambient air quality standards, and emission limits for individual sources of air pollutants.

Federal Regulations

The United States Environmental Protection Agency (USEPA) is charged with enforcing the Federal Clean Air Act (FCAA). The USEPA has established air quality standards for common pollutants. The USEPA has been directed to develop regulations to address the GHG emissions of cars and trucks. Currently, USEPA regulations for GHGs do not exist.

State Regulations

Assembly Bill 1493

In 2002, then-Governor Gray Davis signed Assembly Bill (AB) 1493 (Stats. 2002, ch. 200) (Health & Safety Code, §§ 42823, 43018.5). AB 1493 requires that the CARB develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty truck and other vehicles determined by the CARB to be vehicles whose primary use is noncommercial personal transportation in the state." Currently, the USEPA has denied the State's request for a waiver from the USEPA to begin regulation of GHG emissions from vehicles. The State of California has indicated that a suit will be filed in federal court.

Executive Order S-3-05

In 2005, Governor Schwarzenegger signed Executive Order S-3-05, which established total GHG emissions targets. Specifically, emissions are to be reduced to year 2000 levels by 2010, to 1990 levels by 2020, and to 80 percent below the 1990 levels by 2050. The Executive Order directed the Secretary of the California Environmental Protection Agency (CalEPA) to coordinate a multi-agency effort to reduce GHG emissions to the target levels. The Secretary is also directed to submit biannual reports to the governor and State legislature describing: (1) progress made toward reaching the emission targets; (2) impacts of global warming on California's resources; and (3) mitigation and adaptation plans to combat these impacts.

To comply with the Executive Order, the Secretary of the CalEPA created a Climate Action Team (CAT) made up of members from various State agencies and commissions. The CAT released their first report in March 2006. In addition, the CAT has released several "white papers" addressing issues pertaining to the potential impacts of climate change on California.

Assembly Bill 32, The California Climate Solutions Act of 2006

In September 2006, Governor Arnold Schwarzenegger signed AB 32, the California Climate Solutions Act of 2006 (Stats. 2006, ch. 488) (Health & Saf. Code, § 38500 et seq.). AB 32 requires that statewide GHG emissions be reduced to 1990 levels by the year 2020. This reduction will be accomplished through an enforceable statewide cap on GHG emissions that will be phased in starting in 2012. To implement the cap, AB 32 directs CARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

Senate Bill 1368

Senate Bill (SB) 1368 (Stats. 2006, ch. 598) (Pub. Util.Code, §§ 8340-8341) is the companion bill of AB 32 and was signed by Governor Schwarzenegger in September 2006. SB 1368 requires the California Public Utilities Commission (PUC) to establish a GHG emission performance standard for baseload generation from investor owned utilities by February 1, 2007. The California Energy Commission (CEC) established a similar standard for local publicly owned utilities on May 23, 2007. The standard prohibits publically owned utilities from entering long-term financial commitments with plants that exceed 1,100 pounds of CO2 per megawatt hour. On January 27, 2007, the PUC adopted an interim Greenhouse Gas Emissions Performance Standard to require that all new long-term commitments for baseload power generation to serve Californians do not exceed the emissions of a combined cycle gas turbine plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the PUC and CEC.

Senate Bill 375

In September 2008, Governor Arnold Schwarzenegger signed SB 375, which is intended to build on AB 32 by attempting to control GHG emissions by curbing sprawl. SB 375 enhances CARB's ability to reach goals set by AB 32 by directing CARB to develop regional GHG emission reduction targets to be achieved from the automobile and light truck sectors for 2020 and 2035. In addition, CARB will work with the State's 18 metropolitan planning organizations to align their regional transportation, housing, and land-use plans and prepare a "sustainable communities strategy" to reduce the amount of vehicle miles traveled in their respective regions and demonstrate the region's ability to attain its GHG emission reduction targets. SB 375 provides incentives for creating walkable and sustainable communities and revitalizing existing communities, and allows home builders to get relief from certain environmental reviews under CEQA if they build projects consistent with the new sustainable community strategies. Furthermore, SB 375 encourages the development of alternative transportation options, which will reduce traffic congestion.

Senate Bill 1078

SB 1078 establishes a renewable portfolio standard (RPS) for electricity supply. The RPS requires that retail sellers of electricity, including investor-owned utilities and community choice aggregators, provide 20 percent of their supply from renewable sources by 2017. This target date was moved forward by SB 107 to require compliance by 2010. In addition, electricity providers subject to the RPS must increase their renewable share by at least one percent each year. The outcome of this legislation will impact regional transportation powered by electricity.

Executive Order S-01-07

On January 18, 2007, Governor Schwarzenegger signed Executive Order S-01-07, which mandates that a statewide goal be established to reduce carbon intensity of California's transportation fuels by at least 10 percent by 2020. The Order also requires that a Low Carbon Fuel Standard for transportation fuels be established for California.

California Air Resources Board

The California Air Resources Board (CARB) is the agency responsible for coordination and oversight of State and local air pollution control programs in California and for the California Clean Air Act (CCAA) adopted in 1988. The CARB has primary responsibility in California to develop and implement air pollution control plans designed to achieve and maintain the National Ambient Air Quality Standards established by the USEPA. As discussed above, the CARB is also charged with developing rules and regulations to cap and reduce GHG emissions. The CARB has released a draft list of actions to be taken to reduce GHG emissions; however, the proposed actions are not specifically applicable to residential development.

The CARB regulates mobile emissions sources and oversees the activities of County Air Pollution Control Districts (APCDs) and regional Air Quality Management Districts (AQMDs).

The CARB regulates local air quality indirectly using State standards and vehicle emission standards, by conducting research activities, and through planning and coordinating activities.

Local Regulations

In 1999, the City of Davis adopted a resolution to participate in the Cities for Climate Protection Campaign and in April 2006, the City adopted a resolution endorsing the U.S. Mayor's Climate Protection Agreement, committing to strive to meet the Kyoto Protocol (an international agreement to address climate disruption) emission reduction targets of 7 percent below 1990 levels by 2012.

More recently, on November 18, 2008, the Davis City Council adopted Resolution No. 08-166, the purpose of which was to adopt GHG reduction targets for the City of Davis. As noted in Resolution No. 08-166, as part of the City's action in adopting the City's Climate Protection/Community Sustainability Framework Strategy in April 2007, the City Council directed staff to aggressively pursue actions to reduce the City's GHG emissions. The City's Climate Protection/Community Sustainability Framework Strategy included the following elements: 1) Assess the City's current programs and projects that support resource conservation and community sustainability; 2) Develop a short-term action plan to identify early action items to be implemented in less than 18 months; 3) Develop a mid-term action plan to implement multi-year projects that build on existing City programs/projects to achieve the City's climate protection and sustainability goals; 4) Initiate a visioning process to define a sustainable Davis that guides future decisions; and 5) Develop a related community outreach program to provide and gather information.

The adoption of GHG reduction targets for the City was based on the belief that significant long-term risks exist to the economy and the environment of the nation, the State, and the City from the temperature increases and climatic disruptions that are projected to result from increased GHG concentrations. The Climate Protection/Community Sustainability Framework Strategy and the GHG reduction targets are intended to reduce GHG emissions and increase energy efficiency by decreasing air pollution, creating jobs, reducing energy expenditures, and saving money for the City government, businesses, and citizens. As part of Resolution No. 08-166, the City adopted the GHG reduction targets for the Davis community and its own City operations, shown in Table 4.10-2.

City of Davis GHG Emissions Reduction Strategy

In April 2007, the City Council adopted a strategy to reduce local GHG emissions. To achieve this objective, the City joined the Cities for Climate Protection (CCP) program along with hundreds of other communities across the globe working to reduce GHG emissions at the local level. The CCP is a performance-oriented campaign that offers a framework for local governments to reduce GHG emissions and improve livability within their municipalities.

Table 4.10-2
City of Davis GHG Reduction Targets

Year	Target Range*		Notes
	State	Davis**	
2010	2000 levels	1990 levels	Minimum: State Target. Desired: Provides baselines for subsequent average annual reductions.
2012	1998 levels	7% below 1990 levels	Minimum: State does not establish target for this year; linear interpolation from 2010 target. Desired: Consistent with Kyoto – Mayors Climate Protection Agreement Pledge – City of Davis Resolution 2006.
2015	1995 levels	15% below 1990 levels	Minimum: State does not establish target for this year; linear interpolation from 2010 target. Desired: Consistent with initial ICLEI modeling conducted by the City
2015 to 2020	Average annual reduction	Average of 2.6% reduction/year to achieve 80% below 1990 levels by 2040	Minimum: State does not establish target for these years. Desired: Average reduction encourages monitoring of progress and some flexibility in implementation.
2020	1990 levels	28% below 1990 levels	Minimum: State Target. Desired: Average reduction encourages monitoring of progress and some flexibility in implementation.
2020-2040	No formal target, but must reduce an average of 2.6% per year to achieve 80% below 1990 by 2050	Average of 2.6% reduction/year to achieve 80% below 1990 levels	Minimum: State does not establish target for these years. Desired: Reduction level adopted by the state based on climate stabilization levels of 3 to 5.5 degree increase in temperature. Average reduction encourages monitoring of progress and some flexibility in implementation.
2050	80% below 1990 levels	Carbon Neutral	Minimum: State Target. Reduction level adopted by the state based on climate stabilization levels of 3 to 5.5 degree increase in temperature. Average reduction encourages monitoring of progress and some flexibility in implementation. Desired: Combination of actions at the local, regional, national, and international levels **and** carbon offsets. Similar to UC system, City of Berkeley, and Norway.

*It is anticipated that Davis will achieve reductions within the range of the state targets (minimum) and local targets (desired)
** Due to Residency time of GHG in the atmosphere, early GHG reduction is generally more beneficial for mitigation of the most severe impacts of climate change.

The CCP framework includes the following five steps:

1. Conduct a baseline emissions inventory and forecast;
2. Adopt an emissions reduction target for the forecast year;
3. Develop a Local Action Plan;
4. Implement policies and measures; and
5. Monitor and verify results.

GHG Emissions Inventory

The City has measured local GHG emissions using the ICLEI – Local Governments for Sustainability Clean Air and Climate Protection (CACP) software. The ICLEI model is the standard approach used by communities measuring local GHG emissions.

As part of the original effort to assemble the ICLEI inventory, staff recognized that there were gaps in the software that had the potential to significantly affect results. Specifically, the model did not capture vehicle (commute or other) miles occurring outside Davis. In order to improve the local GHG inventory and address this gap, the City's consultant worked with SACOG staff and traffic models to estimate commute miles associated with Davis residents and businesses. To calculate the approximate adjustment that should be made to include trips that may have some portion of their travel outside Davis, half of each commute trip (into and out of Davis) was included in the Davis GHG inventory.

Link with State GHG Inventory

As noted above, the City has used the standard model for establishing a local GHG emissions inventory. However, the CARB has also conducted a statewide inventory that is the basis for moving forward on State-mandated reduction targets and will be required to set regional targets under SB 375. The City of Davis determined that directly linking these two types of inventories is an important step if local jurisdictions are to show how their actions contribute to State GHG reduction targets.

In order to link the two inventories, the City identified the State inventory emissions sectors that occur in Davis (e.g. transportation, residential, commercial, etc.). Then, State emissions were calculated on a per capita basis and allocated to Yolo County and, finally, to Davis based on proportion of population. Based on the results of linking the two inventories, the per capita GHG emissions in Davis are approximately 30 percent lower than what the State inventory would predict. After accounting for the gap in the Davis inventory for travel outside the City, as discussed above, the difference is approximately 25 percent. A portion of the difference is believed to be due to the policies the City has pursued for the past several decades that serve to reduce local GHG emissions. However, some of the difference may be associated with the differences in the assumptions that are built into the State and ICLEI models. The City has proceeded with the best available information in setting GHG guidelines for new residential development projects; therefore, the guidelines proposed for the City are based on the statewide inventory to establish a per dwelling unit GHG "allowance" for City of Davis projects.

Revised GHG Emissions Reduction Targets

As part of the overall effort to establish a Climate Action Plan for the City, the City determined that the GHG reduction targets originally considered and passed by the Davis Natural Resources Commission (NRC) in April 2008 were the appropriate targets on which to base the City's reduction targets. The GHG reduction targets recommended by the NRC in April are shown below in Table 4.10-3.

Table 4.10-3
GHG Reduction Targets Recommended by the NRC

Year	Target	Notes
2012	7 percent below 1990 levels	Consistent with Kyoto – Mayor's Climate Protection Agreement Pledge – City of Davis Resolution (2006).
2015	15 percent below 1990 levels	Consistent with current ICLEI modeling conducted by the City. Due to residency time of GHG gases in the atmosphere, early GHG reduction is more beneficial for mitigation of most severe impacts.
2015-2040	Average of 2.6 percent reduction per year to achieve 80 percent below 1990 levels	Reduction level adopted by the State based on climate stabilization levels of 3.0 to 5.5 degree increase in temperature. Average reduction encourages monitoring of progress and some flexibility in implementation.
2050	Carbon neutral	Combination of actions at the local, regional, national, and international levels and carbon offsets. Similar to targets for the UC System, City of Berkeley, and Norway.

Source: City of Davis, City Council Staff Report, November 4, 2008.

The City determined that these aggressive reduction goals are important to frame the local discussion and to set an example for other communities to consider. In addition, early GHG reduction is beneficial in addressing climate change, due to residency times of GHGs in the atmosphere. However, after considering the implications of the revised inventory, the City determined that reaching these local targets would be very difficult and consideration of a revised target set aligned with State targets was warranted. Rather than abandon the more aggressive targets, the City has proposed a target range using the State targets as the minimum and the targets shown above as the desired reductions. This serves to remind the City of its leadership role, while also providing a higher likelihood that the City will achieve at least a minimum target. In addition, this approach serves to link the State inventory and targets with the local inventory and targets and recognizes the current debate over whether the State's targets will achieve climate stabilization levels in the lower range of predicted temperature increases.

