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## 4.5 TRANSPORTATION AND CIRCULATION

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### INTRODUCTION

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The Transportation and Circulation Chapter describes the existing and future setting for transportation and circulation both with and without the proposed project. The analysis provides information on local roadway networks, levels-of-service, and the potential effects associated with increases in traffic volumes as a result of the proposed project. Information in this section is based predominantly upon the City of Suisun City General Plan<sup>1</sup> and the *Gentry Suisun Traffic Study*, prepared by Fehr & Peers, Inc<sup>2</sup>.

### ENVIRONMENTAL SETTING

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The project site and surrounding roadway network are shown in Figure 4.5-1. The key intersections in the transportation analysis project study area are also shown on Figure 4.5-6.

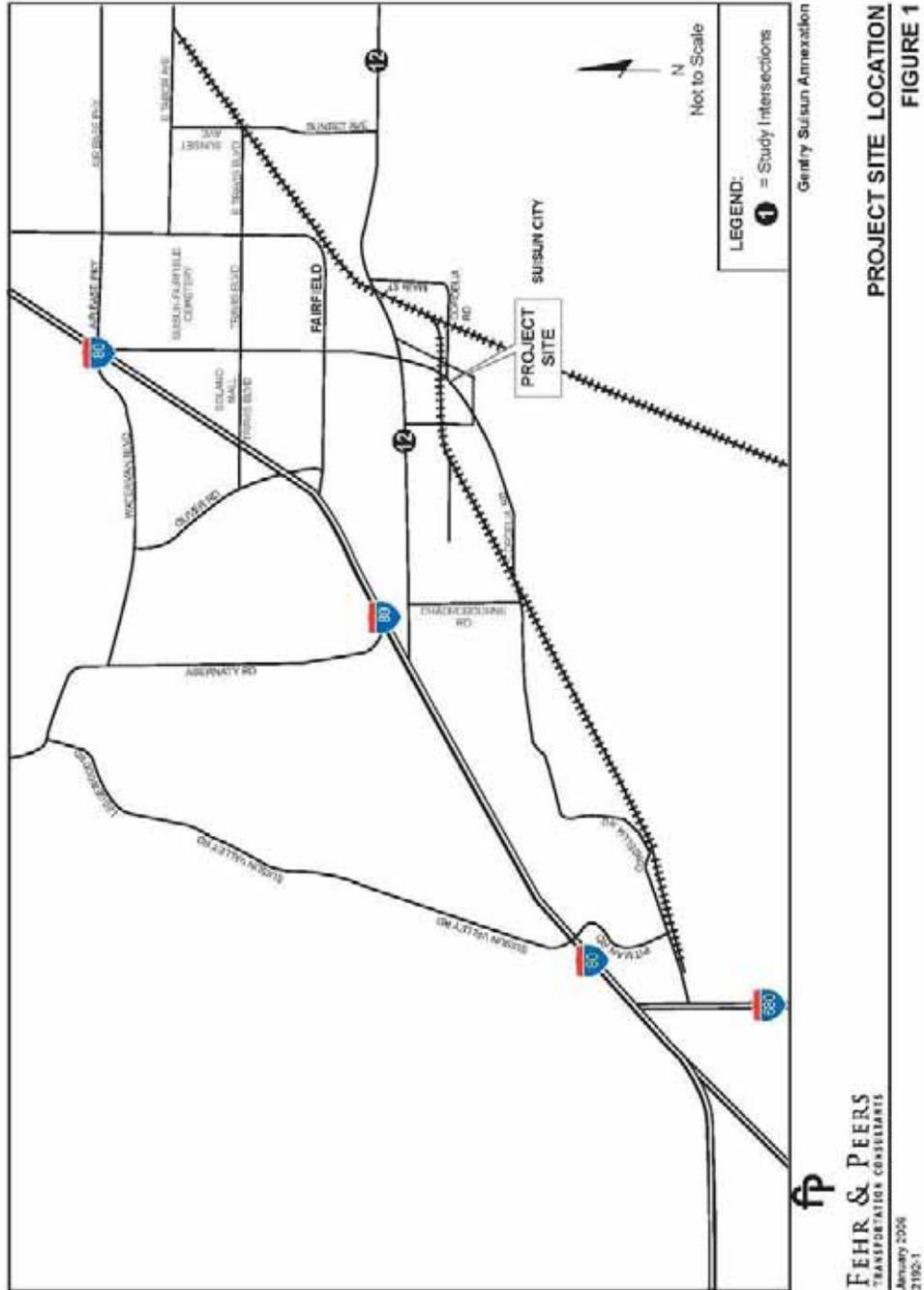
#### Existing Roadway Facilities

Interstate 80 (I-80) is a major east-west interstate freeway originating from the San Francisco Bay Area and continuing east towards Sacramento, terminating in New Jersey. Near the project study area, I-80 align in a southwest-to-northeast direction and provides four mixed-flow lanes in each direction with a posted speed limit of 65 mph. Major interchanges near the study area are State Route 12 (SR 12), Air Base Parkway and Alamo Drive. Access to the project site is provided via SR 12 near Abernathy Road.

State Route 12 (SR 12) is an east-west state highway, also called Rio Vista Road, extending from State Route 99 in Lodi to a junction with State Route 1 near Bodega Bay in Sonoma County. Near the project study area, SR 12 is a four lane expressway with infrequent signals and a 50 mph speed limit. West of the project study area, SR 12 joins I-80 for a segment of approximately one mile before splitting off to the northwest and traveling towards Napa County. SR 12 serves as an important commute route between I-80 and Suisun City and provides access to the Sacramento-San Joaquin River Delta. Access to the site is provided via an intersection of Pennsylvania Avenue and SR 12.

Pennsylvania Avenue is a north-south two-lane major arterial between Cordelia Road and SR 12 where the project site is located. The posted speed limit along the section is 40 mph. From SR 12 to Gateway Boulevard, Pennsylvania Avenue is a four-lane facility with a posted speed limit of 30 mph. Pennsylvania Avenue provides interchangeable access between Suisun City and Fairfield in a north-south direction.

Figure 4.5-1



West Texas Street is an east-west major arterial providing access from Downtown Fairfield to I-80. West of I-80, Texas Street becomes Rockville Road. East of I-80, Texas Street is a four-lane facility with a two-way-left-turn (TWLT) lane. The posted speed limited along this section is 35 mph. East of Pennsylvania Avenue, West Texas Street becomes a two-lane facility, with on-street parking allowed on both sides. West Texas Street makes a 90-degree turn after running passed downtown Fairfield and becomes North Texas Street.

Beck Avenue is a north-south minor arterial connecting Texas Street to Cordelia Road and running parallel to Pennsylvania Avenue. Beck Avenue also provides an eastbound on-ramp to I-80 at its northern end. Beck Avenue intersects Cordelia Road at its south end with a stop control on Beck Avenue. The posted speed limit is 35 mph.

Cordelia Road is a two-lane east-west minor arterial located south of the project site. The posted speed limit is 45 mph. To the west, Cordelia Road terminates at Lopes Road near the I-80/I-680 interchange. Cordelia Road travels along the southern edge of the City of Fairfield and then travels east to Suisun City.

Jackson Street is a north-south minor arterial connecting SR 12 and Kentucky Street in Fairfield. Jackson Street provides direct access for westbound traffic on SR 12 to Downtown Fairfield, and vice versa. The posted speed limit is 25 mph. On-street parking and sidewalks are provided on both sides of the street.

Webster Street is a north-south minor arterial connecting Highway 12 and Kentucky Street in Fairfield. Webster Street provides direct access for eastbound traffic on Highway 12 to Downtown Fairfield, and vice versa. The posted speed limit is 25 mph. On-street parking and sidewalks are provided on both sides of the street.

### **Existing Bus Transit Facilities**

Bus transit service in the project study area is provided by the Fairfield/Suisun Transit System. Bus service is not provided to the site at this time. However, the Route 5 Bus does pass along a portion of the project frontage along Pennsylvania Avenue. This line serves major destinations such as the Solano Mall, the Amtrak/Greyhound station in Suisun City, and the Suisun City Park-And-Ride facility. On the weekdays, service is offered from approximately 7 AM to 7:30 PM with 30 minute headways while weekend service begins at 9 AM and continues to 5 PM with one hour headways.

### **Existing Rail Transit Facilities**

Commuter rail service in the study area is provided by the Capital Corridor Joint Powers Authority (CCJPA). The Capitol Corridor Joint Powers Authority (CCJPA) is a partnership among the six local transit agencies in the eight county service area (Placer, Sacramento, Yolo, Solano, Contra Costa, Alameda, San Francisco, and Santa Clara), which shares the administration and management of the Capitol Corridor. The nearest Capital Corridor station to the project site is located one mile from the project site along Main Street south of Lotz Way in Suisun City. The CCJPA operates 24 passenger trains per day along this line with 12 eastbound

and 12 westbound trains. Service at the Fairfield/Suisun City station begins at 5 AM and ends at 9:30 PM.

### **Bicycle/Pedestrian Network**

Given that the project site is currently vacant, bicycle or pedestrian facilities are not located along the project boundary. Bicycle and pedestrian facilities are located throughout the project study area. For example, several of the study area roadways, such as Pennsylvania Avenue have sidewalks located away from the project site. A Class I Bicycle Route (off-street facility) is located west of the project site along SR 12 which extends from Marina Boulevard to Walters Road, a distance of 2.7 miles.

### **Study Area**

As shown in Figure 4.5-1, the project is located in southern Solano County, near the cities of Fairfield and Suisun City. The project site borders on the western edge of Suisun City and is proposed to be annexed into the City prior to development of the site.

Given the location of this project, the study area for the project includes the major roadways proximate to the site. Roadways include State Route 12 (SR 12), Pennsylvania Avenue, West Texas Street, Beck Avenue, Cordelia Road, and Marina Way. The project site is located approximately 1 mile from Interstate 80 to the north and east and is also 1 mile from the downtown Suisun City area.

The project study area was selected based on a variety of factors. These factors include likely approach and departure routes to the site, comments from agencies such as the California Department of Transportation (Caltrans) and the City of Fairfield requesting that certain intersections or roadways be included in the analysis, and the use of the currently adopted Solano/Napa County regional travel demand to determine the potential distribution of project traffic. Using the regional travel demand model, Fehr and Peers, the City's transportation consultant, was able to identify roadways where the addition of project traffic from the site would increase the total volumes by five percent or more. Within this larger study area, intersections were selected for analysis, as discussed in subsequent sections.

The proposed project site plans are shown on Figure 4.5-2 (Base Project), Figure 4.5-3 (Alternative 1), and Figure 4.5-4 (Alternative 2).

### **Study Intersections**

Within the larger study area, sixteen external study intersections were selected for detailed analysis. These intersections were selected because of their proximity to the project site and also based on Notice of Preparation (NOP) comments from the City of Fairfield. The City of Fairfield requested that the traffic analysis for this project address the following roadways:

- Beck Avenue
- Pennsylvania Avenue

- West Texas Street

The project study intersections were confirmed through a screening analysis, which utilized the currently adopted Solano Transportation Authority (STA) travel demand model. This tool was selected for use after a review of all available forecasting tools for the project study area. Some additional information regarding the STA model is provided as Appendix D in the Fehr & Peers traffic study for the project (a complete copy of the traffic report appendices is available at the City for review). A summary of that information is as follows:

In 2003, the STA initiated a process to update their regional model. As part of this model update process, the STA hired the firm of DKS Associates to oversee the model development. DKS was assisted in this effort by Dowling Associates, which assisted in the development of the land use data. The model update included a model validation, which tests the ability of the model to replicate existing traffic volumes and travel patterns, development of the future land use and roadway network data, and forecast preparation. The DKS model uses the more advanced TP+ software. This model includes detailed information on Napa and Solano County. To replicate interregional travel behavior, the model also includes aggregated land use and roadway network information from the Sacramento and San Francisco metropolitan areas along with San Joaquin County.

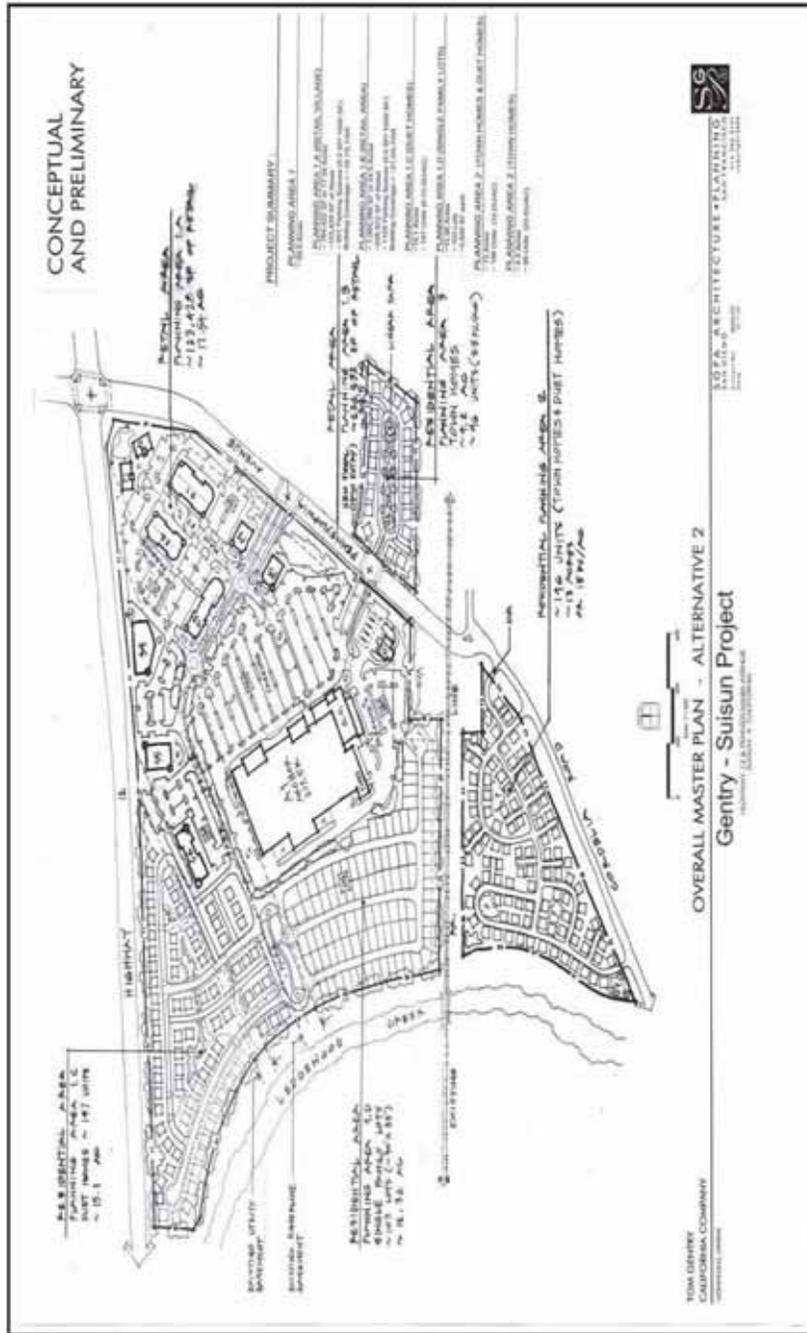
In early 2005, the model development process concluded and the STA formally adopted the model. Since the formal adoption of the model, this model has been employed for a variety of studies within Solano County, including the I-80/I-680/SR 12 interchange study.

Through this process, the anticipated development of the site was input into the STA model and new forecasts were generated. The difference between the model volumes without the project and those with the project were noted. All of the selected intersections were located along roadways where the project causes an increase of 3 percent or more in the total roadway volumes. It should be noted that the list of intersections includes only major intersections and gateways to the project study area along major approach and departure routes to the project site. The study intersections were also confirmed through discussions with the City staff at Suisun City.





Figure 4.5-4  
 Gentry-Suisun Site Plan – Alternative 2



Gentry Suisun Annexation

PROJECT SITE PLAN - ALTERNATIVE 2

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The sixteen intersections analyzed in this EIR include:

1. Texas Street/I-80 WB Ramp
2. Texas Street/I-80 EB Ramp
3. Texas Street/Beck Avenue
4. Texas Street/Pennsylvania Avenue
5. Texas Street/Jackson Street
6. Texas Street/Webster Street
7. Woolner Avenue/Beck Avenue
8. SR 12/Beck Avenue
9. SR 12/Pennsylvania Avenue
10. SR 12/Marina Boulevard
11. SR 12/Sunset Avenue
12. Cordelia Road/Beck Avenue
13. Cordelia Road/Pennsylvania Avenue
14. Cordelia Road/Main Street
15. Lotz Way/Civic Center Boulevard
16. Lotz Way/Main Street

The locations of the study intersections are shown on Figure 4.5-5. The location of these sixteen off-site study intersections is shown on Figure 4.5-6. Additionally, six other locations were studied in this traffic analysis. The six locations include five project driveways on Pennsylvania Avenue as well as a major internal intersection within the project site. The locations include:

1. Driveway #1/Cordelia Road
2. Driveway #2/Cordelia Road
3. Driveway #3/ Pennsylvania Avenue
4. Driveway #4/Pennsylvania Avenue (Main Project Entrance)
5. Driveway #5/Pennsylvania Avenue
6. Driveway #4/Internal Roadway

The location of these driveways and intersections are discussed further in the impacts section addressing the project site plan and the project transportation characteristics.

### **Existing Conditions Analysis**

The following discussion includes the existing transportation conditions in the project study area which addresses the roadway network, the bus and transit network, the existing bicycle and pedestrian facilities along with the traffic counts and intersection operations analysis for the existing conditions.

### Existing Intersection Traffic Volumes

The existing intersection LOS results are shown on Table 4.5-1, which provides the LOS for the AM, PM, and Saturday peak hour periods. The existing LOS results are provided in Appendix B of the Traffic Study (a complete copy of the traffic report appendices is available at the City for review).

### Traffic Data Collection

Traffic counts within the sixteen existing study intersections were collected in a period extending from 2002 to 2005. Traffic counts were obtained from previous Fehr & Peers studies, including the I-80/I-680/SR 12 interchange study, and from previous work done by TJKM. Additional counts were conducted by Fehr & Peers in April and May of 2005. Traffic count data was collected from 7:00 to 9:00 AM and 4:00 to 6:00 PM on a weekday and from 12:00 to 2:00 PM on a Saturday. The highest one hour of traffic was selected from each two-hour period. The peak hour traffic counts at each study intersection are shown on Figures 4.5-7A (off-site intersections) and 4.5-7B (project driveways). The existing lane configurations are shown on Figure 4.5-8. The traffic counts are provided as Appendix A of the traffic study.

Figure 4.5-5

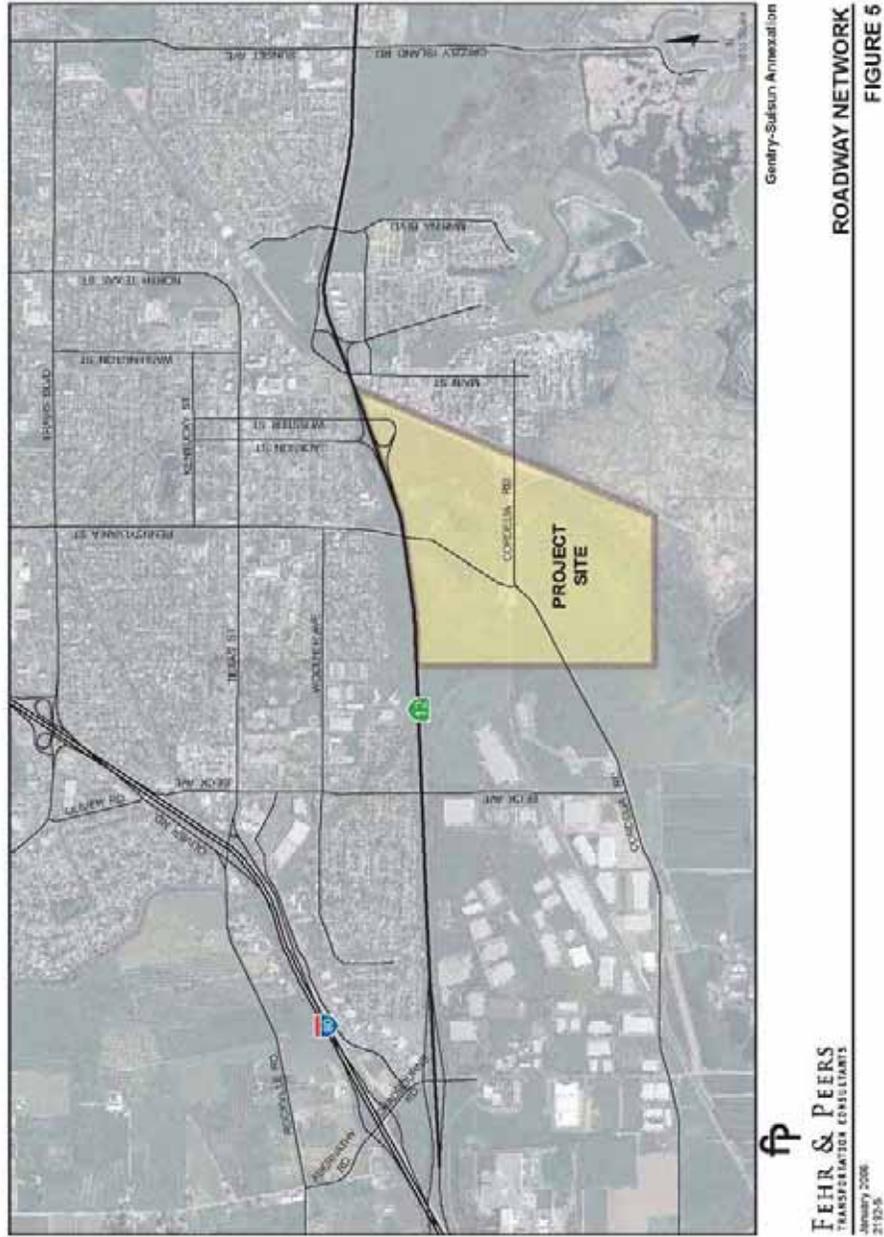
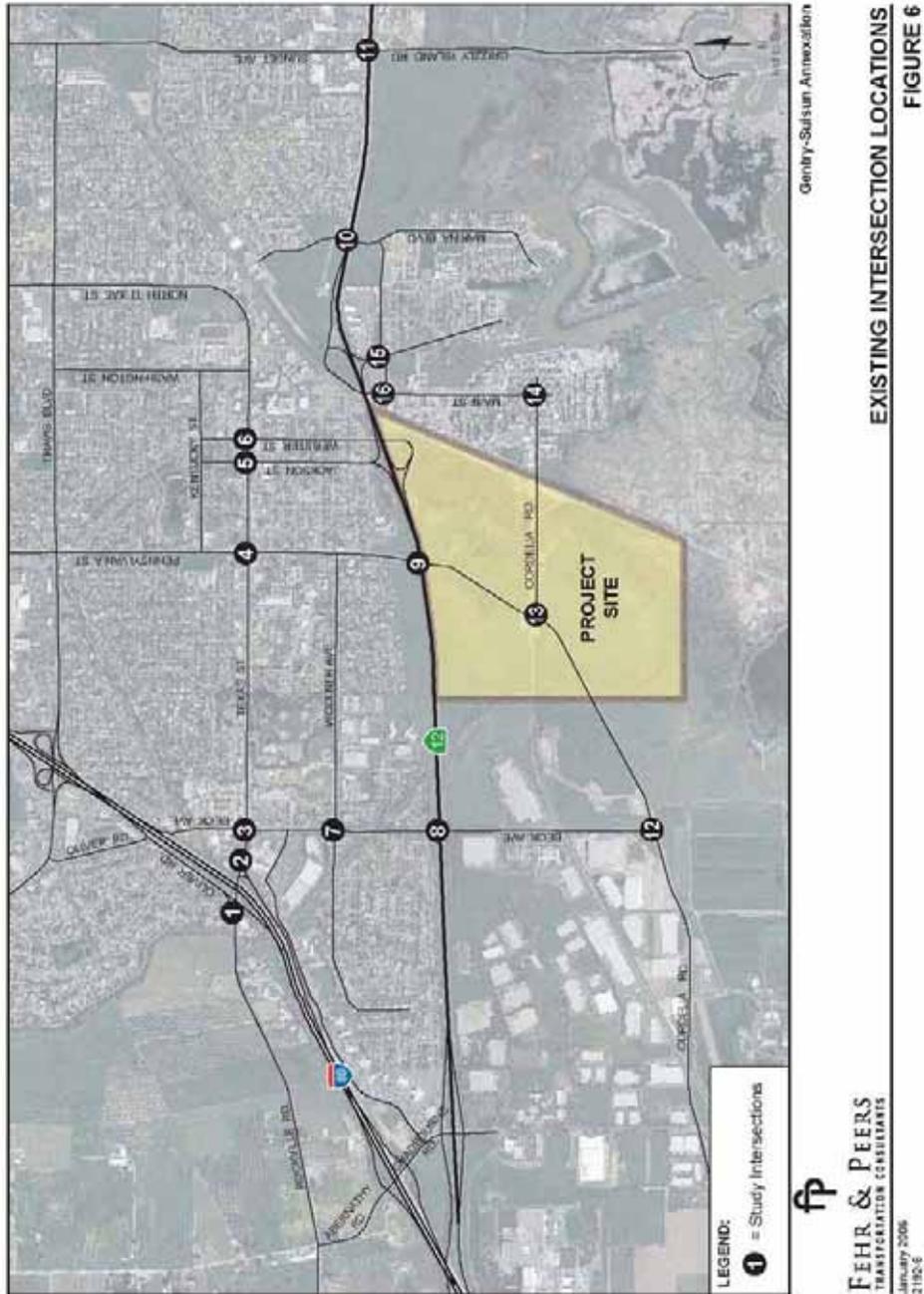


Figure 4.5-6



**TABLE 4.5-1  
 EXISTING INTERSECTION LEVELS OF SERVICE**

Intersection	Jurisdiction	Traffic Control	Peak Hour	Average Intersection Delay <sup>1</sup>	LOS <sup>2</sup>
Texas St/I-80 WB Ramp	Caltrans	Signal	AM	32	C
			PM	<b>48</b>	<b>D</b>
			SAT	31	C
Texas St/I-80 EB Ramp	Caltrans	Signal	AM	29	C
			PM	30	C
			SAT	24	C
Texas St/Beck Ave	Fairfield	Signal	AM	29	C
			PM	<b>42</b>	<b>D</b>
			SAT	<b>37</b>	<b>D</b>
Texas St/Pennsylvania Ave	Fairfield	Signal	AM	32	C
			PM	<b>57</b>	<b>E</b>
			SAT	35	D
Texas St/Jackson St	Fairfield	Signal	AM	13	B
			PM	16	B
			SAT	16	B
Texas St/Webster St	Fairfield	Signal	AM	16	B
			PM	17	B
			SAT	16	B
Woolner Ave/Beck Ave	Fairfield	Signal	AM	21	C
			PM	14	B
			SAT	16	B
SR 12/Beck Ave	Caltrans	Signal	AM	<b>56</b>	<b>E</b>
			PM	<b>52</b>	<b>D</b>
			SAT	30	C
SR 12/Pennsylvania Ave	Caltrans	Signal	AM	<b>44</b>	<b>D</b>
			PM	<b>43</b>	<b>D</b>
			SAT	27	C
SR 12/Marina Blvd	Caltrans	Signal	AM	<b>40</b>	<b>D</b>
			PM	24	C
			SAT	18	B
SR 12/Sunset Ave	Caltrans	Signal	AM	<b>40</b>	<b>D</b>
			PM	31	C
			SAT	<b>38</b>	<b>D</b>
Cordelia Rd/Beck Ave	Fairfield	TWSC	AM	10	B
			PM	12	B
			SAT	9	A
Cordelia Rd/Pennsylvania Ave	Fairfield	TWSC	AM	10	B
			PM	12	B
			SAT	10	B
Cordelia Rd/Main St	Fairfield	All-way	AM	7	A
			PM	9	A
			SAT	8	A
Lotz Way/Civic Center Blvd	Caltrans	All-way	AM	8	A
			PM	10	B
			SAT	11	B
Lotz Way/Main St	Suisun City	Signal	AM	13	B
			PM	12	B
			SAT	9	A

Notes:

Deficient intersections shown in **Bold**

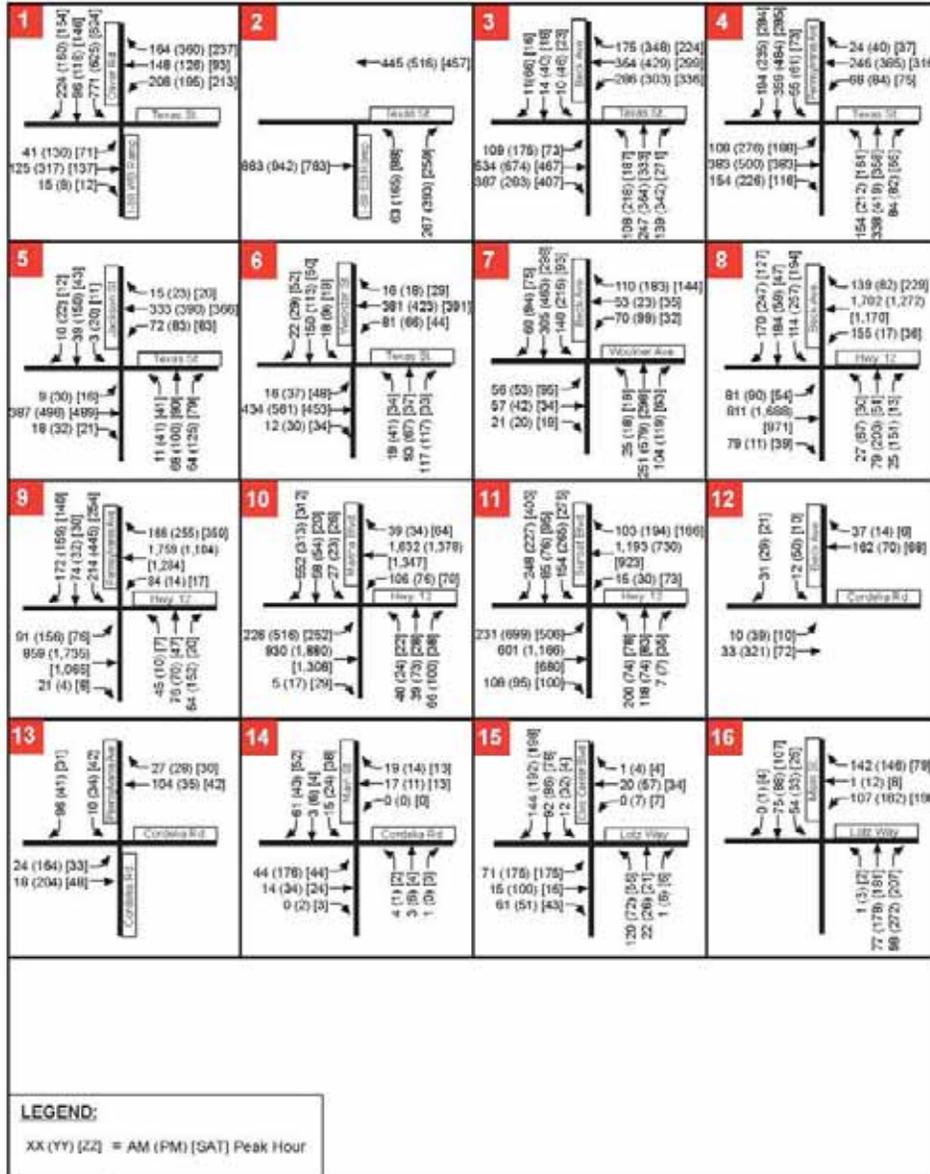
<sup>1</sup> Delay and LOS shown for two-way stop controlled intersections represent worst-case stop-controlled street approach.

<sup>2</sup> LOS calculations performed using the 2000 Highway Capacity Manual

TWSC=Two-Way Stop Control , All-way= All-Way Stop Control

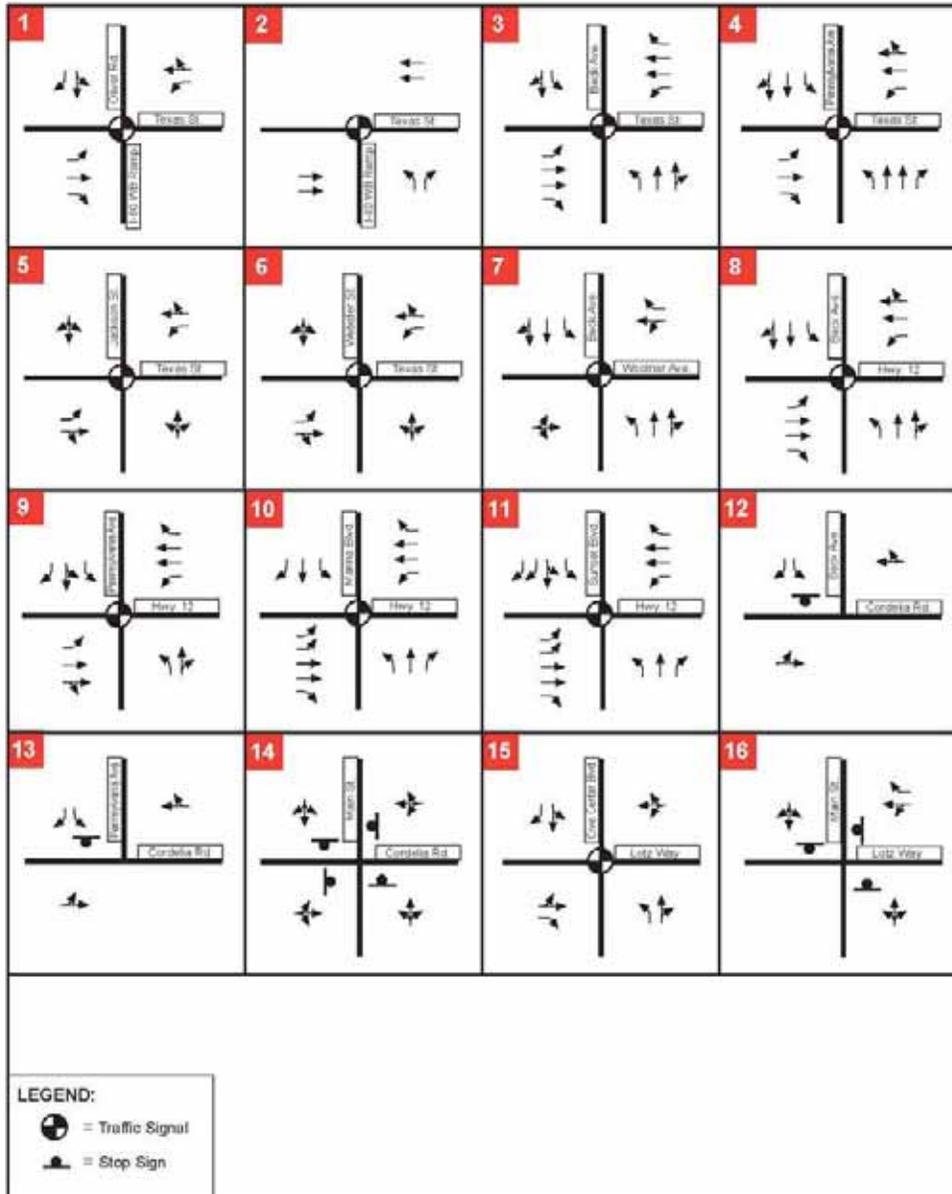
AM = AM Peak Hour; PM = PM Peak Hour

Figure 4.5-7A  
 Existing Peak Hour Traffic Volumes





**Figure 4.5-8  
 Existing Lane Configurations**



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Gentry-Suisun Annexation

**EXISTING LANE CONFIGURATIONS**

**FIGURE 8**

## Existing Conditions

The existing roadways within close proximity to the project site include SR 12 which is a major east-west roadway in Solano County and serves both regional and local travel. Other major roadways in the study area include West Texas Street, Beck Avenue, and Pennsylvania Avenue. A transit line exists in the study area, although bus stops are not located adjacent to the project site. Limited bicycle and pedestrian facilities are located within the study area. The review of existing intersection operations indicates that the following seven intersections operate at a deficient level (LOS E or higher), based on existing traffic counts and lane configurations:

- Texas Street/I-80 WB Ramp (PM only)
- Texas Street/Beck Avenue (PM & Saturday)
- Texas Street/Pennsylvania Avenue (PM only)
- SR 12/Beck Avenue (AM & PM)
- SR 12/Pennsylvania Avenue (AM & PM)
- SR 12/Marina Blvd (AM)
- SR 12/Sunset Avenue (Saturday)

### Intersection and Roadway Levels of Service

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 (6) 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, heavy congestion results and operations are designated as LOS F.

### Signalized Intersection Analysis

Signalized intersection operations were evaluated using methodologies provided in the *2000 Highway Capacity Manual* (HCM) (Transportation Research Board). The methodologies assess average control delays and then assign a corresponding letter grade that represents the overall condition of the intersection. The HCM methodologies were selected to analyze the operation of the signalized intersections for the following reasons:

1. The Highway Capacity Manual is developed by the Transportation Research Board, a national organization headquartered in Washington, D.C., established for the purpose of providing transportation engineers guidelines and methodologies for analyzing transportation facilities ranging from freeways, arterials, bicycle and pedestrian facilities.
2. The HCM is based on empirical studies of intersection volume and capacity, dating back at least 40 years (1965 Highway Capacity Manual) and have been consistently updated and modified based on field collected data, research, and analysis.
3. The HCM methodologies are employed by a number of jurisdictions in the area including the City of Suisun City, the City of Fairfield, the City of Vacaville, the Solano Transportation Authority, and Caltrans.

These grades range from level of service (LOS) A (minimal delay) to LOS F (excessive congestion). Descriptions of the LOS letter grades for signalized intersections are provided in Table 4.5-2.

Levels of service are calculated using Synchro 6.0 software, which implements 2000 HCM methodologies. Synchro software allows the input of signal timing and coordination data to more accurately reflect actual conditions. Synchro is a computerized analysis package which implements the HCM methodologies to determine intersection Level Of Service (LOS) based on volumes (vehicles, trucks, transit, pedestrians, and bicyclists), geometry, and signal control. The intersection capacity is based on the number of travel lanes, available storage for turn lanes, traffic signal operations, lane widths and other related design parameters. Synchro allows the input of all factors related to the timings of a traffic signal including the phasing, the length of green time for each individual movement (left-turn, through, etc.), signal actuation, and signal coordination. By allowing the input of the detailed signal timing information, Synchro can more accurately estimate the operation of a signalized intersection than other similar tool such as Traffix for Windows.

Delay and the resulting LOS is based on total intersection operations. Individual movements through the intersection will have varying levels of delay due to unique conditions affecting each movement.

<b>TABLE 4.5-2 SIGNALIZED INTERSECTION LOS CRITERIA</b>		
<b>Level of Service</b>	<b>Description</b>	<b>Average Control Delay (Seconds)</b>
A	Operations with very low delay occurring with favorable progression and/or short cycle length.	≤ 10
B	Operations with low delay occurring with good progression and/or short cycle lengths.	> 10 to 20
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	> 20 to 35
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	> 35 to 55
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	> 55 to 80
F	Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	> 80

Source: *Highway Capacity Manual* (Transportation Research Board, 2000).

## Unsignalized Intersection Analysis

Unsignalized intersection levels of service were analyzed using Traffix for Windows software, which implements the 2000 HCM methodologies. Traffix for Windows was used to analyze the operations of unsignalized intersections. Like Synchro, Traffix implements the HCM methodologies as they apply to unsignalized intersections. We employed Traffix for Windows instead of Synchro since unsignalized intersection operation is less complex and does not require a more sophisticated tool like Synchro to yield accurate results. It should be noted that delay was calculated for movements that operate under traffic control. Therefore, the delay value at side-street stop-controlled intersections reflects only the delay accruing for vehicles that are stopping at the stop sign. The LOS ranges for unsignalized intersections are shown in Table 4.5-3.

<b>TABLE 4.5-3 Unsignalized Intersection LOS Criteria</b>		
Level of Service	Description	Average Control Per Vehicle (Seconds) <sup>1</sup>
A	Little or no delays	≤ 10
B	Short traffic delays	> 10 to 15
C	Average traffic delays	> 15 to 25
D	Long traffic delays	> 25 to 35
E	Very long traffic delays	> 35 to 50
F	Extreme traffic delays with intersection capacity exceeded	> 50

Source: *Highway Capacity Manual* (Transportation Research Board, 2000).

## REGULATORY CONTEXT

Existing transportation policies, 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) has jurisdiction over state highways. Therefore, Caltrans controls all construction, modification, and maintenance of state highways, such as SR 12. Any improvements to SR 12 would require Caltrans' approval.

### City of Suisun City General Plan Goals and Policies

The Suisun City General Plan sets forth various goals, objectives, and policies that would apply to projects in the City. The following goals, objectives, and policies from the Circulation and Transportation Element (Chapter V; pp. 52-75) of the Suisun City General Plan are applicable to the proposed project.

Goal 1: To develop a street and highway system which provides for both local and regional vehicular circulation needs while maintaining a level-of-service “C” on public streets wherever feasible. Level-of-service “C” represents stable, high volume traffic flows.

Goal 2: To ensure that the circulation system is adequate to accommodate the density and distribution of trips that would be generated from land uses allowed under the Land Use Element.

Goal 3: To coordinate commercial vehicular circulation with other types of circulation to reduce conflicts and promote the movement of materials, goods, and services throughout the community.

Goal 4: To provide opportunities for bicycle and pedestrian travel.

Goal 5: To provide efficient and viable public transportation choices for all segments of the community, especially those for which private automobile transportation, is not feasible.

Objective 2: Complete the arterial street system as shown in Table V-2 and the Circulation Map to coincide with traffic increases, such that a level-of-service “C” or better can be maintained, and continue to implement traffic mitigation measures to achieve these levels of service, including the adoption of a Capital Improvement Program, the charging of traffic mitigation fees, the implementation of subdivision street standards, the adoption of a bicycle circulation plan, the support of a Fairfield-Suisun City intercity bus service, and the rehabilitation of the depot as a multi-modal transportation center.

Objective 4: Provide signals at appropriate intersections in a timely manner, to prevent the deterioration of service levels.

Policy 18: Except on Route 12, signals shall be provided prior to meeting Caltrans warrants, if necessary to prevent deterioration of service levels.

Policy 19: All proposed traffic signals are to be funded through the OSSIP fee program, so as to ensure their construction when needed and to avoid deterioration of service levels while waiting for the adjacent property owner to develop or other funding to become available.

Objective 6: Establish a bikeway system which follows all major routes, especially connecting likely destinations for bicyclists.

Policy 23: The bicycle route system shall reinforce the purposes of bicycle travel: to provide a safe and relatively direct means of reaching schools, parks, places of employment, and other destinations for bicycle; and to provide bicycling opportunities along scenic areas.

Policy 26. Class II bike routes shall be striped on all existing and future arterial and collector streets where sufficient street width and/or parking restrictions exist. As new arterial streets are constructed, or collector streets upgraded to arterial streets, street design shall incorporate sufficient width for a bicycle lane on each side.

Policy 27. Class III bike routes shall be established on all existing collector streets where parking cannot be restricted and sufficient width does not exist to accommodate an additional six feet on each side. These routes should be established where major bicycle destinations occur or connections to critical segments of the system need to be provided. Where feasible, additional width should be provided to new collectors, even though a full Class II cannot be accommodated.

Objective 7: Designate pedestrian routes along scenic areas. Pedestrian routes allow persons on foot to enjoy the environmental qualities of the City.

Policy 28: The City shall designate off-street foot paths along environmentally important and scenic areas of the City to enhance recreational opportunities of the residents of Suisun City. These may be combined with Class I bike paths where sufficient width is provided.

To implement this policy, the City may require the dedication of public access pedestrian routes as a condition of subdivision approval or may secure easement rights to acquire such access.

Objective 8: Provide residents with a variety of public transit options, better fixed route connections and more frequent service, and provide a more cost-effective operation of the transit system.

Policy 29: Pursue the expansion of the City's fixed-route bus service as new neighborhoods reach sufficient size and density to support expanded bus service. Ensure that transit service in Suisun City is adequate to meet the needs of the City's growing population.

Policy 30: Continue to pursue improvements in connections between local bus service in Suisun City and Fairfield and in regional public transit connections.

### **Solano County Transportation Authority**

The Solano County Transportation Authority sets forth various goals, objectives, and policies that would apply to projects in the County. The Solano County Transportation Authority sets forth various goals, objectives, and policies that would apply to projects in the County. The STA was created in 1990 through a Joint Powers Agreement between the cities of Benicia, Dixon, Fairfield, Rio Vista, Suisun City, Vacaville, Vallejo and the County of Solano to serve as the Congestion Management Agency for Solano. As the Congestion Management Agency (CMA)

for the Solano area, the STA partners with various transportation and planning agencies, such as the Metropolitan Transportation Commission (MTC) and Caltrans District 4.