As the inventory was examined and refined, the City reconsidered the likelihood that the desired near-term targets could be achieved. Based on this analysis, the City concluded the following: (1) the State targets presented considerable challenges for a local jurisdiction to achieve; and (2) the desired reduction levels shown in Table 4.10-3 would be very difficult to achieve without fundamental advances in technology and shifts in society that are outside the influence of the Davis community. Therefore, the City has recommended a range of targets that set a floor but aim much higher (See Table 4.10-2).

Analysis of potential GHG reduction actions is currently underway, and City staff, the Climate Action Team, and the Science Advisory Team will provide additional information on the practicality of the recommended targets. These targets will be reexamined as part of an adaptive management approach that takes updated information, changing policy, and advancements in technology into consideration.

Residential Carbon Allowances

The City's GHG inventory shows that more than 75 percent of the total GHG emissions generated in Davis are associated with the energy used in Davis homes and personal transportation associated with residential land uses (City of Davis GHG Inventory and Forecast Report, May 2008). Although some of the transportation GHG emissions are associated with the movement of goods, the majority are associated with personal transportation and are therefore linked with residential activities.

Due to the importance of the residential sector relative to GHG emissions, a methodology was developed to establish a GHG target (or "allowance") for individuals and, by extension, dwelling units. Establishing this allowance informs the City's efforts to reduce local GHG emissions in the following two ways: (1) with a simple calculation, the City can link GHG emissions from new residential development projects directly to local and State GHG reduction targets; and (2) targets are provided for existing residents. In short, this information allows the City to set GHG performance standards for new residential projects and helps educate existing residents about what role they play in reducing local GHG emissions.

The City has, therefore, established GHG allowances for the two residential sectors – new housing projects and existing residents. In order to meet the GHG emissions reduction targets shown in Table 4.10-2, it is clear that the energy used in Davis' existing housing stock and newly constructed residential units must be addressed. As noted above, more than 75 percent of the total GHG emissions generated in Davis are directly related to residential energy use and transportation. Working from the assumptions that every home built in Davis today will still be in existence in 2050 and that energy use associated with residential activities will continue to be the primary source of local direct and indirect GHG emissions, new residential units built in Davis must perform to meet future GHG reduction targets.

Working from these assumptions, the adjusted GHG inventory, and the proposed Davis GHG reduction targets, it was determined how residential units must perform for the City to meet the community reduction targets. The carbon "allowance" for new and existing residential units for sample reduction targets is summarized in Table 4.10-4, below.

By establishing these allowances, the City has the information necessary to develop standards, incentives, and tools to help the residential sector achieve its share of local, and State, GHG emissions reductions.

Table 4.10-4
Carbon Allowances

Target Year Minimum / Desired	Target	Carbon Allowance to Meet GHG Reduction Target (annual metric tonnes per dwelling unit and per person)	
		Residential Type	
		New	Existing
Existing / Base Year (2010)	N/A	20.25 per unit / 8.1 per person	20.25 per unit / 8.1 per person
2012 (minimum) 2012 (desired)	1998 level 7% below 1990	18.6 / 7.4 11.25 / 4.5	18.75 / 7.5 11.75 / 4.7
2020 (minimum) 2020 (desired)	1990 level 28% below 1990	12.0 / 4.8 8.75 / 3.5	12.75 / 5.1 9.25 / 3.7
2030 (minimum) 2030 (desired)	28% below 1990 53% below 1990	8.75 / 3.5 5.75 / 2.3	9.25 / 3.7 6.0 / 2.4
2040 (minimum) 2040 (desired)	53% below 1990 80% below 1990	5.75 / 2.3 2.5 / 1.0	6.0 / 2.4 2.5 / 1.0
2050 (minimum) 2050 (desired)	80% below 1990 Carbon neutral	2.5 / 1.0 Net 0	2.5 / 1.0 Net 0

* Assumes 2.5 persons per dwelling unit and an annual growth rate of 1% per year. (Source: City of Davis GHG Inventory and Forecast Report, May 2008).

Sources: City of Davis, City Council Staff Report, November 4, 2008; and Deb Niemeier, Ph.D., P.E., Carbon Development Allowances, Final Report, September 2008.

Existing Residential Dwelling Units

As a first step in achieving the long-term per-capita reduction goals, the City has initiated a public engagement program to raise citizen awareness and give existing residents a tool to achieve measurable GHG reduction savings at the household level. The voluntary Davis Low Carbon Diet Challenge pilot program was launched on October 12, 2008 with the goal of 100 households losing 5,000 lbs of carbon each over the course of a year. The City's goal is to learn from this pilot program and scale the program up in coming years to cover thousands of Davis households.

If the 100 households involved in the pilot program are successful, they will lose an average of 2.48 tons per household, which is approximately 25 percent of the way to the desired reduction for Davis residents by 2012 and 27 percent of the State's 2020 target.

As part of the City's planning process to develop a long-term climate action plan for the community, consideration is also being given to other incentive-based programs to assist existing residents (e.g., financing programs for energy efficiency upgrades and solar power). In addition, improvements to the transit system and changed land-use patterns are being considered with the objective of reducing automobile use which would lead to reductions in GHG emissions at the community level.

New Residential Projects

Staff is in the process of drafting initial guidelines for GHG reduction standards for new residential projects. The guidelines use the GHG inventory and allowances to set standards for new residential projects. The intent of the guidelines is to ensure that new residential projects move the City toward its long-term GHG reduction targets. The draft guidelines are currently in the early development stages.

Conclusion

The City recognizes that implementation of programs to reduce residential GHG emissions will require development of a set of standards, measures, and tools to educate and guide existing residents and developers of new residential projects. Establishment of the allowances is a critical first step, but it must be followed by programs that provide certainty and adequate flexibility to give developers and residents a viable chance of achieving the per-capita targets.

City of Davis Green Building Ordinance

Article 8.20 of the Davis Municipal Code provides green building guidelines for new development. Both the proposed single-family and multi-family buildings would be required to implement measures identified in the *Build it Green 2007 New Home and Multifamily Green Building Guidelines* (See Table 4.10-5). Measures could include exceeding energy efficiency standards, including water-efficient appliances and landscaping. Depending on the size of the single-family units, a total of 70 to 80 points would be required. The multi-family units would be required to achieve 70 points.

IMPACTS AND MITIGATION MEASURES

Standards of Significance

Although it is clear that emissions throughout the State must be reduced in order to meet reductions targets, none of the Air Districts in California have identified a significance threshold for GHG emissions, a methodology for making a finding, or a measuring tool to determine when mitigation reduces emissions "enough." The California Office of Planning and Research, the agency responsible for development and updates to the CEQA Guidelines, is not required to have a draft set of guidelines for climate change until July 1, 2009 (pursuant to Senate Bill 97, Chapter 185, 2007). One could use the emissions reduction targets established through AB 32; however, the measures listed in the published Proposed Scoping Plan (not yet adopted) do not clearly identify the reduction targets that will apply specifically to local government. The Proposed Scoping Plan states that local government should set the same ultimate targets as those set forth in AB 32, but does not provide the details necessary to understand how much of the target will be achieved through State actions (such as the low-carbon fuel standard) and how much will be achieved by local action. Even after this inventory is complete, it is recognized that for most projects there is no clear or established method to determine if a particular project will negatively impact the ability of the State to meet the emissions goals.

Table 4.10-5
Build It Green Point System – Proposed Project Compliance (Single-Family Units)

Point Category	Potential Points
Site (Includes demolition, construction waste, topsoil preservation, use of recycled-content aggregate)	**12 points**
Foundation (Includes use of recycled fly ash or slag in place of Portland cement, and use of structural pest controls)	**8 points**
Landscaping (Includes resource efficient landscaping, minimization of turf, use of shade trees, and installation of high-efficiency irrigation systems)	**31 Points**
Structural Frame and Building Envelope (Includes use of engineered lumber, FSC certified wood, and thermal mass considerations)	**36 Points**
Exterior Finish (Includes use of durable and noncombustible siding and roofing, and recycled content or FSC certified decking)	**7 Points**
Insulation (Includes use of recycled content insulation, low-emitting insulation, and inspection of insulation prior to drywall installation)	**5 Points**
Plumbing (Includes domestic hot water efficiency measures and high efficiency toilets)	**17 Points**
Heating, Ventilation & Air Conditioning (Includes HVAC standards, ductwork standards, and mechanical ventilation systems)	**37 points**
Renewable Energy (Includes solar water heating and photovoltaic)	**34 Points**
Building Performance (Includes diagnostic evaluations, Energy Star certification, and a requirement that all buildings exceed Title 24 by a minimum of 15 percent)	**39 Points**
Finishes (Includes use of low-VOC or Zero-VOC finishes, recycled content paint, and reduction of formaldehyde in finishes)	**22 Points**
Flooring (Includes various flooring alternatives and thermal mass considerations)	**7 Points**
Appliances (Includes standards for appliances and consideration for recycling and composting facilities.)	**12 Points**
Other (Includes community design measures and allows for innovative measures that achieve green building objectives)	**43 Points**
Total Possible	**310 Points**

Source: Build It Green, http://www.builditgreen.org/greenpoint-rated/guidelines.

At the time of this writing, a host of white papers on the subject have been published, and many conferences and workshops are being held each month. While all conclude that actions must be taken, the subject of significance criteria is a matter of great debate.

It should be noted that the Davis NRC is in the process of making recommendations to the City Council regarding which GHG reduction target year should be adopted for new development occurring prior to 2010 (See Table 4.10-2).

Method of Analysis

Emissions of CO_2 were estimated using the URBEMIS-2007 (Version 9.2.4) computer program. The URBEMIS-2007 program is designed to model construction and operational emissions for land use development projects and allows for the input of project-specific information. For development sites greater than 10 acres, URBEMIS modeling default parameters assume that one-quarter of the project area could be under construction on any given day.

Project Impacts and Mitigation Measures

4.10-1 Project impacts concerning the production of GHGs.

The increase in GHG concentrations in the atmosphere has contributed to, and will continue to contribute to, increases in global average temperature and associated shifts in climatic and environmental conditions. Multiple adverse environmental effects are attributable to global climate change, such as sea level rise, increased incidence and intensity of severe weather events (e.g., heavy rainfall, droughts), and extirpation or extinction of plant and wildlife species. Given the significant adverse environmental effects linked to global climate change induced by GHGs, the emission of GHGs is considered a significant impact. Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. Therefore, the global emissions of GHGs contributing to global climate change can be attributed to every nation, region, and city, and virtually every individual on Earth.

Carbon Dioxide Emissions Estimate for the Wildhorse Ranch Project

Using the URBEMIS-2007 outputs contained in the Air Quality Assessment for the proposed project (Appendix D of this Draft EIR), it was determined that construction activities would result in the generation of 148.25 tons of CO_2. Following construction, the major source of GHG emissions generated by the proposed project would be vehicle source CO_2 emissions. Vehicle transportation is one of the major contributors to GHG emissions in Yolo County and the City of Davis. Vehicle emissions primarily consist of CO_2 from the tailpipe during vehicle operation. Based on the URBEMIS-2007 information, the proposed project was estimated to generate approximately 3,823.54 tons of CO_2 per year. The project emissions figures are considered to be conservative as they do not take into account the reduction in vehicle trips that would be associated with the multi-family housing component of the project. In addition, the emissions figures are

conservative because the figures were based on the proposed project including 259 residential units, as opposed to up to 191 residential units. Approximately 80 percent of the total project-related CO_2 emissions would be generated by vehicles. By comparison, the CO_2 emissions of the State of California totaled approximately 391 million tons in 2004.[8] It should be noted that while the CO_2 emissions factor does assume certain reductions in vehicle emissions due to future vehicle models operating more efficiently, the factor does not take into account additional reductions in vehicle emissions that might take place in response to AB 1493, if mobile source emission reductions are ultimately implemented through legislation.

Wildhorse Ranch Sustainability Plan

The project applicant has provided a preliminary sustainability plan that demonstrates how the project would reduce levels of project-related GHG emissions, thereby reducing the project's contribution to global climate change. The proposed strategy is to use 2009 Title 24 standards as the baseline for energy usage and then design energy reduction and mitigation from that point. The reduction program outlined below is intended to reduce energy use and GHG emissions at least 25 percent below the 2009 Title 24 standards. The mitigation program outlined in the preliminary sustainability plan will reduce energy use and GHG emissions an additional 50 percent through the use of photovoltaics and provision of electric vehicles.

Residential Energy Demand

The design strategy for the proposed project with regard to GHG mitigation is as follows: (a) Employ passive solar design so as to reduce energy demand; (b) Design the building systems and equipment so as to reduce energy use; and (c) Use photovoltaic systems to mitigate the resulting GHG emissions.

Passive Solar Design (13 percent)

The first strategy is to reduce energy demand as much as feasible through the design of the project using accepted passive solar design practices. Passive solar design reduces ongoing energy demand for heating and cooling, but has the additional advantage of adding to the comfort levels within the home.

The following are the possible elements of the project's passive solar design.

- Building orientation. The sustainability consultant for the proposed project will work with the project architect to provide the layout of the residences so as to minimize solar gain through east and west facades; the basic layout of the project as it currently stands is conducive to passive solar design principles, but some adjustment during the tentative map stage will be undergone in order to reduce the east/west wall surface. In the project development stage, the project applicant will ensure that roof orientation

(south and west) and pitch are conducive to maximize the output of the photovoltaic installations.

- Walls, floors, and roofs. Wall, floor, and roof materials will be specified so as to maximize thermal mass in order to hold energy from the sun and to maximize insulation capacity. Elaborate wall systems are not anticipated to be used.

- Glazing. The sustainability consultant for the proposed project will work with the project architect to minimize the overall area of east and west glazing and to specify appropriate e-rated windows that meet or exceed Green Building and Title 24 Standards. The proposed project will include roof awnings and overhangs to limit solar gain through windows, where necessary. In addition, a passive ventilation system will be developed, using windows and paddle circulation fans, but no ductwork.

- Reflectance. Wall colors and materials for the project would be designed to have reflectance levels greater than 0.75 and emittance levels greater than 0.7. Roofs would be reflective but covered with solar panels on south and west faces.