The STA receives funds from a variety of Federal, State, and Regional sources (such as MTC). For example, the recently passed Federal transportation legislation contained an earmark for improvements at the I-80/I-680/SR-12 interchange. The STA then disperses these funds to various projects within the County. The various projects funded by the STA are listed in the Regional Transportation Plan (RTP), which was updated in 2004. However, like many transportation agencies, the STA has experienced a significant funding shortfall in recent years. As stated in the recent RTP:

Solano County has an estimated funding shortfall of approximately \$3.161 billion for arterial, highway, and freeway projects over the next 25 years, based on currently available information on transportation needs.

Two factors which contribute to this shortfall is the lack of a regional traffic impact fee, which would collect monies from various projects within Solano County for regional transportation improvements, and lack of a sales tax increase earmarked to fund transportation improvements. Several recent attempts to pass a sales tax measure have failed in Solano County.

Applicable goals, objectives, and policies from the Solano Comprehensive Transportation Plan (June 2005) are applicable to the proposed project. The following goals, objectives, and policies from the Solano Comprehensive Transportation Plan (June 2005) are applicable to the proposed project.

#### Arterials, Highways, and Freeways Element

*Goal:* Develop a balanced transportation system that reduces congestion and improves access and travel choices through the enhancement of roads.

Objective A – Preserve the System: Preserve the physical and operational condition of existing roadway facilities as a means of protecting past transportation investments and maintaining an effective system.

*Policy 1:* Encourage member jurisdictions and Caltrans to maintain level of service (LOS) E or better conditions during the a.m. and p.m. peak hours on roadways of countywide significance.

*Policy 2:* Prepare long-term corridor plans to upgrade and widen roadways of countywide significance to provide adequate peak hour and peak period traffic operations.

*Policy 3:* Develop a list of priority projects for arterials, highways and freeway for STIP, SHOPP, and federal reauthorization funds.

*Policy 4:* Focus countywide funds to enhance and improve roadways of countywide significance.

*Policy 5:* Update the roadways of countywide significance and the list of priority projects every two years.

**Objective B** – Serve Highway Needs: Develop a plan and implementation program for the highway system that serves current and future needs.

*Policy 3:* Prepare long-term corridor plans for all roadways of countywide significance that are not on the state highway system.

*Policy 4:* Support improvements to roadways of regional significance based on the need to improve transportation system efficiency balanced with quality urban design and, where appropriate, design roadways with consideration for safety, transit, bikeway, and pedestrian facilities

*Policy 5:* Give priority to improvements of highways and roadways that also serve as major transit corridors.

#### Transit Element

*Goal:* To develop a comprehensive transit system for buses, rail, and ferries to meet future demand.

**Objective A** – Convenient Public Transit: Provide intercity public transit services with convenient access to developed areas of the county.

*Policy 1:* Provide intercity service coverage with convenient access for the County's population.

*Policy 2:* Provide basic non-commute oriented intercity services seven days a week.

*Policy 3:* Provide hours-of-service weekday service coverage as needed.

*Policy 4:* Meet ADA requirements for fully accessible intercity services.

**Objective B** – New Service: Provide improved and new services to maximize usage and minimize traffic congestion.

*Policy 1:* Maximize intercity patronage

*Policy 2:* Provide reliable service.

*Policy 3:* Provide competitive travel times to automobile travel.

*Policy 10:* Set priorities for new intercity transit and countywide paratransit services.

**Objective C – Efficient Transit:** Provide efficient transit services to maximize ridership and cost effectiveness.

*Policy 3:* Balance service supply with passenger demands.

*Policy 4:* Coordinate intercity services with other regional providers.

## **IMPACTS AND MITIGATION MEASURES**

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The standards of significance, methods of analysis, and traffic impacts and mitigation measures are summarized below for the Base Project, Alternative 1, and Alternative 2, where applicable.

### **Standards of Significance**

The following significance criteria will be employed to determine if the project causes significant traffic impacts, based on the results of the traffic study.

#### Traffic Impacts

A project, including project driveways, would disrupt existing traffic operations. Traffic operations would be assessed using both quantitative (Level of Service (LOS)) and qualitative criteria. LOS was evaluated using methodologies documented in the *2000 Highway Capacity Manual*. A disruption of traffic operations is defined as any of the following:

- If the addition of project traffic causes the LOS to degrade from LOS of A, B, or C to LOS D, E, or F at a signalized intersection under the jurisdiction of Suisun City under either the existing or cumulative condition.
- If the addition of project traffic causes a three percent or more increase in traffic volumes (with project as compared to no project) at a signalized intersection under the jurisdiction of Suisun City that operates at LOS D, E, or F under either the existing or cumulative condition no project condition.
- If the addition of project traffic causes the LOS to degrade from LOS of A, B, C, or D to LOS E or F at a signalized intersection under the jurisdiction of the City of Fairfield under either the existing or cumulative condition.
- If the addition of project traffic causes a three percent or more increase in traffic volumes (with project as compared to no project) at a signalized intersection under the jurisdiction of the City of Fairfield that operates at LOS E or F under either the existing or cumulative condition no project condition.

- If the addition of project traffic causes the LOS to degrade from an acceptable LOS of A, B, or C to LOS D, E or F at a signalized intersection under the jurisdiction of the California Department of Transportation (Caltrans) under either the existing or cumulative condition no project condition.
- If the addition of project traffic causes a three percent or more increase in traffic volumes (with project condition as compared to no project condition) at a signalized intersection under the jurisdiction of the California Department of Transportation (Caltrans) that operates at LOS D, E or F under either the existing or cumulative condition no project condition.
- If the addition of project traffic causes an unsignalized intersection under the jurisdiction of Suisun City to degrade from LOS A, B, or C to LOS D, E, F and one or more traffic signal warrants (as defined by the Manual of Uniform Traffic Control Devices (MUTCD)) are met.
- If the addition of project traffic causes an unsignalized intersection under the jurisdiction of the City of Fairfield to degrade from LOS A, B, C, or D to LOS E or F and one or more traffic signal warrants (as defined by the Manual of Uniform Traffic Control Devices (MUTCD)) are met.
- If the addition of project traffic causes an unsignalized intersection under the jurisdiction of Caltrans to degrade from LOS A, B, C, to LOS D, E or F and one or more traffic signal warrants (as defined by the Manual of Uniform Traffic Control Devices (MUTCD)) are met.
- If the addition of project traffic adds 10 or more trips to an unsignalized intersection under the jurisdiction of Suisun City that operates at LOS D, E, or F without project traffic and one or more traffic signal warrants (as defined by the Manual of Uniform Traffic Control Devices (MUTCD)) are met.
- If the addition of project traffic adds 10 or more trips to an unsignalized intersection under the jurisdiction of the City of Fairfield that operates at LOS E or F without project traffic and one or more traffic signal warrants (as defined by the Manual of Uniform Traffic Control Devices (MUTCD)) are met.
- If the addition of project traffic adds 10 or more trips to an unsignalized intersection under the jurisdiction of Caltrans that operates at LOS D, E, or F without project traffic and one or more traffic signal warrants (as defined by the Manual of Uniform Traffic Control Devices (MUTCD)) are met.
- A project interferes with, conflicts with or precludes other planned improvements such as roadway extensions/expansions, planned trail facilities, proposed creek restoration projects, etc.

- A project conflicts or creates inconsistencies with adopted traffic plans, guidelines, policies or standards.
- The construction of a project creates a temporary but prolonged impact due to lane closures, need for temporary signals, emergency vehicles access, traffic hazards to bikes/pedestrians, damage to roadbed, truck traffic on roadways not designated as truck routes, etc.

### Transit Impacts

The following significance criteria will be employed to determine if the project causes significant transit impacts:

- A project or project-related mitigation disrupts existing transit services or facilities. This includes disruptions caused by proposed-project driveways on transit streets and impacts to transit stops/shelters; and impacts to transit operations from traffic improvements proposed or resulting from a project.
- A project interferes with planned transit services or facilities.
- A project conflicts or creates inconsistencies with adopted transit system plans, guidelines, policies or standards.
- A project creates demand for public transit services above the capacity which is provided, or planned.

### Bicycle Impacts

The following significance criteria will be employed to determine if the project causes significant bicycle impacts:

- A project disrupts existing bicycle facilities.
- A project interferes with planned bicycle facilities. This includes failure to dedicate right-of-way for planned on- and off-street bicycle facilities included in an adopted Bicycle Master Plan or to contribute toward construction of planned bicycle facilities along the project's frontages.
- A project conflicts or creates inconsistencies with adopted bicycle system plans, guidelines, policies or standards.

### Pedestrian Impacts

The following significance criteria will be employed to determine if the project causes significant pedestrian impacts:

- A project disrupts existing pedestrian facilities. This can include adding new vehicular, pedestrian or bicycle traffic to an area experiencing pedestrian safety concerns such as an adjacent crosswalk or school, particularly if the added traffic reduces the number of pedestrian acceptable gaps at un-signalized crossings or cause queues to spillback through pedestrian crossings.
- A project interferes with planned pedestrian facilities. In existing and/or planned urbanized areas, main streets or pedestrian districts, this can include impacts to the quality of the walking environment.
- A project conflicts or creates inconsistencies with adopted pedestrian system plans, guidelines, policies or standards.

#### Impacts Arising from Inconsistencies with Applicable Policies

The following significance criteria will be employed to determine if the project causes significant impacts arising from inconsistencies with applicable transportation-related policies:

- Project designs for on-site circulation, access and parking areas fail to meet industry standard design guidelines.
- A project fails to provide a sufficient quantity of on-site parking for vehicles.
- A project fails to provide a sufficient quantity of on-site parking for bicycles.
- A project fails to provide accessible and safe pedestrian connections between buildings and to adjacent streets and transit facilities.
- A project fails to provide adequate accessibility for service and delivery trucks on-site including access to truck loading areas.
- A project violates access management standards (e.g., driveway spacing, signal spacing, sight distance, etc.) in a way that causes an adverse effect on the environment or reduction in public safety.

#### **Method of Analysis**

The impact analysis considered the roadway, transit, bicycle, and pedestrian components of the transportation system. The specific method of analysis for roadway impact analysis is described below. For the transit, bicycle, and pedestrian systems impact analysis, the Base Project, Alternative 1, and Alternative 2 were evaluated for consistency with existing and planned service and facilities as well as consistency with related policies of the City of Suisun City.

## Project Description

The Gentry-Suisun Annexation involves the annexation of 171.50 acres of land from Solano County into the City of Suisun City. A portion of this 171.50 acres area would be developed into commercial and residential uses while the remaining areas would be maintained as farmland. Three variations of the project site plan are proposed. The variations include the Base Project, Alternative 1, and Alternative 2. The alternatives differ based on the size of the commercial and residential component.

## Project Parcelization

The proposed project site would be divided into the following parcels as described in Table 4.5-4 and shown on Figure 4.5-9:

- Planning Area 1- This site would contain either commercial uses or a mixture of commercial and residential uses depending on the alternative. Under the Base Project, this site would develop as a 655,000 sq. ft. shopping center. Under Alternative 1, the site would develop as a 480,000 sq. ft. shopping center with 120 homes on the remaining areas of the site. Under Alternative 2, this site would have a 350,000 sq. ft. shopping center combined with 250 homes. Retail uses on this site would vary from large big-box retail to small shops. These residences would likely be town homes or high-density single family homes.
- Planning Area 2- Up to 275 dwelling units at 21 dwelling units per acre on a site of about 13 acres would be developed under the Base Alternative. Under Alternative 1 and 2, up to 196 dwelling units would be built. These homes would be town homes or other forms of high density single-family homes (patio homes, zero-lot line homes, etc).
- Planning Area 3- Development on this rate would be 84 units. As in Planning Area 2, these homes would be developed as either town homes or high density single-family homes.
- Ardave Parcel- This parcel is less than 1 acre in site and is proposed to contain light industrial or office type uses. Approximately 16,000 sq. ft. of office or light industrial uses would be developed on this site. Under the Base Project, the site would be entirely office while under Alternatives 1 and 2, the site would develop as 4,000 sq. ft. of office and 12,000 sq. ft. of light industrial buildings.
- Gilbert Parcel- This portion of the site is approximately 5 acres in size and would contain about 65,000 sq. ft. of general retail uses or light industrial uses. Under the Base Project, this site would be developed entirely as commercial uses. Under Alternatives 1 and 2, this parcel would be developed as 10,000 sq. ft. of commercial and 50,000 sq. ft. of light industrial.

A significant portion of the site (Planning Area 4- 70 acres) is anticipated to remain as an agricultural use. Under the Base Project configuration, the proposed project is estimated to generate 21,691 daily trips, 578 morning peak hour trips (295 inbound and 283 outbound), 2,040 afternoon peak hour trips (1,005 inbound and 1,035 outbound), and 2,654 Saturday midday peak hour trips (1,382 inbound and 1,272 outbound).

Alternative 1 is estimated to generate 16,543 daily trips, 518 morning peak hour trips (264 inbound and 254 outbound), 1,562 afternoon peak hour trips (762 inbound and 800 outbound), and 1,946 Saturday midday peak hour trips (1,015 inbound and 931 outbound).

Alternative 2 is estimated to generate 14,575 daily trips, 509 morning peak hour trips (240 inbound and 269 outbound), 1,370 afternoon peak hour trips (679 inbound and 691 outbound), and 1,662 Saturday midday peak hour trips (869 inbound and 793 outbound).

**TABLE 4.5-4  
 Gentry-Suisun Project  
 Annexation Land Use Alternatives By Planning Area**

Scenario									Overall Totals			
	PA1 (71.3 ac)		PA2 (13.1ac)	PA3 (4ac)	Gilbert (5.0 ac)		Ardave (0.6 ac)		Sq. Ft.			DUs
	Comm'l. SF	Resid. DU	Resid. DU	Resid. DU	Comm'l. SF	Ltd. Ind. sf (a)	Office sf (b)	Ltd. Ind. sf (a)	Comm'l.	Office	Ltd. Ind.	Resid.
Base Project	655,499	0	275	84	65,340		15,682		720,839	15,682	0	359
Alternative 1	480,000	120	196	84	10,000	50,000	4,000	12,000	490,000	4,000	62,000	400
Alternative 2	350,000	250	196	84	10,000	50,000	4,000	12,000	360,000	4,000	62,000	530
Wetlands Avoidance Alt.	in process											

Notes:

(a) Ltd. Industrial uses would not include office.

(b) Office use is a sub-designation within the General Plan designation Limited Industrial/Business Park

## **Proposed Transportation Improvements**

A review of relevant documents such as the Solano Countywide Transportation Plan, the State Route 12 Major Investment Study (MIS), the *City of Fairfield General Plan*, and the *City of Suisun City General Plan*, indicates that there are several planned roadway improvements in the study area. For instance, the SR 12 MIS identified a need to construct an interchange or grade separation at the intersection of SR 12/Pennsylvania Avenue. However, limited funding is available to fund this improvement or other proposed improvements in the study area. This analysis therefore assumes that roadway improvements do not exist, beyond those identified as project mitigation measures. Minor transit, bicycle, and pedestrian improvements proposed in the study area are not anticipated to significantly affect development of the site.

## **Future Transportation Improvements**

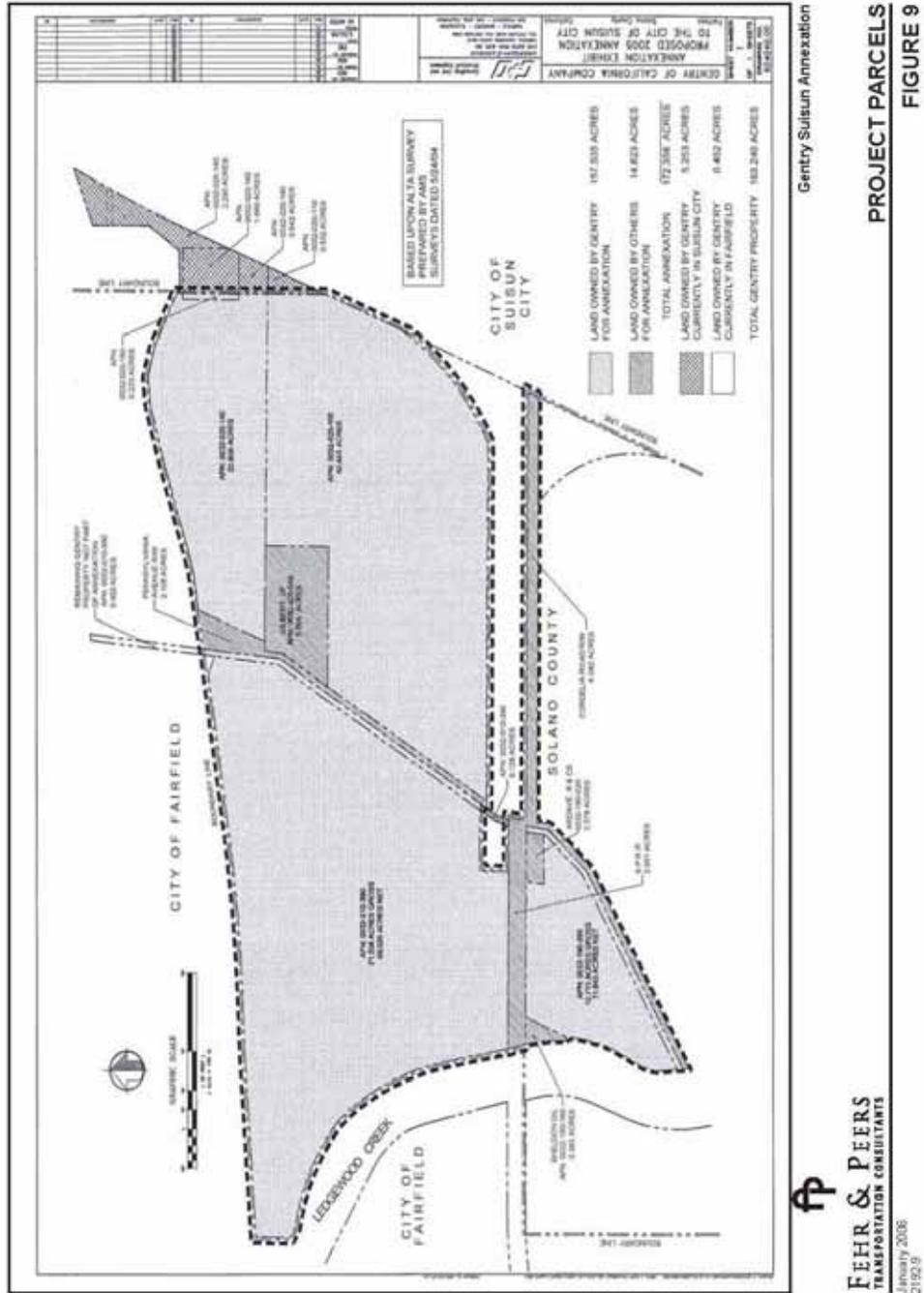
Future transportation improvements are anticipated to occur in the project study area without the construction of the proposed project. Transportation Facilities addressed in this discussion include highways such as SR 12 and other roadways located both in Suisun City and the City of Fairfield. This section also addresses the status of various funding mechanisms such as impact fee programs that could help fund improvements that may mitigate project traffic impacts.

### State Route 12 Improvements

A *Major Investment Study* for SR 12 was completed by the STA in October 2001. The MIS document recommended the following improvements in the corridor:

- Acceleration and deceleration lanes at Beck Avenue
- Geometric improvements at Pennsylvania Avenue
- Widening SR 12 to six lanes to Webster/Jackson
- Adding an interchange or grade separation at SR 12/Pennsylvania Avenue

**Figure 4.5-9  
 Gentry-Suisun Project Parcels**



Other improvements outside the project study area include additional traffic signals, adding turn lanes, and various other improvements. The cost of all of the proposed improvements is \$109 million. Caltrans has currently programmed \$36 million in state funds for these improvements. Some additional funding is available from the MTC as outlined in the Transportation 2030 Plan. However, the MTC would only be able to allocate \$4 million for this improvement. One major impediment to fully funding this improvement is the prioritization of the I-80/I-680/SR 12 interchange improvement above all other roadway projects. Therefore, much of the funding that the STA anticipates receiving over the next 25 years is allocated to this project.

The STA Regional Transportation Plan indicates that improvements to SR 12 can only be funded if additional revenue sources are identified. These sources include local sales tax increases, countywide traffic impact fees, a regional gas tax increase, or future bridge toll increases. However, none of these revenue sources are currently in place and is not guaranteed that any of these funding sources could be implemented. For example, Solano County voters have rejected transportation sales tax measures in Solano County in 2002 and 2004. Based on the lack of available funding for this improvement, no improvements funded by the STA are assumed to occur to SR 12 in the project study area.

#### Suisun City Roadway Improvements

The Suisun City General Plan contains provisions to fund needed roadway improvements but does not specify individual roadway improvements. The General Plan provides language relating to the funding of roadway improvements through fees levied against new developments, as documented in the City's recently adopted Municipal Services Review and Comprehensive Annexation Plan:

General Plan Policy 4: Arterial streets and traffic signals should be funded through fees levied against new development, with participation in the cost by adjacent property owners where applicable. In determining the amount of the fee, and the portion of the traffic improvements costs that should be borne by each new development project, the City will consider the amount of traffic generation projected by the project in relation to existing traffic volumes and road capacities.

General Plan Policy 6: Where arterial streets are needed prior to the development of the adjacent parcels, the City will create assessment districts and/or advance Off-Site Improvement Program (OSIP) funding to prevent existing levels of service from dropping.

Based on these policies, it is the clear preference of Suisun City to levy traffic fees against proposed developments to fund needed roadway improvements. However, Suisun City does not have a formal fee program with defined roadway improvements and predetermined unit costs. A formal traffic fee program would require the preparation of a nexus study, which is defined by AB 1600. Given this lack of a formal traffic fee program, no improvements are assumed to occur within Suisun City.

### City of Fairfield Roadway Improvements

The City of Fairfield, through its recently adopted General Plan (2002), proposes to widen several roadways within the project study area. These improvements include:

- Widening Cordelia Road from I-680 to SR 12
- Widening SR 12 from I-80 to Pennsylvania Avenue
- Improving Intersections along West Texas Street at I-80

However, the General Plan did not specify funding sources for these improvements. The General Plan anticipated that these improvements would be implemented through a citywide development fee program. The precise order for the implementation of needed improvements would be a citywide Transportation Capital Improvement Plan.

Since the adoption of the General Plan, the City has implemented a citywide traffic fee program based on an AB 1600 nexus study. The fee varies by type of use and by size of that use as well. For example, a single-family dwelling unit with more than 3,000 square feet of space pays a traffic impact fee of over \$2,800. Retail uses pay the highest fee which is \$11,220 per 1,000 square feet of area. These traffic impact fees are in addition to other impact fees collected for other public facilities such as water and sewer services.

According to information provided by the City of Fairfield, the City anticipates funding the widening of SR 12 from I-80 to Pennsylvania Avenue through its traffic fee program. At this time, Fehr & Peers cannot assure the timely completion of this improvement; therefore, Fehr & Peers did not assume that SR 12 is widened in their traffic study.

### Bicycle/Pedestrian Improvements

One proposed bicycle and pedestrian facility is proposed within the study area. This improvement is the Central County Bikeway, which is proposed along SR 12 from Suisun City to the City of Rio Vista. Portions of this improvement would be constructed as either multi-use path on the northern side of SR 12 or as on-street facilities. The portion of this facility within the study involves the construction of a multi-use path from Marina Boulevard to the Amtrak Station, a segment of 0.6 miles.

### Transit Improvements

The Solano Transportation Authority is proposing to expand intercity transit service in Solano and Napa County, as documented in their recently adopted *Countywide Transportation Plan* (2005). One of the intercity bus routes proposed by the STA would extend from Napa to Rio Vista along SR 12. This service would serve long-distance commuters but is not currently funded at this time.

A review of available documents from other agencies indicates that plans do not exist to expand or develop new transit service in the study area. For instance, the Capital Corridor JPA

anticipates maintaining the same level of rail service along the Capital Corridor line, at least through 2007. The Fairfield/Suisun Transit System, through its Short Range Transit Plan, addressed only service expansions outside of the study area.

### **Project Driveway and Roadways**

Main access to the project site would be provided along Pennsylvania Avenue. At least five major driveways would be created along Pennsylvania Avenue south of SR 12 along the project frontage. This traffic study would assume initially that all driveways on Pennsylvania Avenue have full access, both left and right-turns into and out of each driveway. Any recommendations to modify or change this access will be discussed in subsequent sections of this chapter.

The project site plan also details an internal roadway network within the commercial site. This roadway network includes a major east-west roadway as well as a major roadway which connects to Pennsylvania Avenue. The location of the major driveways and internal roadways, as they are currently designed, are shown on Figures 4.5-10 (Base Project), 4.5-11 (Alternative 1) and 4.5-12 (Alternative 2).

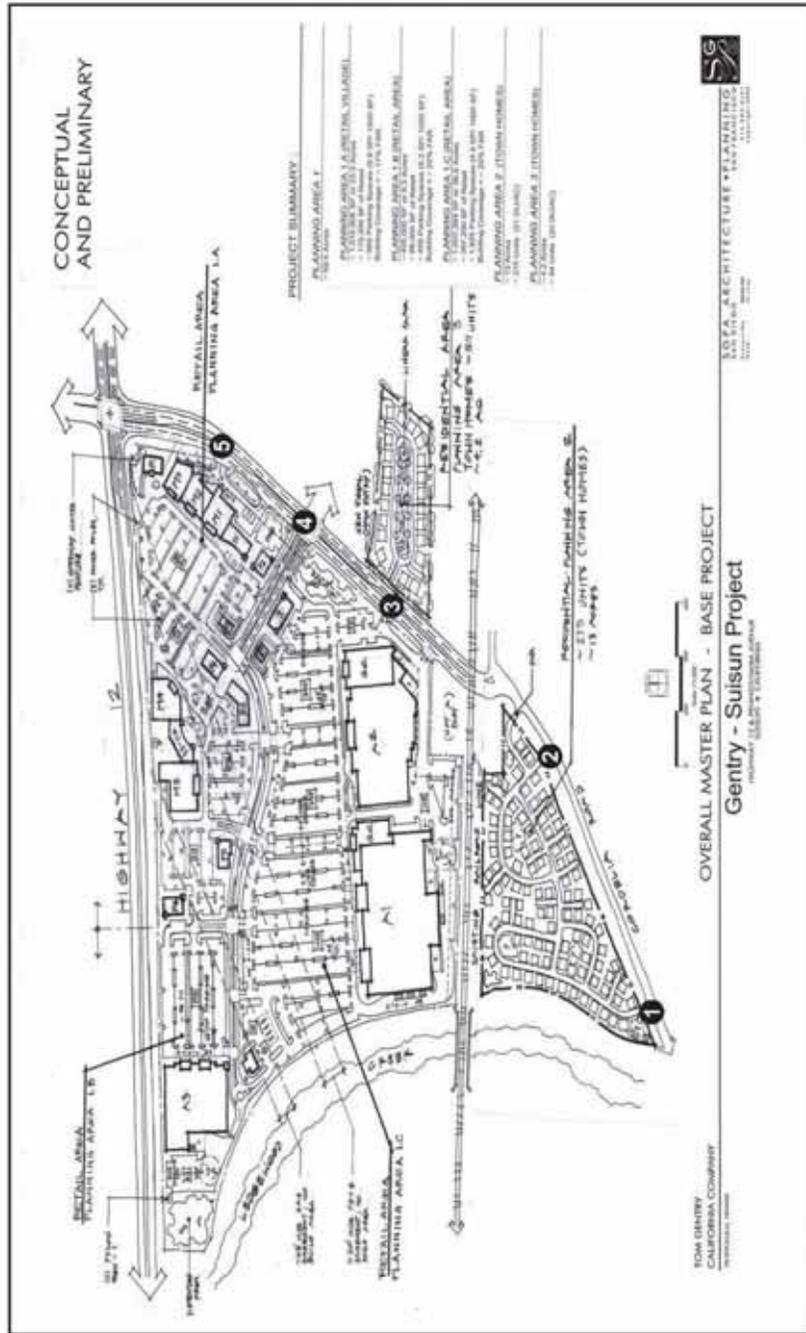
### **Project Trip Generation**

Fehr & Peers estimated the project trip generation by applying standard trip generation rates, based on empirical research compiled by the Institute of Transportation Engineers (ITE). ITE compiles trip generation studies for various sites, groups these studies into categories, and then develops rates and equations which can be applied to similar projects. These trip generation studies are summarized in ITE's *Trip Generation (7<sup>th</sup> Edition)* with additional information provided in the *Trip Generation Handbook*.

The approach for estimating the project trip generation is as follows:

1. Categorize project land uses into appropriate ITE categories
2. Identify trip generation rates and/or trip generation equation.
3. Apply trip generation reductions
4. Calculate Final Trip Generation

**Figure 4.5-10  
 Driveway Location – Base Project**



Gentry Suisun Annexation

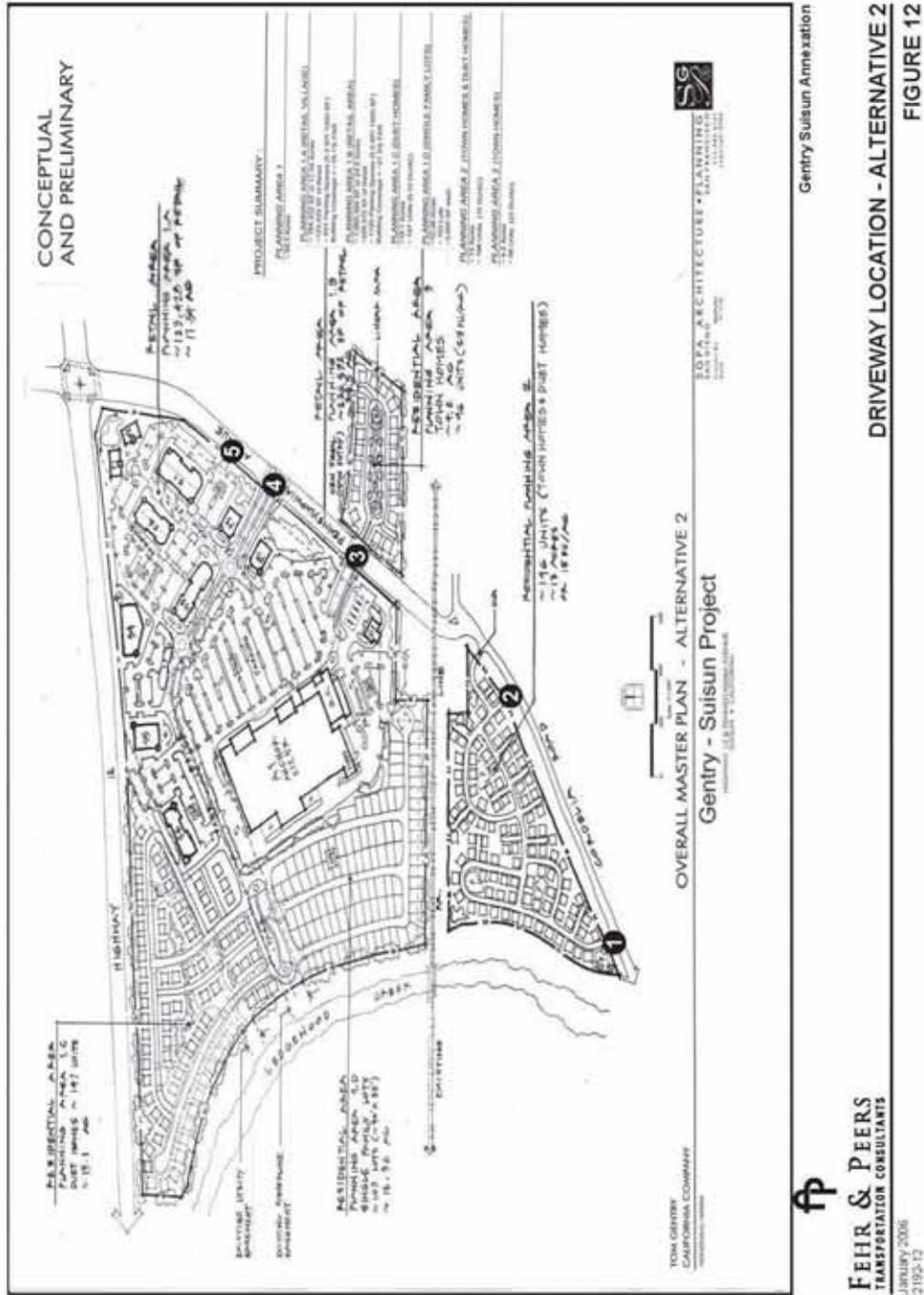
**DRIVEWAY LOCATION-BASE PROJECT**

**FIGURE 10**

**FEHR & PEERS**  
 TRANSPORTATION CONSULTANTS  
 JANUARY 2006  
 2152-10



Figure 4.5-12  
 Driveway Location – Alternative 2



### **Categorized Project Land Uses**

Appropriate ITE categories were applied to each of the proposed uses within the project site. Where multiple categories were available for use, more general categories were applied given the general level of uncertainty regarding the precise configuration of future development on the site.

Retail Uses- Anticipated retail development for the site would vary from 360,000 sq. ft. to 720,000 sq. ft. Most of this development would be located within Planning Area 1 with some additional development on the Gilbert Parcel.

The larger shopping center is described as containing a variety of different retail uses. Given this, two possible approaches were considered to categorize the uses within the larger shopping center. One possible approach would be to consider the larger shopping center as single, discrete use and apply a generic shopping center category (Land Use Code 820). A second approach would be to apply different trip generation categories to the various proposed uses within the larger retail center. For example, the superstore would be analyzed under Land Use Code 813 (Free-Standing Discount Superstore). The remaining components of the larger shopping center would be analyzed using Land Use Code 820 or another retail category, such as 816 (Specialty Retail). The larger shopping center was categorized as a single shopping center, based upon the following:

- ITE defines a shopping center as “an integrated group of commercial establishments that is planned, developed, owned, and managed as a single unit”. This retail site will certainly operate as a single unit. For example, it is likely that there will be trip chaining within the site whereby a visitor travels to multiple stores on a single visit to the site.
- The proposed uses on the site have not been finalized and the use of a specific category could lead to later revisions in the traffic study
- The trip generation rate between Land Use Code 813 (Superstore) and Land Use Code 820 (Shopping Center) are similar. For example, the average rate for a superstore is 3.87 in the PM period while the average rate for a shopping center is 3.97 during that same period.
- The shopping center use has been studied extensively by ITE over the past 40 years. Hundreds of trip generation studies have been prepared for shopping centers while there are only 10 studies for Land Use Code 813.
- Uses have not been specified for the smaller retail shopping center; therefore Land Use Code 820 (Shopping Center) was employed for this smaller center as well.

### Residential Uses

The project description indicates that the residential uses on the site would contain medium to high-density residential units. These units could consist of condominiums, attached town homes, or small lot single-family homes. Regardless of the actual configuration of the residential uses, all of the housing will be for sale housing as opposed to rental housing. Given the variety of possible housing types on this site, a general residential category (Land Use Code 230- Residential Condos/Townhouses), was employed.

### Office Park/Light Industrial

The project description indicates that a small portion of the project would develop a small office facility and some additional light industrial uses. The office has been classified as a General Office (Land Use Code 710). The light industrial uses on the site would be classified as Land Use Code 110 (Light Industrial).

### **Trip Generation Rates**

Trip Generation rates are reported in Table 4.5-5A (Base Project), Table 4.5-5B (Alternative 1) and Table 4.5-5C (Alternative 2). For those instances where an equation is applied, the trip rate represents the calculated rate based on the results of the equations. For those uses when a trip rate is applied, the trip rate from the ITE manual is reported.

### **Trip Generation Reductions**

Trip reductions are typically applied for one of three reasons. One possible reduction is the pass-by trip reduction, which reflects existing trips on the roadway which temporarily stop at a retail use. This reduction is often applied to commercial uses. For example, much of the traffic associated with a gas station or a convenience store at such a use to while traveling between other destinations. Empirical support for pass-by trip reductions is provided by the ITE *Trip Generation Handbook*, which summarizes previous studies of pass-by trips at various types of land uses. Second, reductions are sometimes made for mixed use projects whereby some of the trips are internalized within the project site. For example, a project containing both residences and offices should have some internalized trips if any of the workers were to live in the adjacent housing. Third, trip generation reductions are sometimes made if significant transit trips are associated with a site. These reductions would generally be applied to development located at or near an existing or future transit station.

**Table 4.5-5A  
 Trip Generation Estimates – Base Project**

Table 4.5-5A Trip Generation Estimates for Gentry/Suisun Annexation																
Land Use	Size	Trip Generation Rates						Trip Generation Estimates								
		Daily	AM Peak	PM Peak	SAT Peak	Daily	AM Peak Hour			PM Peak Hour			Sat Midday Peak Hour			
			Hour	Hour	Hour		In	Out	Total	In	Out	Total	In	Out	Total	
<b>Retail (Shopping Center)</b>																
Planning Area 1 + Gilbert Parcel	720,839 s.f.	34.02	0.71	3.20	4.34	24,521	312	200	512	1107	1199	2,306	1625	1500	3,125	
<b>Retail Subtotal:</b>						<b>24,521</b>	<b>312</b>	<b>200</b>	<b>512</b>	<b>1,107</b>	<b>1,199</b>	<b>2,306</b>	<b>1,625</b>	<b>1,500</b>	<b>3,125</b>	
Passby Reduction (20%)						-4,904	-62	-40	-102	-221	-240	-461	-325	-300	-625	
<b>Total Net Retail:</b>						<b>19,617</b>	<b>250</b>	<b>160</b>	<b>410</b>	<b>886</b>	<b>959</b>	<b>1,845</b>	<b>1,300</b>	<b>1,200</b>	<b>2,500</b>	
<b>Residential</b>																
Residential Condo/Townhouse	359 d.u.	5.30	0.40	0.48	0.41	1,902	24	120	144	115	56	171	79	68	147	
<b>Total Net Housing:</b>						<b>1,902</b>	<b>24</b>	<b>120</b>	<b>144</b>	<b>115</b>	<b>56</b>	<b>171</b>	<b>79</b>	<b>68</b>	<b>147</b>	
<b>General Office Building</b>																
	15,682 s.f.	11.01	1.55	1.49	0.41	173	21	3	24	4	19	23	3	3	6	
<b>Total Limited Industrial/Business Park:</b>						<b>173</b>	<b>21</b>	<b>3</b>	<b>24</b>	<b>4</b>	<b>19</b>	<b>23</b>	<b>3</b>	<b>3</b>	<b>6</b>	
<b>Total Net Trips:</b>						<b>21,691</b>	<b>295</b>	<b>283</b>	<b>578</b>	<b>1,005</b>	<b>1,035</b>	<b>2,039</b>	<b>1,382</b>	<b>1,271</b>	<b>2,653</b>	
Notes:																
Trip Generation Rates: ITE Trip Generation, 7th Edition																
Passby Reduction applied per ITE Trip Generation Handbook for Shopping Center based on 720,000 square feet of Retail																
Internalization Trips within the proposed site will be analyzed in TRAFFIX model																

**Table 4.5-5B  
 Trip Generation Estimates – Alternative 1**

Table 4.5-5B Trip Generation Estimates for Gentry/Suisun Annexation- Alternate Configuration																
Land Use	Size	Trip Generation Rates					Trip Generation Estimates									
		Daily	AM Peak	PM Peak	SAT Peak	Daily	AM Peak Hour			PM Peak Hour			Sat Midday Peak Hour			
			Hour	Hour	Hour		In	Out	Total	In	Out	Total	In	Out	Total	
<b>Retail (Shopping Center)</b>																
Planning Area 1 + Gilbert Parcel	490,000 s.f.	38.94	0.83	3.65	4.96	19,079	248	158	406	858	929	1,787	1265	1167	2,432	
<b>Retail Subtotal:</b>						<b>19,079</b>	<b>248</b>	<b>158</b>	<b>406</b>	<b>858</b>	<b>929</b>	<b>1,787</b>	<b>1,265</b>	<b>1,167</b>	<b>2,432</b>	
Internal Trip Reduction (2%)						-191	-2	-2	-5	-9	-9	-19	-13	-13	-25	
Passby Reduction (25%)						-4,770	-62	-40	-102	-215	-232	-447	-316	-292	-608	
<b>Total Net Retail:</b>						<b>14,118</b>	<b>184</b>	<b>116</b>	<b>300</b>	<b>634</b>	<b>687</b>	<b>1,322</b>	<b>936</b>	<b>863</b>	<b>1,799</b>	
<b>Residential</b>																
Residential Condo/Townhouse	412 d.u.	5.19	0.39	0.47	0.39	2,139	27	133	160	129	63	192	87	75	162	
Internal Trip Reduction for Residential						-191	-2	-2	-5	-9	-9	-19	-13	-13	-25	
<b>Total Net Housing:</b>						<b>1,948</b>	<b>25</b>	<b>131</b>	<b>155</b>	<b>120</b>	<b>54</b>	<b>173</b>	<b>74</b>	<b>62</b>	<b>137</b>	
<b>General Office Building</b>																
	4,000 s.f.	11.01	1.55	1.49	0.41	44	5	1	6	1	5	6	1	1	2	
<b>Light Industrial</b>																
	62,000 s.f.	6.97	0.92	0.98	0.14	432	50	7	57	7	53	61	4	5	9	
<b>Total Limited Industrial/Business Park:</b>						<b>476</b>	<b>56</b>	<b>8</b>	<b>63</b>	<b>8</b>	<b>58</b>	<b>67</b>	<b>5</b>	<b>6</b>	<b>11</b>	
<b>Total Net Trips:</b>						<b>16,543</b>	<b>264</b>	<b>254</b>	<b>518</b>	<b>762</b>	<b>800</b>	<b>1,562</b>	<b>1,015</b>	<b>931</b>	<b>1,946</b>	
Notes: Trip Generation Rates: ITE Trip Generation, 7th Edition Passby Reduction applied per ITE Trip Generation Handbook for Shopping Center based on 490,000 square feet of Retail																

**Table 4.5-5C**  
**Trip Generation Estimates – Alternative 2**

Table 4C Trip Generation Estimates for Gentry/Suisun Annexation- Alternate Configuration																
Land Use	Size	Trip Generation Rates					Trip Generation Estimates									
		Daily	AM Peak	PM Peak	SAT Peak	Daily	AM Peak Hour			PM Peak Hour			Sat Midday Peak Hour			
			Hour	Hour	Hour		In	Out	Total	In	Out	Total	In	Out	Total	
<b>Retail (Shopping Center)</b>																
Planning Area 1 + Gilbert Parcel	360,000 s.f.	43.38	0.94	4.05	5.53	15,615	206	132	338	700	758	1,458	1035	955	1,990	
<b>Retail Subtotal:</b>						<b>15,615</b>	<b>206</b>	<b>132</b>	<b>338</b>	<b>700</b>	<b>758</b>	<b>1,458</b>	<b>1,035</b>	<b>955</b>	<b>1,990</b>	
Internal Trip Reduction (2%)						-156	-2	-2	-4	-8	-8	-15	-10	-10	-21	
Passby Reduction (25%)						-3,904	-52	-33	-85	-175	-190	-365	-259	-239	-498	
<b>Total Net Retail:</b>						<b>11,555</b>	<b>152</b>	<b>97</b>	<b>249</b>	<b>517</b>	<b>561</b>	<b>1,078</b>	<b>766</b>	<b>706</b>	<b>1,472</b>	
<b>Residential</b>																
Residential Condo/Townhouse	542 d.u.	4.98	0.37	0.44	0.37	2,700	34	166	200	161	79	240	108	92	200	
Internal Trip Reduction for Residential						-156	-2	-2	-4	-8	-8	-15	-10	-10	-21	
<b>Total Net Housing:</b>						<b>2,544</b>	<b>32</b>	<b>164</b>	<b>196</b>	<b>153</b>	<b>71</b>	<b>225</b>	<b>98</b>	<b>82</b>	<b>179</b>	
General Office Building	4,000 s.f.	11.01	1.55	1.49	0.41	44	5	1	6	1	5	6	1	1	2	
Light Industrial	62,000 s.f.	6.97	0.92	0.98	0.14	432	50	7	57	7	53	61	4	5	9	
<b>Total Limited Industrial/Business Park:</b>						<b>476</b>	<b>56</b>	<b>8</b>	<b>63</b>	<b>8</b>	<b>58</b>	<b>67</b>	<b>5</b>	<b>6</b>	<b>11</b>	
<b>Total Net Trips:</b>						<b>14,575</b>	<b>240</b>	<b>268</b>	<b>509</b>	<b>679</b>	<b>691</b>	<b>1,370</b>	<b>869</b>	<b>793</b>	<b>1,662</b>	
Notes: Trip Generation Rates: ITE Trip Generation, 7th Edition Passby Reduction applied per ITE Trip Generation Handbook for Shopping Center based on 360,000 square feet of Retail																

For this analysis, a pass-by reduction was applied. According to the *Trip Generation Handbook*, the expected pass-by rate for a retail center of this size would range from 20-25 percent, depending on the size of the center. This reduction was applied to all of the commercial uses within the site. Under the Base Project, the pass-by percentage was 20 percent while the pass-by percentage increased slightly under Alternatives 1 and 2 to 25 percent.

Some reduction for internalized trips were applied under Alternatives 1 and 2, containing parcels that are mixed use, whereby two complementary uses are located on the same parcel and are accessible without having to use the external roadway network. These complementary uses are located in Planning Area 1, which has both commercial and residential uses in Alternatives 1 and 2. Using methodologies outlined by the *Trip Generation Handbook*, Fehr & Peers estimated the internalization on Planning Area 1 to be two percent of the total trips associated with the site.

In addition, reduction for transit use was not taken. Given that existing transit services do not serve the site, reduction for transit use cannot be taken.

### **Trip Generation Calculations**

Under the Base Project configuration, the proposed project is estimated to generate 21,691 daily trips, 578 morning peak hour trips (295 inbound and 283 outbound), 2,040 afternoon peak hour trips (1,005 inbound and 1,035 outbound), and 2,654 Saturday midday peak hour trips (1,382 inbound and 1,272 outbound).

Alternative 1 is estimated to generate 16,543 daily trips, 518 morning peak hour trips (264 inbound and 254 outbound), 1,562 afternoon peak hour trips (762 inbound and 800 outbound), and 1,946 Saturday midday peak hour trips (1,015 inbound and 931 outbound).

Alternative 2 is estimated to generate 14,575 daily trips, 509 morning peak hour trips (240 inbound and 269 outbound), 1,370 afternoon peak hour trips (679 inbound and 691 outbound), and 1,662 Saturday midday peak hour trips (869 inbound and 793 outbound).

### **Trip Distribution**

The project trip distribution was based on results obtained from the STA Regional Travel Demand Model, whereby the project was input into the model and the model trips were tracked through the roadway network to determine their likely origin and destinations. A minor adjustment to these results was made to reflect the internalization of a small percentage (5 percent) of project trips within the site. The project trip distribution is shown on Figure 4.5-13.

As shown on this graphic, approximately 40 percent of the project trips travel into the City of Fairfield, while 15 percent travel to downtown Suisun City, 15 percent travel either east or west down SR 12. Some of the traffic from the project is assumed to travel on I-80 to the north as well.



## **Trip Assignment**

The assignment of project trips under the Base Project is shown on Figures 4.5-14A (off-site intersections) and 4.5-14B (project driveways). The Alternative 1 project trip assignment is shown on Figures 4.5-15A (off-site intersections) and 4.5-15B (project driveways). The Alternative 2 project trip assignment is shown on Figures 4.5-16A (off-site intersections) and 4.5-16B (on-site intersections).

Figures 4.5-17, 4.5-18, and 4.5-19 provide the pass-by trip assignment for the Base Project, Alternative 1, and Alternative 2, respectively.

### Existing Plus Proposed Project Scenario

#### *Traffic Volumes*

The traffic volumes for the Existing Plus Base Project scenario are shown on Figures 4.5-20A and 4.5-20B. The Existing Plus Alternative 1 Project volumes are shown on Figures 4.5-21A and 4.5-21B. The Existing Plus Alternative 2 Project volumes are shown on Figures 4.5-22A and 4.5-22B.

#### *Roadway Improvements*

Assumed roadway improvements are not included in this scenario. For the project driveways, all of these internal roadways are assumed to initially operate under side-street stop sign control. The major internal intersection is also assumed to operate under all-way stop control. This assumption allows Fehr & Peers to verify the need for additional traffic control devices and address any possible phasing of improvements. Additionally, Pennsylvania Avenue is assumed to have only one travel lane in each direction for this analysis. This assumption again allows Fehr & Peers to verify the need to widen Pennsylvania Avenue and address phasing related to this widening.

#### *Intersection Improvements*

The LOS results are shown on Table 4.5-6 for all three analysis scenarios. The Existing Plus Project LOS results are provided as Appendix C of the Traffic Study (a complete copy of the traffic report appendices is available at the City for review).

Figure 4.5-14A  
 Project Trips Only – Base Project

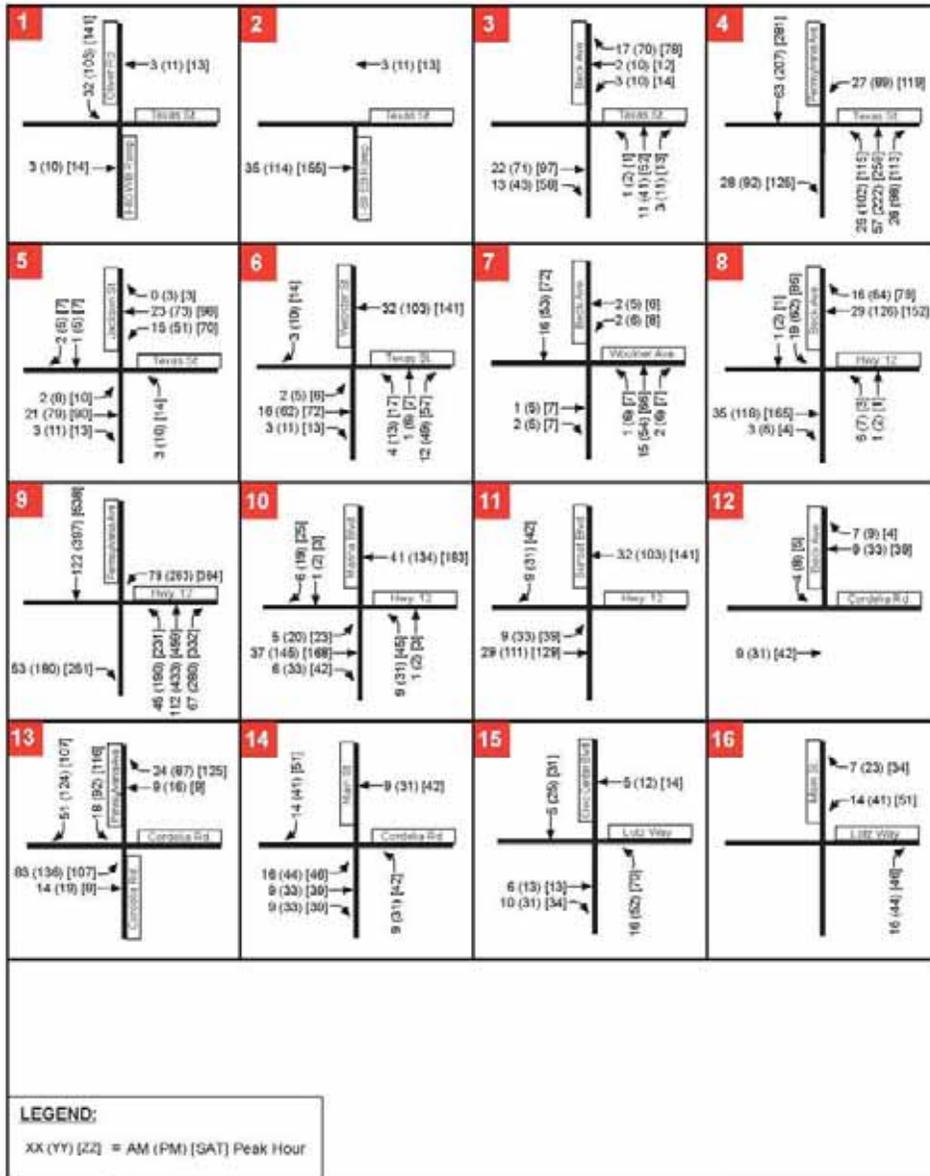


Figure 4.5-14B  
 Project Trips Only – Base Project (cont.)

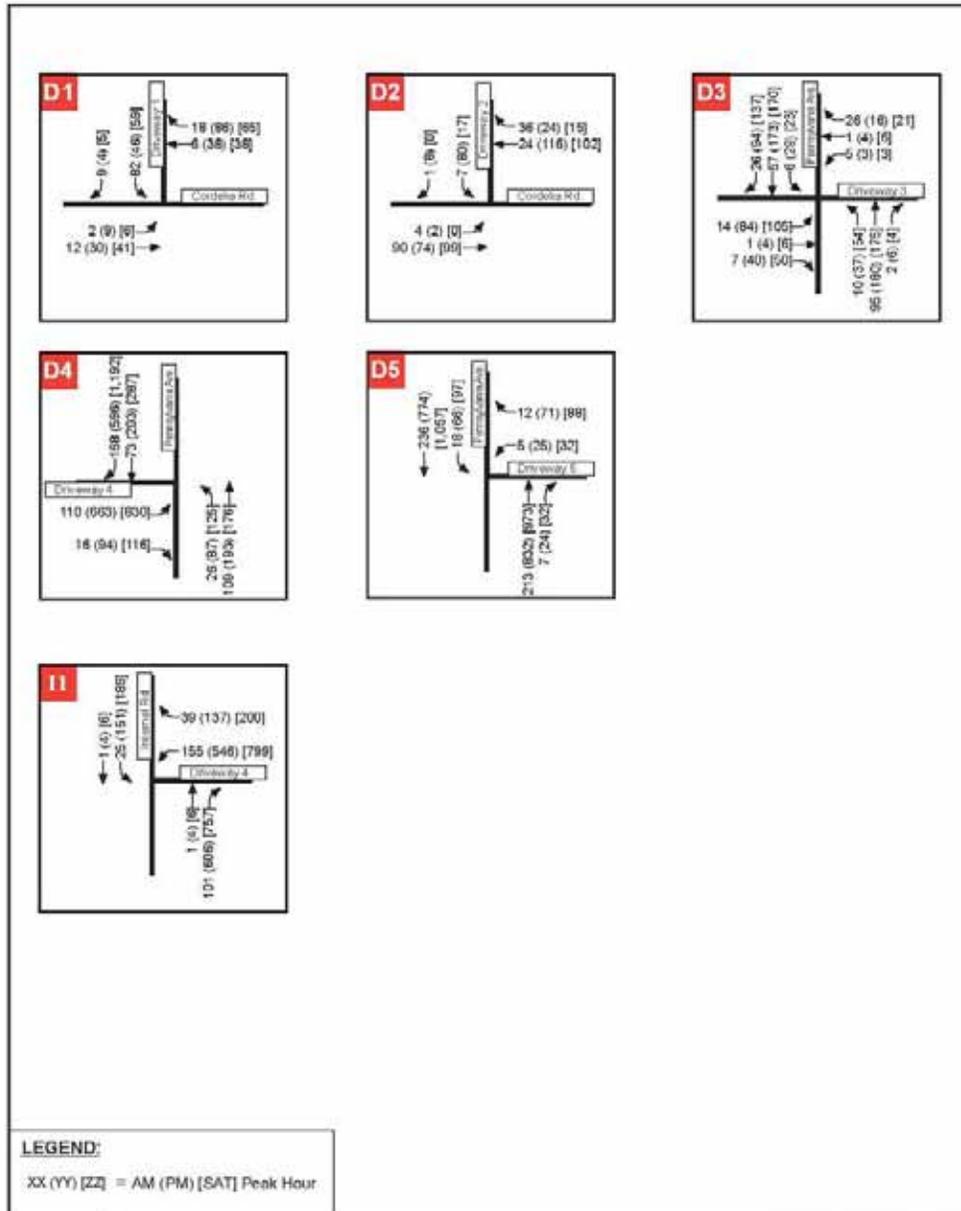
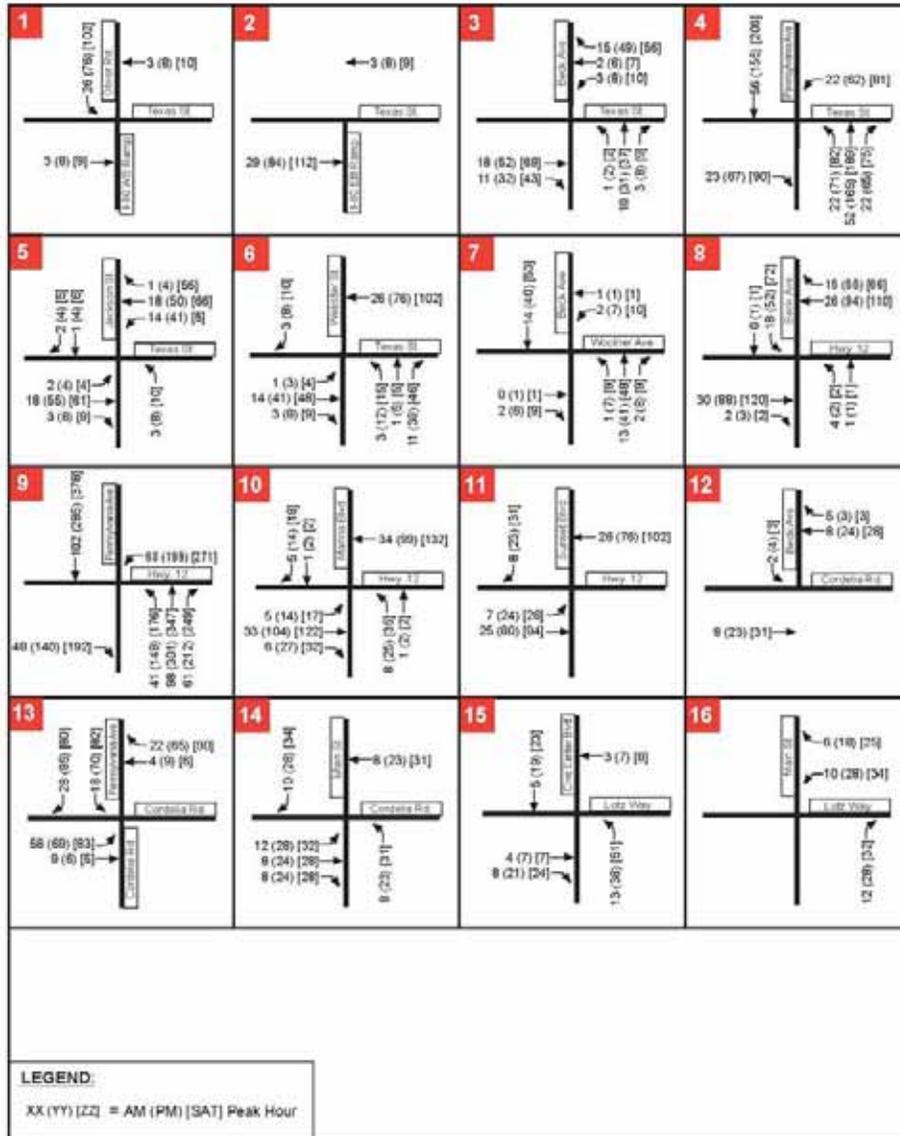


Figure 4.5-15A  
 Project Trips Only – Alternative 1



**Figure 4.5-15B**  
**Project Trips Only – Alternative 1 (cont.)**

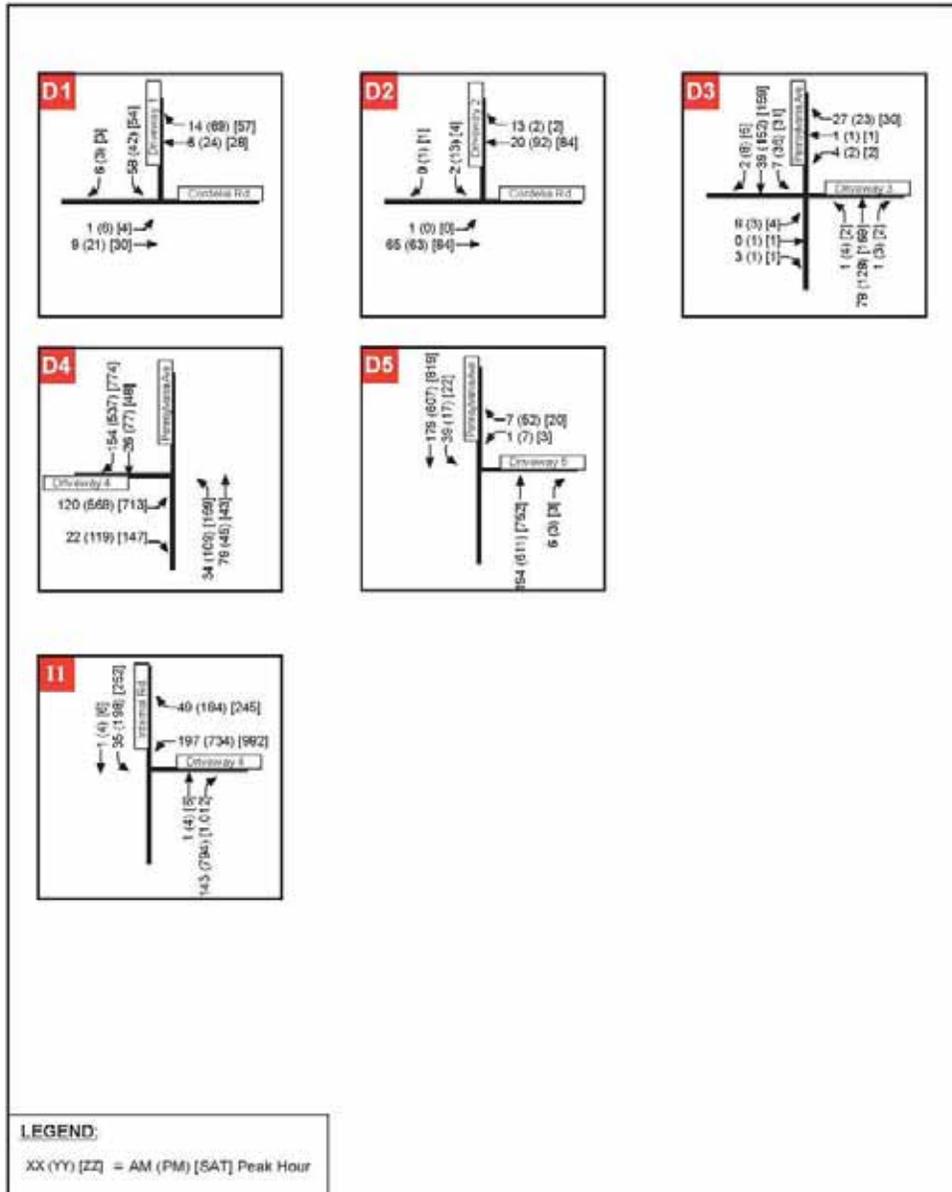
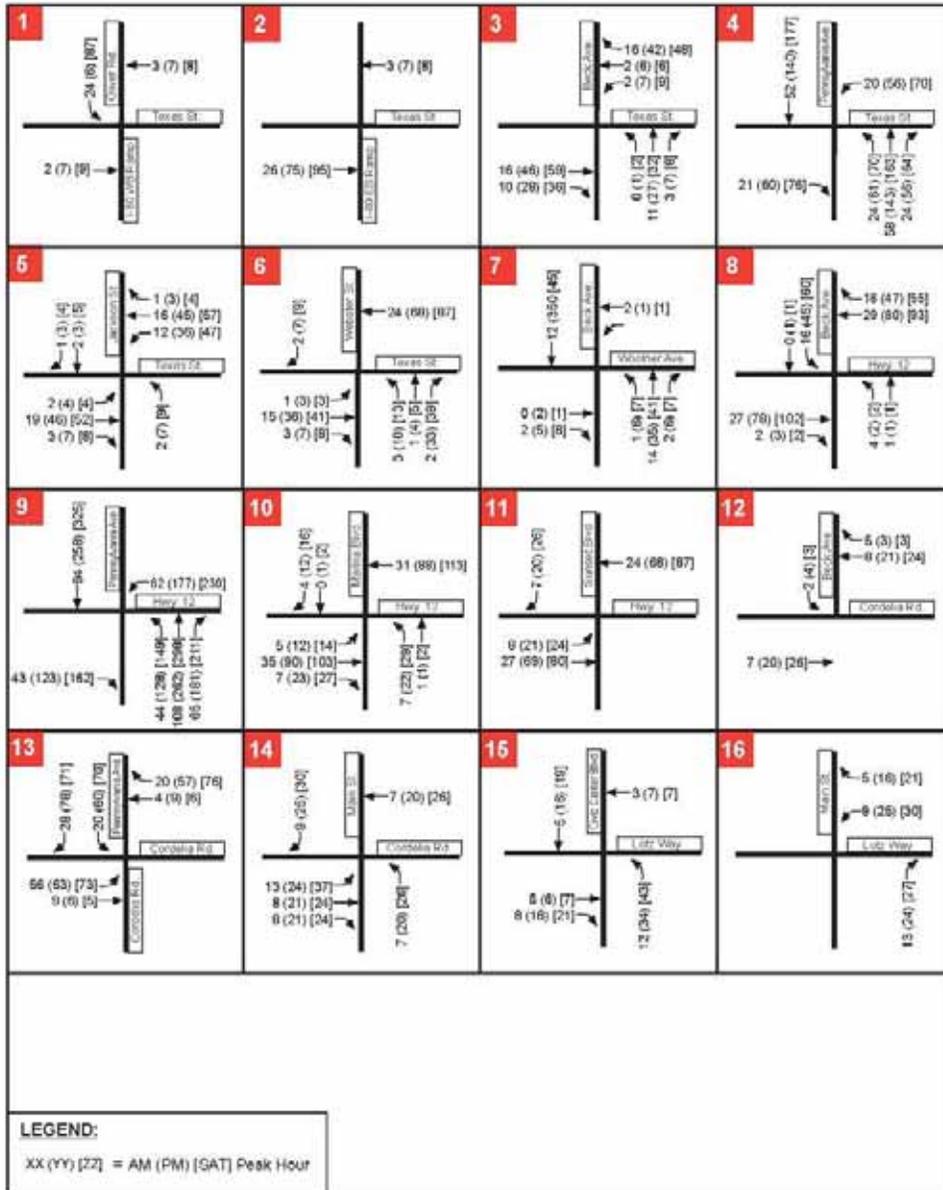


Figure 4.5-16 A  
 Project Trips Only – Alternative 2



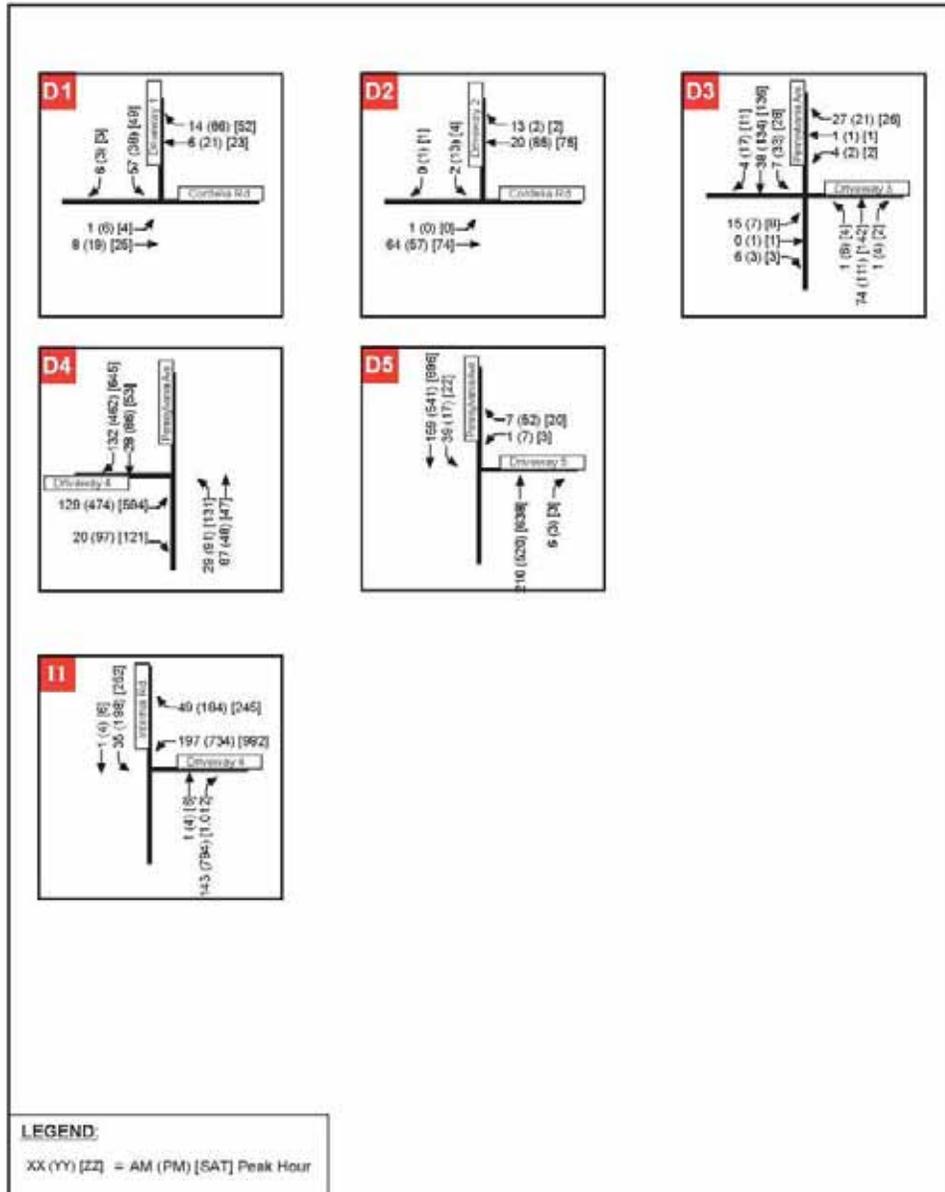
**fp**  
**FEHR & PEERS**  
 TRANSPORTATION CONSULTANTS  
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 2152-16A

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**PROJECT TRIPS ONLY  
 - ALTERNATIVE 2**

**FIGURE 16A**

**Figure 4.5-16B**  
**Project Trips Only – Alternative 2 (cont.)**



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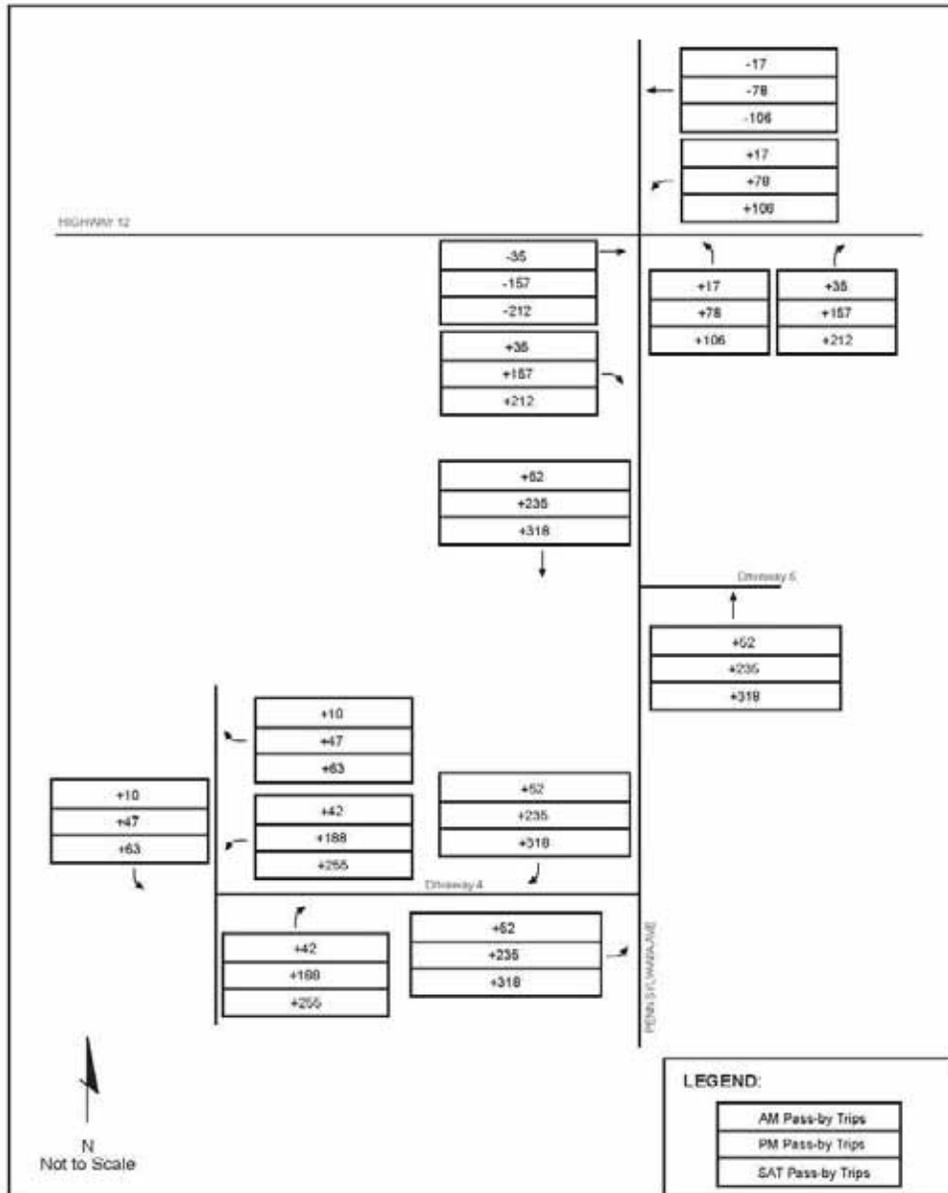
**FEHR & PEERS**  
 TRANSPORTATION CONSULTANTS

**ALTERNATIVE 2 - PROJECT ONLY**

January 2006  
 2192-16B

**FIGURE 16B**

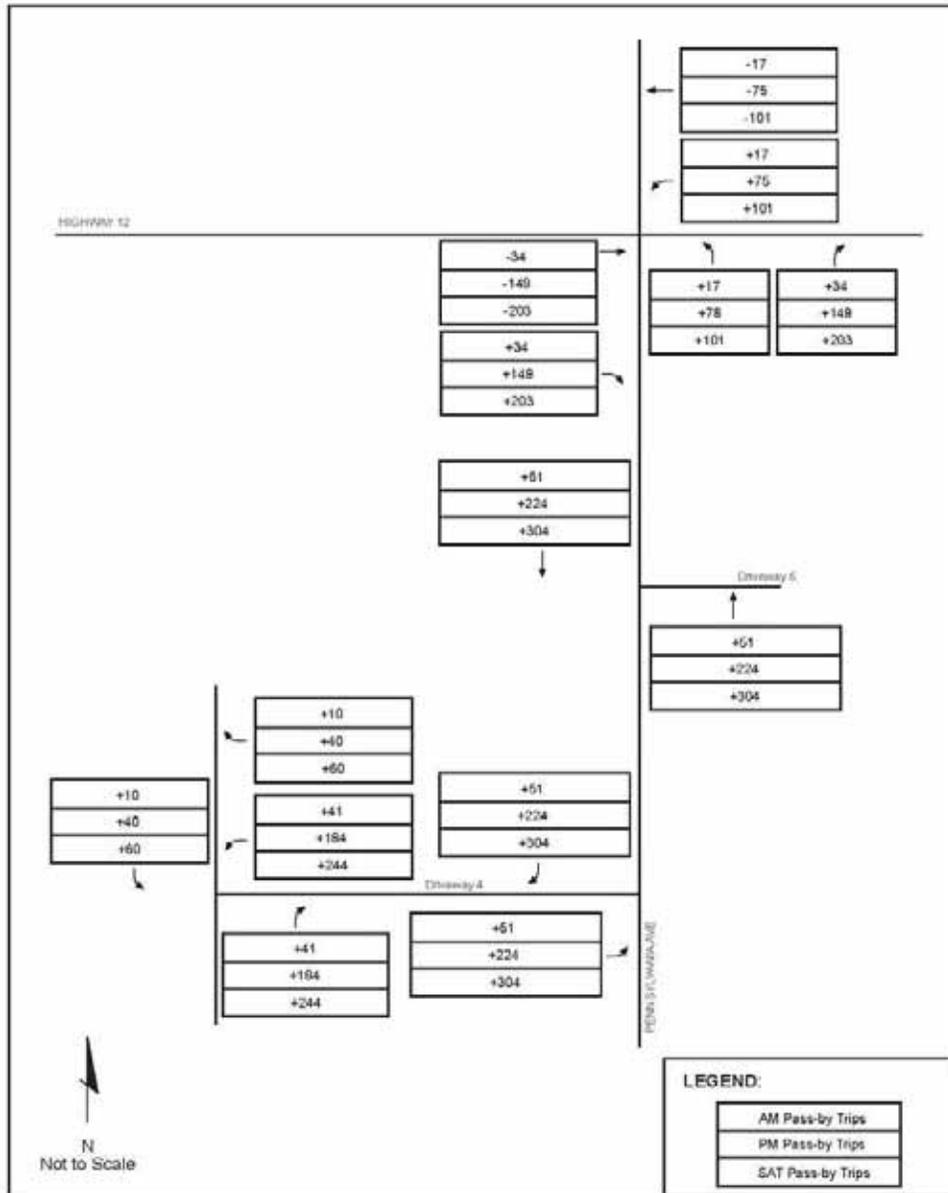
**Figure 4.5-17  
 Pass-By Trip Assignment – Base Project**



**fp**  
**FEHR & PEERS**  
 TRANSPORTATION CONSULTANTS  
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 2192-17

Gentry Suisun Annexation  
**PASS-BY TRIP ASSIGNMENT  
 BASE PROJECT**  
**FIGURE 17**

**Figure 4.5-18**  
**Pass-By Trip Assignment – Alternative 1**



**Figure 4.5-19**  
**Pass-By Trip Assignment – Alternative 2**

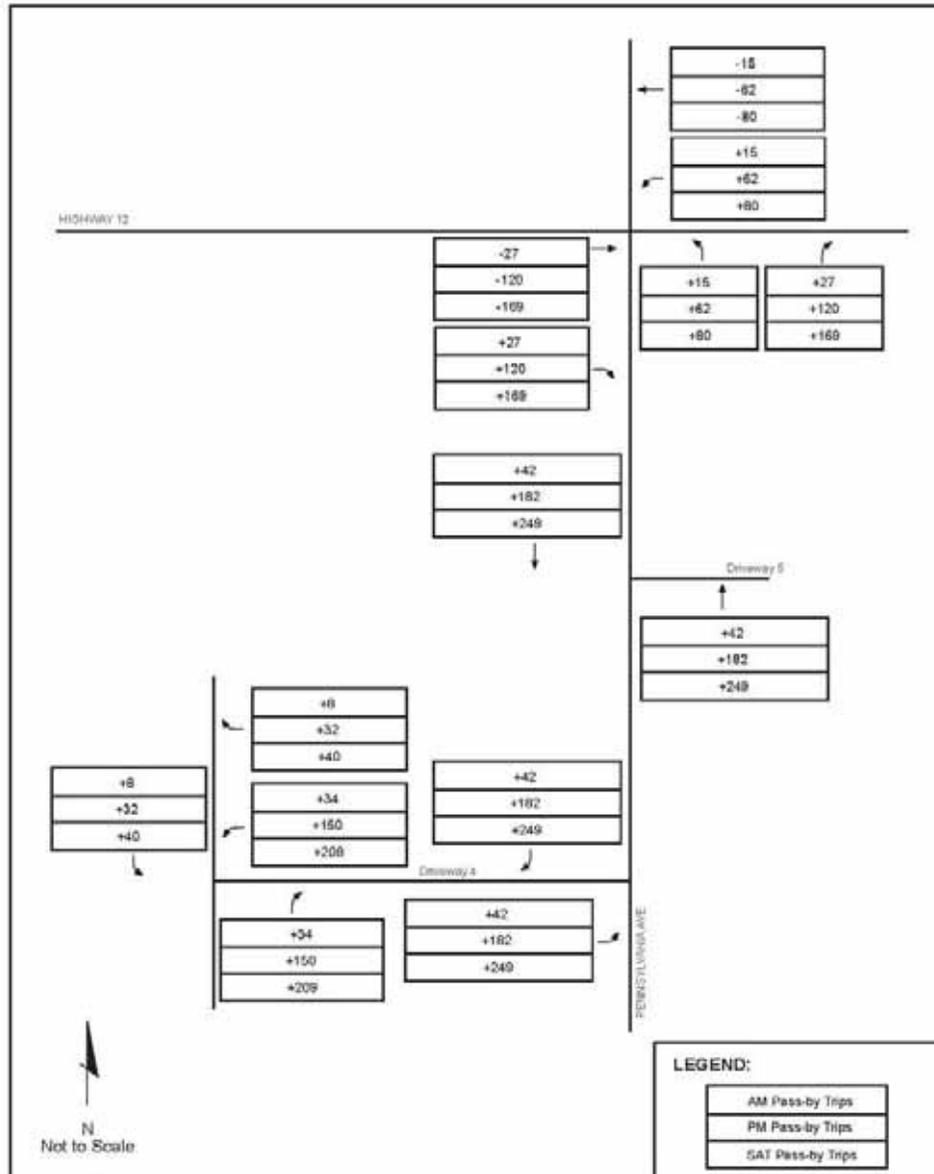
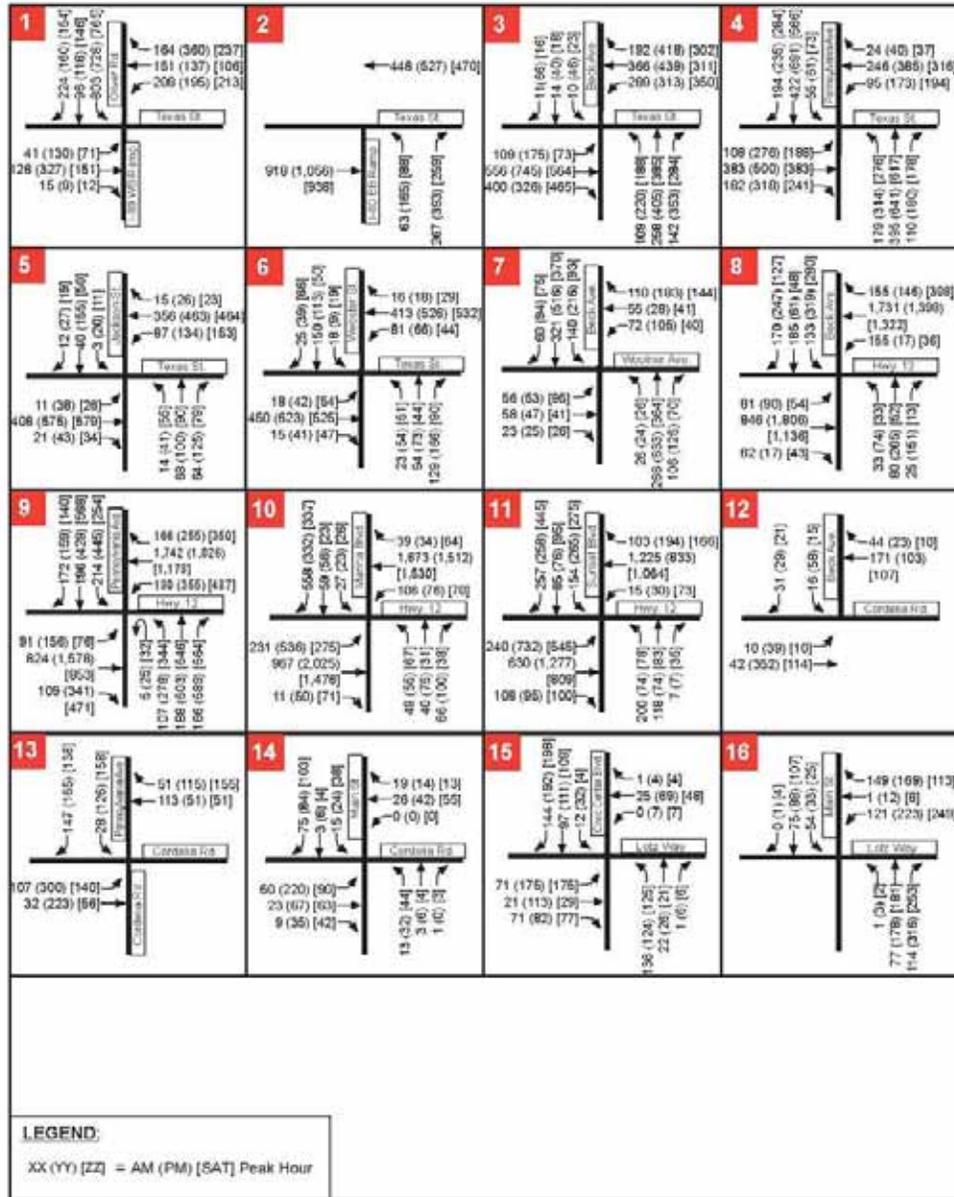


Figure 4.5-20A  
 Existing Plus Project – Base Project Traffic Volumes



**Figure 4.5-20B**  
**Project Driveway Volumes – Base Project Traffic Volumes (cont')**

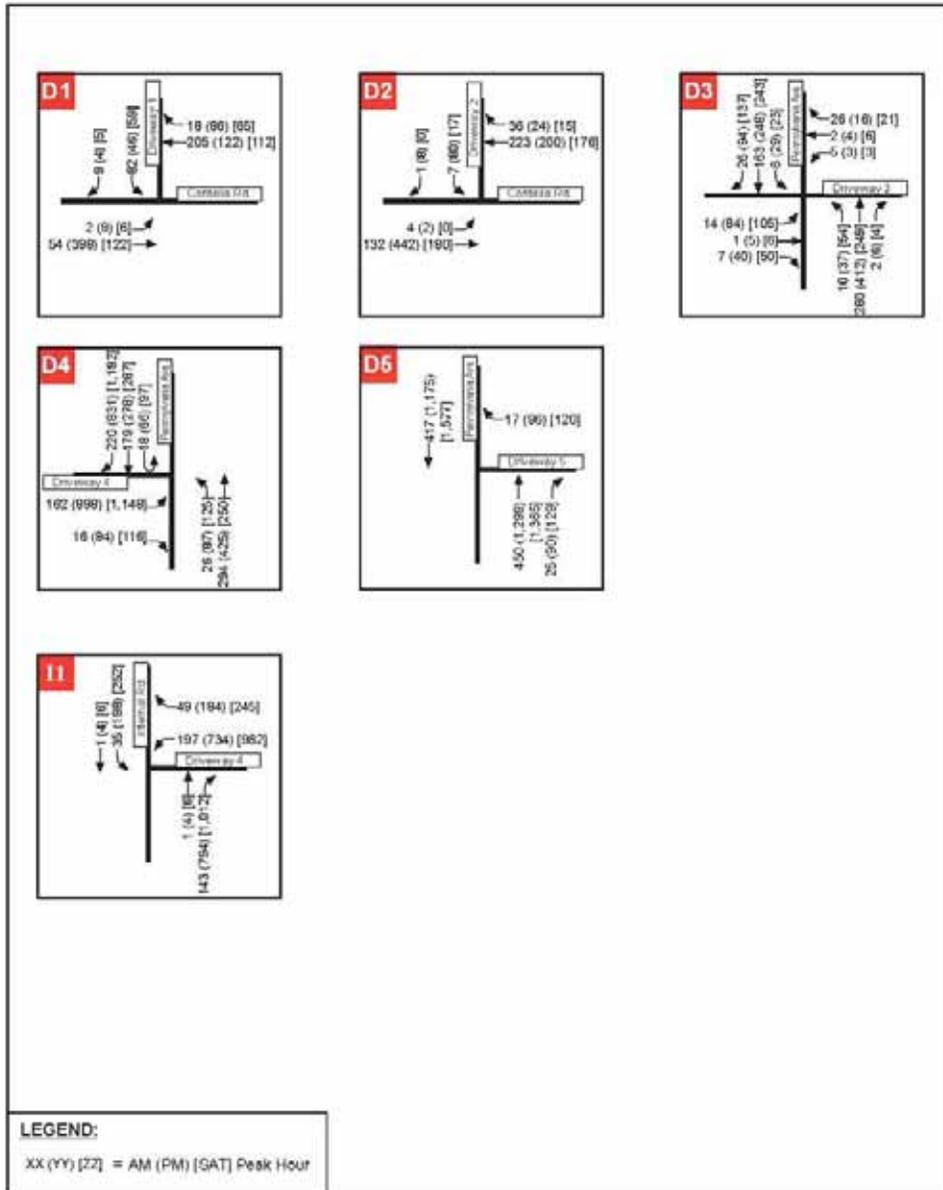
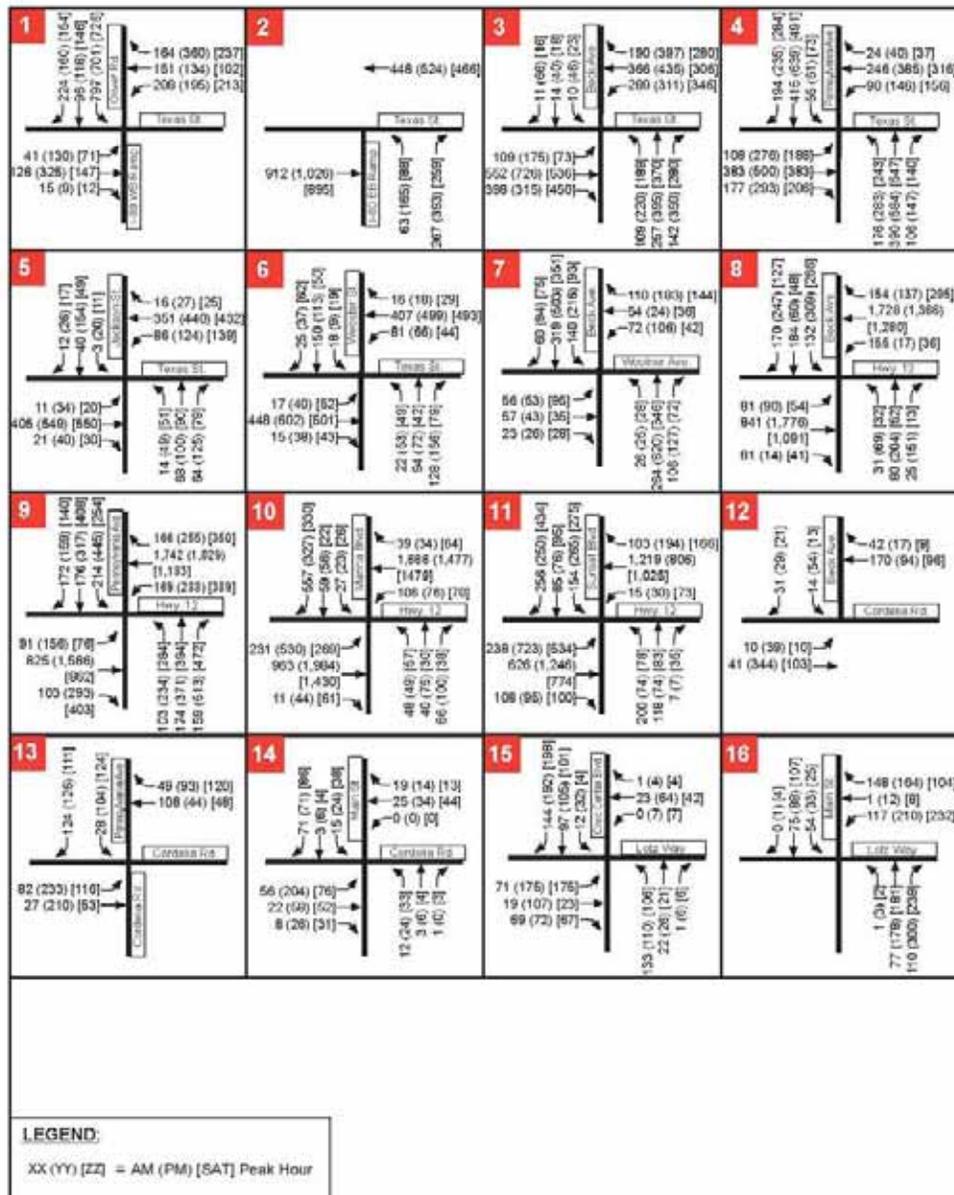