Building Systems and Equipment (12 percent)

The following are the possible elements of the equipment design for the project. During the project development stage, the most favorable use of the following elements will be developed to produce the 25 percent reduction with optimal quality and cost for the proposed project.

- Heating and Cooling. In Davis, residential use of the home's heating and cooling system is estimated to make up approximately 40 percent of the entire energy use of the average homeowner. In order to reduce this amount, the project would use passive thermal design combined with a high efficiency HVAC system or radiant heating and cooling system to reduce heating and cooling use well under 2009 standards. (The system would be supplemented with a low-energy nighttime air circulation system.)

- Hot Water. Hot water demand would be supplied by high-efficiency units, or possibly supplied by rooftop thermal solar systems, and supplemented with electricity from on-site photovoltaic systems.

- Lighting. The project would include lamps that exceed minimum Title 24 requirements, defined as permanently-installed high-efficiency luminares, by 50 percent. In addition, a lighting monitor that switches lights on and off and raises and lowers the light levels, as needed, would be provided.

- Appliances. Appliances installed in the proposed residences would meet Green Building standards. Builder-supplied appliance packages will include Energy Star rated appliances.

- Monitoring and Smart Metering. The project buildings would include monitors for the electric and thermal energy systems to verify their efficiency.

- Project-Specific Benefits. The proposed orchard would contribute to the GHG reduction plan through site-wide temperature reduction, carbon capture, and carbon sequestration. Each 12-inch diameter tree is estimated to sequester approximately 1,730 pounds of CO_2 equivalents.

On-Site Photovoltaic Systems (25 percent)

The passive design and energy equipment strategies associated with the project would reduce energy demand by 25 percent below 2009 Title 24 requirements. Most of the remaining residential energy use (and hence GHG emissions) would be reduced further through photovoltaic systems sized in accord with the City's Green Building standards, to the lesser of either 2.4 kilowatts (kW) or 90 percent of demand. In the instance where the roof area is insufficient to accommodate the target system size, the system would be sized to generate the most energy for the home as determined by the available roof area.

Transportation (25 percent)

GHG emissions reduction for transportation are not included in the Green Building Codes or Title 24 calculations because these standards are only concerned with building efficiency rather than project efficiency. Legal standards for project mitigation for transportation-related emissions are not available. Nonetheless, the proposed project would address the issue of vehicle emissions as an aspect of the energy sustainability via the following features:

- The project would provide garage space and hook-ups for electrical vehicles. The current sustainability plan would provide garage space for 1.5 to two cars for each residence; therefore, providing space for an electric car. The sustainability plan would include a hook-up to the PG&E grid in each garage and a separate meter so the homeowner would get the benefit of preferential PG&E rates.

- The project would provide internal bicycle paths, as well as connection to existing bicycle paths in the vicinity of the project site.

- The project intends to provide two prepaid annual passes for the Unitrans bus system for each residence, in order to encourage the use of public transit by residents of the community.

The net result of the proposed project's energy reduction and mitigation features, as discussed above, would be to reduce the net operational usage of the project by greater than 75 percent, when compared to a home that simply meets the current Title 24 requirements. These energy savings would result in corresponding GHG emissions reductions.

Multi-Family housing is substantially similar; however, points are assigned for project design considerations such as sidewalk width, provision of gathering areas, and proximity to services. As shown in Table 4.10-5, the proposed project would exceed the overall targets of the City of Davis Green Building Ordinance (300 points) by 10 points.

Project Compliance with Assembly Bill 32

In March 2008, the California Attorney General issued a paper for use by local agencies in carrying out their duties under CEQA as they relate to global warming. Included were examples of various measures that may reduce the emissions of individual projects that result in global warming. As noted in the paper, each of the measures should not be considered in isolation, but as part of a larger set of measures, that together, would help reduce GHG emissions and the effects of global warming.

Table 4.10-6 lists the measures from the California Attorney General's office that are applicable to the proposed project and indicates whether, and how, the project would conform to the measures. As indicated, the proposed project would include a number of features that would reduce the project's contribution to global warming.

Based on the information provided in Table 4.10-6, the City has determined that the proposed project would not conflict with or obstruct implementation of the goals or strategies of Executive Order S-3-05, the California Global Warming Solutions Act of 2006, or the Attorney General's suggested global warming mitigation measures. The City of Davis Green Building Ordinance would ensure that the measures are implemented.

Conclusion

As discussed above, the City is still in the process of establishing GHG reduction targets for new development occurring prior to 2010. Therefore, the City does not currently have an established threshold of significance against which the proposed project can be evaluated. Although the proposed project would implement several design standards to reduce energy use well below 2009 Title 24 standards, as well as ensure overall consistency with the latest GHG reduction measures identified by the California Attorney General, a single project cannot, on its own, feasibly mitigate impacts associated with the large-scale issue of global climate change; therefore, impacts related to GHG emissions and global climate change would remain ***significant***.

Table 4.10-6
Greenhouse Gas Emissions Measures – Wildhorse Ranch Project

Office of the California Attorney General Methods to Offset or Reduce Global Warming Impacts	Wildhorse Ranch Compliance
Energy Efficiency	
Design buildings to be energy-efficient. Site buildings to take advantage of shade, prevailing winds, landscaping and sun screens to reduce energy use.	As part of compliance with the Green Building Ordinance, the proposed project would include buildings designed to exceed existing Title 24 standards. Roofs would be oriented to ensure solar efficiency.
Install efficient lighting and lighting control systems. Use daylight as an integral part of lighting systems in buildings.	All buildings would be designed to make use of energy-efficient lighting technologies.
Install light colored "cool" roofs, cool pavements, and strategically-placed shade trees.	The project would make use of strategically-placed shade trees.
Provide information on energy management services for large energy users.	All residents would be provided with educational information regarding the energy reduction measures incorporated into the units, and how to further reduce energy use.
Install energy-efficient heating and cooling systems, appliances and equipment, and control systems.	All units would include energy-efficient heating/cooling systems and appliances.
Install light emitting diodes (LEDs) for traffic, street, and other outdoor lighting.	Traffic and street lighting would be installed in compliance with City of Davis standards, and would make use of LEDs to the extent feasible.
Limit the hours of operation of outdoor lighting.	Exterior lighting would comply with City of Davis standards and hours of operation will be dictated by security and safety requirements.
Renewable Energy	
Install solar and wind power systems, solar and tankless hot water heaters, and energy-efficient heating ventilation and air conditioning. Educate consumers about existing incentives.	As noted above, all units would include energy-efficient heating/cooling systems. In addition, residents would be educated on the existing State and national incentives regarding solar installation. Units would include efficient hot water delivery (demand-initiated tankless heating/core plumbing systems). Photovoltaic would be included where feasible.
Water Conservation and Efficiency	
Create water-efficient landscapes.	All landscaped areas would be designed to reduce their water requirements, and to take advantage of stormwater runoff. Furthermore, landscaping would make extensive use of drought tolerant species.
Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls.	Irrigation will be controlled by systems designed to ensure water-efficiency, including within the project's proposed orchard area.

Table 4.10-6
Greenhouse Gas Emissions Measures – Wildhorse Ranch Project

Office of the California Attorney General Methods to Offset or Reduce Global Warming Impacts	Wildhorse Ranch Compliance
Restrict watering methods (e.g., prohibit systems that apply water to non-vegetated surfaces) and control runoff.	All irrigation systems would be designed to ensure that water is only applied to vegetation.
Restrict the use of water for cleaning outdoor surfaces and vehicles.	All residents would be subject to any watering restrictions established by the City of Davis.
Implement low-impact development practices that maintain the existing hydrologic character of the site to manage storm water and protect the environment. (Retaining storm water runoff on-site can drastically reduce the need for energy-intensive imported water at the site.)	The proposed project would make extensive use of Low-Impact Development techniques, including vegetated swales and rain gardens. Stormwater would be routed to swales and shallow open space detention areas instead of centralized detention ponds.
Solid Waste Measures	
Reuse and recycle construction and demolition waste (including but not limited to: soil, vegetation, concrete, lumber, metal, and cardboard).	The proposed project would reuse and recycle construction and demolition waste in compliance with State law and City ordinance.
Provide interior and exterior storage areas for recyclables and green waste and adequate recycling containers located in public areas.	Recycling services are provided by Davis Waste Removal. The applicant would work with Davis Waste Removal to ensure that adequate recycling opportunities are provided to future residents.
Land Use Measures	
Include mixed-use, infill, and higher density in development projects to support the reduction of vehicle trips, promote alternatives to individual vehicle travel, and promote efficient delivery of services and goods.	The proposed project includes attached single-family townhomes, and a multi-family housing area that could be developed at a density of 21 units per acre.
Incorporate public transit into project design.	The project site is located in close proximity to bus stops for two transit systems.
Preserve and create open space and parks. Preserve existing trees, and plant replacement trees at a set ratio.	The project would include 8.31 acres of interior open space, agricultural buffers, and greenbelts. In addition, all streets would be lined with shade trees, and the project design includes an orchard area.
Include pedestrian and bicycle-only streets and plazas within developments. Create travel routes that ensure that destinations may be reached conveniently by public transportation, bicycling or walking.	The project would include a 10-foot-wide bike path connecting the existing Wildhorse community and the proposed bike trail on the east side of the project site.
Transportation and Motor Vehicles	
Limit idling time for commercial vehicles, including delivery and construction vehicles.	Idling time is limited by State law.
Use low or zero-emission vehicles, including construction vehicles.	Low and zero-emission vehicles would be used to the extent feasible.

Table 4.10-6
Greenhouse Gas Emissions Measures – Wildhorse Ranch Project

Office of the California Attorney General Methods to Offset or Reduce Global Warming Impacts	Wildhorse Ranch Compliance
Provide the necessary facilities and infrastructure to encourage the use of low or zero-emission vehicles (e.g., electric vehicle charging facilities and conveniently located alternative fueling stations).	The project does not include any fueling stations. Residential garages would include electrical outlets which could be used for electric vehicle charging.
Incorporate bicycle lanes and routes into street systems, new subdivisions, and large developments.	As noted above, the project would include bicycle facilities.
Incorporate bicycle-friendly intersections into street design.	The project has been designed to accommodate bicyclists.
For commercial projects, provide adequate bicycle parking near building entrances to promote cyclist safety, security, and convenience. For large employers, provide facilities that encourage bicycle commuting, including, locked bicycle storage or covered or indoor bicycle parking.	The project does not include commercial uses.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the project's impact related to GHG emissions and global climate change. However, implementation of the mitigation measure would not reduce the impact to a less-than-significant level; therefore, the impact would remain *significant and unavoidable*.

4.10-1 *In conjunction with the submittal of a Tentative Map for the proposed project, the project applicant shall submit, for the review and approval of the Community Development Department, a sustainability plan, which demonstrates that the proposed project does not conflict with the goals and strategies of Executive Order S-3-05, the Attorney General's suggested global warming mitigation measures, or City of Davis Resolution No. 08-166. The sustainability plan shall include, but not be limited to, the compliance measures included in Table 4.10-6.*

Endnotes

[1] Deb Niemeier, Ph.D., P.E., *Carbon Development Allowances, Final Report*, September 2008.

[2] City of Davis, *City of Davis General Plan*, May 2001.

[3] Association of Environmental Professionals, *Alternative Approaches to Analyzing Greenhouse Gas Emissions and Global Climate Change in CEQA Documents*, June 29, 2007.

[4] Meehl, G.A., T.F. Stocker, W.D. Collins, P. Friedlingstein, A.T. Gaye, J.M. Gregory, A. Kitoh, R. Knutti, J.M. Murphy, A. Noda, S.C.B. Raper, I.G. Watterson, A.J. Weaver and Z.-C. Zhao, 2007: Global Climate Projections. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

[5] California Climate Change Center, *Our Changing Climate: Assessing the Risks to California*, 2006.

[6] California Climate Action Team, *Climate Action Team Report*, March 2006.

[7] *Climate Change 2007*, Ibid.

[8] California Energy Commission, *Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004*, Publication CEC-600-2006-013-D, 2006.

5 STATUTORILY REQUIRED SECTIONS

INTRODUCTION

The Statutorily Required Sections chapter of the EIR includes brief discussions regarding those topics required to be included in an EIR, pursuant to CEQA Guidelines Section 15126.2. The chapter includes a discussion of the proposed project's potential to induce economic or population growth, and in addition, the chapter includes lists of significant irreversible environmental changes, cumulative impacts, and significant and unavoidable impacts caused by the proposed project.

GROWTH INDUCEMENT

An EIR must discuss the ways in which a proposed project could foster economic or population growth, or the construction of additional housing in the vicinity of the project, and how that growth will, in turn, affect the surrounding environment (See CEQA Guidelines Section 15126.2[d]). Growth can be induced in a number of ways, including through the elimination of obstacles to growth, or through the stimulation of economic activity within the region. The discussion of the removal of obstacles to growth relates directly to the removal of infrastructure limitations or regulatory constraints that could result in growth unforeseen at the time of project approval.

A number of issues must be considered when assessing the growth-inducing effects of development plans, such as the proposed project. These include the following:

> **Elimination of Obstacles to Growth:** The extent to which infrastructure capacity provided to accommodate the proposed project would allow additional development in surrounding areas; and
>
> **Economic Effects**: the extent to which development of the proposed project could cause increased activity in the local or regional economy.

Development of the Wildhorse Ranch project site could result in the construction of up to 191 residential units. Growth-inducing impacts associated with the proposed project would be considered to be any effects of the project allowing for additional growth or increases in population beyond that proposed by the project.