Figure 4.5-21A  
 Existing Plus Project – Alternative 1 Traffic Volumes



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**EXISTING PLUS PROJECT  
 ALTERNATIVE 1**

**FIGURE 21A**

**Figure 4.5-21B**  
**Project Driveway Volumes – Alternative 1 Traffic Volumes (cont')**

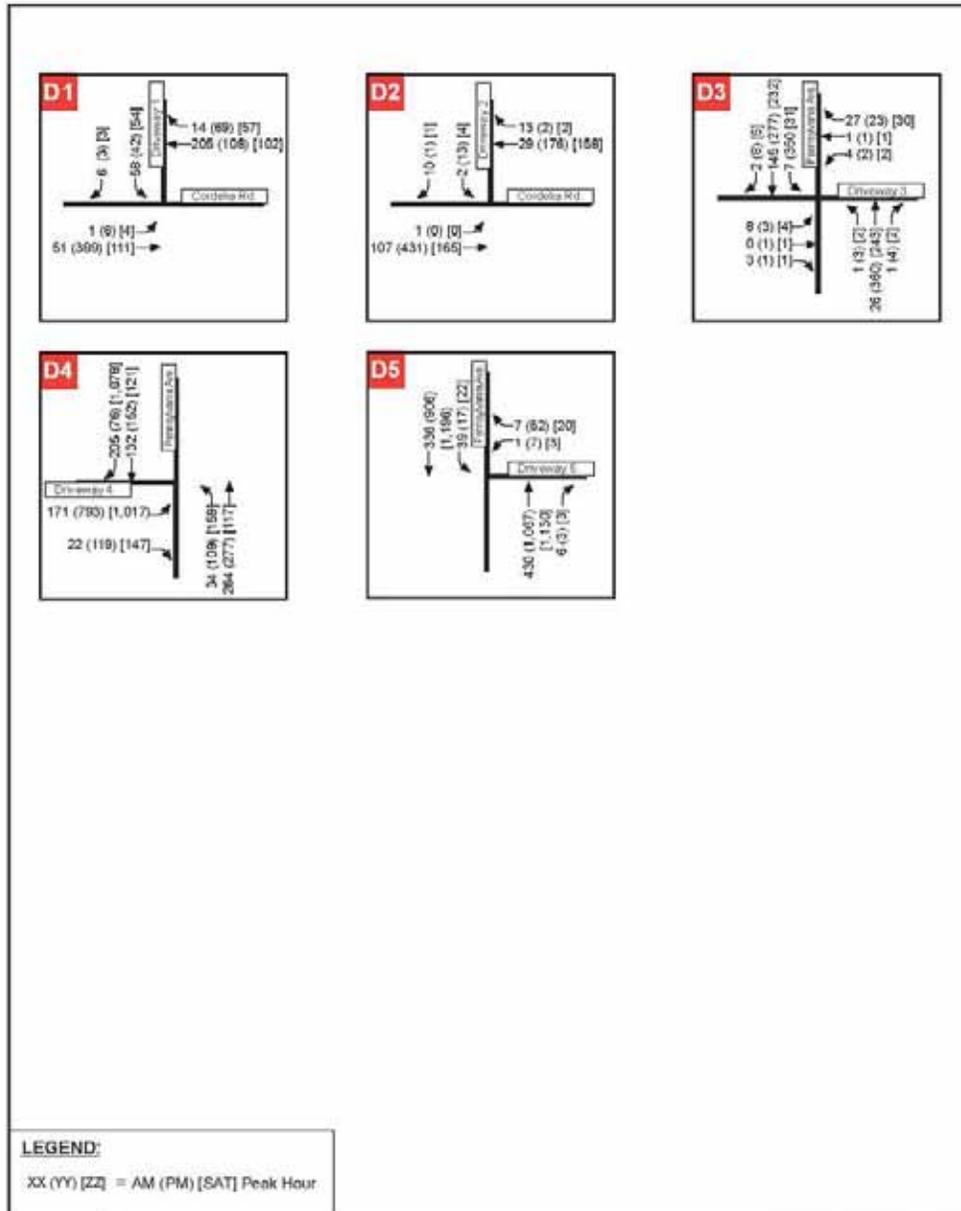
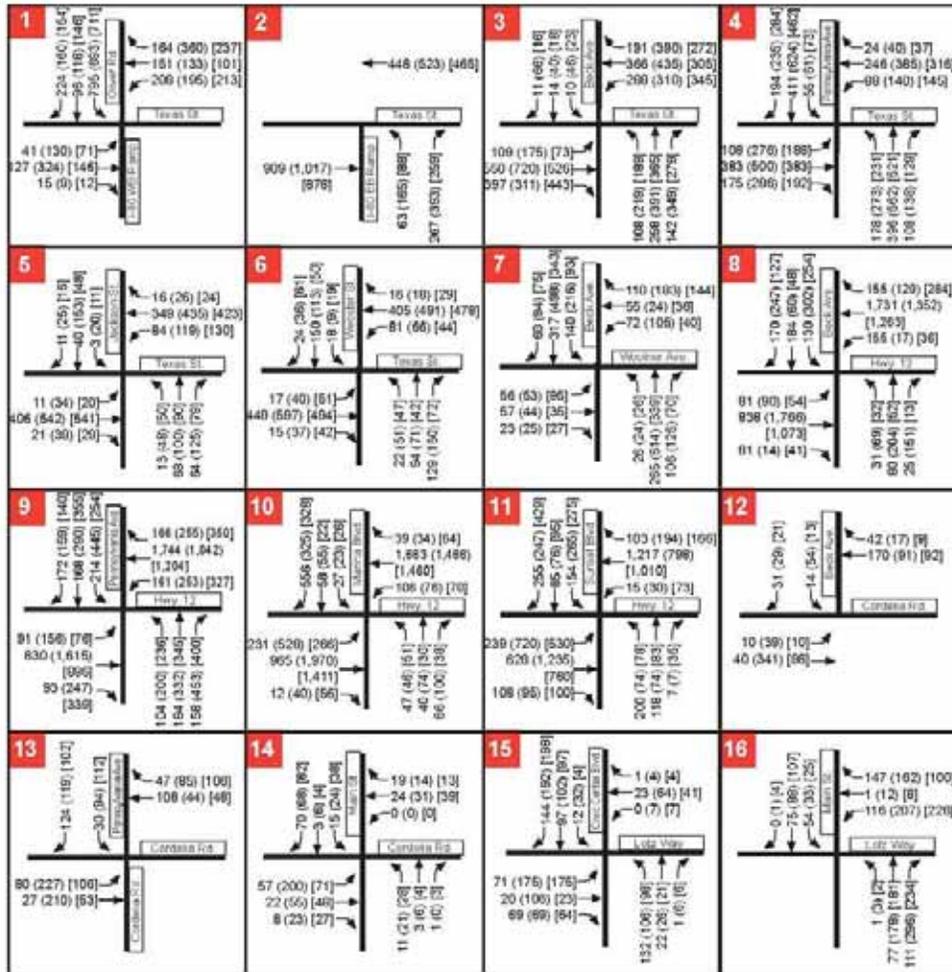


Figure 4.5-22A  
 Existing Plus Project – Alternative 2 Traffic Volumes

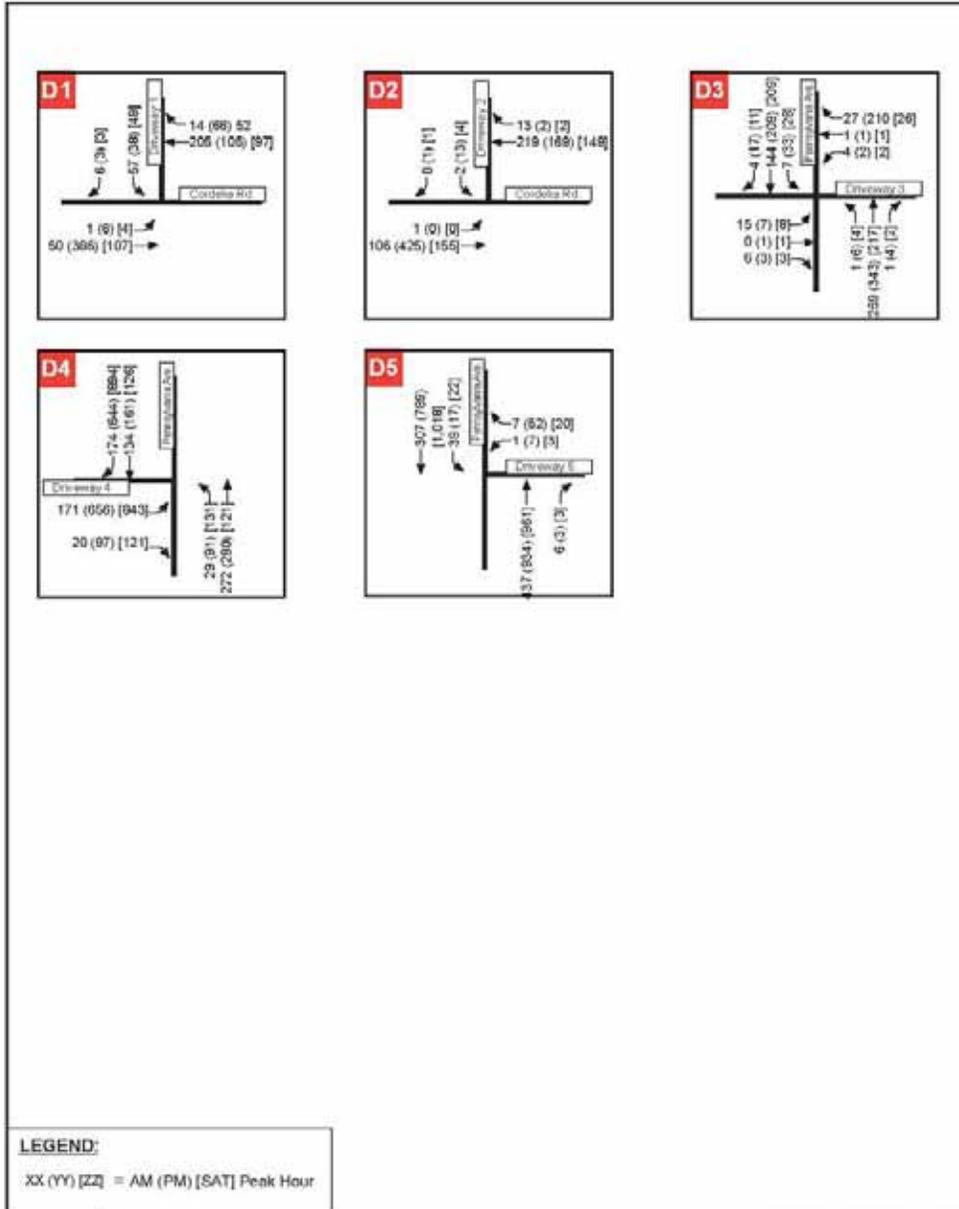


**LEGEND:**  
 XX (YY) (ZZ) = AM (PM) (SAT) Peak Hour

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Gentry-Suisun Annexation  
**EXISTING PLUS PROJECT**  
**ALTERNATIVE 2**  
**FIGURE 22A**

**Figure 4.5-22B**  
**Project Driveway Volumes – Alternative 2 Traffic Volumes (cont')**



## **Project-Specific Impacts and Mitigation Measures**

The following section presents an impact analysis for the off-site and on-site intersections. For intersections which are projected to operate at a deficient level after the addition of project traffic, impacts and mitigation measures are identified. Intersections which are not impacted by the project traffic are not discussed in this section. For the Existing Plus Project and Cumulative Plus Project scenarios, the mitigation measures fall within several major categories. These categories include:

1. Improvements the project will directly construct. These improvements include those located directly adjacent to the project and other improvements in Suisun City.
2. Improvements the project will partially fund through payment of a fair share contribution to the City of Fairfield or Caltrans under a multi-jurisdictional cost-sharing agreement outlined in Mitigation Measure 4.5.1
3. Improvements that can not be constructed since insufficient right-of-way exists or if the payment of a fair share contribution will not likely result in the construction of the needed improvement.

## **Infeasible Improvements**

For each of the impacted intersections in either the Existing Plus Project or Cumulative Scenario, Fehr and Peers identified the mitigation measures needed to meet LOS requirements of each jurisdiction. However, the improvements at several intersections can be considered infeasible for several reasons.

The first category of intersections is those located in the developed areas of the City of Fairfield where there are buildings and parking lots adjacent to the existing roadway. In these cases, the addition of turn lanes or through lanes would impact the existing buildings or parking areas, potentially requiring the removal of parking spaces or buildings. Fehr and Peer and the City consider these mitigation measures to be physically infeasible, because there is insufficient ROW for the needed improvement. Improvements at the following intersections would be physically infeasible:

- West Texas Street/Beck Avenue (Cumulative)
- West Texas Street/Pennsylvania Avenue (Existing and Cumulative)
- West Texas Street/Jackson Street (Cumulative)
- West Texas Street/Webster Street (Cumulative)
- Woolner Avenue/Beck Avenue (Cumulative)
- SR 12/Sunset Avenue (Cumulative)

The second category of intersections is those located in the study area where the project's contribution to the improvement is so small that, even if the project were required to pay fees

representing its “fair share” contribution to the cost of the improvement, the lack of any matching funds in any foreseeable scenario would lead to a lack of the funds needed to actually build needed improvement. In such instances, the City sees little point in requiring fair share payments from the project applicant, as any money collected would not result in actual physical mitigation. For several of the intersections along SR 12, for example, the needed mitigation measure would involve the construction of a grade separated interchange or the addition of through lanes on SR 12. These improvements are beyond the ability of this project to construct or fund as they are regional improvements which benefit the City of Fairfield, Suisun City, and other residents of Solano County. Even the payment of a fair share contribution would not ensure construction of these improvements, since there is no existing funding mechanism for regional improvements on this scale. Fehr and Peers and the City consider these improvements to be fiscally infeasible. Fiscally infeasible improvements include the following locations:

- SR 12/Beck Avenue (Cumulative Scenario only)
- SR 12/Pennsylvania (Cumulative Scenario only)
- SR 12/Marina Boulevard (Cumulative Scenario only)
- SR 12/Sunset Avenue (Cumulative Scenario only)

The project impact at the intersection of West Texas Street/I-80 WB Ramp during both the Existing Plus Project and Cumulative Scenario can also be considered to be fiscally infeasible since the project contribution to the impact at this location is approximately 5 percent or less for all alternatives and scenarios. Mitigating the project impact would require the addition of turn lanes at the intersection which are physically feasible but the project’s fair share payment is not likely to result in the construction of the improvement, given the lack of any existing or anticipated financial mechanism for obtaining funds from other development or through-traffic that also contributes to the need for such improvements.

#### **4.5-1 Impacts to the Texas Street/I-80 WB Ramp Intersection under Existing Plus Base Project, Existing Plus Alternative 1, and Existing Plus Alternative 2 conditions.**

##### Base Project

Prior to the introduction of project trips, this intersection operates at LOS D during the PM peak hour (48 seconds of delay). This LOS currently exceeds the LOS C threshold that is generally applicable to Caltrans facilities. During the AM and Saturday peak hour, the intersection operates at LOS C with 32 seconds and 31 seconds of delay respectively. After the addition of project traffic, this intersection would operate unacceptably at LOS E and D during the PM and Saturday peak hours, respectively (See Table 4.5-6). The addition of project traffic would increase traffic volumes by 6% during the PM peak hour, which would exceed the threshold of three percent for an intersection that currently operates at a deficient level during the PM peak hour. Therefore, the Base Project would result in a *significant* impact.

### Alternative 1

Similar to the Base Project, the addition of traffic under this Alternative would result in the intersection operating unacceptably at LOS E and D during the PM and Saturday peak hours. The addition of Alternative 1 traffic would increase traffic volumes by 5% during the PM peak hour, which would exceed the threshold of three percent for an intersection that currently operates at a deficient level during the PM peak hour. Therefore, Alternative 1 would result in a **significant** impact.

### Alternative 2

Similar to the Base Project, the addition of traffic under this Alternative would result in the intersection operating unacceptably at LOS E and D during the PM and Saturday peak hours, respectively. The addition of Alternative 2 traffic would increase traffic volumes by 4% during the PM peak hour, which would exceed the threshold of three percent for an intersection that currently operates at a deficient level during the PM peak hour. Therefore, Alternative 2 would result in a **significant** impact.

### Mitigation Measure(s)

Implementation of the following mitigation measure, which involves the payment of fees to help fund improvements to a facility controlled by Caltrans, would render the impact **less than significant** if the improvements are fully funded and constructed. Because Caltrans approval and cooperation cannot be assured, however, the City at present cannot be certain that the improvements will be funded, and therefore concludes that the impact is **potentially significant and unavoidable**.

Mitigation Measure 4.5-1 is identified for the Base Project, Alternative 1, and Alternative 2.

**Table 4.5-6  
Existing Plus Base Project, Alternative 1, and Alternative 2 LOS**

Table 5- Existing Plus Approved LOS Results											
Intersection	Jurisdiction	Traffic Control Device	Peak Hour Period	Existing		Existing + Base Project		Existing + Alternative 1		Existing + Alternative 2	
				Average Intersection Delay	LOS						
1. Texas St/I-80 WB Ramp	Caltrans	Signal	AM	32	C	34	C	34	C	33	C
			PM	48	D	64	E	59	E	58	E
			SAT	31	C	41	D	37	D	36	D
2. Texas St/I-80 EB Ramp	Caltrans	Signal	AM	25	C	25	C	25	C	25	C
			PM	30	C	33	C	32	C	32	C
			SAT	24	C	26	C	25	C	25	C
3. Texas St/Beck Ave	Caltrans	Signal	AM	29	C	29	C	29	C	29	C
			PM	42	D	44	D	44	D	43	D
			SAT	37	D	39	D	38	D	38	D
4. Texas St/Pennsylvania Ave	Fairfield	Signal	AM	32	C	34	C	33	C	33	C
			PM	57	E	79	E	71	E	69	E
			SAT	35	D	55	E	45	D	42	D
5. Texas St/Jackson St	Fairfield	Signal	AM	13	B	14	B	14	B	14	B
			PM	16	B	19	B	18	B	18	B
			SAT	16	B	23	C	19	B	18	B
6. Texas St/Webster St	Fairfield	Signal	AM	16	B	17	B	16	B	16	B
			PM	17	B	20	B	19	B	18	B
			SAT	16	B	20	B	18	B	18	B
7. Woolner Ave/Beck Ave	Fairfield	Signal	AM	21	C	22	C	21	C	22	C
			PM	14	B	15	B	15	B	15	B
			SAT	16	B	16	B	15	B	16	B
8. Hwy 12/Beck Ave	Caltrans	Signal	AM	56	E	62	E	60	E	60	E
			PM	52	D	62	E	58	E	56	E
			SAT	30	C	42	D	40	D	39	D
9. Hwy 12/Pennsylvania Ave	Caltrans	Signal	AM	44	D	>80	F	>80	F	>80	F
			PM	43	D	>80	F	>80	F	>80	F
			SAT	27	C	>80	F	>80	F	>80	F
10. Hwy 12/Marina Blvd	Caltrans	Signal	AM	40	D	43	D	42	D	42	D
			PM	24	C	25	C	25	C	25	C
			SAT	18	B	19	B	18	B	18	B
11. Hwy 12/Sunset Ave	Caltrans	Signal	AM	40	D	40	D	40	D	40	D
			PM	31	C	31	C	31	C	31	C
			SAT	38	D	37	D	37	D	37	D
12. Cordelia Rd/Beck Ave	Fairfield	TWSC	AM	10	A	11	B	11	B	11	B
			PM	12	B	15	B	14	B	14	B
			SAT	9	A	10	B	10	B	10	A
13. Cordelia Rd/Pennsylvania	Suisun City	TWSC	AM	10	A	13	B	12	B	12	B
			PM	12	B	>50	F	34	C	30	C
			SAT	10	A	19	C	15	C	14	B
14. Cordelia Rd/Main St	Suisun City	All-way	AM	7	A	8	A	7	A	7	A
			PM	9	A	10	A	9	A	9	A
			SAT	8	A	9	A	8	A	8	A
15. Lotz Way/Civic Center Blvd	Caltrans	All-way	AM	8	A	9	A	9	A	9	A
			PM	10	A	12	B	12	B	12	B
			SAT	11	B	11	B	11	B	11	B
16. Lotz Way/Main St	Suisun City	Signal	AM	13	B	12	B	12	B	12	B
			PM	12	B	13	B	13	B	13	B
			SAT	9	A	13	B	12	B	12	B
17. Driveway 1/Cordelia Rd	Project	TWSC	AM	N/A	N/A	11	B	10	B	10	B
			PM	N/A	N/A	13	B	13	B	13	B
			SAT	N/A	N/A	10	B	10	B	10	B
18. Driveway 2/Cordelia Rd.	Project	TWSC	AM	N/A	N/A	11	B	10	B	10	B
			PM	N/A	N/A	15	B	13	B	13	B
			SAT	N/A	N/A	11	B	10	B	10	B
19. Driveway 3/Pennsylvania	Project	TWSC	AM	N/A	N/A	12	B	11	B	11	B
			PM	N/A	N/A	23	C	14	B	14	B
			SAT	N/A	N/A	21	C	13	B	12	B
20. Driveway 4/Pennsylvania	Project	TWSC	AM	N/A	N/A	>50	F	17	C	16	C
			PM	N/A	N/A	>50	F	>50	F	>50	F
			SAT	N/A	N/A	>50	F	>50	F	>50	F
21. Driveway 5/Pennsylvania	Project	TWSC	AM	N/A	N/A	13	B	12	B	12	B
			PM	N/A	N/A	>50	F	31	D	24	C
			SAT	N/A	N/A	>50	F	35	D	25	C
23. Driveway 4/Internal Project	Project	All-way	AM	N/A	N/A	9	A	9	A	8	A
			PM	N/A	N/A	>50	F	>50	F	26	D
			SAT	N/A	N/A	>50	F	>50	F	>50	F

4.5-1 *The developer(s) of the Gentry property shall be responsible for the project's fair share of all feasible physical improvements necessary and available to reduce the severity of the project's significant transportation-related impacts. Where the project creates the entire need for such improvements, the developer(s) shall either build such facilities or shall pay the entire costs of the facilities. Where the project creates only part of the need for such improvements, the project shall either build the improvements, subject to fee credits or reimbursement from future development or other sources, or shall pay impact fees to the City of Suisun ("City" or "Suisun") in amounts that reflect the project's fair share contributions. Such fees shall be collected by the City at the time of the issuance of building permits, and shall apply not only to improvements required on transportation facilities subject to the City's sole control, but shall also apply to facilities controlled in full or in part by the City of Fairfield ("Fairfield") and/or the California Department of Transportation ("Caltrans"), provided that, as set forth below, the City is successful in entering into agreements with these two entities permitting the expenditures of funds collected on facilities controlled by the two entities.*

*In order to facilitate the construction of such improvements on transportation facilities located within the City's boundaries and subject to its sole jurisdiction, the City, consistent with Goal 5, Policy 2, of the Circulation and Transportation Element of its General Plan, shall undertake as soon as reasonably possible the creation of a Capital Improvement Program ("CIP") by which the City shall assess future development projects, along with the Gentry project, their fair shares of the costs of physical transportation improvements required in whole or in part because of the impacts of such projects. To the extent that, even with the CIP in place, the City cannot collect sufficient funds from new development to pay the full costs of the improvements at issue, the City shall make up funding shortfalls from other sources, including, but not limited to, the City's General Fund as augmented by revenues derived from the Gentry project or federal, state, or regional funds made available by the Solano County Transportation Authority. In the event that, five years after the issuance of building permits for the Gentry project, the City has been unable to obtain the funds needed to fully finance improvements included within the CIP and for which the City has charged impact fees, the City shall take one of the following actions: (i) reimburse the developer(s) of the Gentry project for some or all of the moneys collected; (ii) spend the moneys collected on the highest priority improvements while abandoning plans to construct lower priority improvements, reimbursing the developer(s) for any unspent moneys; or (iii) identify a credible strategy by which the remaining necessary funds needed for all identified improvements can be obtained within a reasonable time frame. If the City exercises the third option, it must obtain all necessary funding within an additional two-year time frame, after which the City must exercise one of the first two options.*

*In order to facilitate the construction of improvements on transportation facilities within the partial or full control of Fairfield, the City shall pursue in good faith, on as expeditious a schedule as is reasonably possible, an agreement with Fairfield pursuant to which each jurisdiction shall agree to accept “fair share” contributions from projects occurring in the other jurisdiction in order to mitigate the impacts of such projects occurring within its own jurisdiction. In other words, Suisun would agree to accept fees collected by Fairfield from projects in Fairfield causing impacts within Suisun, and Fairfield would agree to accept fees collected by Suisun from projects in Suisun causing impacts within Fairfield. The agreement should identify key improvements of benefit to both jurisdictions, and should spell out the details regarding a mutually acceptable methodology for calculating fair share contributions for the funding of such improvements. The City should strive to employ methodologies under this arrangement consistent with those the City will use for its own CIP. In the event that Fairfield does not agree to enter into an agreement with the City, the developer(s) of the Gentry project shall be absolved of any obligation to contribute to the financing of improvements within the City of Fairfield.*

*In order to facilitate the construction of improvements on transportation facilities under the partial or full control of Caltrans, the City shall pursue in good faith, on as expeditious a schedule as is reasonably possible, an agreement with Caltrans that, to the extent permitted by state law, will allow expenditures of moneys collected by the City from projects in the City, including the Gentry project, that cause impacts on Caltrans facilities and thus create part of the demand for new improvements on such facilities. To the extent that the participation of Fairfield in an agreement with Caltrans will facilitate the construction of desired improvements, the City shall use its best efforts to include the City of Fairfield in its agreement with Caltrans. The agreement shall exclude funding for any improvements unacceptable to Caltrans, and shall provide that, in the event that Caltrans and/or Fairfield cannot identify a source of matching funds to fully finance improvements Caltrans considers desirable, the City, and thus the developers paying fees to the City for improvements requiring Caltrans approval or cooperation, shall be absolved of its obligation to fund portions of the costs of such facilities. In the event that the City has collected funds from developers prior to a determination by Caltrans that matching funds are not available, the City shall reimburse such developers for any and all fees paid towards the construction of such improvements.*

*Consistent with this cost sharing mechanism identified above, the applicant shall pay to the City fees representing the project’s fair share contribution to:*

- *The addition of an exclusive southbound left-turn lane at Texas Street/I-80 WB Ramp intersection.*

According to a review of the field conditions, sufficient right-of-way would be adequate for the construction of this improvement. However, this improvement would appear to be fiscally infeasible in that the project contribution to the specified improvement would be insufficient to assure completion of the improvement. Therefore, this impact is considered significant and unavoidable, even if the cost sharing mechanism presented above is successfully implemented.

#### **4.5-2 Impacts to the Texas Street/Beck Street Intersection under Existing Plus Base Project, Existing Plus Alternative 1, and Existing Plus Alternative 2 conditions.**

##### Base Project

This intersection operates at LOS D during both the PM and Saturday periods with a delay of 42 seconds (PM) and 37 seconds (Saturday). This LOS currently exceeds the LOS C threshold that is generally applicable to City of Fairfield facilities. After the addition of project trips, the delay would increase but the LOS would remain at LOS D. The Base Project would result in an increase in traffic volumes by 8% in the PM peak hour and 12% in the Saturday peak hour, which would exceed the threshold of three percent for an intersection that currently operates at a deficient level during the PM and Saturday peak hours. Therefore, the Base Project would result in a *significant* impact.

##### Alternative 1

Similar to the Base Project, the addition of Alternative 1 trips would increase the delay but the LOS would remain at LOS D. Alternative 1 would result in an increase in traffic volumes by 6% in the PM peak hour and 9% in the Saturday peak hour, which would exceed the threshold of three percent for an intersection that currently operates at a deficient level during the PM and Saturday peak hours. Therefore, Alternative 1 would result in a *significant* impact.

##### Alternative 2

Similar to the Base Project, the addition of Alternative 2 trips would increase the delay but the LOS would remain at LOS D. Alternative 2 would result in an increase in traffic volumes by 5% in the PM peak hour and 8% in the Saturday peak hour, which would exceed the threshold of three percent for an intersection that currently operates at a deficient level during the PM and Saturday peak hours. Therefore, Alternative 2 would result in a *significant* impact.

##### Mitigation Measure(s)

Implementation of the following mitigation measure, which involves the payment of fees to help fund improvements to a facility controlled by Caltrans, would render the impact *less than significant* if the improvements are fully funded and constructed. Because Caltrans approval and cooperation cannot be assured, however, the City at present cannot

be certain that the improvements will be funded, and therefore concludes that the impact is *potentially significant and unavoidable*.

Mitigation Measure 4.5-2 is identified for the Base Project, Alternative 1, and Alternative 2.

4.5-2(a) *Consistent with the funding mechanism outlined in Mitigation Measure 4.5-1 the applicant shall pay to the City fees representing the project's fair share contribution to prior to the completion of the commercial buildings within Planning Area 1:*

- *The modification of the westbound right-turn movement from permitted to free movement at the Texas Street/Beck Street intersection.*

4.5-2(b) *Prior to the completion of the commercial buildings within Planning Area 1, the applicant shall pay for a traffic operations analysis for the optimization of the signal timings at the Texas Street/Beck Street intersection.*

According to the Traffic Study, sufficient right-of-way appears to exist for the construction of this improvement. In addition, after implementation of this mitigation measure, the LOS at this intersection would be C or better during all periods.

#### **4.5-3 Impacts to the Texas Street/Pennsylvania Avenue Intersection under Existing Plus Base Project, Existing Plus Alternative 1, and Existing Plus Alternative 2 conditions.**

##### Base Project

This intersection currently operates at LOS E in the PM peak hour, which exceeds the City of Fairfield's LOS D standard. This intersection operates at LOS C during the AM peak hour (32 seconds of delay) and LOS D during the Saturday peak hour (35 seconds of delay). After the addition of project trips, the intersection would operate at LOS E with increased delay during the PM peak hour and degraded LOS E in the Saturday peak hour. The addition of project traffic would increase traffic volumes by 27% during the PM peak hour, which would exceed the threshold of three percent for an intersection that currently operates at a deficient level during the PM peak hour. Therefore, the Base Project would result in a *significant* impact.

##### Alternative 1

Similar to the Base Project, the addition of Alternative 1 trips at this intersection would result in the intersection operating at LOS E with increased delay during the PM peak hour. The addition of Alternative 1 traffic would increase traffic volumes by 20% during the PM peak hour, which would exceed the threshold of three percent for an intersection that currently operates at a deficient level during the PM peak hour. Therefore, Alternative 1 would result in a *significant* impact.

## Alternative 2

Similar to the Base Project, the addition of Alternative 2 trips at this intersection would result in the intersection operating at LOS E with increased delay during the PM peak hour. Alternative 2 would increase traffic volumes by 17% during PM peak hour, which would exceed the threshold of three percent for an intersection that currently operates at a deficient level during the PM peak hour. Therefore, Alternative 2 would result in a *significant* impact.

### Mitigation Measure(s)

Implementation of the following mitigation measure would be infeasible for Texas Street/Pennsylvania Avenue because the City of Suisun City lacks jurisdiction over this intersection and would require approval of an outside agency, such as the City of Fairfield. Therefore, the impact would remain *significant and unavoidable*.

Mitigation Measure 4.5-3 is identified for the Base Project, Alternative 1, and Alternative 2.

4.5-3(a) *Consistent with the funding mechanism outlined in Mitigation Measure 4.5-1 the applicant shall pay to the City fees representing the project's fair share contribution to prior to the completion of the commercial buildings within Planning Area 1.*

4.5-3(b) *Prior to approval of improvement plans, the applicant shall submit to the City Engineer, for review and approval, plans for the restriping of the existing shared through/right-turn lane to the exclusive through lane on the southbound approach.*

Based on a review of conditions at the intersection, insufficient right-of-way appears to exist for this improvement. Because there is insufficient right-of-way, this improvement can be considered to be physically infeasible and the impact remains significant and unavoidable, even if the cost sharing mechanism identified is successfully implemented.

## **4.5-4 Impacts to the SR 12/Beck Avenue Intersection under Existing Plus Base Project, Existing Plus Alternative 1, and Existing Plus Alternative 2 conditions.**

### Base Project

This intersection currently operates at LOS E in the AM peak hour and LOS D in the PM peak hour, which exceeds Caltrans' LOS C standard. The intersection operates at LOS C during the Saturday peak hour, which is an acceptable condition. After the addition of project trips, the intersection would: remain at LOS E with increased delay in the AM peak hour; degrade from LOS D to LOS E during the PM peak hour; and degrade from LOS C to LOS D during the Saturday peak hour. The addition of project traffic would increase traffic volumes by more than 3 percent and 9 percent during the AM and PM

peak hours, respectively, which would exceed the threshold of three percent for an intersection that currently operates at a deficient level during the AM and PM peak hour. Therefore, the Base Project would result in a **significant** impact.

#### Alternative 1

Similar to the Base Project, the addition of Alternative 1 trips would result in the intersection operations remaining at LOS E with increased delay in the AM peak hour. For the PM peak hour, the intersection would degrade from LOS D to LOS E, and during the Saturday peak hour, the intersection would degrade from LOS C to LOS D. The addition of project traffic would increase traffic volumes by 7 percent during the PM peak hour, which would exceed the threshold of three percent for an intersection that currently operates at a deficient level during the AM and PM peak hour. Therefore, Alternative 1 would result in a **significant** impact.

#### Alternative 2

Similar to the Base Project, the addition of Alternative 2 trips would result in the intersection operations remaining at LOS E with increased delay in the AM peak hour. For the PM peak hour, the intersection would degrade from LOS D to LOS E, and during the Saturday peak hour, the intersection would degrade from LOS C to LOS D. The addition of Alternative 2 traffic would increase traffic volumes by 6 percent during the PM peak hour, which would exceed the threshold of three percent for an intersection that currently operates at a deficient level during the AM and PM peak hour. Therefore, Alternative 2 would result in a **significant** impact.

#### Mitigation Measure(s)

Implementation of the following mitigation measure, which involves the payment of fees to help fund improvements to a facility controlled by Fairfield and Caltrans, would render the impact **less than significant** if the improvements are fully funded and constructed. Because Caltrans approval and cooperation cannot be assured, however, the City at present cannot be certain that the improvements will be funded, and therefore concludes that the impact is **potentially significant and unavoidable**.

Mitigation Measure 4.5-4a is identified for the Base Project, Alternative 1 and Alternative 2.

4.5-4      *Consistent with the funding mechanism outlined in Measure 4.5-1 the applicant shall pay to the City fees prior to the completion of all commercial buildings within Planning Area 1 representing the project's fair share contribution to:*

- *The addition of an exclusive right-turn lane and the addition of the second left-turn lane on the southbound approach at SR 12/Beck Avenue intersection;*

- *The restriping of the existing shared through/right-turn lane to the exclusive through lane on the westbound approach.*

For the Base Project, adequate right-of-way appears to be sufficient for this improvement. After implementation of this mitigation measure, the intersection LOS would be LOS C during the AM and Saturday peak hours, and LOS D with decreased delay compared to existing conditions prior to the addition of project traffic during the PM peak hour.

For Alternatives 1 and 2, adequate right-of-way appears to be sufficient for this improvement. After implementation of this mitigation measure, the intersection LOS would be LOS C or better during all periods.

#### **4.5-5 Impacts to the SR 12/Pennsylvania Avenue Intersection under Existing Plus Base Project, Existing Plus Alternative 1, and Existing Plus Alternative 2 conditions.**

##### Base Project

This intersection currently operates at LOS D in the AM and PM peak hour, which exceeds Caltrans' LOS C standard. The intersection operates at LOS C during the Saturday peak hour, which is an acceptable condition. After the addition of project trips, the intersection operations would degrade to LOS F during the AM, PM, and Saturday peak hours. The Base Project would increase the traffic volumes at the intersection by 13 and 40 percent during the AM and PM peak hours, respectively, which would exceed the threshold of three percent for an intersection that currently operates at a deficient level during the AM and PM peak hour. In addition, the Base Project would degrade the LOS from LOS C to LOS F during the Saturday peak hour, resulting in a *significant* impact.

##### Alternative 1

Similar to the Base Project, the addition of Alternative 1 trips would result in the intersection operations degrading to LOS F during the AM, PM, and Saturday peak hours. Alternative 1 would increase the traffic volumes at the intersection by 11 and 29 percent during the AM and PM peak hours, respectively, which would exceed the threshold of three percent for an intersection that currently operates a deficient level during the AM and PM peak hour. In addition, Alternative 1 would degrade the LOS from LOS C to LOS F during the Saturday period, resulting in a *significant* impact.

##### Alternative 2

Similar to the Base Project, the addition of Alternative 2 trips would cause intersection operations to degrade to LOS F during the AM, PM, and Saturday peak hours. Alternative 2 would result in increased traffic volumes at the intersection by 11 and 25 percent during the AM and PM peak hours, respectively, which would exceed the threshold of three percent for an intersection that currently operates at a deficient level during the AM and PM peak hour. Alternative 2 would also degrade the LOS from LOS C to LOS F during the Saturday period, resulting in a *significant* impact.

Mitigation Measure(s)

Implementation of the following mitigation measure, which would involve the construction of an improvement to a facility controlled by Caltrans, would render the impact *less than significant* if the improvements are fully funded and constructed. Because Caltrans approval and cooperation cannot be assured, however, the City at present cannot be certain that the improvements will be funded, and therefore concludes that the impact is *potentially significant and unavoidable*.

Mitigation Measure 4.5-5(a) is identified for the Base Project.

*4.5-5(a)(1) Prior to approval of improvement plans, the applicant shall submit to the City Engineer for review and approval, plans for the addition of lanes on all approaches to the SR12/Pennsylvania Avenue intersection. Some of the improvements required would include the addition of a through lane on SR 12, additional lanes on the northbound approach to the intersection, additional westbound turn lanes, and other improvements. Alternately, one or more of the movements could require grade separation. An urban interchange would fully mitigate the deficient conditions at this intersection.*

Implementing this mitigation measure would require extensive engineering studies and coordination between the project applicant, the City of Fairfield, Suisun City, and the California Department of Transportation. Constructing an interchange at this location could cost upwards of \$10 million, as documented by the SR 12 MIS completed in 2001. Given the difficulties in implementing this mitigation measure and the cost involved, full implementation cannot be assured in a timely fashion to mitigate the project impact.

In addition, currently insufficient funding exists for this improvement and no regional mechanisms to collect money for this improvement. For example, Solano County does not have a countywide traffic impact fee program that would fund a regional improvement such as this. The City of Fairfield is a potential funding source for this interchange, although it is uncertain at this time whether there is sufficient funding from other parties to construct the interchange in conjunction with this project.

As a partial mitigation measure to the above, the traffic consultant has recommended the following mitigation measure.

*4.5-5(a)(2) Prior to approval of improvement plans, the applicant shall submit to the City Engineer for review and approval, plans for the reconstruction of the northbound approach of the SR12/Pennsylvania Avenue intersection to include two left-turn lanes, two through, and a free-right-turn lane. Two southbound receiving lanes shall also be constructed. The traffic consultant also recommends that Pennsylvania Avenue be constructed as a four-lane roadway along the project frontage. At a minimum, this widening should extend to the project entrance at Driveway #4. In conjunction with the widening on Pennsylvania Avenue, an additional*

*westbound left-turn lane on SR 12 should be provided to facilitate access to the project. The reconstruction and construction of the lanes shall be complete prior to initial occupancy of a commercial building or residential unit.*

Mitigation Measure 4.5-5(b) is identified for Alternative 1 and Alternative 2.

*4.5-5(b) Prior to approval of improvement plans, the applicant shall submit to the City Engineer, for review and approval, plans for the addition of lanes on all approaches to the SR 12/Pennsylvania Avenue intersection. These additional lanes would include turn lanes on the eastbound and westbound approaches and additional through lanes on Pennsylvania Avenue. The installation of the additional lanes shall be complete prior to initial occupancy of a commercial building or residential unit.*

With these improvements, this intersection would operate at LOS D, which would provide acceptable level of operations and mitigate the impacts of the project. No impact is judged to occur because the delay would be less than the existing condition, if the proposed improvements are implemented.

**4.5-6 Impacts to the SR 12/Sunset Avenue Intersection under Existing Plus Base Project, Existing Plus Alternative 1, and Existing Plus Alternative 2 conditions.**

Base Project

This intersection currently operates at LOS D during the AM and Saturday peak hours. After the addition of project traffic, the LOS would remain at LOS D. However, LOS C is considered the acceptable threshold for this location so the intersection is judged to be operating at a deficient level. The Base Project would result in an increase in traffic volumes by 10 percent at this deficient intersection during the Saturday peak hour. The addition of project traffic would cause an increase of more than three percent at an intersection that currently operates at a deficient level during the Saturday peak hour, resulting in a *significant* impact.

Alternative 1

Similar to the Base Project, the addition of Alternative 1 traffic would result in the LOS remaining at LOS D. Alternative 1 would result in an increase in traffic volumes by 10 percent at this deficient intersection during the Saturday peak hour. Because the addition of Alternative 1 traffic would cause an increase of more than three percent at an intersection that currently operates at a deficient level during the Saturday peak hour, a *significant* impact would occur.

Alternative 2

Similar to the Base Project, the addition of Alternative 2 traffic would result in the LOS remaining at LOS D. Alternative 2 would result in an increase in traffic volumes by 10 percent at this deficient intersection during the Saturday peak hour. Because the addition of Alternative 2 traffic would cause an increase of more than three percent at an intersection that currently operates at a deficient level during the Saturday peak hour, a *significant* impact would occur.

Mitigation Measure(s)

Implementation of the following mitigation measure, which involves the payment of fees to help fund improvements to a facility controlled by Caltrans, would render the impact *less than significant* if the improvements are fully funded and constructed. Because Caltrans approval and cooperation cannot be assured, however, the City at present cannot be certain that the improvements will be funded, and therefore concludes that the impact is *potentially significant and unavoidable*.

Mitigation Measure 4.5-6 is identified for the Base Project, Alternative 1, and Alternative 2.

4.5-6            *Prior to the completion of all commercial buildings within Planning Area 1, the applicant shall pay for a traffic operations analysis for the optimization of the signal timings at the SR 12/Sunset Avenue intersection. Any changes to signal timings would require approval from the California Department of Transportation.*

After implementation of this mitigation measure, the intersection LOS would be LOS C during all periods.

**4.5-7    Impacts to the Cordelia Road/Pennsylvania Avenue intersection under Existing Plus Base Project, Existing Plus Alternative 1, and Existing Plus Alternative 2 conditions.**

Base Project

This intersection, which operates under side street stop control, currently operates at LOS C or better during all peak hours. After the addition of project traffic, the intersection would operate at LOS F with delays exceeding 50 seconds during the PM peak hour. The addition of project traffic also causes the LOS to degrade from an acceptable LOS C to LOS F during the PM peak hour. Therefore, a *potentially significant* impact would occur.

Alternative 1

After the addition of Alternative 1 traffic, the intersection would operate at LOS D during the PM peak hour. The addition of project traffic causes the LOS to degrade from an acceptable LOS C to LOS D during the PM peak hour, resulting in a *potentially significant* impact.

## Alternative 2

After the addition of Alternative 2 traffic, the intersection would operate at LOS D during the PM peak hour. The addition of project traffic causes the LOS to degrade from an acceptable LOS C to LOS D during the PM peak hour, resulting in a ***potentially significant*** impact.

### Mitigation Measure(s)

Implementation of the following mitigation measures, one of which requires approval of the California Public Utilities Commission (CPUC), would render the impact to *less-than-significant* if CPUC approval is granted. Because CPUC approval cannot be assured, however, the City at present cannot be certain that the additional lanes required by the measures can be constructed, and therefore, concludes that the impact is ***potentially significant and unavoidable***.

Mitigation Measure 4.5-7 is identified for the Base Project, Alternative 1, and Alternative 2.

4.5-7(a) *Prior to installation of a traffic signal, a complete signal warrant analysis should be conducted to verify the need for a traffic signal. If it is determined that a traffic signal is required, the applicant shall fully fund the installation of a traffic signal at Cordelia Road/Pennsylvania Avenue. Prior to the completion of all commercial buildings within Planning Area 1, the applicant shall submit design plans for this improvement to the City Engineer for his review and approval.*

4.5-7(b) *Prior to the completion of all commercial buildings within Planning Area 1, the applicant shall submit to the City Engineer, for review and approval, plans for the widening of Pennsylvania Avenue to four travel lanes along the project frontage north and south of this location appropriate transitions for these travel lanes. The design for this intersection is complicated by the proximate location to the adjacent railroad track. Improving Pennsylvania Avenue over the railroad tracks would require the approval of the California Public Utilities Commission (CPUC). The applicant would be responsible for the construction of this improvement.*

After implementation of this mitigation measure, the intersection LOS would be LOS B during all periods. This intersection is located in the City of Suisun City and the City has the ability to implement this mitigation measure as necessary.

## **4.5-8 Impacts to the Pennsylvania Avenue/Driveway #4 intersection under Existing Plus Base Project, Existing Plus Alternative 1, and Existing Plus Alternative 2 conditions.**

### Base Project

This intersection would provide primary access to the main commercial portion of the proposed development. For purposes of this analysis, this intersection is assumed to operate under side-street stop control and all turning movements are assumed to occur at this intersection. Additionally, Pennsylvania Avenue is assumed to have two lanes at this location. Based up this assumption, the intersection would operate at LOS F during all the peak hours. Because this LOS would exceed the City's LOS standard of C, a ***potentially significant*** impact occurs.

#### Alternative 1

Similar to the Base Project, with the addition of Alternative 1 traffic, this intersection would operate at LOS F during all the peak hours, resulting in a ***potentially significant*** impact.

#### Alternative 2

Similar to the Base Project, with the addition of Alternative 2 traffic, this intersection would operate at LOS F during all the peak hours, resulting in a ***potentially significant*** impact.

#### Mitigation Measure(s)

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

Mitigation Measure 4.5-8 is identified for the Base Project, Alternative 1, and Alternative 2.

4.5-8(a) *Prior to approval of improvement plans, the applicant shall submit to the City Engineer, for review and approval, plans for the widening of Pennsylvania Avenue/Driveway #4 entrance and additional turn lanes, such as an additional left-turn lane outbound from the project, and an additional right-turn lane entering the project. The applicant would be responsible for the funding and construction for widening Pennsylvania Avenue through this intersection and modifications to the site plan to provide the necessary turn lanes at this intersection which shall be complete prior to initial occupancy of a commercial building or residential unit.*

4.5-8(b) *The applicant shall fully fund the installation of a traffic signal at Pennsylvania Avenue/Driveway #4. Prior to initial occupancy of a commercial building or residential unit, the signal at Pennsylvania Avenue/Driveway #4 shall be installed and operational as determined by the City Engineer.*

With these modifications, the intersection would operate at LOS B or better during all time periods. The recommended lane configuration for this intersection is addressed in the chapter discussing the project site access and circulation. This intersection is located in the City of Suisun City and the City has the ability to implement this mitigation measure as necessary.

**4.5-9 Impacts to the Pennsylvania Avenue/Driveway #5 intersection under Existing Plus Base Project, Existing Plus Alternative 1, and Existing Plus Alternative 2 conditions.**

Base Project

This proposed intersection would be located to the south of SR 12 along Pennsylvania Avenue and would provide access to the Gilbert Parcel. For purposes of this analysis, this intersection is assumed to operate under side street stop control and all turning movements are assumed to occur at this intersection. Additionally, Pennsylvania Avenue is assumed to have two lanes at this location. Based upon these assumptions, the intersection would operate at LOS F during both the PM and Saturday peak hours. Therefore, because this Base Project intersection would exceed the LOS C threshold, a *significant* impact would occur.

Alternative 1

With the addition of Alternative 1 traffic, this intersection would operate at LOS D during both the PM and Saturday Peak hours. Therefore, because the Pennsylvania Avenue/Driveway # 5 intersection would exceed the LOS C threshold, a *significant* impact would occur.

Alternative 2

With the addition of Alternative 2 traffic, this intersection would operate at LOS C or better during both the PM and Saturday Peak hours. Therefore, this intersection would not exceed the LOS C threshold and would result in a *less-than-significant* impact.

Mitigation Measure(s)

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

Mitigation Measure 4.5-9 is identified for the Base Project and Alternative 1.

- 4.5-9 *Prior to approval of improvement plans, the applicant shall submit to the City Engineer, for review and approval, plans for the widening of Pennsylvania Avenue and changes in the access control at Pennsylvania Avenue/Driveway #5 location. This driveway would have to operate as right-in/right-out driveways only. The widening of Pennsylvania Avenue/Driveway #5 shall be complete prior to initial occupancy of a commercial building or residential unit.*

The installation of a traffic signal was considered, but cannot be recommended given the distance to the signal at SR 12/Pennsylvania Avenue. Additionally, left-in movements cannot be allowed given the extensive queuing that is expected to occur at the SR 12/Pennsylvania intersection. With these modifications, the intersection would operate at LOS B or better during all time periods. This intersection is located in the City of Suisun City and the City has the ability to implement this mitigation measure as necessary.

Mitigation Measures are not required for Alternative 2.

**4.5-10 Impacts to the Driveway #4/Internal Roadway intersection under Existing Plus Base Project, Existing Plus Alternative 1, and Existing Plus Alternative 2 conditions.**

Base Project

This intersection represents the connection between the major internal roadway on the main commercial site and Driveway #4. Nearly all of the traffic accessing the main commercial site would enter through this intersection while traveling to individual buildings. This analysis assumes that this intersection operates as an all-way stop intersection with one lane approaches in all directions. Based on this assumed configuration, the intersection would operate at LOS F during the PM and Saturday peak hours. Therefore, because the proposed intersection LOS would exceed the City of Suisun City's LOS C standard a *potentially significant* impact would occur.

Alternative 1

Similar to the Base Project, this intersection would operate at LOS F during the PM and Saturday peak hours. Therefore, because the proposed intersection LOS would exceed the City of Suisun City's LOS C standard a *potentially significant* impact would occur.

Alternative 2

With the addition of Alternative 2 traffic, this intersection would operate at LOS D during the PM peak hour and LOS F during Saturday peak hour. Therefore, because the proposed intersection LOS would exceed the City of Suisun City's LOS C standard a *potentially significant* impact would occur.

Mitigation Measure(s)

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

Mitigation Measure 4.5-10 is identified for the Base Project, Alternative 1, and Alternative 2.

4.5-10(a) *The applicant shall fully fund the installation of a traffic signal at Driveway #4/Internal Roadway. Prior to initial occupancy of a*

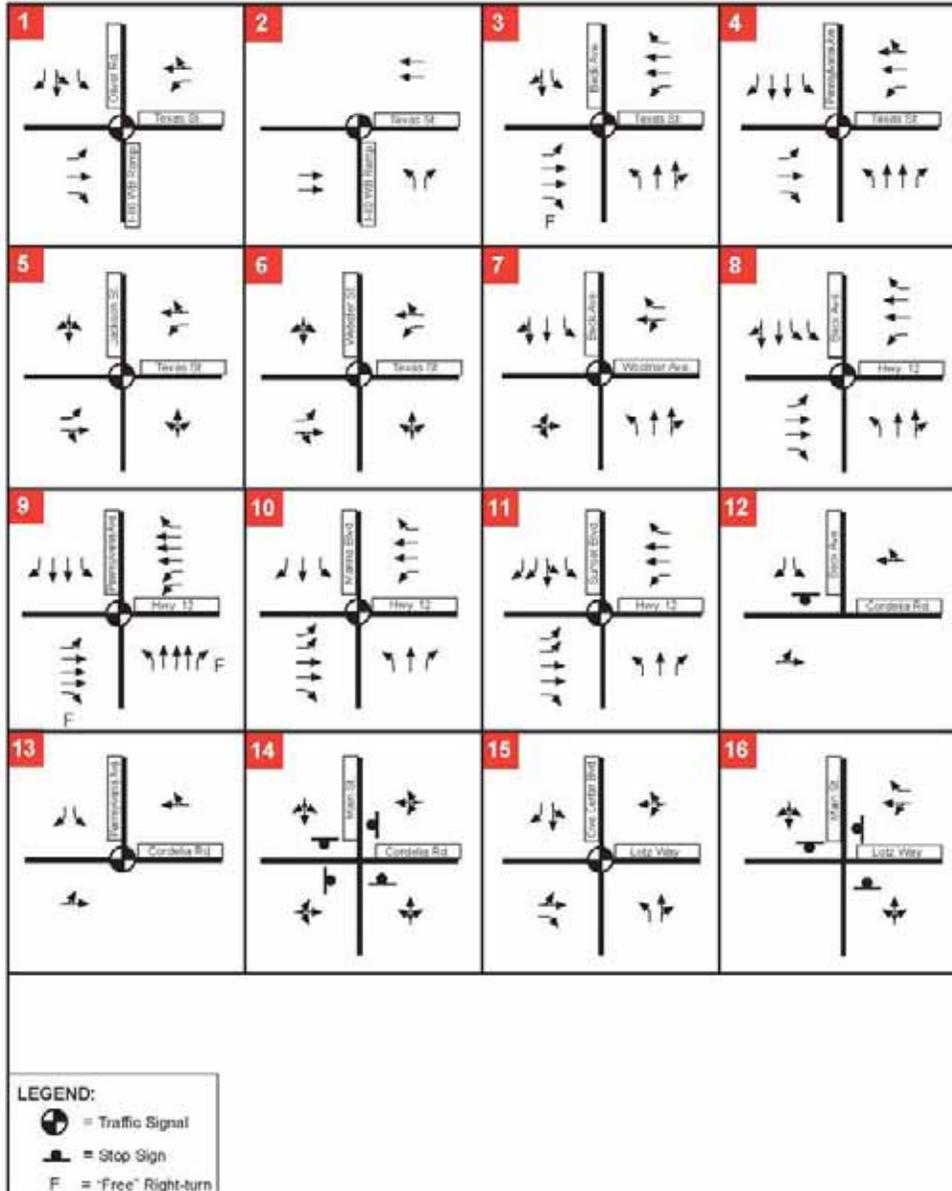
*commercial building or residential unit, the signal at Driveway #4/Internal Roadway shall be installed and operational by the City Engineer.*

- 4.5-10(b) *Prior to approval of improvement plans, the applicant shall submit to the City Engineer, for review and approval, plans for the modification to have two lanes on all approaches. The project applicant would be responsible for the funding and construction of the acceleration/deceleration lane which shall be complete prior to initial occupancy of a commercial building or residential unit.*

With this improvement, the intersection would operate at LOS B or better during all time periods. This intersection is located in the City of Suisun City and the City has the ability to implement this mitigation measure as necessary. In addition, any special improvements would not require the approval of either Caltrans or the City of Fairfield.

Intersection volumes with the above mitigation measures incorporated as well as the recommended lane configurations for the on-site intersections and project driveways are shown for the Base Project, Alternative 1, and Alternative 2 in Figures 4.5-23A to 4.5-25B below.

**Figure 4.5-23A**  
**Existing Plus Base Project With Mitigation**

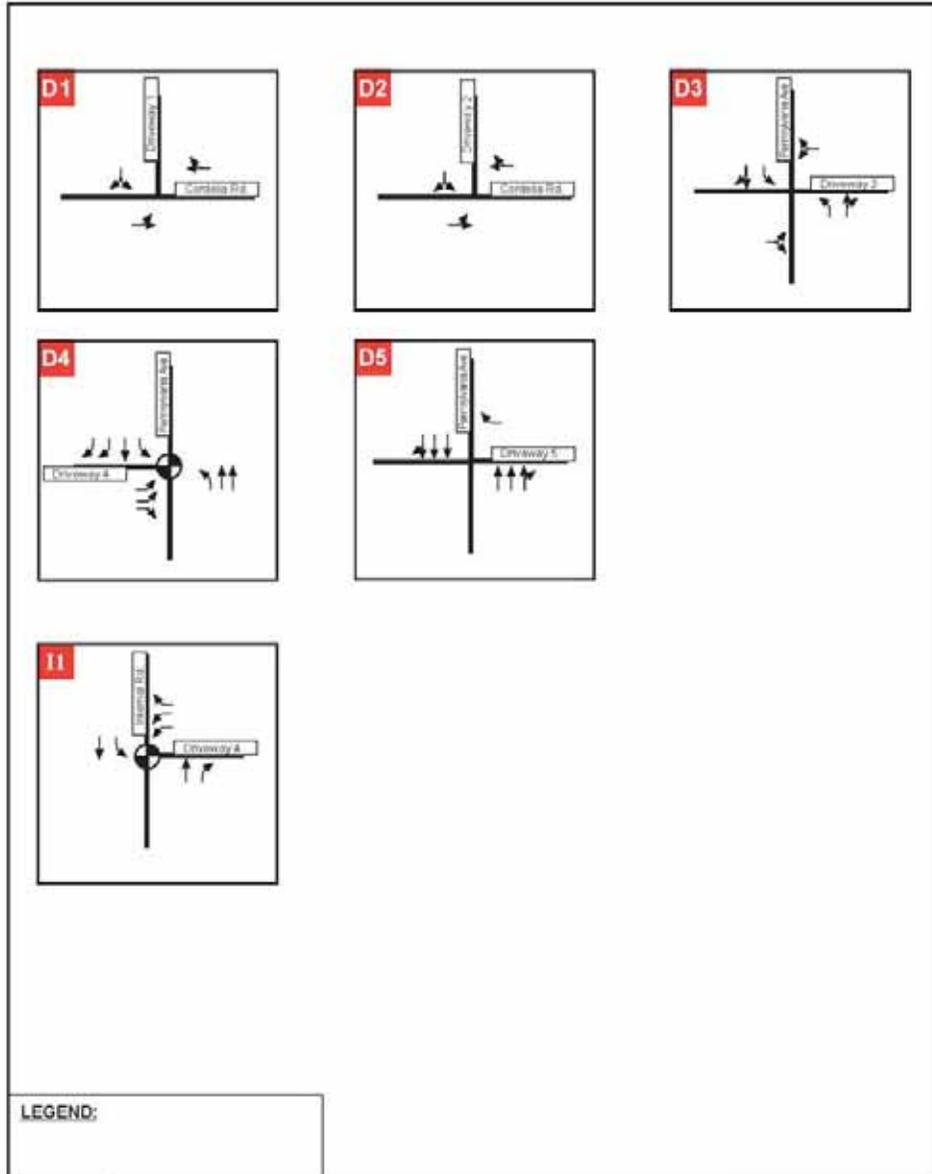


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**EXISTING PLUS BASE PROJECT WITH MITIGATION**

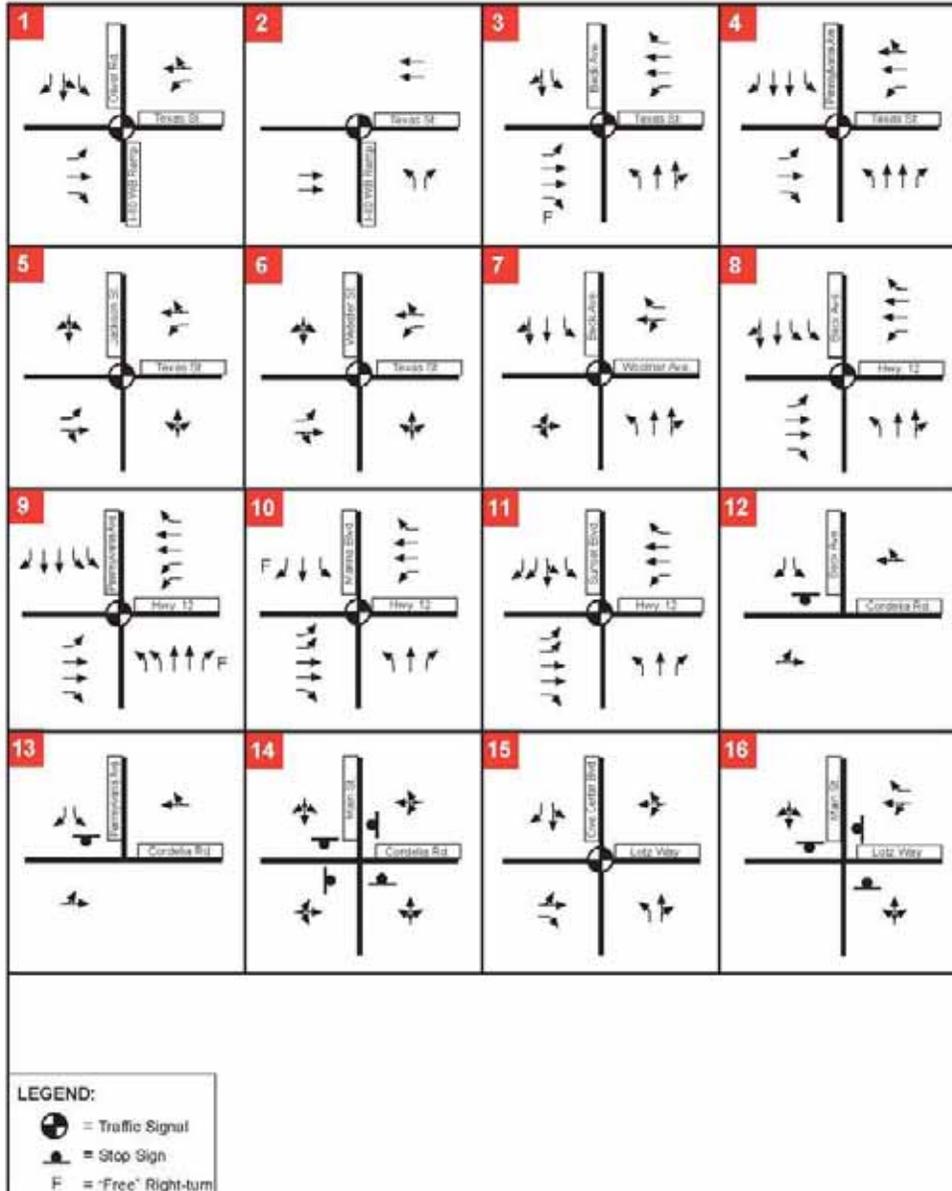
**FIGURE 23A**

**Figure 4.5-23B**  
**Base Project Driveway Configurations (Existing Plus Approved)**



LEGEND:

**Figure 4.5-24A**  
**Existing Plus Project With Mitigation – Alternative 1**



**LEGEND:**  
 = Traffic Signal  
 = Stop Sign  
 F = "Free" Right-turn



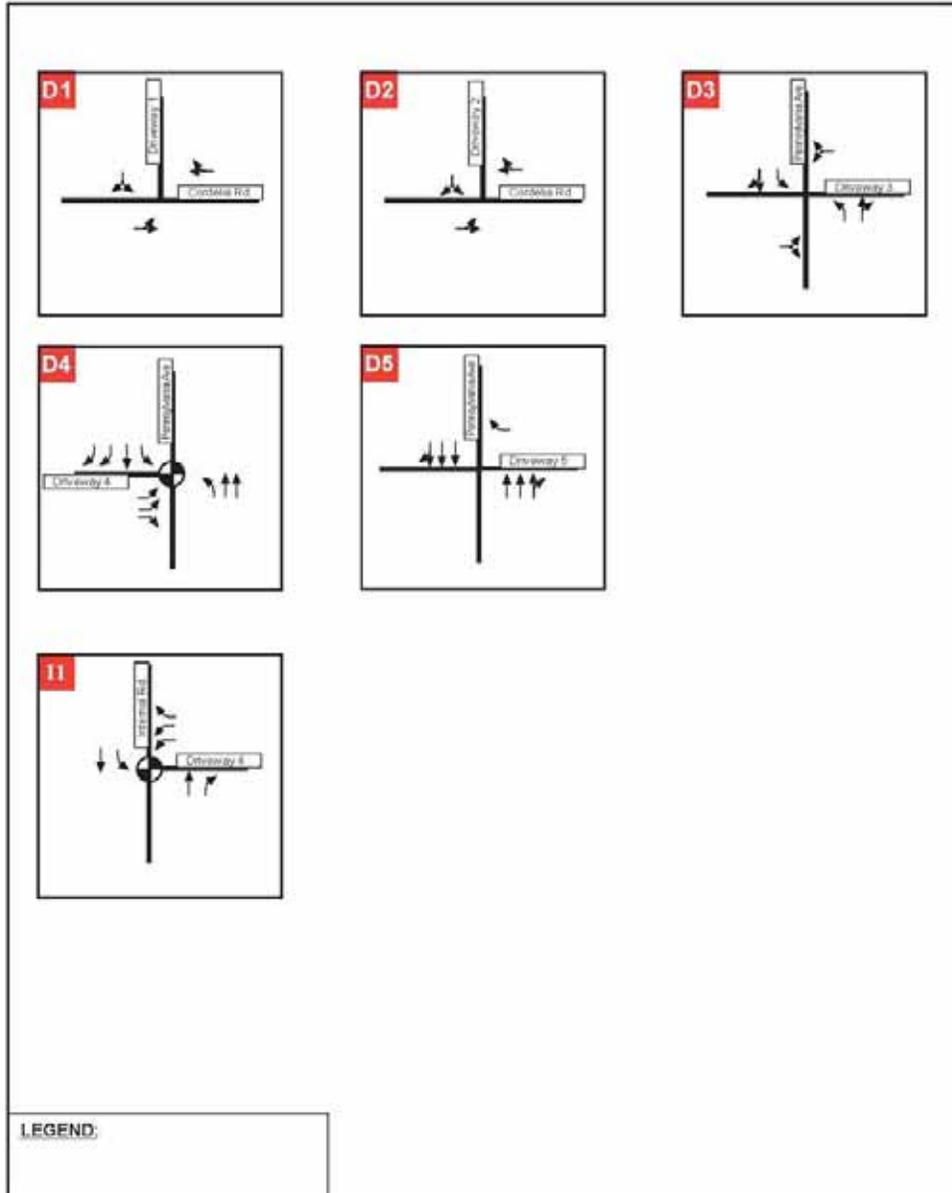
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Gentry-Suisun Annexation

**EXISTING PLUS PROJECT WITH MITIGATION  
 ALTERNATIVE 1**

**FIGURE 24A**

**Figure 4.5-24B**  
**Alternative 1 Driveway Configurations (Existing Plus Approved)**



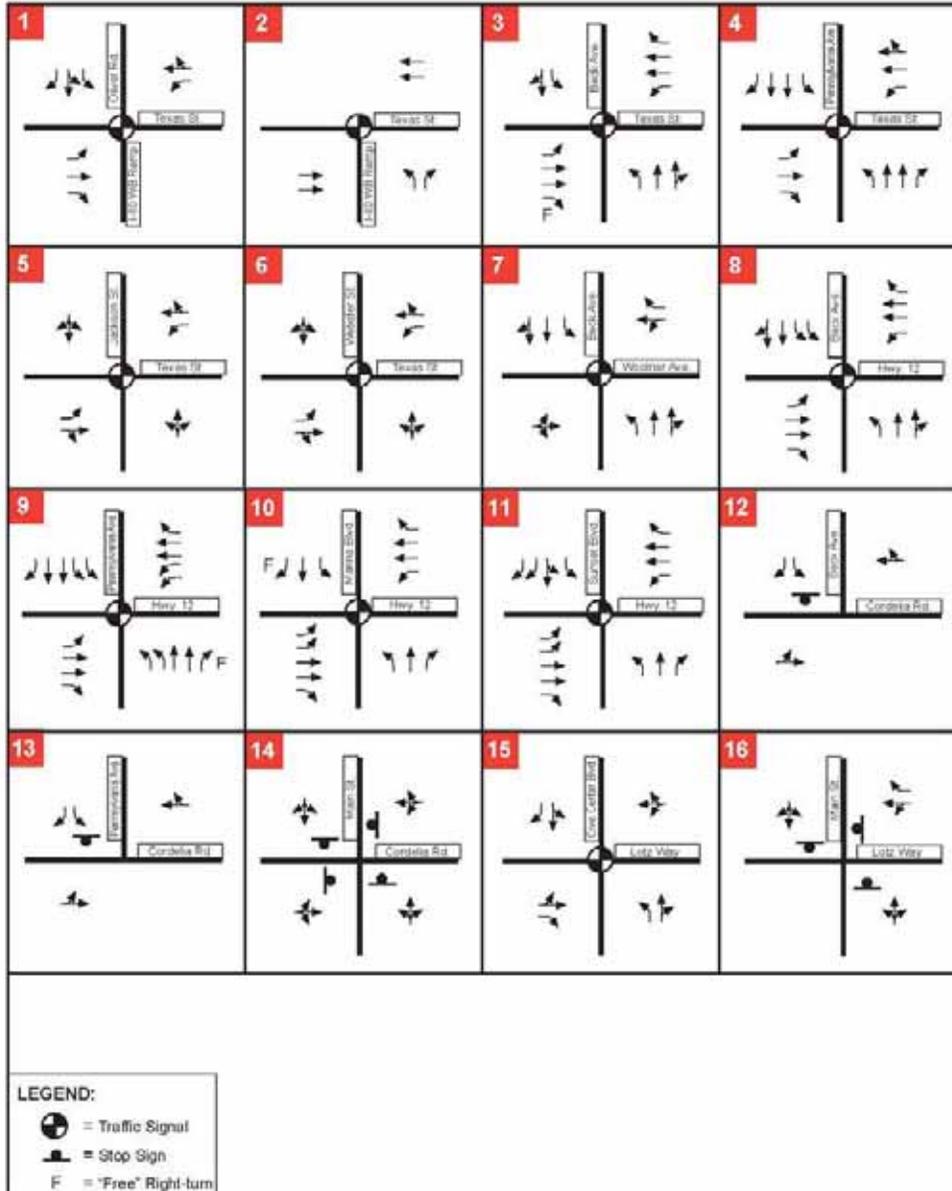
**fp**  
**FEHR & PEERS**  
TRANSPORTATION CONSULTANTS  
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2192-24B

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**ALTERNATIVE 1 DRIVEWAY CONFIGURATIONS  
(EXISTING PLUS APPROVED)**

**FIGURE 24B**

**Figure 4.5-25A**  
**Existing Plus Project With Mitigation – Alternative 2**



**LEGEND:**  
 = Traffic Signal  
 = Stop Sign  
 F = "Free" Right-Turn

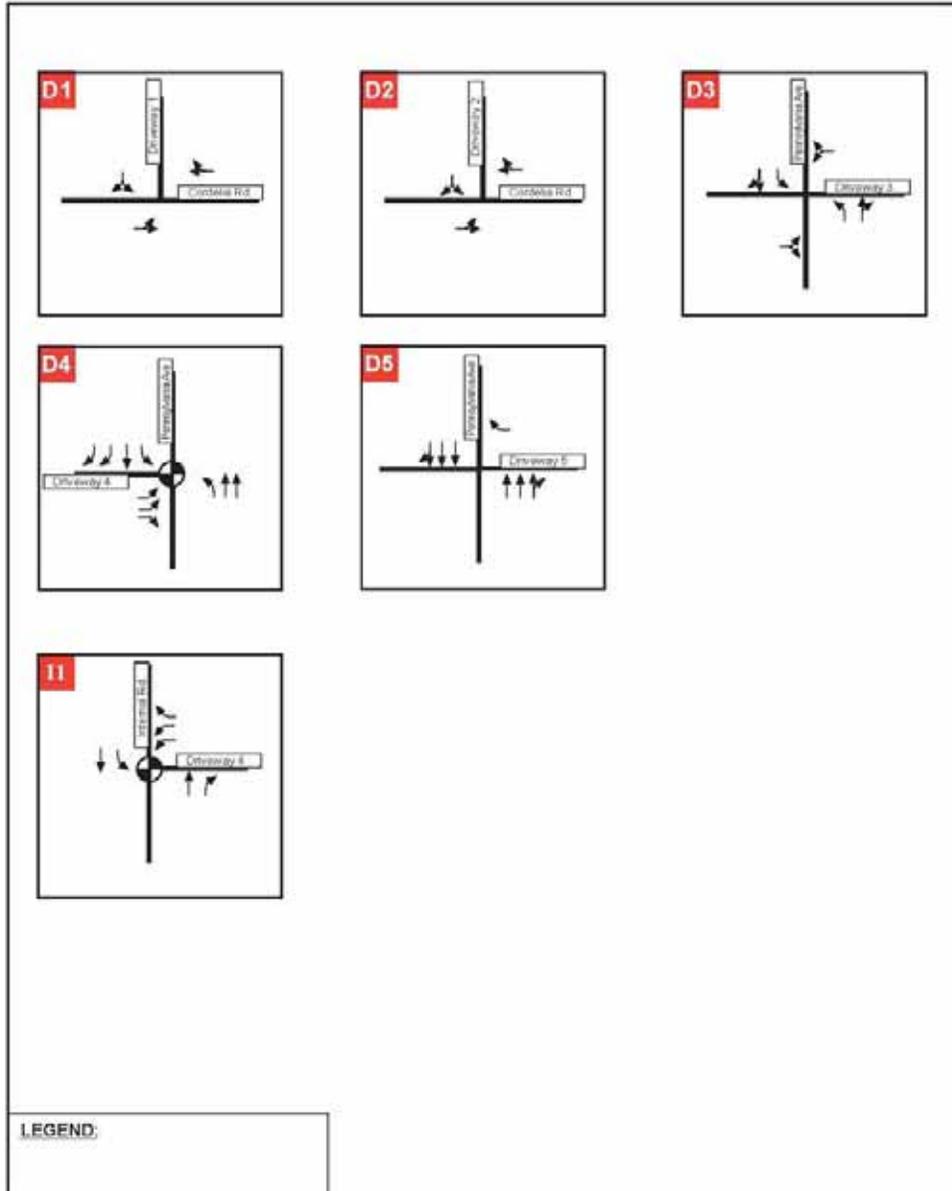
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**EXISTING PLUS PROJECT WITH MITIGATION  
 ALTERNATIVE 2**

**FIGURE 25A**

**Figure 4.5-25B**  
**Alternative 2 Driveway Configuration (Existing Plus Approved)**



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**ALTERNATIVE 2 DRIVEWAY CONFIGURATIONS  
(EXISTING PLUS APPROVED)**

**FIGURE 25B**

## Cumulative Impacts and Mitigation Measures

The following section represents traffic impacts associated with the Cumulative Scenario. This scenario represents existing traffic volumes, as well as additional traffic associated with proposed and planned developments within the City of Fairfield and the City of Suisun City. This section discusses the traffic volumes, the assumed improvements, the resulting intersection operations, and the project impacts and associated mitigation measures for the Cumulative with the Base Project, Alternative 1, and Alternative 2.

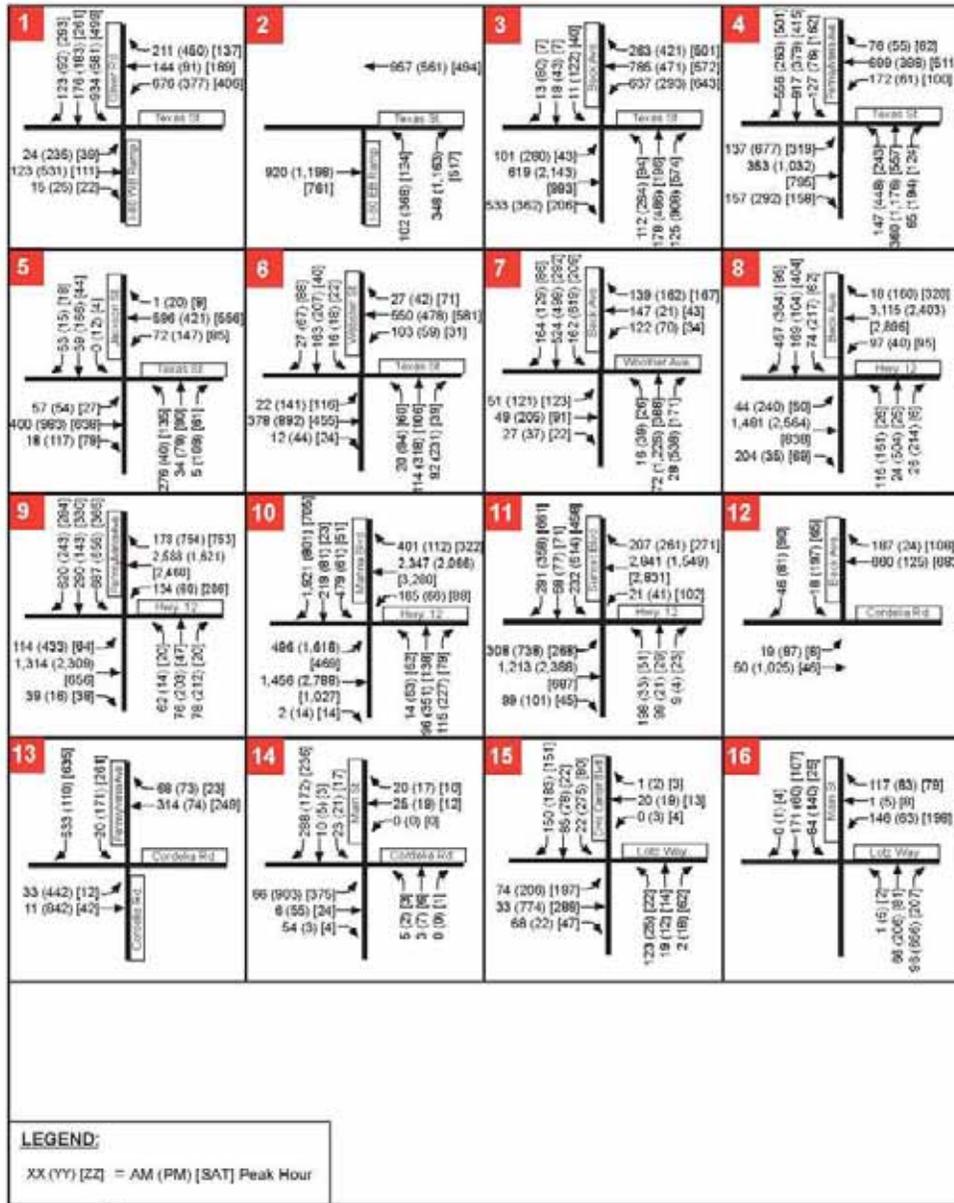
### Traffic Volumes

Given the anticipated growth within the study area, a travel demand model was selected as the most appropriate tool for use in developing the traffic volumes for the Cumulative Scenario. Based on a variety of considerations discussed previously in the section related to the selection of the project study area, the recently adopted Solano Transportation Authority (STA) regional travel demand was selected for use. A detailed description of the model selection process as well as checks of the regional model's land use and roadway network data is provided in the Appendix D of the Fehr & Peers Traffic Study (a complete copy of the traffic report appendices is available at the City for review). This review concluded that the model was generally acceptable for use in preparing the forecasts, although several land use and roadway network changes were required. These changes are also documented in the memo provided in Appendix D of the traffic study.

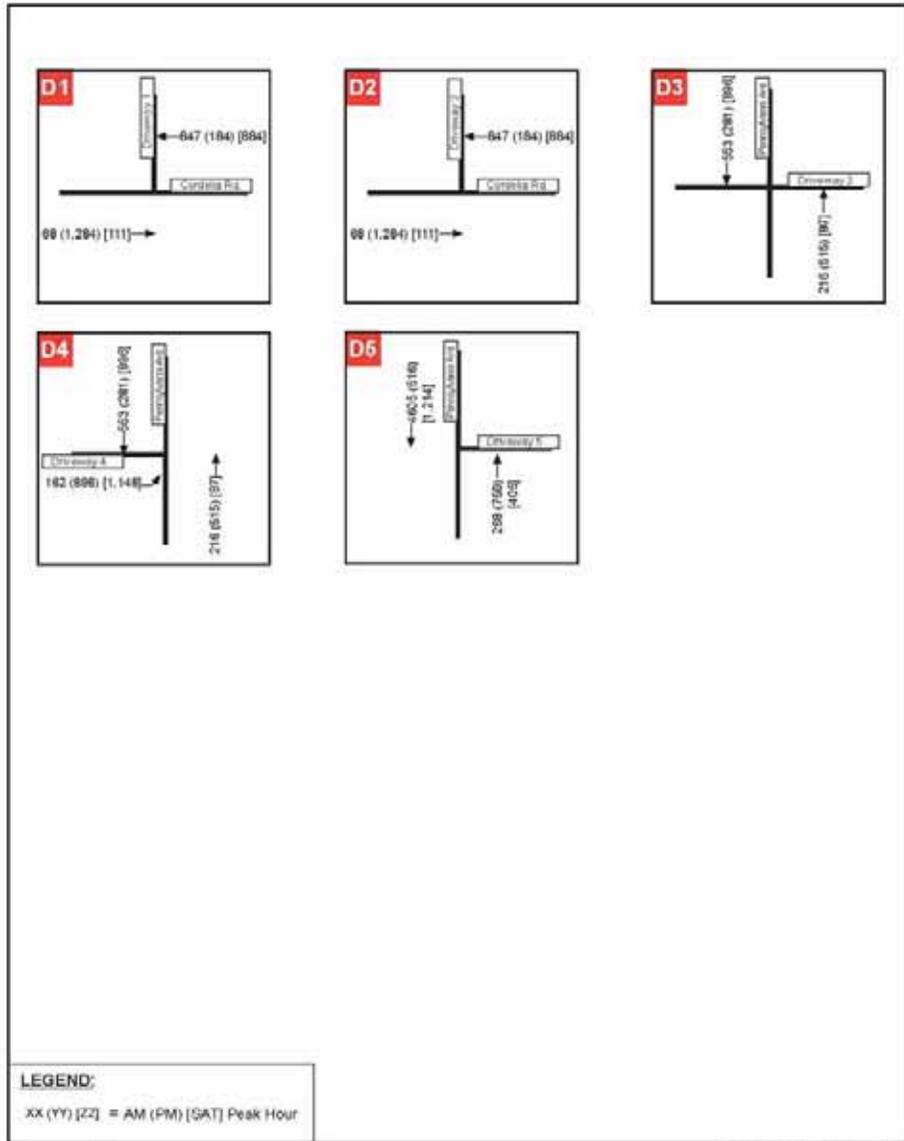
Using the results of this model, Fehr & Peers developed forecasts for the three peak analysis periods using a furnessing process. As part of the furnessing process, the growth on a roadway segment is added to an approach and distributed to the various turning movements based on the existing turning percentages. This growth is then added to the existing traffic counts. Furnessing is often employed to develop traffic forecasts given that regional travel demand models often lack the necessary accuracy to provide accurate turning movement volumes. The furnessing process also ensures that traffic forecasts are equal to or higher than the existing traffic counts. For the Saturday forecasts, the growth for the AM and PM peak hours were averaged and added to the existing traffic counts.

The Background or No Project Traffic Volumes for the Cumulative Scenario volumes are shown on Figures 4.5-26A and 4.5-26B. The volumes which result from the addition of the Base Project traffic to the Background Volumes are presented on Figures 4.5-27A and 4.5-27B. Figures 4.5-28A and 4.5-28B represent the estimated traffic volumes which result from the addition of project traffic under Alternative 1. Alternative 2 traffic volumes are provided on Figures 4.5-29A and 4.5-29B. Cumulative LOS results for the Base Project, Alternative 1, and Alternative 2 are listed in Table 4.5-7.