As discussed in this Draft EIR, the project site is currently designated as Agriculture in the Davis General Plan and therefore is not anticipated for urban development. As a result, the proposed project includes a request for a General Plan Amendment to change land uses from Agriculture to Residential High Density, Residential Medium Density, Residential Low Density Neighborhood Greenbelt, Natural Habitat Area, and Urban Agricultural Transition Area. Should

the proposed project be approved, infrastructure would have to be extended to the site in order to provide needed services. Some infrastructure already exists adjacent to the project site, which would allow the project to connect to existing systems. These improvements would include but not be limited to wastewater infrastructure and a stormwater drainage system. It is important to note that project infrastructure would be sized to serve only the needs of the project. As oversizing of infrastructure would not occur, project improvements would not necessarily result in the elimination of obstacles to growth. Furthermore, the only area surrounding the project that is not already developed is the agricultural land east of the site. This site, known as the Mace-Covell Gateway site, is one of the three potential sites for the Davis Sports Park project, currently being processed by the City. While the Mace-Covell Gateway site is being considered for development of a park, the possibility exists that this site may remain in agricultural operation. However, as the proposed project does not include the extension of any infrastructure (i.e., roads, sewer, and water lines, etc.) to the eastern border of the site, which is comprised of the Davis Agricultural Habitat buffer, the project would not facilitate the development of agricultural lands east of the project site. In summary, the proposed project would not lead to growth inducement.

SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL EFFECTS

The CEQA Guidelines, Section 15126.2(c), require that this EIR consider significant irreversible environmental changes caused by the proposed project if developed. An impact would be a significant and irreversible change in the environment if:

- Development of the project would involve a large commitment of nonrenewable resources;
- The primary and secondary impacts of development would generally commit future generations to similar uses (e.g., a highway provides access to a previously remote area);
- Development of the proposed project would involve uses in which irreversible damage could result from any potential environmental accidents associated with the project; or
- The phasing and eventual development of the project would result in an unjustified consumption of resources (e.g., the wasteful use of energy).

The proposed project would likely result in or contribute to the following irreversible environmental changes:

- Conversion of existing agricultural farmland to suburban land uses;
- Conversion of habitat;
- Removal of trees;
- Commitment of municipal services to new development; and
- Irreversible alteration of existing character of the project site and obstruction of views from adjacent existing homes.

CUMULATIVE IMPACTS

CEQA Guidelines Section 15130 requires that an EIR discuss the cumulative and long-term effects of the proposed project that adversely affect the environment. "Cumulative impacts" are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." (CEQA Guidelines, § 15355; see also Pub. Resources Code, § 21083, subd. (b).) Stated another way, "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts." (CEQA Guidelines, § 15130, subd. (a)(1).)

"[I]ndividual effects may be changes resulting from a single project or a number of separate projects." (CEQA Guidelines, § 15355, subd. (a).) "The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time." (CEQA Guidelines, § 15355, subd. (b).)

The need for cumulative impact assessment reflects the fact that, although a project may cause an "individually limited" or "individually minor" incremental impact that, by itself, is not significant, the increment may be "cumulatively considerable," and thus significant, when viewed together with environmental changes anticipated from past, present, and probable future projects. (CEQA Guidelines, §§ 15064, subd. (h)(1), 15065, subd. (c), 15355, subd. (b).) This formulation indicates that particular impacts may be less-than-significant on a project-specific basis but significant on a cumulative basis, because their small incremental contribution, viewed against the larger backdrop, is cumulatively considerable.

The lead agency should define the relevant geographic area of inquiry for each impact category (id., § 15130, subd. (b)(3)), and should then identify the universe of "past, present, and probable future projects producing related or cumulative impacts" relevant to the various categories, either through the preparation of a "list" of such projects or through the use of "a summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact" (id., subd. (b)(1)).

The possibility exists that the "cumulative impact" of multiple projects will be significant, but that the incremental contribution to that impact from a particular project (e.g., Base Project) may not itself be "cumulatively considerable." Thus, CEQA Guidelines section 15064, subdivision (h)(5), states that "[t]he mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable." Therefore, it is not necessarily true that, even where cumulative impacts are significant, any level of incremental contribution must be deemed cumulatively considerable.

Wildhorse Ranch Cumulative Setting

The cumulative analysis for this EIR is based on the *City of Davis General Plan* (May 2001) and the *Program EIR for the City of Davis General Plan Update and Project EIR for Establishment of a New Junior High School* (General Plan Update EIR) (January 2000). The cumulative traffic analysis was also based on full buildout of the UC Davis 2003 Long Range Development Plan, including the research park and *Aggie Village*, Spring Lake residential development in the City of Woodland and the Woodland Gateway development. Given that the air and noise analyses for the proposed project are based upon the traffic data prepared for the project, the air and noise cumulative settings include the same parameters as the traffic cumulative setting. Cumulative impacts are analyzed in each section of Chapter 4 and summarized below.

Impacts

The following cumulative impacts are identified in Chapter 4 of this Draft EIR:

Land Use and Agricultural Resources

4.1-5 Long-term impacts to Prime Farmland from the proposed project in combination with existing and future developments in the Davis area.

The proposed project would contribute to the ongoing conversion of farmland to urban uses. The General Plan Update EIR found that the conversion of prime farmland would be considered a significant and unavoidable impact even with the implementation of General Plan policies, including the provision of agricultural acreage at a minimum 1:1 ratio. In addition, because the project site is designated as Agriculture on "Figure 11b – Land Use" of the 2001 Davis General Plan, the project site has not been anticipated for urban development. Therefore, the conversion of the project site in addition to the cumulative loss of Prime Farmland elsewhere in the vicinity would result in a *significant* impact. Even with implementation of mitigation measures, the impact would remain significant and unavoidable.

4.1-6 Consistency with the City of Davis' plans, policies, or ordinances.

The project includes a General Plan Amendment to revise the project site land use designation to accommodate the project. However, as with the other entitlements requested for the proposed project, the final authority for determination of the proposed, or any future, General Plan amendments to this designation rests with the Davis City Council. Approval of this project or any potential future project application of a similar nature in the City of Davis is a discretionary action of the City Council. Future conversion of land designated for agricultural use to residential uses, if any, would undergo analysis and environmental review. Furthermore, pursuant to Measure J, should the project or any similar project be approved by the City Council the decision would be voted on by the residents of the City of Davis. It is also pertinent to note that the proposed project has been designed to be consistent with several General Plan goals and policies related to provision of needed housing and alternative modes of transportation.

As a result, approval of the proposed project or any future project would require the approval of both the City Council and the residents of Davis; therefore, a *less-than-significant* cumulative land use impact would result.

Population, Housing, and Employment

4.2-4 Long-term impacts to population, housing, and employment from the proposed project in combination with existing and future developments in the Davis area.

The proposed project is identified in the City of Davis General Plan EIR Addendum as a yellow light project. The addendum identifies that with buildout of all currently zoned and "green light" projects (includes buildout of the Verona and Grande sites) by June 2013 the total single-family residences within the City would be approximately 15,291, remaining below the anticipated 15,500. Development of the proposed project would result in the construction of up to 191 residential units, 151 of which are single family residences. Therefore, with buildout of the proposed project, the total single family residences would be 15,442, below the 15,500 Growth Management Action "e" threshold, and a *less-than-significant* impact would result.

Transportation and Circulation

4.3-6 Cumulative impacts regarding the deterioration of the Second Street / Mace Boulevard intersection LOS.

The Second Street / Mace Boulevard intersection operates at LOS C under both the Existing and Existing With Project scenarios. Under Cumulative No Project conditions, background volume growth results in LOS F conditions during both the AM and PM peak hours. The addition of project traffic would cause the overall average control delay to increase by more than five seconds during the PM peak hour. In addition, the proposed project would contribute three percent to the total volume of growth at the Second Street / Mace Boulevard intersection during the AM and PM peak hours. Therefore, the development of the proposed project would result in a significant cumulative impact to the Second Street / Mace Boulevard intersection. With implementation of mitigation measures required in the Draft EIR, a *less-than-significant* impact would result.

Air Quality

4.4-4 Long-term air quality impacts from the proposed project in combination with existing and future developments in the Davis area.

Based on the YSAQMD standards of significance the proposed project would result in a significant cumulative impact if the project would result in an individually significant impact to air quality. As indicated in Impact 4.4-3, carbon monoxide concentrations, the proposed project would not result in a potentially significant impact because it would not generate emissions in excess of YSAQMD thresholds for operational emissions. In addition, the proposed project would ultimately result in a less-than-significant impact to

air quality as a result of construction emissions with implementation of Mitigation Measure 4.4-1. Therefore, the project's incremental contribution to the long-term cumulative air quality impact would not be cumulatively considerable, resulting in a *less-than-significant* cumulative air quality impact.

Noise

4.5-5 Cumulative impact of traffic noise levels.

Cumulative plus project conditions within the project area would include the generation of increased traffic on roads within the local roadway network, which would result in changes of traffic noise levels between 0 and 1 dB, relative to cumulative no-project conditions. Pursuant to the project significance criteria, a substantial increase in traffic noise levels is defined as 1.5 to 5 dB, depending on the pre-project traffic noise level.

Table 4.5-4 shows the predicted traffic noise levels for existing and cumulative conditions, and the changes in traffic noise levels that would result from implementation of the proposed project. The levels are provided in terms of Ldn at a standard distance of 100 feet from the centerline of the project-area roadways for existing and future, with project and without project conditions.

Due to the relatively small number of trips that are predicted to be generated by the project as compared to existing and future trips without the project, traffic noise level increases are not predicted to be significant on any of the roadway segments evaluated. Therefore, the cumulative impact of increased traffic-related noise associated with the proposed project would be *less-than-significant*.

4.5-6 Cumulative impact of traffic noise levels at outdoor activity areas proposed within the 60 dB Ldn contours.

Future cumulative plus project traffic noise levels would exceed the City's 60 dB Ldn exterior noise level standard at proposed uses within the 60 dB Ldn contours shown in Table 4.5-6. The future cumulative plus project traffic noise level at the project site, at a distance of 100 feet from Covell Boulevard, would be 67 dB Ldn. Table 4.5-6 indicates that the distance from the Covell Boulevard centerline to the cumulative plus project 60 dB Ldn contour is 284 feet. However, primary outdoor activity areas are not proposed between the southernmost multi-family residential uses of the project and East Covell Boulevard. All proposed common outdoor activity areas would be partially shielded by the multi-family residences and would be located a considerable distance from East Covell Boulevard. As a result, the proposed outdoor activity areas would not be exposed to future traffic noise levels above 60 dB Ldn exterior noise level standard of the City of Davis. Therefore, cumulative impacts related to traffic noise levels at outdoor activity areas would be considered *less-than-significant*.

4.5-7 Cumulative impact of traffic noise levels at interior residential areas proposed within the 60 dB Ldn contours.

Table 4.5-4 indicates that the cumulative plus project traffic noise, at a distance of 100 feet from Covell Boulevard, would be 67 dB Ldn. The nearest proposed residential building would be approximately 120 feet from the roadway centerline, where first floor building façade exposure would be approximately 66 dB Ldn. Because upper-floor noise exposure is typically two dB higher than first-floor exposure due to reduced ground absorption, upper-floor façades of the proposed residences could be exposed to future traffic noise levels of approximately 68 dB Ldn. Given this exterior exposure, a building façade traffic noise level reduction of 23 dB would be required to ensure compliance with the City of Davis interior noise level standard of 45 dB Ldn or less.

However, new residential development typically provides a building façade noise level reduction of 25 to 30 dB; therefore, future traffic noise levels at the interior spaces of these residential uses are predicted to be 45 dB Ldn or less, and the impact would be considered *less-than-significant*.

Biological Resources

4.6-8 Cumulative loss of biological resources in the City of Davis and the effects of ongoing urbanization in the region.

The project site consists of various habitat types including cropland, grazing land, and developed/landscaped areas. These biological communities provide habitat and foraging areas for endangered, threatened, and special concern animal species. Many of the sensitive habitats and species found on-site are not only a concern in the City, but also regionally throughout Yolo County. Population growth and large amounts of clearing for new roads and urban development within the next 20 years would likely be experienced regionally as well. Therefore, the cumulative impact on the environment must consider not only development within the project site, but also those developments occurring in surrounding areas such the City of West Sacramento, City of Winters, the City of Woodland, as well as surrounding counties.

Impacts likely to result from the implementation of the proposed project include disturbance to special-status plant and wildlife species, and migratory and listed bird species. While additional impacts may result from the implementation of individual projects within the City and surrounding areas, mitigation would be required of any discretionary projects impacting natural resources. These impacts would be adequately addressed by the establishment of mitigation measures, such as those required in this EIR. The pending Yolo County HCP and the City of Davis General Plan policies and guidelines for preservation of wildlife habitats would ensure that the cumulative impacts would be properly mitigated for by preserving mitigation lands for wildlife and sensitive communities within Yolo County. With these measures in place the proposed project would not have substantial adverse effects to the populations of the special-status species

and sensitive habitats, and therefore *less-than-significant* cumulative impacts are expected.

Aesthetics

4.7-4 Long-term impacts to the visual character of the region from the proposed project in combination with existing and future developments in the Davis area.

The proposed project would contribute to the cumulative change in visual character of an agricultural area within the City of Davis. The properties in the immediate vicinity of the project site are currently developed for residential uses with the exception of the land east of the project site, which is used for agricultural purposes. Therefore, in terms of the change to the visual character of the project area, development on the project site would be typical of what currently exists north, west, and south of the project site. Should development be allowed, the character of the area would change from flat fields and roadways to residences with trees and a greenbelt area. Development in the City, in addition to the development on the project site, would contribute to a change in the visual character of the area.

The Davis General Plan designates the project site as Agriculture. Conversion of agricultural land to residential development would result in permanent viewshed changes for properties to the west and would be considered significant and unavoidable. Although the conversion of rural lands is anticipated in the General Plan, the impact is still considered significant. Therefore, the conversion of the project site, in addition to other lands in the project area, from a rural to an urban setting would be considered *significant*.

Hydrology, Water Quality, and Drainage

4.8-5 Long-term increases in peak stormwater runoff flows from the proposed project in combination with existing and future developments in the Davis area.

Implementation of the proposed project would result in the construction of up to 191 residential units on the project site, thereby creating impervious surfaces where none currently exist. The addition of impervious surfaces to the project site could increase peak stormwater runoff rates and volumes on and downstream of the site. However, the proposed project would include on-site collection and detention facilities to accommodate the increased flows.

As indicated on page 5G-15 of the General Plan Update EIR, a proposed land use would be considered to have a significant impact if the new land use would "result in a substantial increase in the rate or amount of surface runoff in a manner that would result in on- or off-site flooding; or create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage facilities." The effect of the proposed project plus other development in the project area, leading to buildout of the General Plan, could be to increase stormwater flows to a degree that would exceed existing drainage system capacity and cause flooding downstream. The proposed project would

include a stormwater detention system that would ensure that the proposed project would not result in a cumulatively considerable incremental increase in stormwater flows that would result in flooding downstream of the project site. Furthermore, future development within the City of Davis would be required to comply with City drainage plans and polices to ensure that each project would not cause a significant negative impact to other drainage facilities in the watershed. Although the final design of the storm drainage system is conceptual at this time, final storm drainage design would be reviewed by the City Engineer for consistency prior to implementation of the project. Therefore, a *less-than-significant* cumulative impact would result from implementation of the proposed project.

4.8-6 Cumulative impacts related to degradation of water quality.

Construction of the proposed project would contribute to a cumulative increase in urban pollutant loading, which would adversely affect water quality. Cumulative development in the Davis area, including the proposed project, would also result in increased impervious surfaces that could increase the rate and amount of runoff, thereby potentially adversely affecting existing surface water quality through increased erosion and sedimentation. The primary sources of water pollution include: runoff from roadways and parking lots; runoff from landscaping areas; non-stormwater connections to the drainage system; accidental spills; and illegal dumping. Runoff from roadway and parking lots could contain oil, grease, and heavy metals; additionally, runoff from landscaped areas could contain elevated concentrations of nutrients, fertilizers, and pesticides.

The mitigation measures for the project-specific impacts identified in Impact Statements 4.8-3 and 4.8-4 would reduce the pollutants in the stormwater from this project to a level lower than in the runoff from most developed areas within the Davis area, because most of these areas were constructed before stormwater quality BMPs were required. Additionally, future development projects would be required to implement BMPs comparable to the BMPs identified in this project. However, without implementation of proper BMPs, this project and other future projects would result in a continued decrease in the water quality of the local Davis natural drainage system. As a result, the incremental contribution from the proposed project to the cumulative water quality impact is significant. With implementation of the mitigation measures required in the EIR, a *less-than-significant* impact would result.

<u>Public Services and Facilities</u>

4.9-9 Long-term impacts to public services and facilities from the proposed project in combination with existing and future developments in the Davis area.

Implementation of the proposed project would contribute toward an increased demand for public services and facilities within the City of Davis. Public service and facility needs for the City of Davis have been evaluated in the Davis General Plan, and the goals and policies included in the General Plan ensure that adequate services will be available for build-out of the General Plan according to the current Land Use Diagram. The current

Land Use Diagram shows the project site as Agriculture. Therefore, development of the project site with urban uses would exceed the demand for public services and facilities anticipated in the Davis General Plan. However, as demonstrated in this Draft EIR, with the incorporation of mitigation measures, impacts to public services and facilities as a result of the proposed project would be less-than-significant. Therefore, the project's cumulative contribution to the City's public service and facility needs would also be less-than-significant. Furthermore, other future development projects would be required by the City to pay their fair share fees toward the expansion and creation of public services and facilities. Therefore, although certain facilities would be adversely impacted as a result of project implementation, cumulative impacts associated with public services and facilities would be considered ***less-than-significant*** with mitigation incorporated.

4.10-1 Project impacts concerning the production of GHGs.

The City is still in the process of establishing GHG reduction targets for new development occurring prior to 2010. Therefore, the City does not currently have an established threshold of significance against which the proposed project can be evaluated. Although the proposed project would implement several design standards to reduce energy use well below 2009 Title 24 standards, as well as ensure overall consistency with the latest GHG reduction measures identified by the California Attorney General, a single project cannot, on its own, feasibly mitigate impacts associated with the large-scale issue of global climate change; therefore, impacts related to GHG emissions and global climate change would remain significant. Even with implementation of the mitigation measure required in the EIR, a significant and unavoidable impact would remain.

SIGNIFICANT AND UNAVOIDABLE ADVERSE IMPACTS

In most cases, impacts that have been identified would be less-than-significant after incorporation of appropriate mitigation measures. Impacts that cannot be feasibly mitigated to a less-than-significant level would remain significant and unavoidable adverse impacts.

The project-specific significant and unavoidable impacts are listed below:

4.1-3 Loss of prime agricultural land.

4.7-1 Impacts related to altering the existing character of the project site and obstructing views of existing homes.

4.9-4 Increased demand for fire protection services.

The significant and unavoidable cumulative impacts are listed below:

4.1-5 Long-term impacts to Prime Farmland from the proposed project in combination with existing and future developments in the Davis area.

4.7-4 Long-term impacts to the visual character of the region from the proposed project in combination with existing and future developments in the Davis area.

4.10-1 Project impacts concerning the production of GHGs.

6 ALTERNATIVES ANALYSIS

INTRODUCTION

The primary intent of the alternatives evaluation in an EIR, as stated in Section 15126.6(a) of the CEQA Guidelines, is to "[…] describe a range of reasonable alternatives to the project, or to 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 alternatives [...]."

The City's project objectives are as follows:

- Provide a diversity of housing types and sizes that will provide options to a range of economic levels;
- Contribute to the City's regional fair share housing needs;
- Provide safe and attractive transportation networks to assure appropriate public safety and emergency access and promote alternative transportation modes, such as bicycling, walking, and public transit;
- Protect the viability of agriculture and prime agricultural land in and around Davis including consistent agriculture buffer; and
- Minimize impacts on Davis' land, water, air, and biological resources, and provide outdoor common areas, greenbelts, and agricultural buffers that enhance the environment and foster a sense of community.

In addition, the applicant's objectives for the project are as follows:

- Provide a net positive value to the neighborhood and the City.
- Create a model for social, ecological, and economic sustainable community development.
- Incorporate the best of smart growth concepts.
- Create a strong network of open spaces within the project. Create small nodes for informal resident interaction throughout.
- Embrace Low Impact Development concepts for the site such as on-site stormwater management; reduced pavement heat sinks; water conserving landscaping; and porous paving.
- Create architecture that is aesthetically pleasing and that utilizes the best of green building practices.
- Define a project that is economically viable. A reasonable profit is necessary to assure completion and provision of amenities for the Davis community.

Furthermore, Section 15126.6 (f) states that "[…] The range of alternatives required in an EIR is governed by a "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice […]."

The CEQA Guidelines (§15126.6 (e)(1)) state that a 'no project' alternative should be evaluated along with its impact. Specifically, the Guidelines state:

> The specific alternative of the "no project" shall also be evaluated along with its impact. The purpose of describing and analyzing a no project alternative is to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project. The no project alternative analysis is not the baseline for determining whether the proposed project's environmental impacts may be significant, unless it is identical to the existing environmental setting analysis which does establish that baseline.

In addition, Section 15126.6 (d) of the CEQA Guidelines states that "[…] If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed."

Selection of Alternatives

Alternatives that are included and evaluated in this EIR must be feasible alternatives. According to the CEQA Guidelines Section 15126.6(f), "[…] the alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project […]." In addition, Section 15126.6(f)(1) states that the feasibility of an alternative may be determined based on a variety of factors including, but not limited to, site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and site accessibility and control.

Six alternatives are considered in this chapter. One alternative is considered and dismissed from further analysis (Alternative 1), and five alternatives (Alternatives 2-6) are studied comparatively.

ALTERNATIVES CONSIDERED AND ELIMINATED FROM FURTHER ANALYSIS

Consistent with CEQA, primary consideration was given to alternatives that could reduce significant impacts, while still meeting most of the basic project objectives. Any alternative that would have impacts identical to or more severe than the Proposed Project, and/or that would not meet any or most of the project objectives was rejected from further consideration. The rejected alternative is discussed below.

Increased Density Alternative

The Increased Density Alternative would have increased the number of residential units constructed on the Proposed Project site by increasing the number of attached dwelling units.

Increasing the number of dwelling units would result in more traffic, which would subsequently increase impacts related to noise and air quality. Furthermore, increased density would result in a similar or greater impact to aesthetics. As the Increased Density Alternative would not reduce any impacts, and would increase the project's contribution to several impacts, the Alternative was dismissed from further consideration.

On-Site Alternatives Considered in this EIR

This section provides a description of the on-site alternatives to the Proposed Project analyzed in this Draft EIR and evaluates the anticipated environmental effects of those alternatives. Table 6-1 includes a comparison of all of the key features of the alternatives considered in this Draft EIR.

Alternative 2: No Project/No Build Alternative

CEQA requires the evaluation of the comparative impacts of the "No Project" alternative (CEQA Guidelines Section 15126.6 (e)). The No Project Alternative can be defined either as "no action taken on the proposed project" or "no build" on the project site.

A "no build" alternative means that the existing environmental setting is maintained. A "no build" alternative is the type of No Project Alternative that is evaluated below for the Proposed Project. Therefore, under the No Project / No Build Alternative, the project site would remain a horse ranch with associated pastures. However, in the future the owners could convert the project site to other uses under the existing zoning designation, which principally permits 1) horse breeding, 2) horse boarding and training, 30 riding stables, and 4) agriculture, except the raising of animals (other than horses) or fowl for commercial purposes, or the sale of any products at retail on the premises.

Environmental Effects

Land Use and Agricultural Resources

The No Project/No Build Alternative would result in the project site remaining in use as a horse ranch. This would be consistent with the current Davis General Plan land use designation for the site of Agriculture. Under the current use, incompatibilities arise from having a working horse ranch adjacent to residential uses. A Horse Ranch Management Plan is in place to manage horse operations, including odors; however, implementation of the Proposed Project would remove the possibility of conflicts between the horse ranch and existing uses. Therefore, the No Project/No Build Alternative could result in slightly greater land use impacts.

Table 6-1
Comparison of Alternatives Features

Features	Project and Project Alternatives					
	Proposed Project	**No Project/No Build Alternative**	**Reduced Intensity - Viewshed Preservation Alternative**	**Agricultural Character Alternative**	**Infill Site Alternative**	**Off-Site Alternative**
Residential units	191	N/A	75	75	191	191
Acreage	25.8	25.8	25.8	25.8	Less than 25.8 acres	47
Multi-story housing	Y	N/A	N	Y	Y	Y
Affordable housing units	Y	N/A	Y*	Y*	Y	Y
Larger residential lot sizes	N	N/A	Y	N	N	Y
Dedication of greenbelt	Y	N/A	Y	Y	N	N
Dedication of agricultural buffer/habitat area	Y	N/A	Y	Agricultural buffer would be used for small-scale onsite agricultural uses.	N	N

*The Reduced Intensity – Viewshed Preservation Alternative and Agricultural Character Alternative would comply with the affordable housing requirements; however, as the requirement is calculated as a percentage of the total units, the alternatives would result in fewer affordable housing units.

The Draft EIR identified significant and unavoidable project-level and cumulative agricultural conversion impacts associated with project implementation under Impacts 4.1-3 and 4.1-5, respectively. Because the No Project/No Build Alternative would not result in the conversion of the project site from agricultural land to urban uses, the No Project Alternative would not result in the conversion of Prime Farmland. Furthermore, because the No Project/No Build Alternative would not place residential uses on the site, incompatibility conflicts would not occur between the project and existing agricultural operations occurring east of the project site. Therefore, the No Project/No Build Alternative would result in fewer impacts to agricultural resources compared to the Proposed Project.

Population, Housing, and Employment

The No Project/No Build Alternative would not result in a substantive increase in the number of housing units, or of the population of the City of Davis. Under the current zoning designation, guest houses or second dwelling units are allowed as an accessory use. There could be a second dwelling unit improvement on the property under the No Project/No Build Alternative. However, it should be noted that because the No Project Alternative does not involve the construction of new housing, affordable housing units would not be added to the City. Although the proposed project would have a less-than-significant impact to population, housing, and employment, the No Project Alternative would result in less intense impacts to the City of Davis as compared to the Proposed Project because the City's population and households would not increase.

Transportation and Circulation

The No Project/No Build Alternative would not result in the construction of any residential uses on the Wildhorse Ranch site and would consequently not generate additional trips on local roadways. Therefore, the No Project/No Build Alternative would not cause a traffic increase in the surrounding area and, unlike the Proposed Project, would have no impacts to traffic. However, it should be noted that all impacts to Transportation and Circulation are mitigated to a less-than-significant level for the Proposed Project.

Air Quality

The project site is currently in use as a horse ranch, and is designated Agriculture by the Davis General Plan. The No Project/No Build Alternative would not result in a change in land use designation for the site. Horse ranching operations on the site could adversely impact air quality due to horse waste related odors and dust that becomes airborne as a result of wind blowing across open paddocks. Implementation of the No Project/No Build Alternative would result in continued horse ranching operations and subsequent emissions. However, a Horse Ranch Management Plan is in place to ensure that odors are minimal. Because, construction and operational emissions associated with the Proposed Project would result in substantially increased airborne pollutant emissions from construction of new residential units on the site, implementation of the No Project/No Build Alternative would be considered to have fewer impacts to air quality as compared to the Proposed Project.

Noise

The No Project/No Build Alternative would result in continued horse ranching operations on the project site which do not currently result in substantial noise generation. In contrast, the uses associated with the Proposed Project are expected to generate substantial short-term noise due to the construction of residential uses on the Wildhorse Ranch site. In addition, the Proposed Project would place residences adjacent to existing agricultural uses which generate noise through the use of heavy agricultural equipment, and would place residences within an area subject to elevated traffic noise levels. Therefore, as the No Project/No Build Alternative would not expose new residents to noise impacts from traffic and agricultural equipment, implementation of the No Project/No Build Alternative would result in fewer noise impacts as compared to the Proposed Project.

Biological Resources

The No Project/No Development Alternative would not result in development of the project site for residential uses. Therefore, the project site would remain in use as a horse ranch, and would remain available as a foraging area by migratory birds, passerines, and other species including burrowing owls and Swainson's hawks. However, the possibility exists that the property owner may choose to remove trees and/or convert the site to more intensive agricultural operations; which could result in similar impacts to migratory birds, bats, raptors, and badgers. Furthermore, the No Project/No Development Alternative does not include the expanded greenbelt/habitat buffer. Overall, the No Project/No Development Alternative would have fewer impacts to the Proposed Project.