Figure 4.5-26A  
 Cumulative No Project Traffic Volumes



**Figure 4.5-26B**  
**Cumulative No Project Traffic Volumes (cont.)**



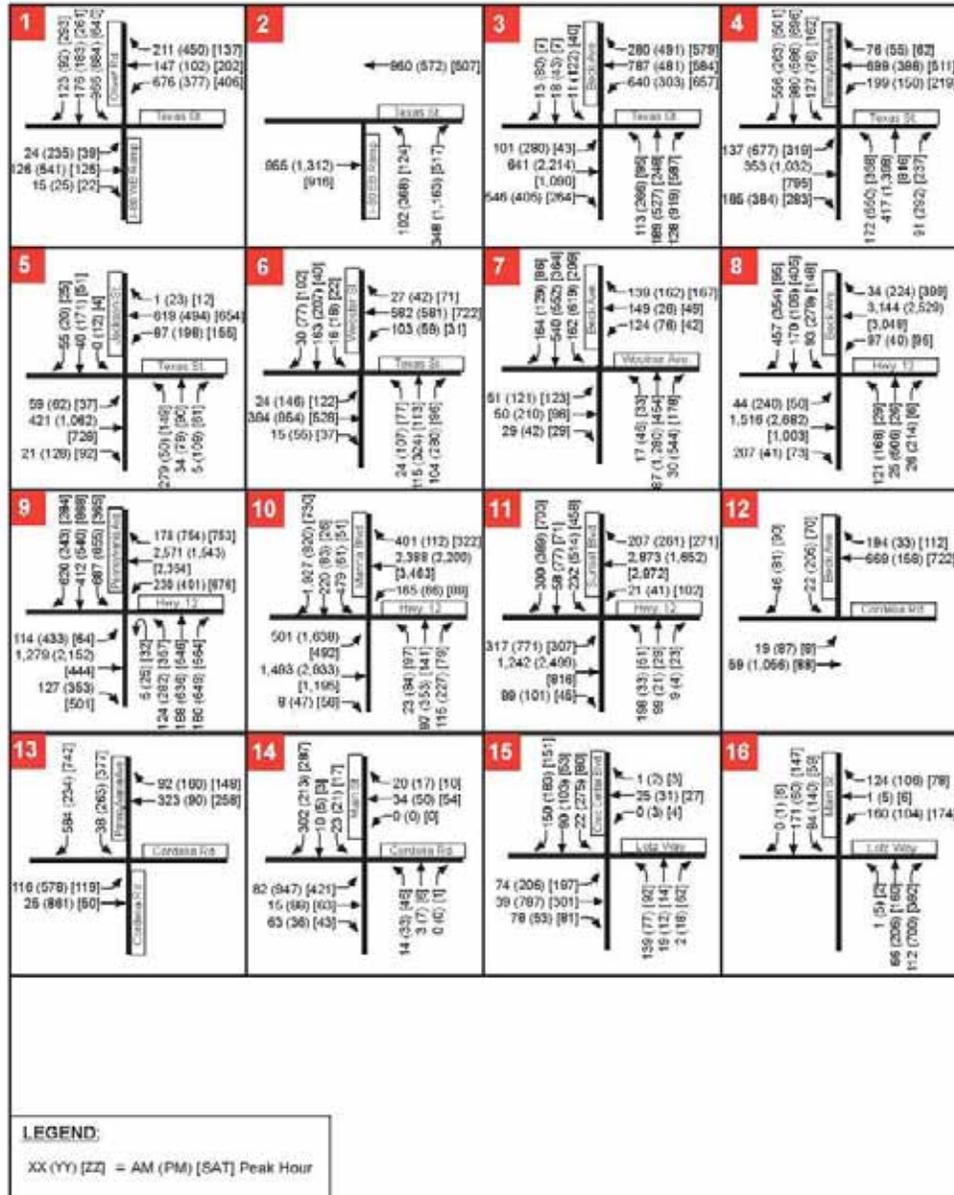
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**CUMULATIVE**  
**FIGURE 26B**

Figure 4.5-27A  
 Cumulative Plus Base Project - Project Volumes



**Figure 4.5-27B**  
**Cumulative Plus Base Project - Project Volumes (cont')**

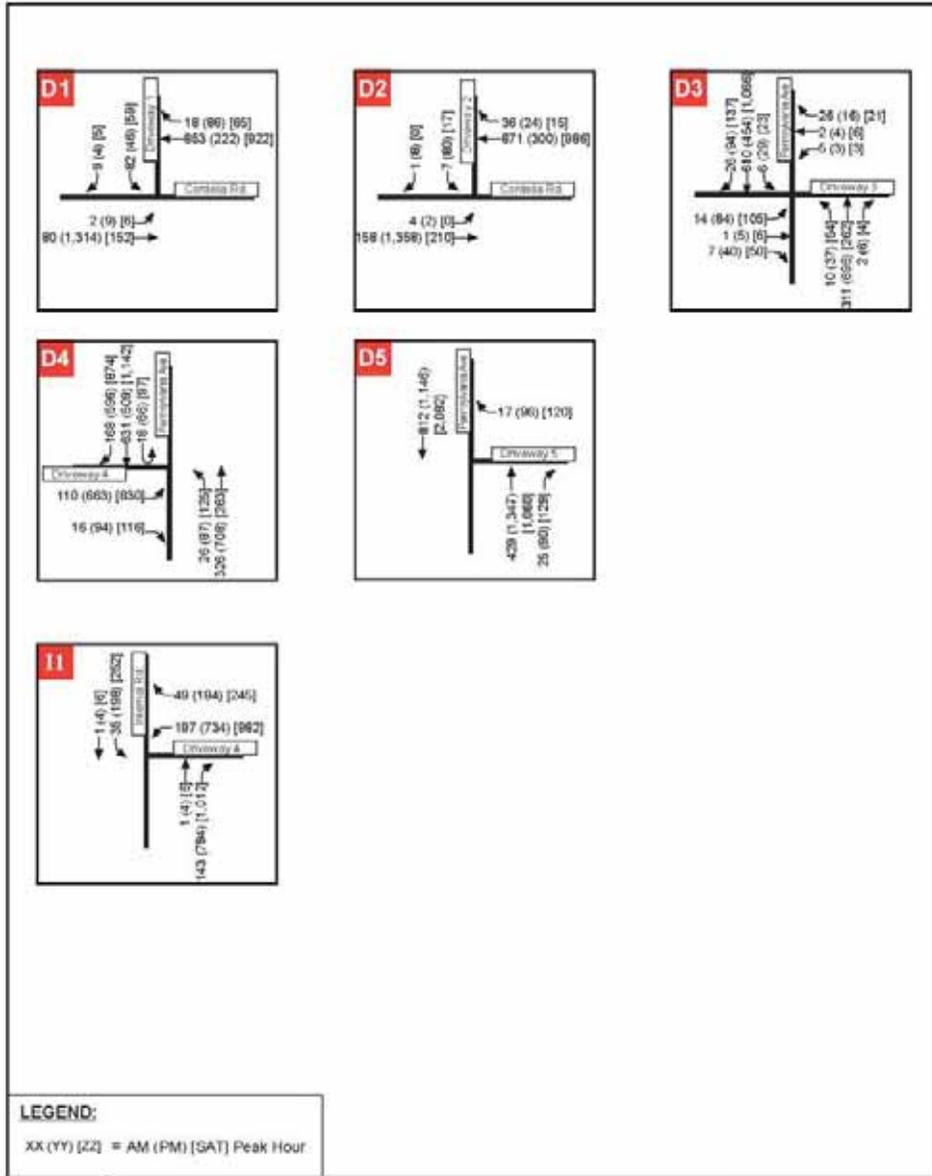
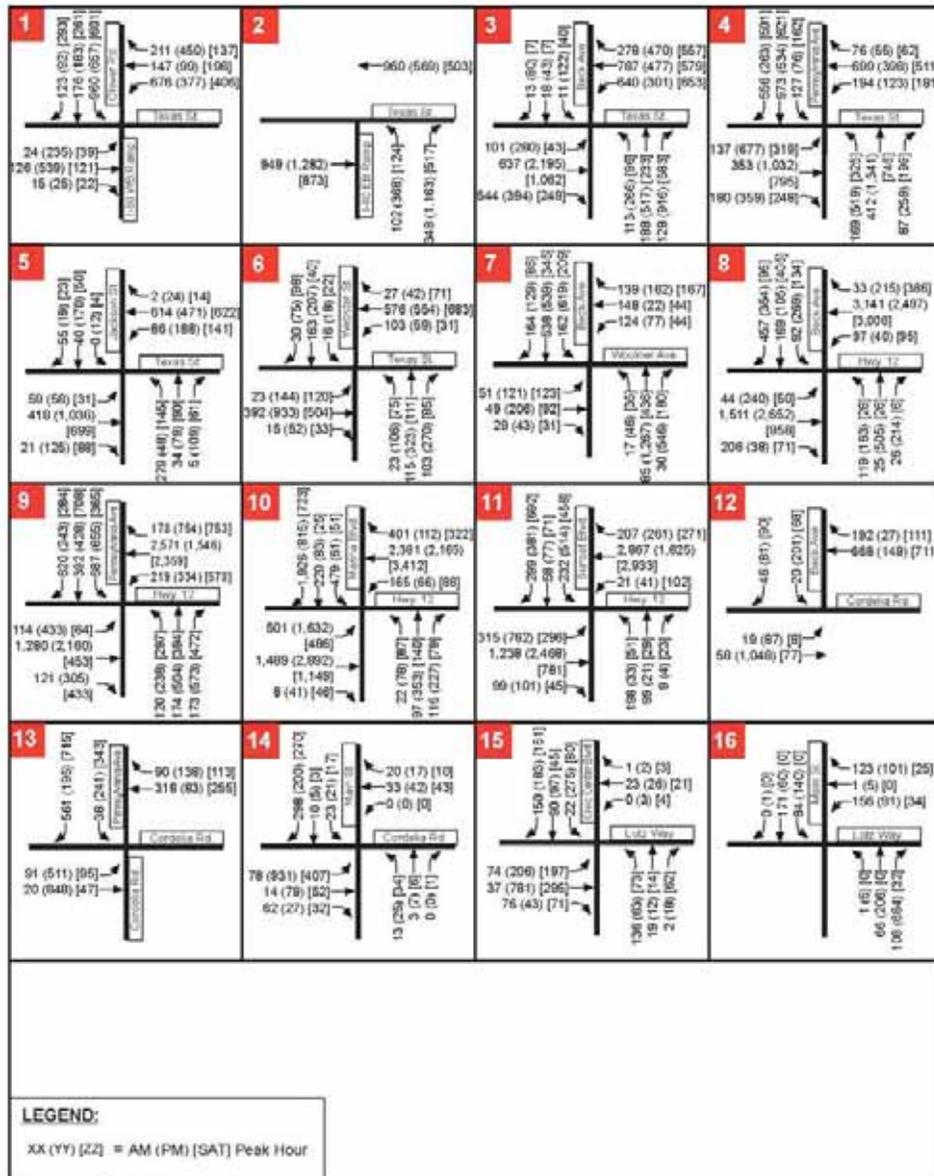


Figure 4.5-28A  
 Cumulative Plus Alternative 1 – Traffic Volumes



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**CUMULATIVE PLUS PROJECT**  
**ALTERNATIVE 1**  
**FIGURE 28A**

**Figure 4.5-28B**  
**Cumulative Plus Alternative 1 – Traffic Volumes (cont.)**

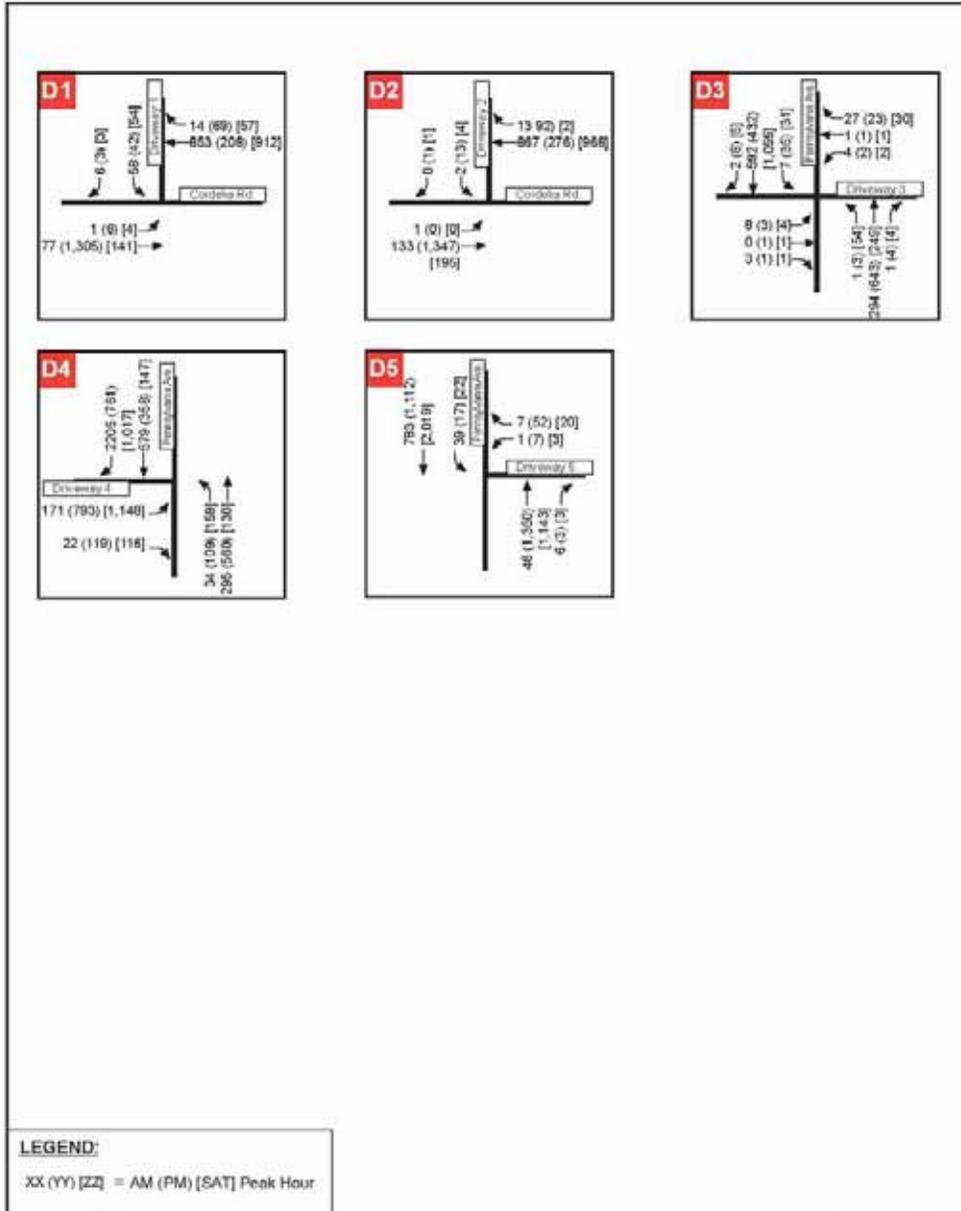
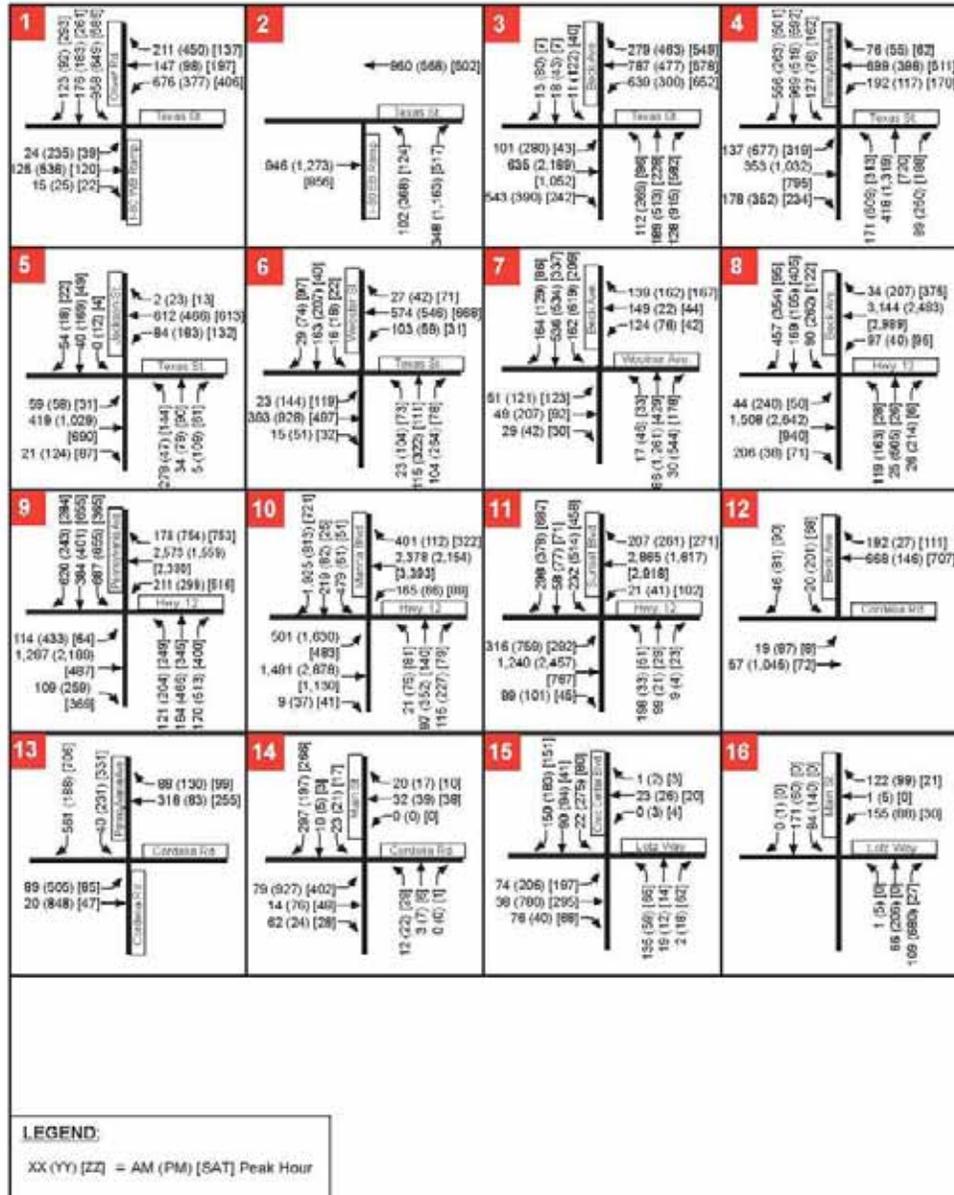
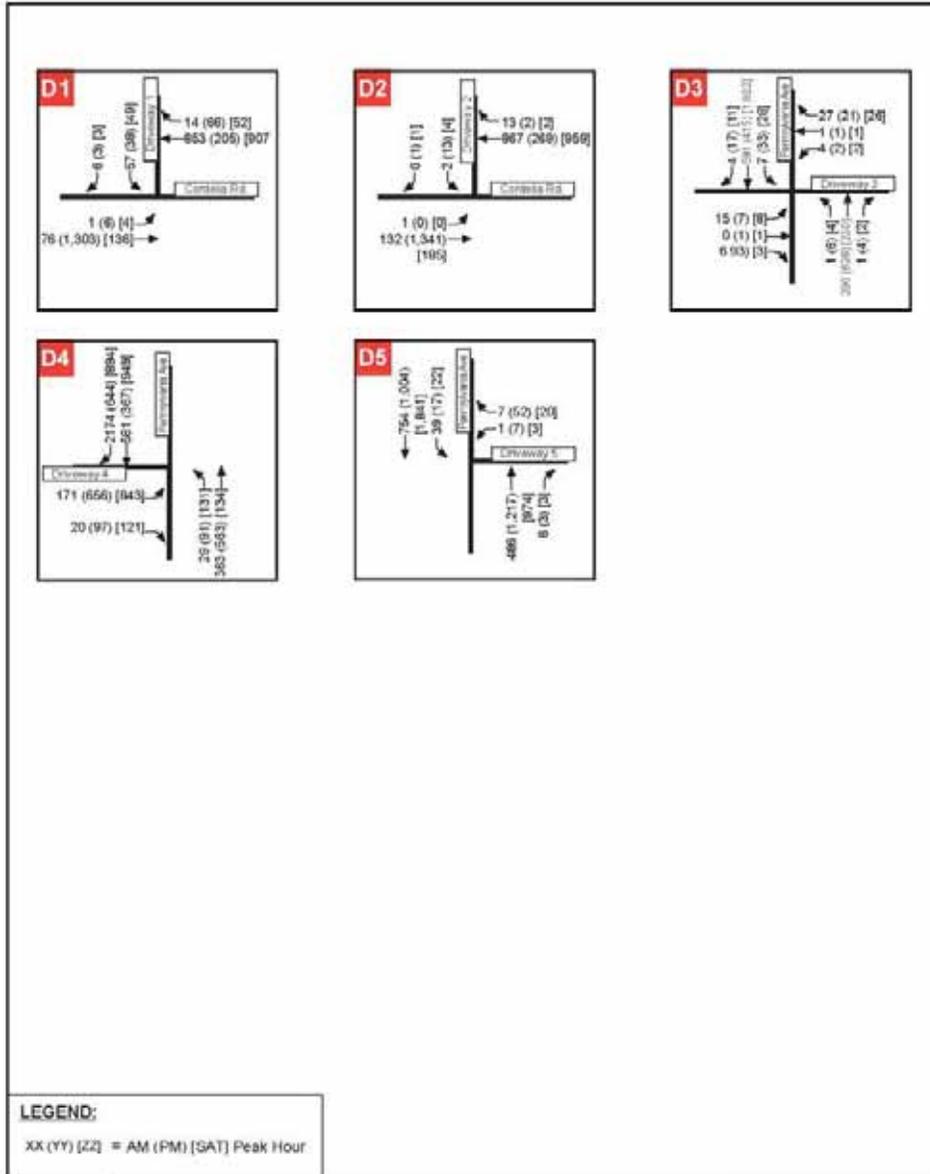


Figure 4.5-29A  
 Cumulative Plus Alternative 2 – Traffic Volumes



**Figure 4.5-29B**  
**Cumulative Plus Alternative 2 – Traffic Volumes (cont.)**



**Table 4.5-7  
Cumulative LOS Results**

Table 6- Cumulative LOS Results

Intersection	Jurisdiction	Traffic Control Device	Peak Hour Period	Cumulative (Exist Lane Config.)		Cumulative+ Base Project (Exist Lane Configurations)		Cumulative+ Alt 1 Project (Exist Lane Configurations)		Cumulative+ Alt 2 Project (Exist Lane Configurations)	
				Average Intersection Delay	LOS	Average Intersection Delay	LOS	Average Intersection Delay	LOS	Average Intersection Delay	LOS
1. Texas St/I-80 WB Ramp	Caltrans	Signal	AM	>80	F	>80	F	>80	F	>80	F
			PM	>80	F	>80	F	>80	F	>80	F
			SAT	34	C	59	E	53	D	52	D
2. Texas St/I-80 EB Ramp	Caltrans	Signal	AM	31	C	31	C	31	C	31	C
			PM	58	E	74	E	69	E	68	E
			SAT	23	C	24	C	24	C	24	C
3. Texas St/Beck Ave	Caltrans	Signal	AM	57	E	58	E	58	E	58	E
			PM	>80	F	>80	F	>80	F	>80	F
			SAT	75	E	>80	F	>80	F	>80	F
4. Texas St/Pennsylvania Ave	Fairfield	Signal	AM	>80	F	>80	F	>80	F	>80	F
			PM	>80	F	>80	F	>80	F	>80	F
			SAT	>80	F	>80	F	>80	F	>80	F
5. Texas St/Jackson St	Fairfield	Signal	AM	18	B	18	B	18	B	18	B
			PM	>80	F	>80	F	>80	F	>80	F
			SAT	27	C	65	E	54	D	48	D
6. Texas St/Webster St	Fairfield	Signal	AM	18	B	19	B	18	B	18	B
			PM	67	E	>80	F	>80	F	>80	F
			SAT	40	D	59	E	52	D	50	D
7. Woolner Ave/Beck Ave	Fairfield	Signal	AM	23	C	23	C	23	C	23	C
			PM	>80	F	>80	F	>80	F	>80	F
			SAT	19	B	20	B	20	B	20	B
8. Hwy 12/Beck Ave	Caltrans	Signal	AM	>80	F	>80	F	>80	F	>80	F
			PM	>80	F	>80	F	>80	F	>80	F
			SAT	>80	F	>80	F	>80	F	>80	F
9. Hwy 12/Pennsylvania Ave	Caltrans	Signal	AM	>80	F	>80	F	>80	F	>80	F
			PM	>80	F	>80	F	>80	F	>80	F
			SAT	>80	F	>80	F	>80	F	>80	F
10. Hwy 12/Marina Blvd	Caltrans	Signal	AM	>80	F	>80	F	>80	F	>80	F
			PM	>80	F	>80	F	>80	F	>80	F
			SAT	>80	F	>80	F	>80	F	>80	F
11. Hwy 12/Sunset Ave	Caltrans	Signal	AM	>80	F	>80	F	>80	F	>80	F
			PM	60	E	76	E	71	E	70	E
			SAT	>80	F	>80	F	>80	F	>80	F
12. Cordelia Rd/Beck Ave	Fairfield	TWSC	AM	22	C	23	C	20	C	20	C
			PM	>50	F	>50	F	>50	F	>50	F
			SAT	22	C	26	D	22	C	22	C
13. Cordelia Rd/Pennsylvania Ave	Suisun City	TWSC	AM	>50	F	>50	F	>50	F	>50	F
			PM	>50	F	>50	F	>50	F	>50	F
			SAT	>50	F	>50	F	>50	F	>50	F
14. Cordelia Rd/Main St	Suisun City	All-way	AM	9	A	9	A	9	A	9	A
			PM	>50	F	>50	F	>50	F	>50	F
			SAT	13	B	23	D	18	B	17	C
15. Lotz Way/Civic Center Blvd	Caltrans	All-way	AM	9	A	10	A	9	A	9	A
			PM	>50	F	>50	F	>50	F	>50	F
			SAT	33	D	46	E	42	E	40	E
16. Lotz Way/Main St	Suisun City	Signal	AM	12	B	11	B	11	B	12	B
			PM	11	B	14	B	13	B	13	B
			SAT	11	B	10	A	22	C	23	C
17. Driveway 1/Cordelia Rd	Project	TWSC	AM	N/A	N/A	22	C	20	C	20	C
			PM	N/A	N/A	>50	F	46	E	43	E
			SAT	N/A	N/A	26	D	24	C	23	C
18. Driveway 2/Cordelia Rd.	Project	TWSC	AM	N/A	N/A	19	C	19	C	19	C
			PM	N/A	N/A	>50	F	39	E	38	E
			SAT	N/A	N/A	24	C	21	C	21	C
19. Driveway 3/Pennsylvania Ave	Project	TWSC	AM	N/A	N/A	20	C	18	C	19	C
			PM	N/A	N/A	>50	F	24	C	23	C
			SAT	N/A	N/A	>50	F	34	D	32	D
20. Driveway 4/Pennsylvania Ave	Project	Signal	AM	N/A	N/A	48	E	50	E	41	E
			PM	N/A	N/A	>50	F	>50	F	>50	F
			SAT	N/A	N/A	>50	F	>50	F	>50	F
21. Driveway 5/Pennsylvania Ave	Project	TWSC	AM	N/A	N/A	16	C	13	B	13	B
			PM	N/A	N/A	>50	F	>50	F	43	E
			SAT	N/A	N/A	>50	F	>50	F	>50	F
23. Driveway 4/Internal Project Road	Project	Signal	AM	N/A	N/A	9	A	9	A	8	A
			PM	N/A	N/A	>50	F	>50	F	26	D
			SAT	N/A	N/A	>50	F	>50	F	>50	F

**4.5-11 Cumulative impacts to the Texas Street/I-80 WB Ramp intersection for the Base Project, Alternative 1, and Alternative 2 conditions.**

Base Project

This intersection currently operates at LOS F during the AM and PM peak hour (greater than 80 seconds of delay). During the Saturday peak hour, the intersection operates at LOS C with 34 seconds of delay. After the addition of project traffic, this intersection would operate at LOS F with increased delay during both the AM and PM peak hours and LOS E during the Saturday peak hour. The addition of the Base Project traffic would increase traffic volumes by five percent during the PM peak hour. The Base Project traffic would increase by more than three percent at an intersection that currently operates at a deficient level during the PM peak hour. In addition, the project would cause a degradation of the LOS from LOS C to LOS E during Saturday peak hour. Therefore, the Base Project would result in a *significant* impact.

Alternative 1

The addition of the Alternative 1 traffic would increase traffic volumes by four percent during the PM peak hour and would cause the LOS to degrade from LOS C to LOS D during the Saturday peak hour. Alternative 1 traffic would increase by more than three percent at an intersection that currently operates at a deficient level during the PM peak hour. In addition, the project would cause a degradation of the LOS from LOS C to LOS D during Saturday peak hour. Therefore, Alternative 1 would result in a *significant* impact.

Alternative 2

The addition of Alternative 2 would increase traffic volumes by four percent during the PM peak hour and would cause the LOS to degrade from LOS C to LOS D during the Saturday peak hour. Alternative 2 traffic would increase by more than three percent at an intersection that currently operates at a deficient level during the PM peak hour. In addition, the project would cause a degradation of the LOS from LOS C to LOS D during Saturday peak hour. Therefore, Alternative 2 would result in a *significant* impact.

Mitigation Measure(s)

Implementation of the following mitigation measure, which involves the payment of fees to help fund improvements to a facility controlled by the Caltrans, would render the impact *less than significant* if the improvements are fully funded and constructed. Because Caltrans approval and cooperation cannot be assured, however, the City at present cannot be certain that the improvements will be funded, and therefore concludes that the impact is *potentially significant and unavoidable*.

Mitigation Measure 4.5-11 is identified for the Base Project, Alternative 1, and Alternative 2.

- 4.5-11(a) *Implement the physical improvement referenced in mitigation measure 4.5-1.*
- 4.5-11(b) *Prior to the completion of all commercial buildings within Planning Area 1, the applicant shall pay to the City fees representing the project's fair share contribution based on the cost sharing mechanism outlined in MM 4.5-1 for the following improvement:*
- *A second exclusive southbound left-turn lane in addition to implementation of MM 4.5-1.*

Sufficient right-of-way exists for the construction of this improvement. However, this improvement would appear to be fiscally infeasible, in that the project would only be paying a small percentage of the cost of this improvement in the Cumulative Scenario. The impact therefore would be considered significant and unavoidable, even if the cost sharing mechanism identified in Mitigation Measure 4.5-1 is successfully implemented.

#### **4.5-12 Cumulative impacts to the Texas Street/I-80 EB Ramp intersection for the Base Project, Alternative 1, and Alternative 2 conditions.**

##### Base Project

This intersection currently operates at LOS E in the PM peak hour with a delay of 58 seconds. During the AM peak hour, the intersection operates at LOS C with a delay of 31 seconds. The intersection operates at LOS C with a delay of 23 seconds in the Saturday peak hour. After the addition of project trips, the intersection would continue to operate at LOS E during the PM period with a delay of 74 seconds. The addition of the Base Project would increase traffic volumes by 4 percent during the PM peak hour. The Base Project traffic would increase by more than three percent at an intersection that currently operates at a deficient level during the PM peak hour and would result in a *significant* impact.

##### Alternative 1

The addition of Alternative 1 trips at this intersection would result in the intersection continuing to operate at LOS E during the PM period with a delay of 69 seconds. The addition of Alternative 1 would increase traffic volumes by 3 percent during the PM peak hour. Alternative 1 traffic would increase by more than three percent at an intersection that currently operates at a deficient level during the PM peak hour and would result in a *significant* impact.

##### Alternative 2

The addition of project trips at this intersection would result in the intersection continuing to operate at LOS E during the PM period with a delay of 68 seconds. The addition of the Alternative 2 traffic would increase traffic volumes by 4 percent during the PM peak

hour. Alternative 2 traffic would increase by more than three percent at an intersection that currently operates at a deficient level during the PM peak hour and would result in a *significant* impact.

Mitigation Measure(s)

Implementation of the following mitigation measure, which involves the payment of fees to help fund improvements to a facility controlled by the Caltrans, would render the impact *less than significant* if the improvements are fully funded and constructed. Because Caltrans approval and cooperation cannot be assured, however, the City at present cannot be certain that the improvements will be funded, and therefore concludes that the impact is *potentially significant and unavoidable*.

Mitigation Measure 4.5-12 is identified for the Base Project, Alternative 1, and Alternative 2.

4.5-12 *Prior to the completion of all commercial buildings within Planning Area 1, the applicant shall pay for a traffic operations analysis for the optimization of the signal timings at the Texas Street/I-80 EB ramp intersection. In addition, this improvement would require the approval of the California Department of Transportation.*

After implementation of this mitigation measure, the intersection LOS would be LOS C or better during all peak hours.

**4.5-13 Cumulative impacts to the Texas Street/Beck Avenue intersection for the Base Project, Alternative 1, and Alternative 2 conditions.**

Base Project

This intersection operates at LOS E during the AM peak hour, LOS F during the PM peak hour, and LOS E during the Saturday peak hour. This LOS currently exceeds the LOS C threshold that is generally applicable to Caltrans facilities. After the addition of project trips, the LOS during the AM and PM peak hour would remain LOS E and LOS F and the Saturday LOS degrades from LOS E to LOS F. The addition of project traffic increases traffic volumes by 4 and 8 percent during the PM and Saturday peak hour, respectively. The Base Project would cause traffic to increase by more than three percent at an intersection that currently operates at a deficient level during the PM peak hour and Saturday peak hour and would result in a *significant* impact.

Alternative 1

Similar to the Base Project, with the addition of Alternative 1 trips, the LOS during the AM and PM peak hour remains LOS E and LOS F and the Saturday LOS degrades from LOS E to LOS F. The addition of Alternative 1 traffic would increase traffic volumes by 3 and 6 percent during the PM and Saturday peak hour, respectively. Alternative 1 would cause traffic to increase by more than three percent at an intersection that currently

operates at a deficient level during the PM peak hour and Saturday peak hour and would result in a **significant** impact.

#### Alternative 2

Similar to the Base Project, with the addition of Alternative 2 trips, the LOS during the AM and PM peak hour remains LOS E and LOS F and the Saturday LOS degrades from LOS E to LOS F. The addition of Alternative 2 traffic increases traffic volumes by 3 and 5 percent during the PM and Saturday peak hour, respectively. Alternative 2 would cause traffic to increase by more than three percent at an intersection that currently operates at a deficient level during the PM peak hour and Saturday peak hour and would result in a **significant** impact.

#### Mitigation Measure(s)

Implementation of the following mitigation measure, which involves the payment of fees to help fund improvements to a facility controlled by the Caltrans, would render the impact **less than significant** if the improvements are fully funded and constructed. Because Caltrans approval and cooperation cannot be assured, however, the City at present cannot be certain that the improvements will be funded, and therefore concludes that the impact is **potentially significant and unavoidable**.

Mitigation Measure 4.5-13 is identified for the Base Project, Alternative 1, and Alternative 2.

4.5-13(a) *Implement mitigation measures 4.5-2a and 4.5-2b.*

4.5-13(b) *Prior to the completion of all commercial buildings within Planning Area 1, the applicant shall pay to the City fees representing the project's fair share contribution based on the cost sharing mechanism outlined in MM 4.5-1 for the following improvements:*

- *Constructing two additional eastbound through lanes;*
- *Constructing one additional through lane and left-turn lane on the westbound approach; and providing a free right-turn lane.*
- *In addition, the applicant shall submit plans for restriping the shared through/right-turn lane to through lane on the northbound approach.*

Based on a review of the existing intersection configuration, insufficient right-of-way exists to construct these improvements without severely impacting the adjacent buildings and properties. This improvement can be classified as being physically infeasible. The impact therefore would be considered significant and unavoidable, even if the cost sharing mechanism identified in Mitigation Measure 4.5-1 is successfully implemented.

**4.5-14 Cumulative impacts to the Texas Street/Pennsylvania Avenue intersection for the Base Project, Alternative 1, and Alternative 2 conditions.**

Base Project

This intersection operates at LOS F during the AM, PM, and Saturday peak hours under the Cumulative No Project scenario. With the addition of project traffic, the intersection would continue to operate at LOS F with increased delay during all peak hours. The addition of project traffic would increase traffic volumes by 6, 16, and 26 percent during the AM, PM, and Saturday peak hour, respectively. The Base Project traffic would increase by more than three percent at an intersection that currently operates at a deficient level during the PM peak hour and Saturday peak hour and would result in a *significant* impact.

Alternative 1

Similar to the Base Project, with the addition of Alternative 1 traffic, the intersection would continue to operate at LOS F with increased delay during all peak hours. The addition of Alternative 1 traffic would increase traffic volumes by 5, 12, and 18 percent during the AM, PM, and Saturday peak hour, respectively. Alternative 1 traffic would increase by more than three percent at an intersection that currently operates at a deficient level during the PM peak hour and Saturday peak hour and would result in a *significant* impact.

Alternative 2

Similar to the Base Project, with the addition of Alternative 2 traffic, the intersection would continue to operate at LOS F with increased delay during all peak hours. The addition of Alternative 2 traffic would increase traffic volumes by 5, 10, and 16 percent during the AM, PM, and Saturday peak hour, respectively. Alternative 2 traffic would increase by more than three percent at an intersection that currently operates at a deficient level during the PM peak hour and Saturday peak hour and would result in a *significant* impact.

Mitigation Measure(s)

Implementation of the following mitigation measure, which involves the payment of fees to help fund improvements to a facility controlled by the City of Fairfield, would render the impact *less than significant* if the improvements are fully funded and constructed. Because Fairfield approval and cooperation cannot be assured, however, the City at present cannot be certain that the improvements will be funded, and therefore concludes that the impact is *potentially significant and unavoidable*.

Mitigation Measure 4.5-14 is identified for the Base Project, Alternative 1, and Alternative 2.

4.5-14(a) *Implement mitigation measures 4.5-3a(1) and 4.5-3a(2).*

4.5-14(b) *Prior to the completion of all commercial buildings within Planning Area 1, the applicant shall pay to the City fees representing the project's fair share contribution based on the cost sharing mechanism outlined in MM 4.5-1 for the following improvements:*

- *Construction of one additional left-turn and through lane on the eastbound and northbound approaches at the Texas Street/Pennsylvania Avenue intersection.*

Based on a review of the existing intersection configuration, insufficient right-of-way exists to construct these improvements without severely impacting the adjacent buildings and properties. This improvement can be classified as being physically infeasible. The impact therefore would be considered significant and unavoidable, even if the cost sharing mechanism identified in Mitigation Measure 4.5-1 is successfully implemented.

#### **4.5-15 Cumulative impacts to the Texas Street/Jackson Street intersection for the Base Project, Alternative 1, and Alternative 2 conditions.**

##### Base Project

This intersection currently operates at LOS F during the PM peak hour. The intersection operates at LOS C or better during the AM peak hours. The addition of project traffic would cause the LOS during the Saturday peak hour to degrade from LOS C to LOS E. The addition of project traffic would increase traffic volumes by 11 percent during the PM peak hour and would cause the LOS to degrade from LOS C to LOS E during the Saturday peak hour. Base Project traffic would increase by more than three percent at an intersection that currently operates at a deficient level during the PM peak hour. In addition, the project would cause a degradation of the LOS from LOS C to LOS D during Saturday peak hour. Therefore, the Base Project would result in a *significant* impact.

##### Alternative 1

With the addition of Alternative 1 traffic, this intersection would operate at LOS F with increased delay during the PM peak hour. The addition of Alternative 1 traffic would increase traffic volumes by 8 percent during the PM peak hour. Therefore, Alternative 1 traffic would increase by more than three percent at an intersection that currently operates at a deficient level during the PM peak hour and would result in a *significant* impact.

##### Alternative 2

With the addition of Alternative 2 traffic, this intersection would operate at LOS F with increased delay during the PM peak hour. The addition of Alternative 2 traffic would increase traffic volumes by 7 percent during the PM peak hour. Therefore, Alternative 2 traffic would increase by more than three percent at an intersection that currently operates at a deficient level during the PM peak hour and would result in a *significant* impact.

Mitigation Measure(s)

Implementation of the following mitigation measure, which involves the payment of fees to help fund improvements to a facility controlled by the City of Fairfield, would render the impact *less than significant* if the improvements are fully funded and constructed. Because Fairfield approval and cooperation cannot be assured, however, the City at present cannot be certain that the improvements will be funded, and therefore concludes that the impact is *potentially significant and unavoidable*.

Mitigation Measure 4.5-15 is identified for the Base Project, Alternative 1, and Alternative 2.

4.5-15 *Prior to the completion of the commercial buildings within Planning Area 1, the applicant shall pay to the City fees representing the project's fair share contribution based on the cost sharing mechanism outlined in MM 4.5-1 for the following improvements:*

- *Add one eastbound through lane along Texas Street.*

Based on a review of the existing intersection configuration, insufficient right-of-way exists to construct these improvements without severely impacting the adjacent buildings and properties. This improvement can be classified as being physically infeasible. The impact therefore would be considered significant and unavoidable, even if the cost sharing mechanism identified in Mitigation Measure 4.5-1 is successfully implemented.

**4.5-16 Cumulative impacts to the Texas Street/Webster Street intersection for the Base Project, Alternative 1, and Alternative 2 conditions.**

Base Project

This intersection currently operates at LOS E during the PM peak hour. During the other peak hours, this intersection operates at LOS D or better which is considered acceptable for the City of Fairfield. After the introduction of project trips, this intersection would operate at LOS F during the PM peak hour and LOS E during the Saturday peak hour. The addition of project traffic would increase traffic volumes by 10 percent during the PM peak hour and causes the LOS to degrade from LOS D to LOS E during the Saturday peak hour. Base Project traffic would increase by more than three percent at an intersection that currently operates at a deficient level during the PM peak hour. In addition, the project would cause a degradation of the LOS from LOS D to LOS E during Saturday peak hour. Therefore, the Base Project would result in a *significant* impact.

Alternative 1

After the introduction of Alternative 1 trips, this intersection would operate at LOS F during the PM peak hour. The addition of project traffic would increase traffic volumes by 7 percent during the PM peak hour. Therefore, Alternative 1 traffic would increase by more than three percent at an intersection that currently operates at a deficient level during the PM peak hour. Therefore, Alternative 1 would result in a *significant* impact.

## Alternative 2

After the introduction of Alternative 2 trips, this intersection would operate at LOS F during the PM peak hour. The addition of project traffic would increase traffic volumes by 7 percent during the PM peak hour. Therefore, Alternative 2 traffic would increase by more than three percent at an intersection that currently operates at a deficient level during the PM peak hour. Therefore, Alternative 2 would result in a **significant** impact.

### Mitigation Measure(s)

Implementation of the following mitigation measure, which involves the payment of fees to help fund improvements to a facility controlled by the City of Fairfield, would render the impact **less than significant** if the improvements are fully funded and constructed. Because Fairfield approval and cooperation cannot be assured, however, the City at present cannot be certain that the improvements will be funded, and therefore concludes that the impact is **potentially significant and unavoidable**.

Mitigation Measure 4.5-16 is identified for the Base Project, Alternative 1, and Alternative 2.

- 4.5-16      *Prior to the completion of the commercial buildings within Planning Area 1, the applicant shall pay to the City fees representing the project's fair share contribution based on the cost sharing mechanism outlined in MM 4.5-1 for the following improvements:*
- *Construction of an additional through lane on Texas Street*

Based on a review of the existing intersection configuration, insufficient right-of-way exists to construct these improvements without severely impacting the adjacent buildings and properties. This improvement can be classified as being physically infeasible. The impact therefore would be considered significant and unavoidable, even if the cost sharing mechanism identified in Mitigation Measure 4.5-1 is successfully implemented.

## **4.5-17 Cumulative impacts to the Woolner Avenue/Beck Avenue intersection for the Base Project, Alternative 1, and Alternative 2 conditions.**

### Base Project

This intersection currently operates at LOS F during the PM peak hour. During the AM and Saturday peak hours, this intersection operates at LOS C or better which is considered acceptable for the City of Fairfield. After the introduction of project trips, this intersection would operate at LOS F during the PM peak hour. The addition of project traffic would increase traffic volumes by 10 percent during the PM peak hour. Base Project traffic would increase by more than three percent at an intersection that currently operates at a deficient level during the PM peak hour and would result in a **significant** impact.

### Alternative 1

After the introduction of Alternative 1 trips, this intersection would operate at LOS F during the PM peak hour while operating at a LOS C or better for the AM and Saturday peak hours. The addition of project traffic would increase traffic volumes by 3 percent during the PM peak hour. Alternative 1 traffic would increase by more than three percent at an intersection that currently operates at a deficient level during the PM peak hour and would result in a **significant** impact.

### Alternative 2

After the introduction of Alternative 2 trips, this intersection would operate at LOS F during the PM peak hour while operating at a LOS C or better for the AM and Saturday peak hours. The addition of project traffic would increase traffic volumes by 3 percent during the PM peak hour. Alternative 2 traffic would increase by more than three percent at an intersection that currently operates at a deficient level during the PM peak hour and would result in a **significant** impact.

### Mitigation Measure(s)

Implementation of the following mitigation measure, which involves the payment of fees to help fund improvements to a facility controlled by the City of Fairfield, would render the impact **less than significant** if the improvements are fully funded and constructed. Because Fairfield approval and cooperation cannot be assured, however, the City at present cannot be certain that the improvements will be funded, and therefore concludes that the impact is **potentially significant and unavoidable**.

Mitigation Measure 4.5-17 is identified for the Base Project, Alternative 1, and Alternative 2.

4.5-17      *Prior to the completion of the commercial buildings within Planning Area 1, the applicant shall pay to the City fees representing the project's fair share contribution based on the cost sharing mechanism outlined in MM 4.5-1 for the following improvements:*

- *The addition of a second left-turn lane on the southbound approach and an exclusive right-turn lane on the northbound approach at the Woolner Avenue/Beck Avenue intersection.*

Based on a review of the existing intersection configuration, insufficient right-of-way exists to construct these improvements without severely impacting the adjacent buildings and properties. This improvement can be classified as being physically infeasible. The impact therefore would be considered significant and unavoidable, even if the cost sharing mechanism identified in Mitigation Measure 4.5-1 is successfully implemented.

**4.5-18 Cumulative impacts to the SR 12/Beck Avenue intersection for the Base Project, Alternative 1, and Alternative 2 conditions.**

Base Project

This intersection currently operates at LOS F during the AM, PM, and Saturday peak hours under the Cumulative No Project scenario. With the addition of project traffic, the intersection would continue to operate at LOS F with increased delay during all peak hours. The addition of project traffic would increase traffic volumes by 6 and 10 percent during the PM and Saturday peak hour, respectively. Therefore, because the addition of project traffic would cause an increase of more than three percent at an intersection that currently operates at a deficient level during the PM and Saturday peak hours, a *significant* impact would occur.

Alternative 1

With the addition of Alternative 1 traffic, the intersection would continue to operate at LOS F with increased delay during all peak hours. The addition of project traffic would increase traffic volumes by 4 and 8 percent during the PM and Saturday peak hour, respectively. Therefore, because the addition of project traffic would cause an increase of more than three percent at an intersection that currently operates at a deficient level during the PM and Saturday peak hours, a *significant* impact would occur.

Alternative 2

With the addition of Alternative 2 traffic, the intersection would continue to operate at LOS F with increased delay during all peak hours. The addition of project traffic would increase traffic volumes by 4 and 7 percent during the PM and Saturday peak hour, respectively. Therefore, because the addition of project traffic would cause an increase of more than three percent at an intersection that currently operates at a deficient level during the PM and Saturday peak hours, a *significant* impact would occur.

Mitigation Measure(s)

Implementation of the following mitigation measure, which involves the payment of fees to help fund improvements to a facility controlled by Caltrans, would render the impact *less than significant* if the improvements are fully funded and constructed. Because Caltrans approval and cooperation cannot be assured, however, the City at present cannot be certain that the improvements will be funded, and therefore concludes that the impact is *potentially significant and unavoidable*.

Mitigation Measure 4.5-18 is identified for the Base Project, Alternative 1, and Alternative 2.

4.5-18(a) *Implement mitigation measures 4.5-4a and 4.5-4b.*

4.5-18(b) *Prior to the completion of the commercial buildings within Planning Area 1, the applicant shall pay to the City fees representing the project's fair share contribution based on the cost sharing mechanism outlined in MM 4.5-1 for the following improvements:*

- *Two additional through travel lanes along SR 12, providing an exclusive right-turn lane on the northbound approach, and providing an exclusive free right-turn lane on the southbound approach.*

Based on a review of the existing intersection configuration, sufficient right-of-way may be available at the intersection for the construction of this improvement. However, this improvement can be considered fiscally infeasible, in that the project would only be paying a small percentage of the cost of this improvement in the Cumulative Scenario. The impact therefore would be considered significant and unavoidable, even if the cost sharing mechanism identified in Mitigation Measure 4.5-1 is successfully implemented.