Aesthetics

The Draft EIR identified significant and unavoidable project-level and cumulative aesthetics impacts as a result of project implementation for Impacts 4.7-1 and 4.7-3, respectively. The No Project/No Build Alternative would not result in the development of the project site, and the site would remain in agricultural use. Therefore, the existing character of the site would be maintained and the partial open views to the east of agricultural lands and the Sierra would be preserved for residences located adjacent to the project site. Therefore, the No Project/No Build Alternative would result in fewer impacts to aesthetics as compared to the Proposed Project.

Hydrology and Water Quality

The No Project/No Build Alternative would not result in the construction of impervious surfaces; therefore, the existing drainage pattern for the project area would not be altered. In addition, the No Project/No Build Alternative would not generate urban runoff that would affect water quality in the area, including the quality of the water in Channel "A". Therefore, the No Project/No Build Alterative would not result in the need to treat stormwater runoff, as would the Proposed Project. Overall, compared to the Proposed Project, the No Project/No Build Alternative would result in decreased impacts on hydrology and water quality.

Public Services and Facilities

The No Project/No Build Alternative would not result in the introduction of new residents to the City of Davis. Therefore, unlike the Proposed Project, the No Project/No Build Alternative would not create an increased need for public services and utilities, such as law enforcement, fire protection, the public school system, parks and recreation facilities, wastewater treatment and disposal, and water supply and delivery. As a result, the No Project/No Build Alternative would have fewer impacts to public services compared to the Proposed Project.

Alternative 3: Reduced Intensity - Viewshed Preservation Alternative

The intent of the Viewshed Preservation Alternative is to maintain the partial views of agricultural land and the Sierras east of the project, which are currently afforded to existing residents immediately west of the project site. In order to still achieve the basic objectives of the project, the project site would still be developed with residential uses, albeit, at a lower density than the Proposed Project. Similar to the Proposed Project, this Alternative would involve a General Plan Amendment. For this Alternative, the project site would be re-designated from Agriculture to Low Density Residential. Using the minimum density of the Low Density Residential designation of three units per acre, the Viewshed Preservation Alternative would include 75 units (3 du/acre * 25 acres = 75 dwelling units). Similar single-family product types would be included in this Alternative as are included in the Proposed Project; however, the Alternative would comply with the affordable housing requirement through the creative placement of attached residences, such as duplexes on corner lots. Average lot size would be approximately 0.25 acres in area. The large lot sizes would allow for the development of single-level ranch style units, which would reduce the impact of the development associated with the change in the current character of the site. Furthermore, single-level houses would obstruct fewer views of the Sierra foothills given a maximum building height of 20 feet. In comparison, the Proposed Project includes structures of up to three stories in height. Land dedications for roadways, agricultural buffers, and greenbelt/open space would remain the same as for the Proposed Project.

<u>Environmental Effects</u>

Land Use and Agricultural Resources

Similar to the Proposed Project, the Viewshed Preservation Alternative would require the conversion of land currently designated for agricultural use in the City of Davis General Plan to urban uses. The Alternative would require a General Plan Amendment, and would result in the conversion of Prime Farmland. The expanded lot sizes could allow for the placement of residences further away from agricultural uses east of the project site; however, the potential for incompatibility conflicts would remain. Therefore, the Viewshed Preservation Alternative would have impacts similar to the Proposed Project in the area of Land Use and Agricultural Resources.

Population, Housing, and Employment

The Viewshed Preservation Alternative would reduce the total number of residences built on the project site from 191 to 75. Based on a population generation rate of 2.48 residents per unit, the Alternative would result in a total of 186 new residents. Therefore, the Viewshed Preservation Alternative would result in 288 fewer new residents than the Proposed Project. Development of the Proposed Project or Viewshed Preservations Alternative would not exceed the 15,500 single-family unit goal of Action "e" of the General Plan. Therefore impacts to Population, Housing, and Employment would be similar to the Proposed Project for the Viewshed Preservation Alternative.

Transportation and Circulation

The reduction in total housing units, and the resultant decrease in the total number of residents, would result in a decrease in the total number of project related trips by approximately 1,400 daily trips (based on 12.189 daily trips per dwelling unit). Furthermore, a reduction in the total number of residences would potentially decrease the construction time of the project, thereby reducing the impact of construction vehicles on traffic. However, design-related impacts to site access, and bicycle and pedestrian circulation which were identified for the Proposed Project would remain until such time as a final project design is completed to the satisfaction of the City Engineer. It should be noted that all of the transportation and circulation impacts related to the Proposed Project would be mitigated to a less-than-significant level. However, as the Viewshed Preservation Alternative would reduce the total number of project-related trips, the Alternative would reduce the intensity of impacts to transportation and circulation.

Air Quality

The Viewshed Preservation Alternative would reduce the total number of dwelling units constructed on the project site by 116 dwelling units, which would result in decreases in total population by 290 residents and vehicle trips by approximately 1,400. As a result, emissions of criteria pollutants from households and automobiles would be reduced. However, the Viewshed Preservation Alternative would also result in the emission of greenhouse gases beyond the existing situation; therefore, the significant and unavoidable impact to global climate change would remain. Overall, the Viewshed Preservation Alternative would reduce impacts to air quality as compared to the Proposed Project.

Noise

The Viewshed Preservation Alternative would reduce the total number of vehicle trips, which would also reduce project-related vehicle noise. Furthermore, a reduction in the total number of dwelling units could also reduce the amount of construction time, thereby reducing construction-related noise impacts. Furthermore, larger lot sizes would allow for residences to be located further away from both local roadways and agricultural uses, which could reduce noise impacts to future residents. Therefore, the Viewshed Preservation Alternative would be expected to reduce impacts related to noise compared to the Proposed Project.

Biological Resources

The Viewshed Preservation Alternative would dedicate the same amount of space to agricultural buffers and greenbelt/open space as the Proposed Project. Similar to the Proposed Project, the Viewshed Preservation Alternative would develop the remainder of the project site with urban uses. Larger lot sizes would potentially allow for the preservation of a greater number of the existing trees; however, because the project site would be converted to urban uses impacts to biological resources would remain substantially the same under the Viewshed Preservation Alternative as compared to the Proposed Project.

Aesthetics

The Viewshed Preservation Alternative would reduce the total number of dwelling units by 116, and would also reduce building heights from up to three story residential complexes proposed in the center of the Proposed Project to a single-story ranch style residential product with a maximum height of 20 feet. Therefore, the Viewshed Preservation Alternative would reduce the visual impact of the Proposed Project, and would be less-likely to obstruct views to the east of the Sierra foothills. However, the Viewshed Preservation Alternative would still alter the existing character of the project site, by developing urban uses where primarily open horse ranch uses currently exist.

Although the intensity of development would be reduced under this Alternative, existing views would still be converted from vistas of horse ranch and associated open pastures to those of an urban setting, which would still be considered a significant and unavoidable impact under the Davis General Plan Update EIR criteria. Therefore, although aesthetic impacts would be reduced under this Alternative, the project-level and cumulative impacts would remain significant and unavoidable.

Hydrology and Water Quality

The Viewshed Preservation Alternative would reduce the total number of dwelling units by 116 and expand lot sizes, which has the potential to reduce the total amount of impervious surfaces. In addition, the elimination of the multi-family units would eliminate the need for parking lots. However, by restricting building heights and focusing on single-story housing, a substantial amount of the larger lot size would be covered by an expansion of the buildings footprint. In total, the Viewshed Preservation Alternative would likely reduce the amount of impervious surfaces, which would reduce the total amount of stormwater. Therefore, the Viewshed Preservation Alternative would reduce impacts to Hydrology and Water Quality.

Public Services and Facilities

The Viewshed Preservation Alternative would involve the construction of 116 fewer dwelling units, which would result in 290 fewer total residents compared to the Proposed Project. The reduction in population increase would reduce the demand for public services and facilities as compared to the Proposed Project. Therefore, while all impacts to public services and facilities would be mitigated to a less-than-significant level under the Proposed Project, the Viewshed

Preservation Alternative would further reduce impacts to public services by reducing the total number of residents.

Alternative 4: Reduced Intensity - Agricultural Character Alternative

Similar to the Viewshed Preservation Alternative, the Agricultural Character Alternative would include the construction of 75 residential dwelling units. The units would be predominantly detached single-family residences; however, duplexes would be included to provide the affordable housing component. The Agricultural Character Alternative would differ from the Viewshed Preservation Alternative in that housing would be clustered on smaller lots. A preliminary concept for this Alternative includes lots of approximately 1/6th of an acre, resulting in 12.5 acres being devoted to residential use (See Table 6-2 for land use acreages). The remaining lands would likely be utilized for small-scale agricultural production of grapes, fruiting trees, or row crops. Trees provided for the residential lots would be agricultural in nature, and could include: olives, walnuts, almonds, or other fruiting trees that would provide both shade and a potential crop. Agricultural lands would likely be owned by the Homeowners Association and leased to an individual or group that would conduct the agricultural operations. An access easement could be included to provide harvesting access to trees in the front yard of residences for tree crops such as olives. The agricultural concept would be woven throughout the development; however, dedicated lands would likely be concentrated along the central greenbelt, adjacent to the agricultural buffer area, and/or in the central portion of the project site. The intended product would be determined at a later date. Similar to the Viewshed Preservation Alternative, low height, low profile street lights would be utilized to reduce the visual presence of the project.

Table 6-2
Agricultural Character Alternative

Project Site Acreages	Site Plan
Public Streets	1.98 acres
Residential Area	12.5 acres
Additional land dedication to neighbors	0.96 (20’ wide) acres
Small-scale Agricultural Lands	7.93 acres (including 2.43 acres minimum along the agricultural buffer)
Interior Greenbelt/Open Space[2]	1.95 acres minimum
Covell Blvd Greenstreet	0.48 acres
Total	***25.8 acres***

Included below are a drawing and photograph of a project that has included a similar concept in the Loomis area. Figure 6-1, below, illustrates how the clustering of houses can preserve lands for agricultural use. The brown areas represent the agricultural lands planted with vineyards. While the Clos Du Lac project is substantially larger than the Agricultural Character Alternative, the general concept is the same. As illustrated in Figure 6-2, the inclusion of small-scale agricultural uses can maintain an agrarian atmosphere with urban/suburban residential densities. Furthermore, small-scale agriculture that utilizes organic or Integrated Pest Management methods would be unlikely to result in conflicts with adjacent residences as large equipment, and extensive spraying would not be utilized.

Figure 6-1
Clustered Land Use

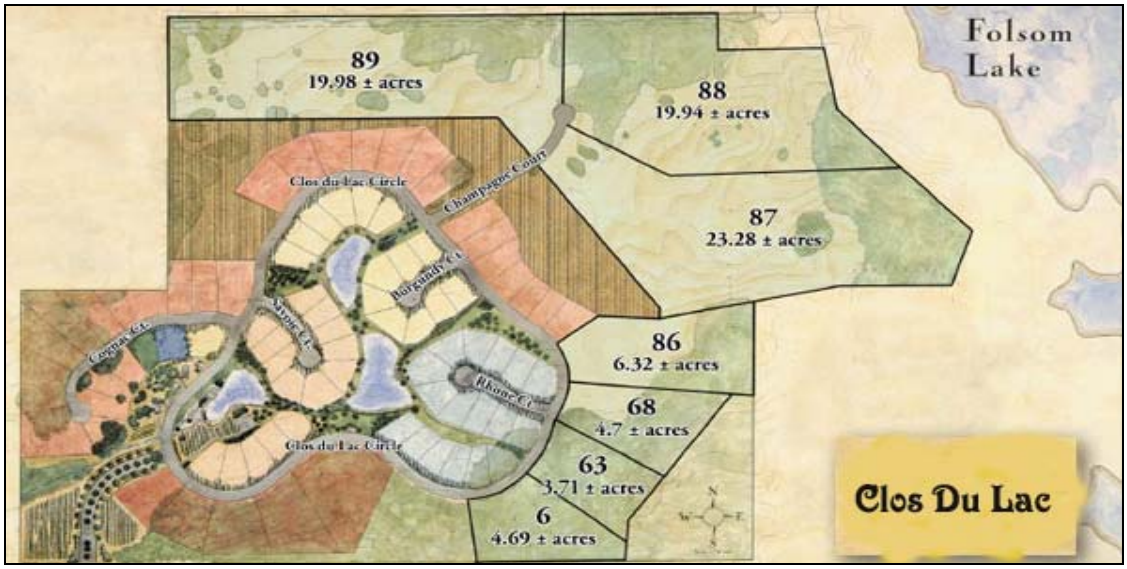


Figure 6-2
Agricultural Lot

Small holdings of this nature would be attractive to someone seeking to grow a crop with a high value added potential such as wine grapes or olives; or as a Community Supported Agriculture project whereby a farmer contracts with limited number of individuals in the community to provide weekly deliveries of fresh produce. Should agricultural production not be viable the land could also be converted to community gardens.

Environmental Effects

Land Use and Agricultural Resources

The Agricultural Character Alternative would include the preservation of approximately 30 percent of the project site in agricultural use. The Alternative would enable clustered development which would provide the ability to orient residences away from agricultural uses to the east while juxtaposing the proposed residences next to less-intense compatible forms of agriculture, thereby reducing the potential for conflicts. However, similar to the Proposed Project, the Agricultural Character Alternative would require the conversion of land currently designated for agricultural use in the City of Davis General Plan to urban uses. The Alternative would require a General Plan Amendment, and would result in the conversion of Prime Farmland. Therefore, while the Agricultural Character Alternative would reduce impacts to agriculture as compared to the Proposed Project, the Alternative would still result in impacts in the area of Land Use and Agricultural Resources.

Population, Housing, and Employment

The Agricultural Character Alternative would reduce the total number of residences built on the project site from 191 to 75. Based on a population generation rate of 2.48 residents per unit, the Agricultural Character Alternative would result in 186 new residents. Therefore, the Agricultural Character Alternative would result in 288 fewer new residents than the Proposed Project. Development of the proposed project or Agricultural Character Alternative would not exceed the 15,500 single-family unit goal of Action "e" of the General Plan. Therefore, the Agricultural Character Alternative would result in similar impacts to Population, Housing, and Employment.

Transportation and Circulation

The reduction in total housing units, and the resultant decrease in the total number of residents, would result in a decrease in the total number of project related trips by approximately 1,400 daily trips (based on 12.189 daily trips per dwelling unit). Furthermore, a reduction in the total number of residences would potentially decrease the construction time of the project, thereby reducing the impact of construction vehicles on traffic. However, design-related impacts to site access, and bicycle and pedestrian circulation which were identified for the Proposed Project would remain until such time as a final project design is completed to the satisfaction of the City Engineer. It should be noted that all of the transportation and circulation impacts related to the Proposed Project would be mitigated to a less-than-significant level. As the Agricultural Character Alternative would reduce the total number of project-related trips, the Alternative would reduce the intensity of impacts to transportation and circulation.

Air Quality

The Agricultural Character Alternative would reduce the total number of dwelling units constructed on the project site by 116 dwelling units, which would result in a decrease in total population by 290 residents and vehicle trips by approximately 1,400. As a result, emissions of criteria pollutants from households and automobiles would be reduced. However, the

Agricultural Character Alternative would also result in the emission of greenhouse gases beyond the existing situation; therefore, the significant and unavoidable impact to global climate change would remain. Overall, the Agricultural Character Alternative would reduce the intensity of impacts to air quality as compared to the Proposed Project.

Noise

The Agricultural Character Alternative would reduce the total number of vehicle trips, which would also reduce project-related vehicle noise. Furthermore, a reduction in the total number of dwelling units could also reduce the amount of construction time, thereby reducing construction related noise impacts. Furthermore, the clustering of residential units would allow for residences to be located further away from both local roadways and large-scale agricultural uses, which could reduce noise impacts to future residents. The possibility exists that the use of small-scale agricultural equipment, such as tillers, could result in noise conflicts with the proposed residences. However, small-scale equipment generally does not generate substantially more noise than residential lawnmowers and leaf-blowers. Furthermore, hours of operation could be restricted by contract to further reduce the possibility for conflicts. Therefore, the Agricultural Character Alternative would reduce impacts related to noise.

Biological Resources

The Agricultural Character Alternative would dedicate a substantially larger area to agricultural uses and greenbelt/open space as compared to the Proposed Project. Furthermore, the clustering of houses, and larger undeveloped area, would potentially allow for the preservation of a greater number of the existing trees. However, the agricultural areas would likely be routinely cultivated and would not provide substantial wildlife habitat. Furthermore, vineyards and orchards are not suitable foraging habitat for burrowing owl and Swainson's hawk, and therefore, the impact from this Alternative to Swainson's hawk and burrowing owl foraging habitat would be the same as the Proposed Project. Therefore, impacts to biological resources would remain substantially the same under the Agricultural Character Alternative as compared to the Proposed Project.

Aesthetics

The Agricultural Character Alternative would result in the construction of 75 residential units on the project site. Residences would be clustered to preserve a larger land area for agricultural use. The agricultural lands would be situated to reduce the visual impact of development, and small orchards could be planted around the clusters to further reduce visual impact. However, the reduction of the lot size would make the single-story requirement included in the Viewshed Preservation Alternative infeasible; therefore, the Agricultural Character Alternative would result in impacts to the viewshed though not as the Proposed Project, which would include up to 3-story residential buildings. The clustering of residences would ensure that a uniform obstruction of views would not occur, but views from certain angles would be obstructed. In fact, clustering could be designed so as to maintain view corridors for some of the existing residences immediately west of the project site.

Although the intensity of development would be reduced under this alternative, existing views would still be converted from vistas of horse ranch and associated open pastures to those of a mixed agricultural and urban setting. The visual impact would be reduced as compared to the Proposed Project; however, the impact would still be considered a significant and unavoidable impact under the Davis General Plan Update EIR criteria. Therefore, although aesthetics impacts would be reduced under this Alternative, the project-level and cumulative impacts would remain significant and unavoidable.

Hydrology and Water Quality

The Agricultural Character Alternative would reduce the total number of dwelling units and reduce lot sizes, which has the potential to reduce the total amount of impervious surfaces. Furthermore, the lands dedicated to agricultural use would be pervious and would not result in an increase in stormwater runoff. In addition, the elimination of the multi-family units, and most of the attached units, would eliminate the need for parking lots. In total, the Agricultural Character Alternative would likely reduce the amount of impervious surfaces, which would reduce the total amount of stormwater runoff. Therefore, the Agricultural Character Alternative would reduce impacts to Hydrology and Water Quality.

Public Services and Facilities

The Agricultural Character Alternative would involve the construction of fewer dwelling units, which would also result in 290 fewer total residents as compared to the Proposed Project. The reduction in population increase would reduce the demand for public services and facilities as compared to the Proposed Project. Therefore, while all impacts to public services and facilities would be mitigated to a less-than-significant levels under the Proposed Project, the Agricultural Character Alternative would further reduce impacts to Public Services and Facilities by reducing the total number of residents.

OFF-SITE ALTERNATIVES CONSIDERED IN THIS EIR

One of the requirements of CEQA is the assessment of the comparative environmental impacts of alternative locations for the "project." Only locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR. The following two off-site alternatives have been included in this analysis.

Alternative 5: Infill Site Alternative

The Infill Site Alternative would combine geographically separated sites to develop the same project components on a land area of approximately the same size as the Proposed Project. Many potential sites exist within the existing City Limits; however, for the purposes of this analysis three sites have been identified for discussion:

- Simmons Properties (12 acres)
- Grande School Site (8.83 acres)
- Nugget Fields (9.01)

None of the above listed properties are currently owned by the project applicant. Grande School site recently received entitlement approvals from the City Council for the development of 41 single-family units. The property is owned by the school district who intends to sell the entitled property to prospective developers. Project applications have been submitted for the Simmons property for the development of 108 single-family units. The Simmons applications are under review and have not been approved by the City Council. No formal applications have been submitted to the City for the development of the Nugget Fields at this time. Simmons and Nugget Fields sites would require General Plan Amendments and changes of zoning; however, the sites are located within the City Limits and are not designated for agricultural use. Therefore, regardless of which sites are combined for this Alternative, unlike the Proposed Project, approval of this Alternative would not be subject to Measure J voter approval. A combination of any two of the three sites would make up a total of 17.4 to 21 acres. The total land area would be smaller under these potential combinations as compared to the Proposed Project; however, the Proposed Project could still be accommodated as the agricultural buffers would not be required. Therefore, a similar number of residences could be constructed.

Environmental Effects

Land Use and Agricultural Resources

The potential infill sites have been designated for urban uses, such as schools and residential development, and are currently surrounded by other urban uses; therefore, development of any combination of the potential sites would not result in impacts related to agricultural compatibility issues. The Simmons and Nugget Fields would require General Plan Amendments and changes of zoning; however, because the amendment(s) to the General Plan do not necessitate re-designating a property currently designated Agriculture the entitlements would not include Measure J approval. Therefore, the Infill Site Alternative would substantially reduce impacts as compared to the Proposed Project in the area of Land Use and Agricultural Resources.

Population, Housing, and Employment

The Infill Site Alternative would involve the construction of the same number of residential units. As potential sites are located within the City Limits, and some sites are designated for residential use, some percentage of project residents would have been included in the anticipated population of Davis. However, implementation of the Infill Site Alternative could likely require a change of zone to residential use for at least one of the locations, and would potentially require increased densities for sites already designated for residential use. Therefore, impacts to Population, Housing, and Employment would be similar (albeit less-intense) to the Proposed Project for the Infill Site Alternative.

Transportation and Circulation

The Infill Site Alternative would construct the same number of residential units as the Proposed Project; however, the units would be constructed at two or more sites. As a result, impacts to any one intersection or roadway segment would potentially be reduced; however, identifying impacts is not possible without conducting studies on the intersections surrounding the individual sites.

Furthermore, design-related impacts to site access, and bicycle and pedestrian circulation identified for the Proposed Project would remain until such time as a final project design is completed to the satisfaction of the City Engineer. While all of the transportation and circulation impacts related to the Proposed Project would be mitigated to a less-than-significant level, the Infill Site Alternative may result in new significant impacts to transportation and circulation that are unforeseen at this time. Therefore, the Infill Site Alternative would likely result in similar, or potentially greater, impacts to transportation and circulation.

Air Quality

The Infill Site Alternative would result in the construction of the same number of residential units as the Proposed Project. A combination of sites would be smaller than the Proposed Project site which would reduce the amount of grading that would occur. However, the residential units would result in a similar number of vehicle trips; therefore, project emissions of criteria air pollutants and greenhouse gases would be similar for both the Infill Site Alternative and the Proposed Project. As a result, impacts to air quality would be similar, or slightly reduced, under the Infill Site Alternative as compared to the Proposed Project.

Noise

The Infill Site Alternative would spread out the same number of vehicle trips over a larger area, which would also reduce project-related vehicle noise increases at any single location. Furthermore, the above listed sites are not located adjacent to agricultural uses which would reduce the impact of agricultural noise on potential residents. However, identifying whether traffic noise would have a significant impact on the infill sites is not possible without site-specific noise studies. In total, the Infill Site Alternative would likely reduce impacts related to noise as the Alternative would eliminate potential conflicts with agricultural operations.

Biological Resources

The Infill Site Alternative would not require the dedication of buffers which also serve as habitat areas. Furthermore, with the exception of the Nugget Fields site, the above listed sites are largely undeveloped and contain potential wildlife habitat. Other potential infill sites that have not been listed are likely to be undeveloped as well. Furthermore, size-constrained sites reduce the flexibility of potential project designs, which would reduce the ability of the project to build around existing biological resources such as trees. Therefore, depending on the sites on which this Alternative is implemented, impacts to biological resources would be similar or fewer (if the site(s) is already developed) than the Proposed Project under the Infill Site Alternative.

Aesthetics

The Infill Site Alternative would result in the development of the same number of residential units on two or more alternate locations. In most likely scenarios, the Infill Site Alternative would convert lands that are currently undeveloped or sparsely developed to urban uses. However, the infill sites are designated for urban uses, and would not involve the conversion of lands designated for agriculture. In addition, development of any one of these sites would not

obstruct existing aesthetic views to adjoining residents, as would the Proposed Project. Therefore, while the Infill Site Alternative would result in changes to the existing conditions of the infill sites, the significant and unavoidable aesthetic impacts identified for the Proposed Project would be eliminated should this Alternative be implemented.

Hydrology and Water Quality

The Infill Site Alternative would result in the construction of the same number of residential units on two or more infill sites within the City of Davis. The cumulative developed area would likely be less as compared to the Proposed Project, which could reduce the amount of new impervious area. However, less land would likely be dedicated to open space and greenbelt uses under the Alternative which would reduce the amount of impervious land available on-site for stormwater flow reduction. Analysis of potential hydrologic impacts to existing drainage facilities is complicated by the uncertainty regarding project location; however, it may be assumed that similar to the Proposed Project all impacts to Hydrology, Water Quality, and Drainage would be reduced to a less-than-significant level through the implementation of mitigation measures. Therefore, impacts to hydrology and water quality would likely be similar for both the Infill Site Alternative and the Proposed Project.

Public Services and Facilities

The Infill Site Alternative would result in the construction of the same number of residential units on two or more sites within the City of Davis; therefore, the Alternative would result in a similar increase in the demand for public services and facilities. Similar to the Proposed Project, for the Infill Site Alternative, the applicant would be required to pay the required impact fees to offset impacts. As the Simmons and Nugget Fields sites are located outside of the March 2009 Davis Fire Department five minute response-time map, the Infill Site Alternative is anticipated to result in a significant and unavoidable impact to fire protection services. Therefore, impacts to Public Services and Facilities would be similar under the Infill Site Alternative as compared to the Proposed Project.

Alternative 6: Measure J Alternative

The Measure J Alternative project site is located in Yolo County, north and east of the City of Davis City limits, southwest of the curve where East Covell Boulevard becomes Mace Boulevard. The Alternative site is comprised of approximately 47 acres. Similar to the Proposed Project, the Measure J site would need to be annexed to the City of Davis and would require public approval pursuant to Measure J. The site is not currently owned by the current project applicant. The Measure J Alternative would result in the construction of the same number and type of residential units. However, both the dedicated greenbelt/open space and single-family detached lots sizes would be increased to fill the approximately 21 additional acres.

Figure 6-3
Off-Site Alternative

Environmental Effects

Land Use and Agricultural Resources

Similar to the Proposed Project, the Measure J Alternative project site is designated Agriculture in the Davis General Plan. The Alternative location would require annexation, a General Plan amendment, and would be subject to a Measure J vote. In addition, the Measure J Alternative would result in the conversion of Prime Farmland to non-farm uses. Furthermore, as the Measure J Alternative is located on a larger parcel the amount of land converted would be greater though some of the additional acreage would remain open space. Therefore, the Measure J Alternative would result in the greater impacts to Land Use and Agricultural Resources.

Population, Housing, and Employment

The Measure J Alternative would involve the construction of the same number of residential units on lands similarly designated for agricultural uses. Therefore, the Measure J Alternative would result in a similar number of new residents on lands not designated for residential use in the Davis General Plan. As a result, impacts to Population, Housing, and Employment would be similar to the Proposed Project for the Measure J Alternative.

Transportation and Circulation

The Measure J Alternative would construct the same number of residential units as the Proposed Project on a site less-than one mile east of the Proposed Project site. As a result, impacts to traffic circulation would be substantially the same. Furthermore, design-related impacts to site access, and bicycle and pedestrian circulation identified for the Proposed Project would remain

until such time as a final project design is completed to the satisfaction of the City Engineer. The potential also exists that the Alternative's proximity to the Junior High School could result in additional safety conflicts from students traveling to and from school. Therefore, the Measure J Alternative would likely result in similar, or greater, impacts to transportation and circulation.