#### **4.5-19 Cumulative impacts to the SR 12/Pennsylvania Avenue intersection for the Base Project, Alternative 1, and Alternative 2 conditions.**

##### Base Project

This intersection operates at LOS F during the AM, PM, and Saturday peak hours under the Cumulative No Project scenario. With the addition of project traffic, the intersection would continue to operate at LOS F with increased delay during all peak hours. The addition of project traffic would increase traffic volumes by 8, 25, and 40 percent during the AM, PM, and Saturday peak hour, respectively. Therefore, because the addition of project traffic would cause an increase of more than three percent at an intersection that currently operates at a deficient level during all peak hours a *significant* impact would occur.

##### Alternative 1

With the addition of Alternative 1 traffic, the intersection would continue to operate at LOS F with increased delay during all peak hours. The addition of project traffic would increase traffic volumes by 7, 19 and 29 percent during the AM, PM, and Saturday peak hour, respectively. Therefore, because the addition of project traffic would cause an increase of more than three percent at an intersection that currently operates at a deficient level during all peak hours a *significant* impact would occur.

##### Alternative 2

With the addition of Alternative 2 traffic, the intersection would continue to operate at LOS F with increased delay during all peak hours. The addition of project traffic would increase traffic volumes 7, 16, and 24 percent during the AM, PM, and Saturday peak hour, respectively. Therefore, because the addition of project traffic would cause an

increase of more than three percent at an intersection that currently operates at a deficient level during all peak hours a **significant** impact would occur.

Mitigation Measure(s)

Implementation of the following mitigation measure, which involves the payment of fees to help fund improvements to a facility controlled by Caltrans, would render the impact **less than significant** if the improvements are fully funded and constructed. Because Caltrans approval and cooperation cannot be assured, however, the City at present cannot be certain that the improvements will be funded, and therefore concludes that the impact is **potentially significant and unavoidable**.

Mitigation Measure 4.5-19 is identified for the Base Project, Alternative 1, and Alternative 2.

4.5-19 *Prior to the completion of the commercial buildings within Planning Area 1, the applicant shall pay to the City fees representing the project's fair share contribution based on the cost sharing mechanism outlined in MM 4.5-1 for the following improvements:*

- *A grade separation of one or more movements. An urban interchange would fully mitigate the deficient conditions at this intersection.*

Implementing this mitigation measure would require extensive engineering studies and coordination between the project applicant, the City of Fairfield, Suisun City, and the California Department of Transportation. Constructing an interchange at this location could cost upwards of \$10 million, as documented by the SR 12 MIS completed in 2001. Given the difficulties in implementing this mitigation measure and the cost involved, full implementation cannot be assured in a timely fashion to mitigate the project impact.

Additionally, currently insufficient funding exists for this improvement and no regional mechanisms to collect money for this improvement. For example, Solano County does not have a countywide traffic impact fee program that would fund a regional improvement such as this. The City of Fairfield is a potential funding source for this interchange, although it is uncertain at this time whether there is sufficient funding from other parties to construct the interchange in conjunction with this project.

Based on the above considerations, this improvement would appear to be fiscally infeasible, in that the project would only be paying a small percentage of the cost of this improvement in the Cumulative Scenario. The impact therefore would be considered significant and unavoidable, even if the cost sharing mechanism identified in Mitigation Measure 4.5-1 is successfully implemented.

**4.5-20 Cumulative impacts to the SR 12/Marina Blvd intersection for the Base Project, Alternative 1, and Alternative 2 conditions.**

Base Project

This intersection operates at LOS F during the AM, PM, and Saturday peak hours under the Cumulative No Project scenario. With the addition of project traffic, the intersection would continue to operate at LOS F with increased delay during all time periods. The addition of project traffic would increase traffic volumes by 5 and 8 percent during the PM and Saturday peak hour, respectively. The AM peak hour increase did not meet the thresholds of significance. Therefore, because the addition of project traffic would cause an increase of more than three percent at an intersection that currently operates at a deficient level during PM and Saturday peak hours a *significant* impact would occur.

Alternative 1

With the addition of Alternative 1 traffic, the intersection would continue to operate at LOS F with increased delay during all time periods. The addition of project traffic would increase traffic volumes by 4 and 6 percent during the PM and Saturday peak hour, respectively. The AM peak hour increase did not meet the thresholds of significance. Therefore, because the addition of project traffic would cause an increase of more than three percent at an intersection that currently operates at a deficient level during the PM and Saturday peak hours a *significant* impact would occur.

Alternative 2

With the addition of Alternative 2 traffic, the intersection would continue to operate at LOS F with increased delay during all time periods. The addition of project traffic would increase traffic volumes by 4 and 5 percent during the PM and Saturday peak hour, respectively. The AM peak hour increase did not meet the thresholds of significance. Therefore, because the addition of project traffic would cause an increase of more than three percent at an intersection that currently operates at a deficient level during the PM and Saturday peak hours a *significant* impact would occur.

Mitigation Measure(s)

Implementation of the following mitigation measure, which involves the payment of fees to help fund improvements to a facility controlled by the Caltrans, would render the impact *less than significant* if the improvements are fully funded and constructed. Because Caltrans approval and cooperation cannot be assured, however, the City at present cannot be certain that the improvements will be funded, and therefore concludes that the impact is *potentially significant and unavoidable*.

Mitigation Measure 4.5-20 is identified for the Base Project, Alternative 1, and Alternative 2.

4.5-20 *Prior to the completion of the commercial buildings within Planning Area 1, the applicant shall pay to the City fees representing the project's fair share contribution based on the cost sharing mechanism outlined in MM 4.5-1 for the following improvements:*

- *Additional two through travel lanes along SR 12 and additional left and right-turn lanes on nearly all approaches. Alternately, one or more of the movements could require grade separation.*

Sufficient right-of-way exists for the construction of this improvement, given that three of the four intersection quadrants are currently vacant. However, this improvement would appear to be fiscally infeasible, in that the project would only be paying a small percentage of the cost of this improvement in the Cumulative Scenario. The impact therefore would be considered significant and unavoidable, even if the cost sharing mechanism identified in Mitigation Measure 4.5-1 is successfully implemented.

**4.5-21 Cumulative impacts to the SR 12/Sunset Avenue intersection for the Base Project, Alternative 1, and Alternative 2 conditions.**

Base Project

This intersection operates at LOS F during the AM and Saturday peak hours under the Cumulative No Project scenario. The intersection operates at LOS E during the PM peak hour also under the Cumulative No Project scenario. LOS C would be the applicable threshold for this location since the intersection is under the jurisdiction of Caltrans. With the addition of project traffic, the intersection would continue to operate at a deficient LOS with increased delay during all time periods. The addition of project traffic would increase traffic volumes by 5 and 6 percent during the PM and Saturday peak hour, respectively. The AM peak hour increase did not meet the thresholds of significance. Therefore, because the addition of project traffic would cause an increase of more than three percent at an intersection that currently operates at a deficient level during the PM and Saturday peak hours a *significant* impact would occur.

Alternative 1

With the addition of Alternative 1 traffic, the intersection would continue to operate at a deficient LOS with increased delay during all time periods. The addition of project traffic would increase traffic volumes by 3 and 5 percent during the PM and Saturday peak hour, respectively. The AM peak hour increase did not meet the thresholds of significance. Therefore, because the addition of project traffic would cause an increase of more than three percent at an intersection that currently operates at a deficient level during the PM and Saturday peak hours a *significant* impact would occur.

Alternative 2

With the addition of Alternative 2 traffic, the intersection would continue to operate at a deficient LOS with increased delay during all time periods. The addition of project traffic

would increase traffic volumes by 3 and 4 percent during the PM and Saturday peak hour, respectively. The AM peak hour increase did not meet the thresholds of significance. Therefore, because the addition of project traffic would cause an increase of more than three percent at an intersection that currently operates at a deficient level during the PM and Saturday peak hours a **significant** impact would occur.

Mitigation Measure(s)

Implementation of the following mitigation measure, which involves the payment of fees to help fund improvements to a facility controlled by the Caltrans, would render the impact **less than significant** if the improvements are fully funded and constructed. Because Caltrans approval and cooperation cannot be assured, however, the City at present cannot be certain that the improvements will be funded, and therefore concludes that the impact is **potentially significant and unavoidable**.

Mitigation Measure 4.5-21 is identified for the Base Project, Alternative 1, and Alternative 2.

4.5-21      *Implement mitigation measure 4.5-8*

*Prior to the completion of the commercial buildings within Planning Area 1, the applicant shall pay to the City fees representing the project's fair share contribution based on the cost sharing mechanism outlined in MM 4.5-1 for the following improvements:*

- *Two additional through travel lanes along SR 12, construction of an exclusive left-turn lane on the northbound approach, providing an exclusive left-turn lane and a free right-turn lane on the southbound approach.*

A review of this intersection indicates that there is insufficient right-of-way for this improvement, as there are buildings or parking lots on three of the four intersection quadrants. Additionally, improvements of this magnitude are also fiscally infeasible in that the project contribution of a fair share payment would be insufficient to ensure construction of the needed improvements. The impact therefore would be considered significant and unavoidable, even if the cost sharing mechanism identified in Mitigation Measure 4.5-1 is successfully implemented.

**4.5-22 Cumulative impacts to the Cordelia Road/Beck Avenue intersection for the Base Project, Alternative 1, and Alternative 2 conditions.**

Base Project

This intersection, which operates under stop-sign control, is projected to operate at LOS F during the Cumulative No Project scenario in the PM peak hour. With the addition of project traffic, the intersection would operate at LOS F with increased delays during the PM peak hour. The Base Project would add more than 10 trips to an unsignalized intersection that currently operates at a deficient LOS during the PM peak hour. Therefore, because the Base Project would add more than 10 trips to an unsignalized intersection that currently operates at a deficient LOS during the PM peak hour a *significant* impact would occur.

Alternative 1

With the addition of Alternative 1 traffic, the intersection would operate at LOS F with increased delays during the PM peak hour. Alternative 1 would add more than 10 trips to an unsignalized intersection that currently operates at a deficient LOS during the PM peak hour. Therefore, because Alternative 1 would add more than 10 trips to an unsignalized intersection that currently operates at a deficient LOS during the PM peak hour a *significant* impact would occur.

Alternative 2

With the addition of Alternative 2 traffic, the intersection would operate at LOS F with increased delays during the PM peak hour. Alternative 2 would add more than 10 trips to an unsignalized intersection that currently operates at a deficient LOS during the PM peak hour. Therefore, because Alternative 2 would add more than 10 trips to an unsignalized intersection that currently operates at a deficient LOS during the PM peak hour a *significant* impact would occur.

Mitigation Measure(s)

Implementation of the following mitigation measure, which involves the payment of fees to help fund improvements to a facility controlled by the City of Fairfield, would render the impact *less than significant* if the improvements are fully funded and constructed. Because Fairfield approval and cooperation cannot be assured, however, the City at present cannot be certain that the improvements will be funded, and therefore concludes that the impact is *potentially significant and unavoidable*.

Mitigation Measure 4.5-22 is identified for the Base Project, Alternative 1, and Alternative 2.

4.5-22 *Prior to the completion of the commercial buildings within Planning Area 1, the applicant shall pay to the City fees representing the project's fair share contribution based on the cost sharing mechanism outlined in MM 4.5-1 for the following improvements:*

- *Installation of a traffic signal at the Cordelia Road/Beck Avenue location.*

After implementation of this mitigation measure, the intersection LOS would be LOS D or better during all time periods. Mitigation for impact may not be successfully implemented and remain significant and unavoidable.

**4.5-23 Cumulative impacts to the Cordelia Road/Pennsylvania Avenue intersection for the Base Project, Alternative 1, and Alternative 2 conditions.**

Base Project

This intersection, which currently operates under stop-sign control, is projected to operate at LOS F during all the peak hours under the Cumulative No Project scenario. With the addition of project traffic, the intersection would operate at LOS F with increased delays during all the peak hours. The Base Project would add more than 10 trips to an unsignalized intersection that currently operates at a deficient LOS during all peak hours. In addition, it should be noted that although proposed Mitigation Measure 4.5-8 could be implemented, this intersection still operate at LOS F during the PM period. Therefore, because the Base Project adds more than 10 trips to an unsignalized intersection that currently operates at a deficient LOS during all peak hours, the Base Project would result in a *significant* impact.

Alternative 1

With the addition of Alternative 1 traffic, the intersection would operate at LOS F with increased delays during all the peak hours. Alternative 1 would add more than 10 trips to an unsignalized intersection that currently operates at a deficient LOS during all peak hours. Even with the Existing Plus Project mitigations, the intersection would still operate at LOS F. Therefore, Alternative 1 would result in a *significant* impact.

Alternative 2

With the addition of Alternative 2 traffic, the intersection would operate at LOS F with increased delays during all the peak hours. Alternative 2 would add more than 10 trips to an unsignalized intersection that currently operates at a deficient LOS during all peak hours and would result in a *significant* impact.

Mitigation Measure(s)

Implementation of the following mitigation measures would be reduce the impacts to *less-than-significant*.

Mitigation Measure 4.5-23 is identified for the Base Project, Alternative 1, and Alternative 2.

4.5-23(a) *Implement mitigation measure 4.5-9a.*

4.5-23(b) *Prior to the completion of the commercial buildings within Planning Area 1, the applicant shall submit to the City Engineer, for review and approval, plans for the addition of an exclusive northbound left-turn lane in addition to mitigation measure 4.5-9a under Existing Plus Project Scenario. The applicant would be responsible for the funding of the construction of this improvement.*

After implementation of this mitigation measure, the intersection LOS would be LOS C or better during all time periods. Because this intersection is under the jurisdiction of the City of Suisun City, additional improvements at this location do not require the approval of the City of Fairfield or Caltrans.

#### **4.5-24 Cumulative impacts to the Cordelia Road/Main Street intersection for the Base Project, Alternative 1, and Alternative 2 conditions.**

##### Base Project

This intersection, which currently operates under stop-sign control, is projected to operate at LOS F during the Cumulative No Project scenario in the PM peak hour. With the addition of project traffic, the intersection would operate at LOS F with increased delays during the PM peak hour and LOS D during the Saturday peak hour while remaining acceptable during AM peak hours. The addition of project traffic would increase traffic volumes by more than 10 trips during the PM peak hour and would cause the LOS to degrade from LOS B to LOS D during the Saturday peak hour. Therefore, because the addition of project traffic would cause an increase of more than 10 percent at an intersection that currently operates at a deficient level during the PM peak hour and because Saturday peak hour traffic would be responsible for a degradation of LOS from LOS B to LOS D a *significant* impact would occur.

##### Alternative 1

With the addition of Alternative 1 traffic, the intersection would operate at LOS F with increased delays during the PM peak hour. The addition of project traffic would increase traffic volumes by more than 10 trips during the PM peak hour and would cause the LOS to degrade from LOS B to LOS D during the Saturday peak hour while remaining acceptable during AM peak hours. Therefore, because the addition of project traffic would cause an increase of more than 10 percent at an intersection that currently operates at a deficient level during the PM peak hour a *significant* impact would occur.

##### Alternative 2

With the addition of Alternative 2 traffic, the intersection would operate at LOS F with increased delays during the PM peak hour. The addition of project traffic would increase traffic volumes by more than 10 trips during the PM peak hour and would cause the LOS to degrade from LOS B to LOS D during the Saturday peak hour while remaining acceptable during AM peak hours. Therefore, because the addition of project traffic would cause an increase of more than 10 percent at an intersection that currently operates at a deficient level during the PM peak a *significant* impact would occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would be reduce the impacts to *less-than-significant*.

Mitigation Measure 4.5-24 is identified for the Base Project, Alternative 1, and Alternative 2.

*4.5-24(a) The applicant shall fully fund the installation of a traffic signal the Cordelia Road/Main Street intersection. Prior to installation of a traffic signal, a complete signal warrant analysis should be conducted to verify the need for a traffic signal. This traffic signal will be installed prior to the completion of the commercial buildings within Planning Area 1.*

*4.5-24(b) Prior to approval of improvement plans, the applicant shall submit to the City Engineer, for review and approval, plans for the addition of an exclusive eastbound left-turn lane. The project would be responsible for the funding of the construction of this improvement. These plans will be prepared prior to the completion of the commercial buildings within Planning Area 1.*

After implementation of this mitigation measure, the intersection LOS would be LOS C or better during all time periods. Because this intersection is under the jurisdiction of the City of Suisun City, improvements at this location do not require the approval of the City of Fairfield or Caltrans.

**4.5-25 Cumulative impacts to the Lotz Way/Civic Center Boulevard intersection for the Base Project, Alternative 1, and Alternative 2 conditions.**

Base Project

This intersection, which currently operates under stop-sign control, is projected to operate at LOS F during the Cumulative No Project scenario in the PM peak hour. This intersection also operates at LOS D during the Saturday Peak Hour. With the addition of project traffic, the intersection would operate at LOS F with increased delays during the PM peak hour and LOS E during the Saturday peak hour. AM peak hour traffic would maintain a LOS A. The addition of project traffic would increase traffic volumes by more than 10 trips during the PM and Saturday peak hours. Therefore, because the project

would add more than 10 trips to an unsignalized intersection that currently operates at a deficient LOS during the PM and Saturday peak hours a **significant** impact would occur.

#### Alternative 1

With the addition of Alternative 1 traffic, the intersection would operate at LOS F with increased delays during the PM peak hour and LOS E during the Saturday peak hour. The addition of project traffic would increase traffic volumes by more than 10 trips during the PM and Saturday peak hours. AM peak hour traffic would maintain a LOS A. Therefore, because the project would add more than 10 trips to an unsignalized intersection that currently operates at a deficient LOS during the PM and Saturday peak hours a **significant** impact would occur.

#### Alternative 2

With the addition of Alternative 2 traffic, the intersection would operate at LOS F with increased delays during the PM peak hour and LOS E during the Saturday peak hour. The addition of project traffic would increase traffic volumes by more than 10 trips during the PM and Saturday peak hours. AM peak hour traffic would maintain a LOS A. Therefore, because the project would add more than 10 trips to an unsignalized intersection that currently operates at a deficient LOS during the PM and Saturday peak hours a **significant** impact would occur.

#### Mitigation Measure(s)

Implementation of the following mitigation measure, which involves construction along a facility controlled by the Caltrans, would render the impact **less than significant** if the improvements are fully funded and constructed. Because Caltrans approval and cooperation cannot be assured, however, the City at present cannot be certain that the improvements will be funded, and therefore concludes that the impact is **potentially significant and unavoidable**.

Mitigation Measure 4.5-25 is identified for the Base Project, Alternative 1, and Alternative 2.

- 4.5-25(a) *The applicant shall fully fund the installation of a traffic signal at the Lotz Way/Civic Center Boulevard. Prior to installation of a traffic signal, a complete signal warrant analysis should be conducted to verify the need for a traffic signal. Prior to the completion of the commercial buildings in Planning Area 1, the signal at the Lotz Way/Civic Center Boulevard intersection shall be installed as determined by the City Engineer.*
- 4.5-25(b) *Prior to the completion of the commercial buildings in Planning Area 1, the applicant shall submit to the City Engineer, for review and approval, plans for the addition of an exclusive eastbound left-turn lane. The applicant would be responsible for the funding and construction of this*

*improvement which shall be complete prior to initial occupancy of a commercial building or residential unit.*

After implementation of this mitigation measure, the intersection LOS would be LOS C or better during all time periods.

**4.5-26 Cumulative impacts to the Cordelia Road/Driveway #1 intersection for the Base Project, Alternative 1, and Alternative 2 conditions.**

Base Project

This proposed intersection would be located to the south of Cordelia Road along Pennsylvania Avenue and would provide access to residential area south of the railroad tracks. For purposes of this analysis, this intersection is assumed to operate under side-street stop sign control and all turning movements are assumed to occur at this intersection. Additionally, Pennsylvania Avenue is assumed to have two lanes at this location. With these assumptions, the intersection would operate at LOS F during the PM peak hour. Therefore, because this intersection would exceed the LOS C threshold, LOS F (PM peak hour) and LOS D (Saturday peak hour) respectively, after the addition of project traffic, a *potentially significant* impact would occur.

Alternative 1

This proposed intersection would be located to the south of Cordelia Road along Pennsylvania Avenue and would provide access to residential area south of the railroad tracks. For purposes of this analysis, this intersection is assumed to operate under side-street stop sign control and all turning movements are assumed to occur at this intersection. Additionally, Pennsylvania Avenue is assumed to have two lanes at this location. With these assumptions, the intersection would operate at LOS E during the PM peak hour. Therefore, because this intersection would exceed the LOS C threshold, LOS E (PM peak hour), after the addition of Alternative 1 traffic, a *potentially significant* impact would occur.

Alternative 2

This proposed intersection would be located to the south of Cordelia Road along Pennsylvania Avenue and would provide access to residential area south of the railroad tracks. For purposes of this analysis, this intersection is assumed to operate under side-street stop sign control and all turning movements are assumed to occur at this intersection. Additionally, Pennsylvania Avenue is assumed to have two lanes at this location. With these assumptions, the intersection would operate at LOS E during the PM peak hour. Therefore, because this intersection would exceed the LOS C threshold, LOS F (PM peak hour), after the addition of Alternative 2 traffic, a *potentially significant* impact would occur.

Mitigation Measure(s)

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

Mitigation Measure 4.5-26a is identified for the Base Project.

4.5-26(a)(1) *Prior to installation of a traffic signal, a complete signal warrant analysis should be conducted to verify the need for a traffic signal. In addition, the applicant shall fully fund the installation of a traffic signal at the Cordelia Road/Driveway #1 intersection if necessary. Prior to initial occupancy of the adjacent residential units, the signal at the Cordelia Road/Driveway #1 intersection shall be installed as determined by the City Engineer.*

4.5-26(a)(2) *Prior to approval of improvement plans, the applicant shall submit to the City Engineer, for review and approval, plans for an exclusive right-turn lane on Cordelia Road. The applicant would be responsible for the funding and construction of this improvement which shall be complete prior to initial occupancy of the adjacent residences.*

After implementation of this mitigation measure, the intersection LOS would be LOS C during all periods. Because this intersection is under the jurisdiction of the City of Suisun City, improvements at this location do not require the approval of the City of Fairfield or Caltrans. The recommended lane configurations for this intersection are discussed in project site plan review section, relating to site access and circulation.

Mitigation Measure 4.5-26b is identified for Alternative 1.

4.5-26(b) *Prior to installation of a traffic signal, a complete signal warrant analysis should be conducted to verify the need for a traffic signal. In addition, the applicant shall fully fund the installation of a traffic signal at the Cordelia Road/Driveway #1 intersection if necessary. Prior to initial occupancy of the adjacent residential units, the signal at the Cordelia Road/Driveway #1 intersection shall be installed as determined by the City Engineer.*

After implementation of this mitigation measure, the intersection LOS would be LOS C during all periods. Because this intersection is under the jurisdiction of the City of Suisun City, improvements at this location do not require the approval of the City of Fairfield or Caltrans.

Mitigation Measure 4.5-26c is identified for Alternative 2.

4.5-26(c) *Prior to installation of a traffic signal, a complete signal warrant analysis should be conducted to verify the need for a traffic signal. In addition, the applicant shall fully fund the installation of a traffic signal at the Cordelia Road/Driveway #1 intersection if necessary. Prior to initial occupancy of the adjacent residential units, the signal at the Cordelia Road/Driveway #1 intersection shall be installed as determined by the City Engineer.*

After implementation of this mitigation measure, the intersection LOS would be LOS C or better during all periods. Because this intersection is under the jurisdiction of the City of Suisun City, improvements at this location do not require the approval of the City of Fairfield or Caltrans. The recommended lane configurations for this intersection are discussed in Chapter 12, relating to site access and circulation.

**4.5-27 Cumulative impacts to the Cordelia Road/Driveway #2 intersection for the Base Project, Alternative 1, and Alternative 2 conditions.**

Base Project

This proposed intersection would be located to the south of Cordelia Road along Pennsylvania Avenue and would provide access to residential area south of the railroad tracks as well as the Ardave parcel. For purposes of this analysis, this intersection is assumed to operate under side-street stop sign control and all turning movements are assumed to occur at this intersection. Additionally, Pennsylvania Avenue is initially assumed to have two lanes at this location. Based upon these assumptions, the intersection of Cordelia Road/Driveway #2 would operate at LOS F during the PM peak hour. Therefore, because this intersection would exceed the acceptable LOS C threshold for the City of Suisun City a *potentially significant* impact would occur.

Alternative 1

This proposed intersection would be located to the south of Cordelia Road along Pennsylvania Avenue and would provide access to residential area south of the railroad tracks as well as the Ardave parcel. For purposes of this analysis, this intersection is assumed to operate under side-street stop sign control and all turning movements are assumed to occur at this intersection. Additionally, Pennsylvania Avenue is initially assumed to have two lanes at this location. Based upon these assumptions, the intersection would operate at LOS E during the PM peak hour. Therefore, because this intersection would exceed the acceptable LOS C threshold for the City of Suisun City a *potentially significant* impact would occur.

Alternative 2

This proposed intersection would be located to the south of Cordelia Road along Pennsylvania Avenue and would provide access to residential area south of the railroad tracks as well as the Ardave parcel. For purposes of this analysis, this intersection is assumed to operate under side-street stop sign control and all turning movements are assumed to occur at this intersection. Additionally, Pennsylvania Avenue is initially assumed to have two lanes at this location. Based upon these assumptions, the intersection would operate at LOS E during the PM peak hour. Therefore, because this intersection would exceed the acceptable LOS C threshold for the City of Suisun City a *potentially significant* impact would occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce impacts to *less-than-significant*.

Mitigation Measure 4.5-27 is identified for the Base Project, Alternative 1, and Alternative 2.

4.5-27 *Prior to approval of improvement plans, the applicant shall submit to the City Engineer, for review and approval, plans for turn restrictions at the Cordelia Road/Driveway #2 intersection, such as restricting left-out movements. The applicant would be responsible for the implementation of this improvement at the Pennsylvania Avenue/Driveway #2 intersection and shall be complete prior to initial occupancy of any adjacent residential unit.*

After implementation of this mitigation measure, the intersection LOS would be LOS C or better during all periods. Since this intersection is under the jurisdiction of the City of Suisun City, improvements at this location do not require the approval of the City of Fairfield or Caltrans. The recommended lane configurations for this intersection are discussed in the project site plan review section, relating to site access and circulation.

**4.5-28 Cumulative impacts to the Pennsylvania Avenue/Driveway #3 intersection for the Base Project, Alternative 1, and Alternative 2 conditions.**

Base Project

This proposed intersection would be located to the south of SR 12 along Pennsylvania Avenue and would provide access to Planning Areas 1 (secondary access) and 3 (primary access). For purposes of this analysis, this intersection is assumed to operate under side-street stop sign control and all turning movements are assumed to occur at this intersection. Additionally, Pennsylvania Avenue is initially assumed to have two lanes at this location. Based upon these assumptions, the intersection would operate at LOS F during both the PM and Saturday peak hours. Therefore, because this intersection exceeds the LOS C threshold which is considered acceptable by Suisun City, a *significant* impact would occur.

Alternative 1

This proposed intersection would be located to the south of SR 12 along Pennsylvania Avenue and would provide access to Planning Areas 1 (secondary access) and 3 (primary access). For purposes of this analysis, this intersection is assumed to operate under side-street stop sign control and all turning movements are assumed to occur at this intersection. Additionally, Pennsylvania Avenue is initially assumed to have two lanes at this location. Based upon these assumptions, the intersection would operate at LOS D during Saturday peak hour. Therefore, because this intersection exceeds the LOS C

threshold which is considered acceptable by Suisun City, a **significant** impact would occur.

#### Alternative 2

This proposed intersection would be located to the south of SR 12 along Pennsylvania Avenue and would provide access to Planning Areas 1 (secondary access) and 3 (primary access). For purposes of this analysis, this intersection is assumed to operate under side-street stop sign control and all turning movements are assumed to occur at this intersection. Additionally, Pennsylvania Avenue is initially assumed to have two lanes at this location. Based upon these assumptions, the intersection would operate at LOS F during both the PM and Saturday peak hours. Therefore, because this intersection exceeds the LOS C threshold which is considered acceptable by Suisun City, a **significant** impact would occur.

#### Mitigation Measure(s)

Implementation of the following mitigation measures would reduce impacts to *less-than-significant*.

Mitigation Measure 4.5-28 is identified for the Base Project, Alternative 1, and Alternative 2.

4.5-28 *Prior to approval of improvement plans, the applicant shall submit to the City Engineer, for review and approval, plans for the construction of a driveway which would have to operate as a right-in/right-out driveway only. Construction of a driveway shall be complete prior to initial occupancy of any adjacent commercial building or residential unit.*

With these modifications, the intersection would operate at LOS C or better during all periods. Since this intersection is under the jurisdiction of the City of Suisun City, improvements at this location do not require the approval of the City of Fairfield or Caltrans. The recommended lane configurations for this intersection are discussed in the project site plan review section, relating to site access and circulation.

#### **4.5-29 Cumulative impacts to the Pennsylvania Avenue/Driveway #4 intersection for the Base Project, Alternative 1, and Alternative 2 conditions.**

##### Base Project

This intersection would provide primary access to the main commercial portion of the proposed development. For purposes of this analysis, this intersection is assumed to operate under side-street stop control and all turning movements are assumed to occur at this intersection. Additionally, Pennsylvania Avenue is assumed to have two lanes at this location. Based upon these assumptions, the intersection would operate at LOS E during the AM peak hour and LOS F during both the PM and Saturday peak hours which would exceed the City's LOS standard of C. If the Existing Plus Approved mitigation measures

are implemented, including the installation of a traffic signal, deficient conditions would still occur in the Saturday peak hour (LOS E). Therefore, because the intersection exceeds the LOS C threshold which is considered acceptable by Suisun City, a *significant* impact would occur.

#### Alternative 1

This intersection would provide primary access to the main commercial portion of the proposed development. For purposes of this analysis, this intersection is assumed to operate under side-street stop control and all turning movements are assumed to occur at this intersection. Additionally, Pennsylvania Avenue is assumed to have two lanes at this location. Based upon these assumptions, the intersection would operate at LOS E during the AM peak hour and LOS F during both the PM and Saturday peak hours which would exceed the City's LOS standard of C. If the Existing Plus Approved mitigation measures are implemented, including the installation of a traffic signal, deficient conditions would still occur in the Saturday peak hour (LOS D). Therefore, because the intersection exceeds the LOS C threshold which is considered acceptable by Suisun City, a *significant* impact would occur.

#### Alternative 2

This intersection would provide primary access to the main commercial portion of the proposed development. For purposes of this analysis, this intersection is assumed to operate under side-street stop control and all turning movements are assumed to occur at this intersection. Additionally, Pennsylvania Avenue is assumed to have two lanes at this location. Based upon these assumptions, the intersection would operate at LOS E during the AM peak hour and LOS F during both the PM and Saturday peak hours which would exceed the City's LOS standard of C. If the Existing Plus Approved mitigation measures are implemented, including the installation of a traffic signal, deficient conditions would still occur in the Saturday peak hour (LOS D). Therefore, because the intersection exceeds the LOS C threshold which is considered acceptable by Suisun City, a *significant* impact would occur.

#### Mitigation Measure(s)

Implementation of the following mitigation measures would reduce impacts to *less-than-significant*.

Mitigation Measure 4.5-29a is identified for the Base Project, Alternative 1 and Alternative 2.

#### *4.5-29 Implement Mitigation Measure 4.5-8b.*

For the Base Project and Alternative 1, this mitigation, the intersection would still operate unacceptably at a LOS E during the Saturday peak hour. Mitigating this impact would require the additional turn lanes at this intersection, in addition to the traffic signal. With these modifications, the intersection would operate at LOS C or better during all time

periods. Since this intersection is under the jurisdiction of the City of Suisun City, improvements at this location do not require the approval of the City of Fairfield or Caltrans. The recommended lane configurations for this intersection are discussed in the project site plan review section, relating to site access and circulation.

For Alternative 2, these modifications, the intersection would operate at LOS C or better during all time periods. Since this intersection is under the jurisdiction of the City of Suisun City, improvements at this location do not require the approval of the City of Fairfield or Caltrans. The recommended lane configurations for this intersection are discussed in the project site plan review section, relating to site access and circulation.

**4.5-30 Cumulative impacts to the Pennsylvania Avenue/Driveway #5 intersection for the Base Project, Alternative 1, and Alternative 2 conditions.**

Base Project

This proposed intersection would be located to the south of SR 12 along Pennsylvania Avenue and would provide access to the Gilbert Parcel. For purposes of this analysis, this intersection is assumed to operate under side street stop control and all turning movements are assumed to occur at this intersection. Additionally, Pennsylvania Avenue is assumed to have two lanes at this location. Based upon these assumptions, the intersection would operate at LOS F during both the PM and Saturday Peak hours. Therefore, because this intersection exceeds the LOS C threshold which is considered acceptable by Suisun City, a *potentially significant* impact would occur.

Alternative 1

This proposed intersection would be located to the south of SR 12 along Pennsylvania Avenue and would provide access to the Gilbert Parcel. For purposes of this analysis, this intersection is assumed to operate under side street stop control and all turning movements are assumed to occur at this intersection. Additionally, Pennsylvania Avenue is assumed to have two lanes at this location. Based upon these assumptions, the intersection would operate at LOS F during both the PM and Saturday Peak hours. Therefore, because this intersection exceeds the LOS C threshold which is considered acceptable by Suisun City, a *potentially significant* impact would occur.

Alternative 2

This proposed intersection would be located to the south of SR 12 along Pennsylvania Avenue and would provide access to the Gilbert Parcel. For purposes of this analysis, this intersection is assumed to operate under side street stop control and all turning movements are assumed to occur at this intersection. Additionally, Pennsylvania Avenue is assumed to have two lanes at this location. Based upon these assumptions, the intersection would operate at LOS E during PM and LOS F during Saturday Peak hours. Therefore, because this intersection exceeds the LOS C threshold which is considered acceptable by Suisun City, a *potentially significant* impact would occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce impacts to *less-than-significant*.

Mitigation Measure 4.5-30a is identified for the Base Project and Alternative 2.

- 4.5-30(a) *Prior to approval of improvement plans, the applicant shall submit to the City Engineer, for review and approval, plans for the modification of access control to right-in/right-out only at the Pennsylvania Avenue/Driveway #5 intersection. This improvement shall be complete prior to initial occupancy of a commercial building or residential unit.*

With this mitigation, the intersection would operate at LOS B or better during all time periods. Because this intersection is under the jurisdiction of the City of Suisun City, improvements at this location do not require the approval of the City of Fairfield or Caltrans. The recommended lane configurations for this intersection are discussed in the project site plan review section, relating to site access and circulation.

Mitigation Measure 4.5-30b is identified for Alternative 1.

- 4.5-30(b)(1) *Prior to approval of improvement plans, the applicant shall submit to the City Engineer, for review and approval, plans for the modification of access control to right-in/right-out only at the Pennsylvania Avenue/Driveway #5 intersection. This improvement shall be complete prior to initial occupancy of a commercial building or residential unit.*

- 4.5-30(b)(2) *Prior to approval of improvement plans, the applicant shall submit to the City Engineer, for review and approval, plans for the additional through lane of Pennsylvania Avenue if mitigation measure 4.5-36(b) is implemented (the intersection would operate at LOS D during the PM period, which is indicative of deficient operations). This additional through lane would create a six-lane section of Pennsylvania Avenue, south of the intersection with SR 12. This improvement shall be complete prior to initial occupancy of a commercial building or residential unit.*

With mitigation, the intersection would operate at LOS B or better during all time periods. The recommended lane configurations for this intersection are discussed in the project site plan review section, relating to site access and circulation.

**4.5-31 Cumulative impacts to the Driveway #4/Internal Roadway intersection for the Base Project, Alternative 1, and Alternative 2 conditions.**

Base Project

This intersection represents the connection between the major internal roadway on the main commercial site and Driveway #4. Nearly all of the traffic accessing the main commercial site would enter through this intersection while traveling to individual buildings. This analysis assumes that this intersection operates as an all-way stop intersection with one lane approaches in all directions. Based upon this assumed configuration, the intersection would operate at LOS F during the PM and Saturday peak hours which LOS exceeds the City of Suisun City's LOS C standard. Therefore, because this intersection would exceed the LOS C threshold which is considered acceptable by Suisun City, a ***potentially significant*** impact would occur.

#### Alternative 1

This intersection represents the connection between the major internal roadway on the main commercial site and Driveway #4. Nearly all of the traffic accessing the main commercial site would enter through this intersection while traveling to individual buildings. This analysis assumes that this intersection operates as an all-way stop intersection with one lane approaches in all directions. Based upon this assumed configuration, the intersection would operate at LOS F during the PM and Saturday peak hours which LOS exceeds the City of Suisun City's LOS C standard. Therefore, because this intersection would exceed the LOS C threshold which is considered acceptable by Suisun City, a ***potentially significant*** impact would occur.

#### Alternative 2

This intersection represents the connection between the major internal roadway on the main commercial site and Driveway #4. Nearly all of the traffic accessing the main commercial site would enter through this intersection while traveling to individual buildings. This analysis assumes that this intersection operates as an all-way stop intersection with one lane approaches in all directions. Based upon this assumed configuration, the intersection would operate at LOS D during the PM and LOS F during the Saturday peak hours which LOS exceeds the City of Suisun City's LOS C standard. Therefore, because this intersection would exceed the LOS C threshold which is considered acceptable by Suisun City, a ***potentially significant*** impact would occur.

#### Mitigation Measure(s)

Implementation of the following mitigation measures would reduce impacts to *less-than-significant*.

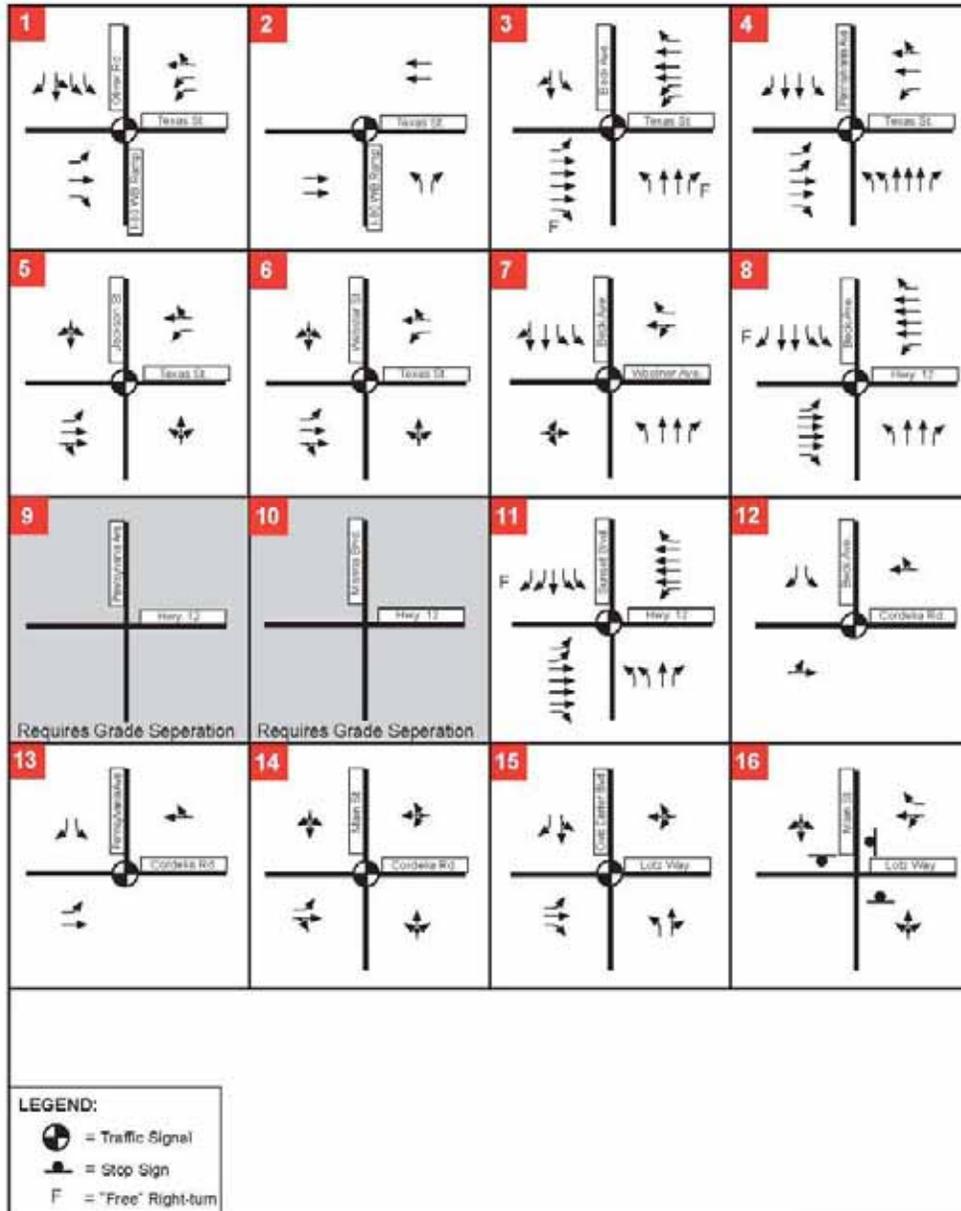
Mitigation Measure 4.5-31 is identified for the Base Project, Alternative 1, and Alternative 2.

#### *4.5-31 Implement Mitigation Measure 4.5-10(a) and 4.5-10(b)*

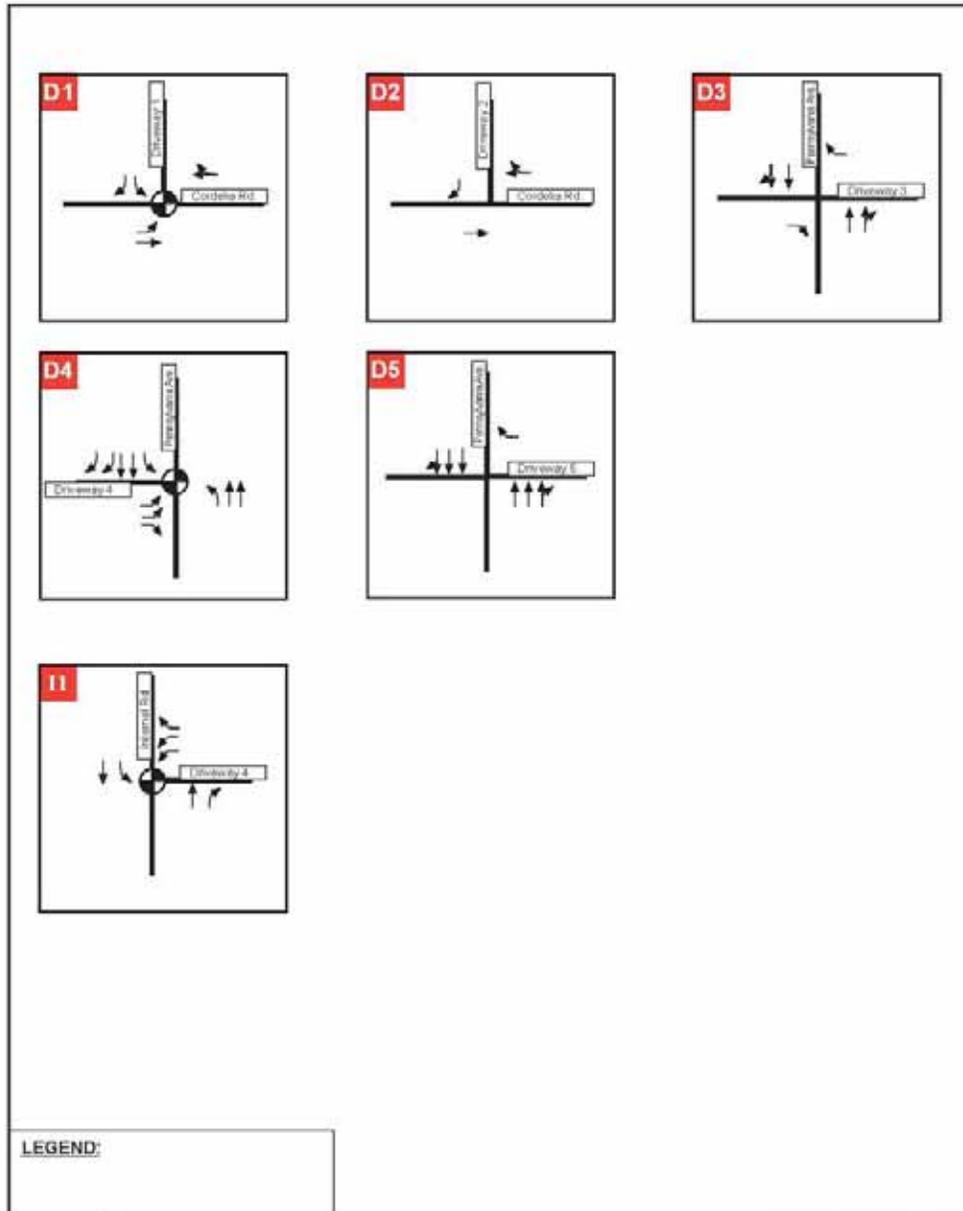
With this improvement, the intersection would operate at LOS B or better during all time periods. Since this intersection is under the jurisdiction of the City of Suisun City, improvements at this location do not require the approval of the City of Fairfield or

Caltrans. The recommended lane configurations for this intersection are discussed in the project site plan review section, relating to site access and circulation.