Air Quality

The Measure J Alternative would result in the construction of the same number of residential units as the Proposed Project. The residential units would likely result in the same number of vehicle trips as the Proposed Project; therefore, project emissions of criteria air pollutants and greenhouse gases would be similar for both the Measure J Alternative and the Proposed Project. However, as the Measure J Alternative involves a larger parcel, and lot sizes could be increased, construction-related impacts as a result of site grading would also increase. As a result, impacts to air quality would be similar, or slightly greater, under the Measure J Alternative as compared to the Proposed Project.

Noise

The Measure J Alternative would result in the same number of vehicle trips in the same approximate area as the Proposed Project. However, the Measure J Alternative is only bordered on one side by residential units; therefore, construction-related noise impacts would potentially be experienced by fewer persons. Furthermore, impacts could be reduced even further by locating a substantial open space area along the southern boundary of the site adjacent to residential uses. The Measure J Alternative would be separated from existing agricultural uses by Mace Boulevard to the east, and East Covell Boulevard to the north; therefore, impacts related to agricultural uses would likely be reduced. Traffic along Mace Boulevard and East Covell Boulevard would generate noise; therefore, depending on the orientation of proposed residential structures, noise attenuation in the form of soundwalls, or other design related measures, would possibly be required to reduce noise impacts to future residents. Therefore, overall noise-related impacts would be similar under the Measure J Alternative as compared to the Proposed Project.

Biological Resources

Similar to the Proposed Project Site, the Measure J Alternative location has previously been used for intensive agricultural use, and does not contain substantial habitat areas. The Measure J Alternative is surrounded by developed sites and major roadways; therefore, the site does not represent a potential migration corridor. Nor does the site appear to contain large trees. However, the Measure J Alternative is currently undeveloped and contains potential burrowing owl nesting and foraging habitat and Swainson's hawk foraging habitat. Furthermore, the Measure J Alternative is larger in area than the Proposed Project; as a result, development of the Alternative would result in the conversion of a larger undeveloped parcel to urban uses. Therefore, implementation of the Measure J Alternative would likely result in similar, or potentially greater, impacts to biological resources.

Aesthetics

The Measure J Alternative would result in the development of the same number of residential units on a larger site located to the east of the Proposed Project site. The Measure J Alternative would convert land designated for agricultural use to urban uses. Similar to the Proposed Project, the Measure J Alternative would alter the existing character of the land and would potentially obstruct views of farmland and the Sierra foothills to the east. Therefore, the Measure J Alternative would result in similar significant and unavoidable aesthetic impacts as compared to the Proposed Project.

Hydrology and Water Quality

The Measure J Alternative would result in the construction of the same number of residential units as the Proposed Project, and would result in a similar amount of impervious surfaces. However, the Measure J Alternative site is larger in area and would contain a larger amount of open space and greenbelt uses. A larger volume of stormwater runoff could be routed to the expanded greenbelt and open space areas under the Alternative, thereby reducing flows to City drainage facilities. Therefore, depending upon the final design impacts to hydrology and water quality would likely be reduced as compared to the Proposed Project.

Public Services and Facilities

The Measure J Alternative would result in the construction of the same number of residential units as the Proposed Project on a site currently designated Agriculture in the Davis General Plan; therefore, the Alternative would result in a similar unanticipated increase in the demand for public services and facilities. Similar to the Proposed Project, the Measure J Alternative would be required to pay fair share fees to offset impacts. One important consideration is that according to the response time map provided by the Fire Department in March 2009 for the project analysis, the Measure J Alternative site would be within the five minute response time area for Station 33. As a result, implementation of this alternative would eliminate the significant and unavoidable project impact to fire protection services, although the alternative would still contribute toward in increased demand to the Fire Department, which would require mitigation. Therefore, impacts to public services would be similar under the Measure J Alternative as compared to the Proposed Project.

Environmentally Superior Alternative

An EIR is required to identify the environmentally superior alternative from among the range of reasonable alternatives that are evaluated. Section 15126(d)(2) of the CEQA Guidelines requires that an environmentally superior alternative be designated and states that "if the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives." Generally, the environmentally superior alternative is the one that would result in the fewest of least unmitigable impacts or less environmental impact overall.

The CEQA Guidelines (Section 15126.6(e)(2)) further state that if the environmentally superior alternative is the "No Project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives. For the Wildhorse Ranch Project, aside from the No Project Alternative, the Infill Site Alternative would be considered the environmentally superior alternative. The Infill Site Alternative, Viewshed Preservation Alternative, and Agricultural Preservation Alternative would all reduce several of the impact areas discussed for the Proposed Project such as aesthetics, air quality, and noise. However, only the Infill Site Alternative would eliminate the significant and unavoidable impacts to aesthetics by placing the project on lands already designated for urban uses. Therefore, the Infill Site Alternative would result in fewer environmental impacts than the Proposed Project while still providing opportunities to achieve most of the City's and the Applicant's project objectives.

Table 6-3
Environmental Impacts

	Proposed Project (PP)	No Project/ No Build Alternative (A2)	Viewshed Preservation Alternative (A3)	Agricultural Character Alternative (A4)	Infill Site Alternative (A5)	Measure J Alternative (A6)
Land Use and Agricultural Resources	Significant & Unavoidable (Prime agricultural land conversion)	None	Equal	Less*	Less	**Greater**
Population & Employment	Less-Than-Significant	None	Equal	Equal	Equal	Equal
Transportation & Circulation	Less-Than-Significant with Mitigation	None	Less	Less	Equal**	Equal**
Air Quality	Less-Than-Significant with Mitigation	None	Less*	Less*	Equal	**Greater**
Noise	Less-Than-Significant with Mitigation	None	Less	Less	Less	Equal
Biological Resources	Less-Than-Significant with Mitigation	None	Equal	Equal	Equal**	Equal**
Aesthetics	Significant & Unavoidable (Alteration of site character and obstruction of views)	None	Less*	Less*	Less	Equal
Hydrology, Water Quality & Drainage	Less-Than-Significant with Mitigation	None	Less	Less	Equal	Less
Public Services	Significant & Unavoidable (Fire protection services)	None	Less	Less	Equal	Less
Climate Change	Significant & Unavoidable (Project contribution to greenhouse gases)	None	Less*	Less*	Equal	**Greater**

*Although alternative would reduce potential impacts, the overall result would remain "Significant and Unavoidable."
**Alternative could result in greater or lesser impacts depending on the results of site-specific studies.

No Impact = "None" Less Than PP = "Less" Equal to PP = "Equal" **Greater Than PP = "Greater"**

7 REFERENCES

AnySite Version 8.7. computer model run on February 3, 2009.

Association of Environmental Professionals. *Alternative Approaches to Analyzing Greenhouse Gas Emissions and Global Climate Change in CEQA Documents*. June 29, 2007.

Bay Area Economics. *Davis General Plan Housing Element Update Needs Assessment Background Report*. September 28, 2007.

Bollard Acoustical Consultants. *Environmental Noise Assessment.* January 7, 2009.

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

California Air Resources Board. *Aerometric Data Analysis and Management (ADAM).* http://www.arb.ca.gov/adam/cgi-bin/db2www/adamtop4b.d2w/start. 2007.

California Climate Action Team. *Climate Action Team Report*. March 2006.

California Climate Action Team. *Climate Change 2007*. March 2006.

California Climate Change Center. *Our Changing Climate: Assessing the Risks to California*, 2006.

California Department of Conservation, Division of Land Resource Protection, FMMP. *A Guide to the Farmland Mapping and Monitoring Program*. http://www.consrv.ca.gov/DLRP/fmmp/pubs/fmmp_guide_2004.pdf. 2007.

California Department of Conservation, Division of Land Resource Protection, FMMP. *Yolo County 2002-2004 Land Use Conversion*. http://www.consrv.ca.gov/DLRP/fmmp/pubs/2002-2004/conversion_tables/yolcon04.xls. 2007.

California Department of Conservation, Farmland Mapping and Monitoring Program. *Soil Candidate Listing for Prime Farmland and Farmland of Statewide Importance*. 1995.

California Department of Finance. E-1: *City/County Population Estimates with Annual Percent Change January 1, 2006 and 2007*. www.dof.ca.gov. September 2007.

California Energy Commission. *Inventory of California Greenhouse Gas Emissions and Sinks:1990 to 2004* (Staff Final Report). Publication CEC-600-2006-013-SF. 2006.

California Energy Commission (CEC). *Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004*. Publication CEC-600-2006-013-D. 2006.

City of Davis. City of Davis: About the Department, http://www.city.davis.ca.us/pcs/aboutpcs.cfm. 2007.

City of Davis. *City of Davis General Plan and General Plan EIR*. May 2001.

City of Davis. *City of Davis Zoning Ordinance*. 2001.

City of Davis. *Program EIR for the City of Davis General Plan Update and Project EIR for Establishment of a New Junior High School*. January 2000.

City of Davis. *Addendum for Program EIR for the City of Davis General Plan Update and Project EIR for Establishment of a New Junior High School*. November 2008.

City of Davis, *Davis-Woodland Water Supply Project Draft Environmental Impact Report*, April 2007.

City of Davis. *Draft Environmental Impact Report Davis Well Capacity Replacement.* February 2005.

City of Davis. City of Davis: General Information, Davis Fire Department. http://www.city.davis.ca.us/fire/GeneralInfo.cfm. 2007.

City of Davis. City of Davis: Public Works Department, http://www.city.davis.ca.us/pw. 2007.

City of Davis Public Works Department. *Status Report on Municipal Wastewater Treatment Facilities.* March 2003.

City of Davis. *City of Davis Urban Water Management Plan 2005 Update.* March 2006.

City of Davis. *SB 610 Water Supply Assessment, Covell Village Development.* November 5, 2004.

City of Davis, *Water Supply Demand / Capacity Forecasting.* April 1, 2009.

City of Davis. http://www.city.davis.ca.us. September 11, 2007.

Cunningham Engineering. *Parlin Wildhorse Ranch – Water, Sanitary Sewer and Storm Drain Conceptual Improvements*. December 2008.

EDAW, Inc. *Biological Resource Analysis.* October 8, 2007.

EDAW, Inc. *Focused Breeding Season Survey for Burrowing Owl.* September 26, 2007.

EDAW, Inc. *Habitat Assessment and Focused Winter Season Survey for Burrowing Owl.* April 9, 2007.

Fehr & Peers. *Traffic Impact Study*. March 2009.

Garza, Vincente J.; Peter Granly; Daniel Sperling. *Transportation Project-Level Carbon Monoxide Protocol, Institute of Transportation Studies Report UCD-ITS-RR-97-21*. 1997.

Jacques Debra. City of Davis Public Works Department, e-mail correspondence. January 3, 2007.

Jones and Stokes Associates, Inc. *Software User's Guide: URBEMIS2002 for Windows with Enhanced Construction Module, Version 7.4*. 2003.

Landy Black. Davis Police Department, Personal Communication. May 30, 2007.

Linda Sinderson. Yolo County Division of Integrated Waste Management, e-mail correspondence. May 29, 2007.

Meehl, G.A., T.F. Stocker, W.D. Collins, P. Friedlingstein, A.T. Gaye, J.M. Gregory, A. Kitoh, R. Knutti, J.M. Murphy, A. Noda, S.C.B. Raper, I.G. Watterson, A.J. Weaver and Z.-C. Zhao, 2007: Global Climate Projections. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. 2007.

Michael Adell, Director of Facilities. DJUSD, Letter Correspondence. November 2007.

Navigant Consulting, Inc. *City of Davis Municipal Electric Utility Options Analysis Phase 1 Report* (unpublished). 2002.

Rebecca Kelly. PG&E, Personal communication. December 21, 2007.

Rick Landon. Yolo County Agricultural Commissioner, Personal Communication. December 12, 2007.

Rose Conroy, Fire Chief. Davis Fire Department, Letter Correspondence. May 29, 2007.

Sacramento Area Council of Governments. http://www.sacog.org. September 11, 2007.

Sacramento Area Council of Governments. *Years 1999-2025 – SACOG Projections*. March 15, 2001.

Sacramento Area Council of Governments. *SACOG MTP Draft Land Use Allocation: Summarized by Jurisdiction and Sphere of Influence/Annexation Area for 2013, 2018 and 2035.* September 5, 2007.

Sacramento Area Council of Governments. *SACOG DRAFT 2035 Projections for Households and Population by Housing Type and Employment by Sector*. http://www.sacog.org. September 5, 2007.

SOCDS Building Permit Database. http://socds.huduser.org/permits/index.html. September 2007.

Tree Associates. *Tree Appraisal*. September 15, 2006.

University of California, Davis. *UC Davis Long Range Development Plan, 2003-2015.* October 2003.

United States Department of Agriculture, National Resources Conservation Service. http://websoilsurvey.nrcs.usda.gov/app. 2007.

U.S. Department of Agriculture, Soil Conservation Service. S*oil Survey of Yolo County, California*. June 1972.

United States Environmental Protection Agency. *Non CO_2 Gases Economic Analysis and Inventory: Global Warming Potentials and Atmospheric Lifetimes.* http://www.epa.gov/nonco2/econ-inv/table.html. December 28, 2007.

United States Environmental Protection Agency. http://cfpub.epa.gov/npdes. February 2006.

Yolo-Solano Air Quality Management District. *Air Quality Handbook*. May 1996.

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

8 AUTHORS

RANEY PLANNING & MANAGEMENT, INC.

C. Timothy Raney, AICP	President
Cindy Gnos, AICP	Vice President
Nick Pappani	Division Manager
Rod Stinson	Assistant Division Manager
Ariel Calvert	Associate
David Lee	Associate
Angela Mar	Associate

CITY OF DAVIS

Katherine Hess	Community Development Director
Michael Webb	Principal Planner
Ike Njoku	Planner
Will Marshall	Assistant City Engineer

BOLLARD ACOUSTICAL CONSULTANTS, INC.

Paul Bollard	President

FEHR & PEERS

Ellen Poling, P.E.	Associate
Michael Beattie	Transportation Engineer

EDAW, INC

Angie Harbin-Ireland	Biology Practice Leader
Erin McDermott	ISA Certified Arborist