**Figure 4.5-30A**  
**Cumulative Plus Base Project with Cumulative Mitigation**



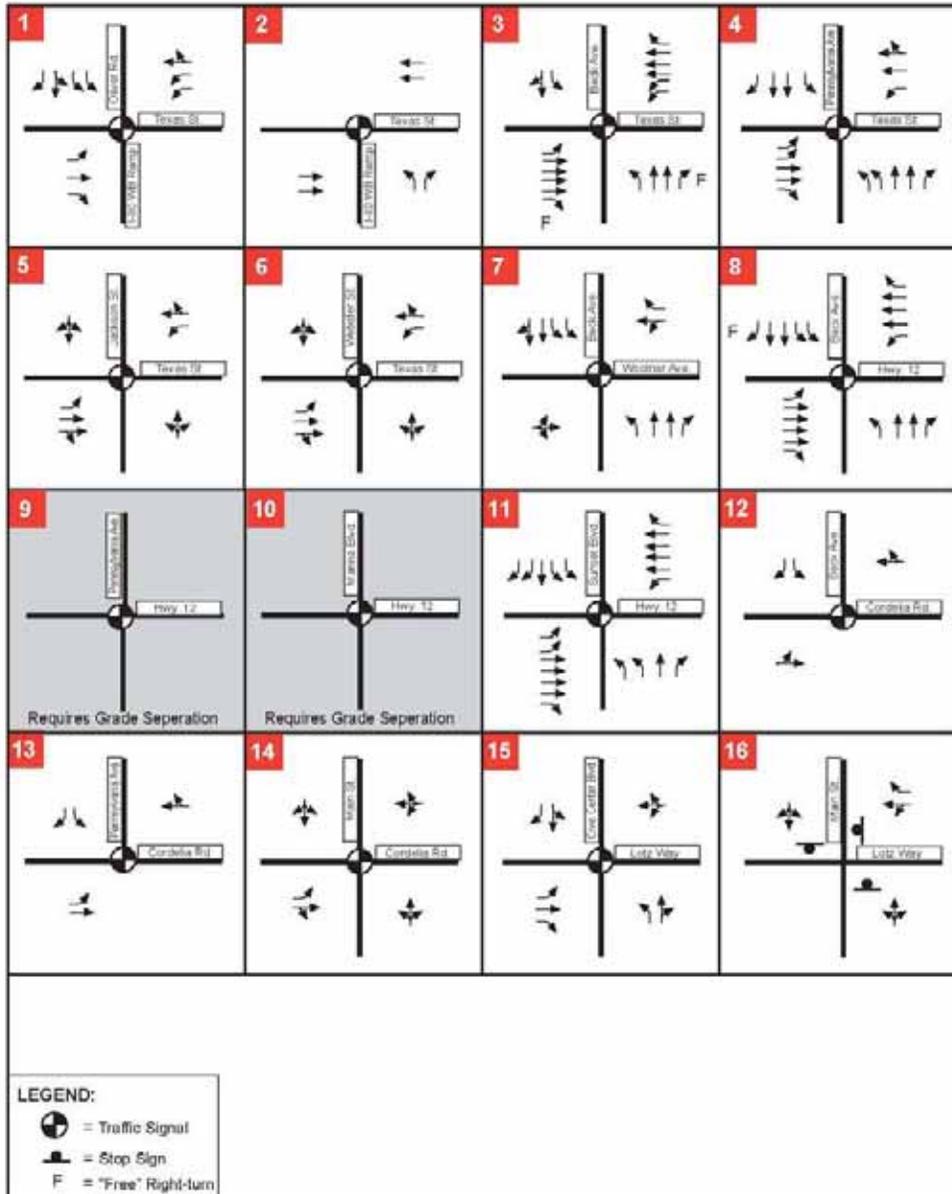
**Figure 4.5-30B**  
**Base Project Driveway Configurations (Cumulative)**



**fp**  
**FEHR & PEERS**  
TRANSPORTATION CONSULTANTS  
February 2006  
2192-30B

Gentry-Suisun Annexation  
**BASE PROJECT DRIVEWAY CONFIGURATIONS**  
**(CUMULATIVE)**  
**FIGURE 30B**

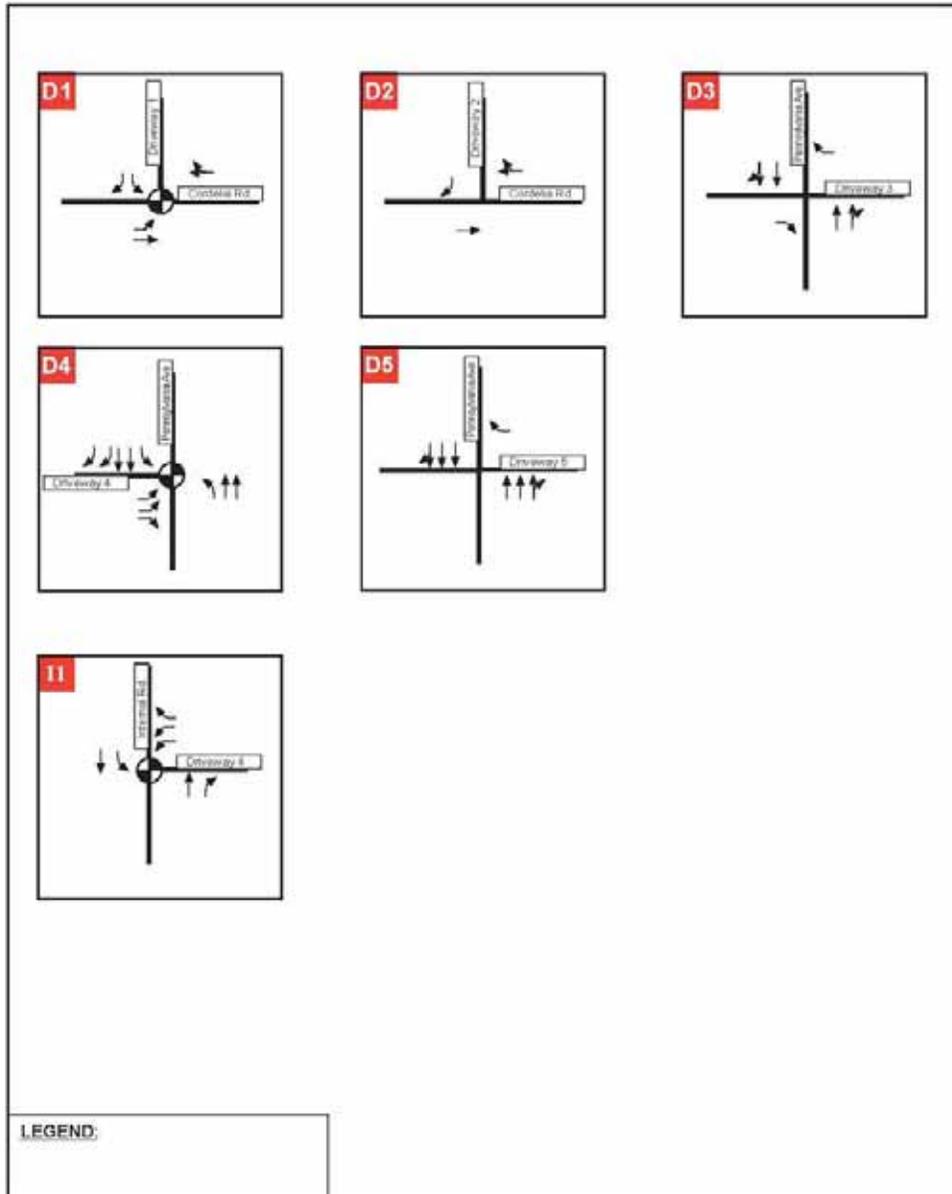
**Figure 4.5-31A**  
**Cumulative Plus Project – Alternative 1 With Cumulative Mitigation**



**fp**  
**FEHR & PEERS**  
 TRANSPORTATION CONSULTANTS  
 January 2006  
 2192-31A

Gentry-Suisun Annexation  
**CUMULATIVE PLUS PROJECT**  
**ALTERNATIVE 1**  
**WITH CUMULATIVE MITIGATION**  
**FIGURE 31A**

Figure 4.5-31B  
Alternative 1 Driveway Configurations (Cumulative)



LEGEND:

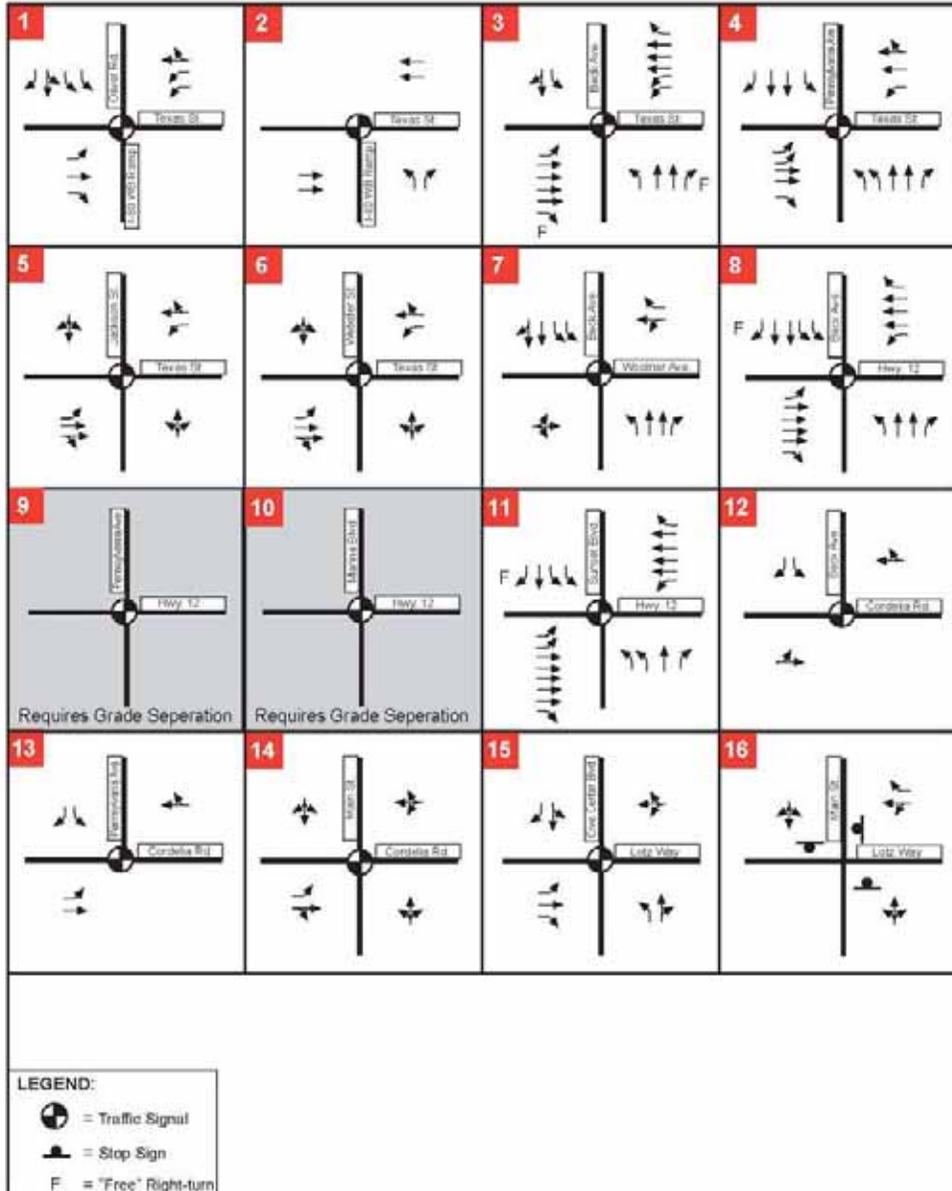
**fp**  
**FEHR & PEERS**  
TRANSPORTATION CONSULTANTS  
February 2006  
2192-31B

Gentry-Suisun Annexation

**ALTERNATIVE 1 DRIVEWAY CONFIGURATIONS  
(CUMULATIVE)**

**FIGURE 31B**

**Figure 4.5-32A**  
**Cumulative Plus Project – Alternative 2 With Cumulative Mitigation**

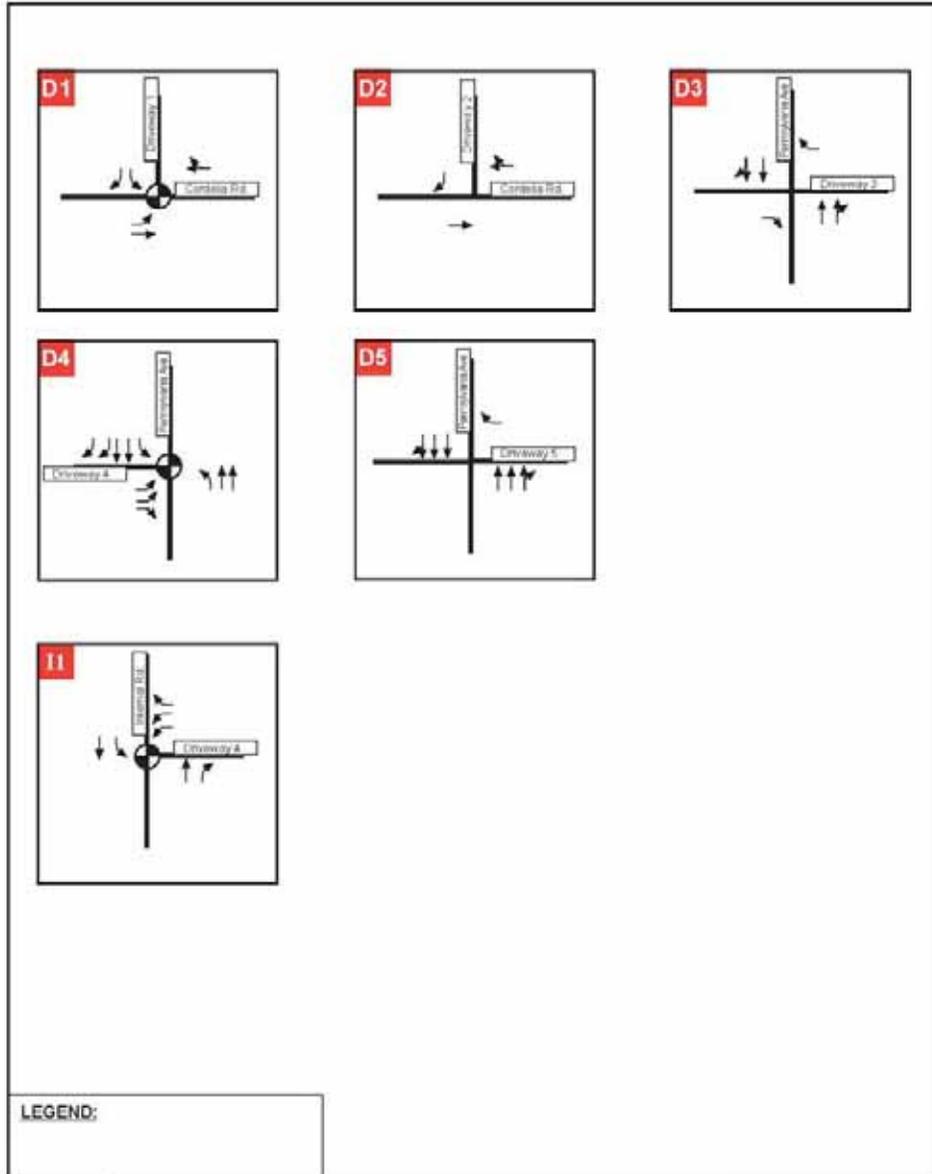


**LEGEND:**  
 ● = Traffic Signal  
 ⬠ = Stop Sign  
 F = "Free" Right-turn

**fp**  
**FEHR & PEERS**  
 TRANSPORTATION CONSULTANTS  
 January 2006  
 2192-32A

Gentry-Suisun Annexation  
**CUMULATIVE PLUS PROJECT**  
**ALTERNATIVE 2**  
**WITH CUMULATIVE MITIGATION**  
**FIGURE 32A**

Figure 4.5-32B  
Alternative 2 Driveway Configurations (Cumulative)



#### 4.5-32 Impacts to planned roadway improvements for the Base Project, Alternative 1, and Alternative 2

##### Base Project, Alternative 1, and Alternative 2

Based on a review of the project site plans, the project site plans could potentially conflict with a proposed interchange at the intersection of SR 12/Pennsylvania Avenue. At this time, design plans for the interchange do not currently exist. To determine whether proposed development on the site would conflict with development of an interchange, the project applicant developed several conceptual interchange configurations. These configurations were reviewed by STA staff and the City of Suisun City staff at a meeting on October 18, 2005. At this meeting the STA concluded that the project would not preclude future construction of an interchange at this intersection and would result in a *less-than-significant* impact.

##### Mitigation Measure(s)

*None Required.*

#### 4.5-33 Impacts to adopted plans and policies regarding roadways for the Base Project, Alternative 1, and Alternative 2.

The project site plan indicates that Pennsylvania Avenue and Cordelia Road, adjacent to the Base Project, Alternative 1, and Alternative 2, would be reconstructed in conjunction with the project. This reconstruction would be necessary to accommodate the additional lanes required at the project entrances. It is anticipated that Pennsylvania Avenue and Cordelia Road would be reconstructed as four lane roadways with medians. This widening would extend along the project frontage. The project site plan indicates that these roadways would have 12 feet wide travel lanes, which are consistent with standards provided AASHTO. The medians shown on the site plan also exceed the AASHTO standards. However, the project site plan does not provide additional detail for items such as sidewalks and cross-walks. Therefore, the proposed project would result in a *potentially significant* impact.

##### Mitigation Measure(s)

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

Mitigation Measure 4.5-33 is identified for the Base Project and Alternative 1.

- 4.5-33 *Prior to issuance of building permits, the applicant shall submit to the City Engineer, for review and approval, revisions to the project site plans to confirm the presence or absence of sidewalks along Pennsylvania Avenue and Cordelia Road. Including sidewalks would allow Fehr & Peers to confirm that the sidewalks meet AASHTO standards. Alternately, the project applicant could prepare a cross-section for Pennsylvania*

*Avenue and Cordelia Road to demonstrate that the major cross-section elements are consistent with AASHTO standards.*

**4.5-34 Impacts to the Base Project, Alternative 1, and Alternative 2 as a result of construction traffic.**

Base Project, Alternative 1, and Alternative 2

Construction-related traffic impacts would occur based on the following considerations:

- The project is large in size and includes over 700 KSF of commercial buildings, 359 residences, and a small office/industrial park under the Base Project. Even under Alternatives 1 and 2, approximately 400- 500 KSF of commercial space will be constructed with up to 542 dwelling units.
- Construction activities would occur on multiple parcels that lack direct connections except along existing public roadways
- Pennsylvania Avenue and Cordelia Road along the project frontage will be widened from two to four lanes. During this widening process, traffic along these roadways would either be diverted or delayed.
- Direct access to the site would be limited to Pennsylvania Avenue and Cordelia Road so there are no alternate routes that construction vehicles could take to access the site

Given the size of the project, the traffic consultant would expect construction activities to extend for a period of 18 months to 2 years at a minimum.

Construction activities associated with this project would create a traffic impact during the construction period. Impacts would result from the import of workers to the site, the movement of heavy vehicles to the site, and the daily influx of materials to the site. Additionally, widening the adjacent roadways would exacerbate impacts associated with the site as well as create an inconvenience for drivers using these roadways currently. Therefore, the proposed project would result in a ***potentially significant*** impact.

Mitigation Measure(s)

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

Mitigation Measure 4.5-34 is identified for the Base Project, Alternative 1, and Alternative 2.

- 4.5-34 *Prior to issuance of building permits, the applicant shall submit to the City Engineer, for review and approval, a construction traffic management plan. It is anticipated that this Construction Traffic Management Plan will be developed in the context of a larger*

*Construction Management Plan, which will address other issues such as hours of construction on site, limitations on noise and dust emissions, and other applicable items. This plan shall include the following items:*

- *A map documenting material and equipment staging and storage locations for all phases of construction (must be located on the project site).*
- *A map documenting worker parking locations for all phases of construction (must be located on the project site).*
- *Notification procedures for adjacent businesses, residents, property owners, and public safety personnel for all major deliveries, detours, and land and/or street closures that would affect traffic in the vicinity of the project.*
- *Provisions for monitoring surface streets used for truck routes so that any damage and debris attributable to the trucks would be identified and corrected.*
- *Signage plans documenting any detours for bicycle and pedestrian traffic.*
- *Routing plans for construction vehicles and construction equipment from the project site.*

#### **4.5-35 Impacts to existing transit services.**

##### Base Project, Alternative 1, and Alternative 2

Route 5 bus which is operated by the Fairfield/Suisun Transit System, travels along the project frontage along Pennsylvania Avenue. At the project buildout, it is expected that there would be limited disruption to the operation of this route as a result of the additional driveways along Pennsylvania Avenue. Some additional delay due to traffic turning into and out of the driveways could occur, but this delay is expected to be minimal. However, there will be two travel lanes in each direction so a bus could utilize the other travel lane, should the curbside line become obstructed at the driveway. Some additional delay could also occur at the main project entrance, which is recommended for signalization. Again, this delay would be minimal given the short cycle time of this signal. The proposed project would not be expected to create significant delay for the Route 5 bus.

Transit stops and shelters do not currently existing within the project area that would be impacted by the project, given that the nearest bus stop is located to the north of SR 12 along Pennsylvania Avenue. Therefore, the project would not impact existing stops and shelters.

While it is likely the project would create minimal disruptions to the existing Route 5 at buildout, the construction activities associated with the project could disrupt transit operations. Major disruptions to the Route 5 service would be likely to occur when Pennsylvania Avenue is reconstructed. For example, it is likely that there could be temporary lane closures, lane shifts, and other activities that can delay the operations of the Route 5 bus. Therefore, roadway construction activities would likely delay bus operations along Pennsylvania Avenue and would result in a *potentially significant* traffic impact.

Mitigation Measure(s)

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

Mitigation Measure 4.5-35 is identified for the Base Project, Alternative 1, and Alternative 2.

4.5-35 *Prior to issuance of building permits, the applicant shall submit to the City Engineer, for review and approval, the proposed project's construction traffic management plan, as discussed in Mitigation Measure 4.5-13. The plan should include a provision that the project applicant notify and coordinate construction activities along Pennsylvania Avenue with the Fairfield/Suisun Transit System.*

**4.5-36 Impacts that would interfere with planned transit services.**

Base Project, Alternative 1, and Alternative 2

As mentioned previously, the STA is proposing to develop intercity transit service that would extend from Napa to Rio Vista. This route would run along SR 12, including the section of SR 12 which borders on the project site. This service is currently unfunded and would only be instituted if funding becomes available.

It is anticipated that the development of this site would not negatively impact the operations of this service along SR 12 for several reasons. A majority of the project driveways would be found on Pennsylvania Avenue, not SR 12. The only project driveway on SR 12 occurs under a variant of the project site plan which proposes to have a single right-in/right-out driveway along SR 12. Given the dearth of new driveways on SR 12, it is unlikely that development of the project would impact the planned intercity service along SR 12. Additionally, the project is not reconstructing SR 12 or modifying the roadway, as in the case of Pennsylvania Avenue. Therefore, the proposed project would result in a *less-than-significant* impact related to planned transit services.

Mitigation Measure(s)

*None Required.*

**4.5-37 Impacts related to project conflicts or inconsistencies with adopted transit system plans, guidelines, policies, or standards.**

Base Project, Alternative 1, and Alternative 2

The regional transportation planning agency for Solano County, the Solano Transportation Authority (STA) recently updated its Comprehensive Transportation Plan (CTP). In this document, the STA adopted a goal related to public transit: develop a comprehensive transit system for buses, rail, and ferries to meet future demand. In addition, five objectives were also adopted relating to this goal. These objectives include the following: convenient public transportation; new service; efficient transit; multi-model system; and environmental justice. Each of these objectives relate to improving existing transit service and providing new service transit service throughout Solano County. These objectives are implemented through policy actions, such as:

- Provide intercity service coverage with convenient access for the County's population (Objective A)
- Provide reliable service (Objective B)
- Provide comfortable, safe, and passenger friendly stop facilities (Objective B)
- Provide a choice of model in the I-80 and I-680 corridors (Objective B)
- Balance service supply with passenger demands (Objective C)
- Provide safe and convenient pedestrian access to intercity service stops (Objective D)

The proposed project does not create a conflict or inconsistency with any of the goals or policies listed in the STA document and summarized above. The only impact on transit service occurs during the reconstruction of Pennsylvania Avenue. In addition, the proposed intercity service on SR 12 would not be impacted by the project. Therefore, given the minimal conflict between the project and the existing and future transit service in the study area, the project would result in *no impact*.

Mitigation Measure(s)

*None Required.*

**4.5-38 Impacts related to the demand for public transit services above capacity.**

Base Project, Alternative 1, and Alternative 2

The Base Project, Alternative 1, and Alternative 2 would be anticipated to generate a minimal demand for public transit service above the capacity which is provided or planned, based upon the following considerations: the project is located in Solano County, which has a lower rate of transit usage than other regions of the San Francisco Bay Area. For example, about 2 percent of all work trips in Solano County occur using transit. Of these trips approximately one-half use a bus while the others take a train, ferry, or other modes (2000 US Census); an existing transit service does not exist for the project site and the nearest transit stations are one-half to one mile away; and retail

developments, particularly big-box retail, are generally perceived as being unfriendly to transit users. For example, a transit user accessing the site would have to walk across parking areas to access individual shops.

Under a best-case scenario for transit, the number of transit users would not likely exceed one percent of the peak hour trips associated with the project, based upon an application of the Census data. Therefore, the number of transit user during a peak hour would be 20, a majority of which would be expected to use the Route 5 bus. A smaller number (1-2 persons) would be expected to use the Capital Corridor AMTRAK service. These transit users would likely ride the Route 5 bus to the Suisun City AMTRAK station. Two buses currently operate during peak hour and would easily accommodate these additional riders, even under a best-case scenario for transit usage. Given this minimal transit demand, a *less-than-significant* impact would occur.

Mitigation Measure(s)

*None Required.*

**4.5-39 Impacts related to the disruption of existing bicycle facilities.**

Base Project, Alternative 1, and Alternative 2

Bicycle facilities do not border the project site or are not located within the project site which could cause a disruption to existing facilities and would result in *no impact*.

Mitigation Measure(s)

*None Required.*

**4.5-40 Impacts related to interference with planned bicycle facilities.**

Base Project, Alternative 1, and Alternative 2

The only planned bicycle facility that could be constructed in the study area is the Central County Bikeway. However, this project would not extend to the project site and would not be affected by any of the development activities on the site and would result in *no impact*.

Mitigation Measure(s)

*None Required.*

**4.5-41 Impacts related to project conflicts or inconsistencies with adopted bicycle system plans, guidelines, policies, or standards.**

Base Project, Alternative 1, and Alternative 2

Solano County recently updated its Countywide Bicycle Plan in 2004. This document outlines several objectives and policies which relate to bicycle facilities and include the following objectives: to maximize increased use of bicycles and the development of a comprehensive regional bikeway system as a viable alternative to the automobile (Objective #1); develop a countywide bikeway system that meets the needs of commuters and recreation bicyclists, helps to reduce vehicle trips, and links residential neighborhoods with destinations countywide (Objective #4); and improve bicycle safety conditions in Solano County (Objective #6). In addition, several policies exist under these objectives and include the following: Strive for the inclusion of bicycle facilities in the development of all new road and roadway improvement projects (Policy 3.5); ensure that new roadways, transportation projects, and developments improve bicycle travel and system continuity (Policy 3.6); develop a commuter bikeway system that provides direct routes between residential neighborhoods and regional employment areas, schools, and universities (Policy 4.1); and incorporate provisions for safe bicycle travel and/or detours in traffic control plans and through construction zones (Policy 6.7).

Based on the current Base Project, Alternative 1, and Alternative 2 site plans, bicycle facilities are not shown. Because the Base Project and Alternative site plans do not explicitly include any bicycle facilities either within the site or along the perimeter of the site, the site plans are considered to be inconsistent with the policies (3.5, 3.6, and 4.1) listed above and would result in a *potentially significant* impact.

Mitigation Measure(s)

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

Mitigation Measure 4.5-41 is identified for the Base Project, Alternative 1, and Alternative 2.

*4.5-41 Prior to issuance of building permits, the applicant shall submit to the City Engineer, for review and approval, revisions to the site plans to indicate bicycle facilities. Possible options would include an off-street path along Pennsylvania Avenue or including in-street bicycle lanes on Pennsylvania Avenue and Cordelia Road.*

**4.5-42 Impacts related to the disruption of existing pedestrian facilities.**

Base Project, Alternative 1, and Alternative 2

Pedestrian facilities do not border on or are located within the project site which could cause a disruption to existing facilities and would result in *no impact*.

Mitigation Measure(s)

*None Required.*

**4.5-43 Impacts related to interference with planned pedestrian facilities.**

Base Project, Alternative 1, and Alternative 2

The only planned bicycle facility that could be constructed in the study area is the Central County Bikeway. However, this project would not extend to the project site and would not be affected by any of the development activities on the site. In addition, the project is not located within an urbanized area, along a main street, a pedestrian district, or an area of high pedestrian volumes. Therefore, development of the project site would result in *no impact* related to the quality of the walking environment.

Mitigation Measure(s)

*None Required.*

**4.5-44 Impacts related to project conflicts or inconsistencies with adopted pedestrian system plans, guidelines, policies, or standards.**

Base Project, Alternative 1, and Alternative 2

Solano County recently updated its Countywide Pedestrian Plan in 2004. This document outlines several objectives and policies which relate to bicycle facilities and include the following objectives: to secure significant benefits for Solano County by preserving, creating, and enhancing pedestrian routes and places (Objective #1); to ensure that safety for pedestrian, especially young people, old people, and people with disabilities, is the highest priority among competing pedestrian improvement priorities, and a high priority among overall transportation improvement priorities (Objective #2); to support and coordinate the planning of pedestrian connections, improvements, and pedestrian-oriented development throughout Solano County (Objective #6). In addition, several policies exist under these objectives and include the following: to follow the latest standards and best practices for the design of safe pedestrian facilities, starting from references provided in this Plan (Objective #2, Policy 4); to encourage local jurisdiction to make safe, convenient, enjoyable pedestrian access a priority in their policies, plans, and project (Objective #3, Policy 1); the highest priority pedestrian improvements should be those where pedestrian facilities are lack or deficient in close proximity (1/4 to 1/2 mile) to pedestrian destinations such as schools, parks, transit, and shopping (Objective

#3, Policy 6); and ensure that pedestrian improvements meet applicable standards for access to people with disabilities (Objective #3, Policy 8).

A review of the project site plan indicates that on-site pedestrian facilities are provided, including pedestrian pathways throughout the site and along with crosswalks at internal intersections. The project site plan does not detail pedestrian improvements, such as sidewalks along the project frontage with Pennsylvania Avenue which conflict with several of the policy statements listed above. Therefore, because the proposed project lacks pedestrian facilities along Pennsylvania Avenue, it may be difficult for residents of the residential areas of the project to walk to the retail center and would result in a *potentially significant* impact.

Mitigation Measure(s)

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

Mitigation Measure 4.5-44 is identified for the Base Project, Alternative 1, and Alternative 2.

*4.5-44 Prior to issuance of building permits, the applicant shall submit to the City Engineer, for review and approval, revisions to the project site plans to include pedestrian facilities on Pennsylvania Avenue.*

**4.5-45 Impacts related to on-site circulation and access.**

The project site could have up to five major driveway locations. Two of these driveway locations are located along Cordelia Road south of the existing railroad tracks. Three driveways are located north of the railroad tracks along Pennsylvania Avenue. The users of each driveway could vary based on the site plan and are described below.

Base Project

- Driveway #1- Planning Area #2 only
- Driveway #2- Planning Area #2 and access to Ardave Parcel
- Driveway #3- Secondary access to commercial center and primary access to Planning Area #3
- Driveway #4- Main access to commercial center (this intersection is proposed to be signalized)
- Driveway #5- Access to Gilbert Parcel with right-in/right-out access to Planning Area # 1. According to the site plan, the right-in and right-out are separated by approximately 100 feet but are combined for the purposes of the traffic analysis

A minor driveway is proposed to be located along Pennsylvania Avenue between Driveway #3 and Cordelia Road. It is anticipated that this driveway would be used only for deliveries and loading activities at the rear of the main commercial buildings.

### Alternative 1

- Driveway #1- Planning Area #2 only
- Driveway #2- Planning Area #2 and access to Ardave Parcel
- Driveway #3- Secondary access to commercial center and primary access to Planning Area #3
- Driveway #4- Main access to commercial center (this intersection is proposed to be signalized)
- Driveway #5- Access to Gilbert Parcel with right-in/right-out access to Planning Area #1. On this site plan, the right-in/right-out driveway for Planning Area #1 is located at a single point.

A minor driveway is proposed to be located along Pennsylvania Avenue between Driveway #3 and Cordelia Road. It is anticipated that this driveway would be used only for deliveries and loading activities at the rear of the main commercial buildings.

### Alternative 2

- Driveway #1- Planning Area #2 only
- Driveway #2- Planning Area #2 and access to Ardave Parcel
- Driveway #3- Secondary access to commercial center and primary access to Planning Area #3
- Driveway #4- Main access to commercial center (this intersection is proposed to be signalized)
- Driveway #5- Access to Gilbert Parcel with right-in/right-out access to Planning Area #1. On this site plan, the right-in/right-out driveway for Planning Area #1 is located at a single point.

As compared to the other site plans, this alternative lacks a dedicated delivery driveway along Pennsylvania Avenue. Deliveries would likely occur through Driveways #3 or #4.

### On-site Circulation and Access for Base Project, Alternative 1, and Alternative 2.

A review of the on-site circulation and access considers the following items:

- Are all areas of the site accessible from each other?
- Does the project site plan contain dead-end drive aisles, which complicate on-site circulation?
- Does the internal roadway network provide sufficient capacity for the anticipated level of traffic volumes?
- Do the internal project intersections provide an acceptable LOS?
- Are the internal intersections adequately spaced?
- Do the project driveways operate at an acceptable level of service (LOS), which ensures easy access to the project site?
- Is there adequate space available to accommodate the anticipated queuing at the project driveways?

### *Intra-Site Accessibility*

The project site plan includes a network of internal roadways which would facilitate travel within each project site. In Planning Area #1, the main internal roadway is an east west roadway which extends from terminus of Driveway #4 to the western boundary of the commercial site. The main project access (Driveway #4) extends from this major east-west roadway to Pennsylvania Avenue and would carry a majority of the entering and exiting the site. This internal roadway is found on all project site plans including the Base Project, Alternative 1, and Alternative 2.

It is anticipated that the internal roadway within Planning Area #1 would be a two-lane roadway. The various parking areas within the project site would be accessible via this main internal roadway. This degree of intra-site accessibility would be sufficient since all areas of the Planning Area #1 are accessible to each other via an internal roadway network.

The drawings of Planning Areas #2 and #3 also indicate that these residential areas would also have an internal roadway network, which would provide adequate intra-site accessibility for these sites as well.

### *Dead-End Drive Aisles*

A dead-end drive aisle, which occurs when a drive aisle is open on one end only, complicates internal circulation and should be discouraged. A review of the project site plan indicates that dead-end drive aisles are not shown on any of the proposed project site plans.

### *Internal Roadway Network Capacity*

Given the projected volumes along this internal roadway, a two-lane roadway should provide sufficient capacity within Planning Area #1. However, additional turn lanes would be required along the main project entrance at Driveway #4. These additional turn lanes would be needed to accommodate the vehicles turning into the project site, a majority of which would then turn left at the first internal intersection, given the layout of the project site. The left-turn movement at this intersection would be matched by the corresponding right-turn movement for drivers turning from the major internal roadway to Driveway #4. The recommended geometrics for this intersection are discussed in Existing Plus Project and Cumulative Scenarios sections for each alternative.

The internal roadway within Planning Areas #2 and #3 are anticipated to operate as two-lane roadways, which will be more than sufficient for the anticipated traffic levels.

### *Internal Intersection Operation*

It is anticipated that the internal intersections would operate under side-street stop-sign control except for the intersection located at the terminus of Driveway #4, which is recommended for signalization under the Base Project, Alternative 1, and Alternative 2. Stop signs would control traffic turning onto the main internal roadway. Traffic on the main internal roadway would not operate under traffic control. It should be noted that the project site plan does not indicate internal traffic control devices.

### *Spacing of Internal Intersections*

For purposes of this analysis, an internal intersection is defined as a location where a driveway, parking aisle, or internal roadway connects to a major internal roadway. A major internal roadway is defined as either the major east-west roadway or Driveway #4.

The City of Suisun City does not provide intersection spacing standards. One option to set driveway spacing standards would be to employ sight distance criteria. Since these internal intersections would not be located on a major public street, such as Pennsylvania Avenue, the most appropriate method to set the sight distance would be to use stopping sight distance criteria, which is outlined in the Caltrans *Highway Design Manual* Table 201.1. Assuming a speed of 25 miles per hour, the minimum distance between driveways would be 150 feet. As indicated on the site plan, many of the internal driveways are equal to or greater than 150 feet. In addition, several internal intersections in Planning Area #1 appear to have inadequate spacing.

### *Project Driveway Operation*

As detailed in the Existing Plus Project and Cumulative Scenarios sections, several of the project driveways would operate at a deficient condition prior to the widening of Pennsylvania Avenue. Additional improvements would be required at several driveways. A Traffic signal would be required at Driveway #4. The remaining intersections would operate at an acceptable LOS under stop sign-control. It should be noted that Driveway #5 would have to be configured for right-in/right-out operation only on both sides of Pennsylvania Avenue, given the distance to the intersection at SR 12/Pennsylvania Avenue. The necessary configuration of each driveway is detailed in the Existing Plus Project and Cumulative Scenarios sections. With the necessary improvements, the project driveways would operate at an acceptable LOS, thereby providing sufficient access to and from the site.

### *Project Driveway Queuing*

With the improvements detailed in the Existing Plus Project and Cumulative Scenarios sections, the queuing at the project driveways would be minimized. A majority of the trips associated with the project would be using Driveway #4, which is recommended to operate under traffic signal control.

The project site plan provides an adequate internal roadway network, lacks dead-end drive aisles, and provides sufficient capacity internally. In addition, the project driveways would operate at acceptable levels, with the proposed changes identified in the intersection analysis. Given these considerations, it can be concluded that the project site plan provides generally acceptable on-site circulation and access. Although the project site plan provides generally acceptable on-site circulation and access, the project site plan does not address on-site traffic control. Furthermore, several of the internal driveways are spaced closer than a recommended 150 feet minimum. Therefore, the proposed project would result in a *potentially significant* impact.

Mitigation Measure(s)

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

Mitigation Measure 4.5-45 is identified for the Base Project, Alternative 1, and Alternative 2.

*4.5-45 Prior to issuance of building permits, the applicant shall submit to the City Engineer, for review and approval, revisions to the project site plans to include traffic control devices on internal roadways. Concurrently, the applicant shall revise the project site plan to provide the necessary turn lanes at the major internal intersection, project driveways, and to provide at least 150 feet of separation between driveways along the internal roadway.*

**4.5-46 Impacts related to on-site parking for vehicles.**

Base Project, Alternative 1, and Alternative 2

For purposes of this analysis, the adequacy of the parking supply is based on a comparison of the parking code requirements, taken from the City of Suisun City *Municipal Code* (Section 18.52.040), and the parking supply shown on the project site plan. Fehr & Peer's analysis of on-site parking considers the commercial component of the project, since parking areas are not indicated in the residential sections of Planning Area #1, #2, or #3. To evaluate the parking supply, Fehr & Peers employed the following process: to determine parking code requirements for each type of use; to calculate parking requirements for each category of use; and to compare total parking requirements to parking supply.

*Parking Code Requirements*

The City of Suisun City *Municipal Code* provides on-site parking requirements for a variety of uses. These categories include different types of residential uses, commercial uses, educational facilities, offices, and other types of buildings. For the commercial site, the following category would be applicable:

- General commercial shopping centers- One off-street parking stall for each two hundred fifty square feet of gross floor area for all buildings and/or uses in the center (4 spaces per 1,000 square feet of building)

Because Fehr & Peers lacked detailed information regarding the type of uses within the site, they have assumed that the shopping center parking requirement would apply.

#### *Parking Spaces Required*

For Planning Area #1, the number of parking spaces required would range from 2,600 (Base Project) to 1,400 (Alternative 2). Alternative 1 would require 1,920 spaces.

#### *Parking Requirements and Parking Supply*

For Planning Area #1, the following number of spaces would be provided:

- Base Project: 3,343 spaces (2,600 spaces required)
- Alternative 1: 2,261 spaces (1,920 spaces required)
- Alternative 2: 1,771 spaces (1,400 spaces required)

In general, the project would provide parking at a ratio of 5 spaces/1,000 square feet of building as opposed to the City's requirement of 4 spaces/1,000 square feet of building. Under all scenarios, the parking for Planning Area #1 is sufficient. Therefore, the proposed project would result in ***no impact***.

#### Mitigation Measure(s)

*None Required.*

#### **4.5-47 Impacts related to on-site parking for bicycles.**

##### Base Project, Alternative 1, and Alternative 2

The City of Suisun City *Municipal Code*, section 18.52.040, contains the following requirement related to bicycle parking:

All commercial and office areas shall provide adequate locking facilities for bicycle parking at any location convenient to the facility for which they are designated. Whenever possible, weatherproofing or covering should be used.

The project site plan does not detail bicycle parking locations, as required above and would result in a ***potentially significant*** impact.

#### Mitigation Measure(s)

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

Mitigation Measure 4.5-47 is identified for the Base Project, Alternative 1, and Alternative 2.

*4.5-47 Prior to issuance of building permit, the applicant shall submit to the City Engineer, for review and approval, revisions to the project site plans to include bicycle parking facilities.*

#### **4.5-48 Impacts related to on-site and off-site pedestrian connections.**

##### Base Project, Alternative 1, and Alternative 2

The project site plan provides strip, which appears to be indicative of cross-walks, throughout the project site. These cross-walks are found at internal intersections as well as along the frontage of many of the buildings. Therefore, the project site plan provides adequate on-site pedestrian connections. While the project site plan details on-site pedestrian connections, the site plan does not explicitly detail connections from the site to adjacent roadways, such as Pennsylvania Avenue. Given this lack of connections to this adjacent roadway, a *potentially significant* impact would occur.

##### Mitigation Measure(s)

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

Mitigation Measure 4.5-48 is identified for the Base Project, Alternative 1, and Alternative 2.

*4.5-48 Prior to issuance of building permits, the applicant shall submit to the City Engineer, for review and approval, revisions of the project site plans to indicated pedestrian connections to adjacent streets with a focus on Pennsylvania Avenue.*

#### **4.5-49 Impacts related to delivery vehicle access and circulation.**

##### Base Project, Alternative 1, and Alternative 2

The project site plan for the commercial center provides a high level of truck access. Trucks would access the commercial site through either Driveways #3 or #4, or through a designated delivery driveway, under the Base Project or Alternative 1. Under Alternative 2, trucks would likely enter the site through Driveway #3 or Driveways #4. Driveway #4 is anticipated to operate under traffic signal control, which should facilitate truck access to the site. Large trucks, in particular, would be able to access the site at this signalized location. Alternately, these trucks could enter the site via Driveway #3 in the Base Project or Alternative 1 since a majority of the trucks will likely access the site from SR 12. Trucks entering at Driveway #3 would either circulate throughout the site and exit the site at Driveway #4 or exit at Driveway #3.

The project site plan also provides a high level of delivery access to many of the buildings shown on the site plan. For example, the “big-box” retail buildings would have delivery areas in the back which are accessible from either side of each building. These types of uses typically have dedicated loading docks and loading areas located in the back of the building, given the number and scale of deliveries received. The smaller buildings on the site lack these dedicated delivery areas. However, these types of uses, such as small shops, restaurants, and personal service firms, don’t require deliveries on the scale of a “big-box” retailer. Deliveries often occur in the form of a small panel truck (such as a UPS truck) and deliveries occur in limited numbers throughout the day. The delivery vehicle access to the site as well as access to individual buildings within the site would appear to be adequate; therefore a *less-than-significant* impact would occur.

Mitigation Measure(s)

*None Required.*

**4.5-50 Impacts related to access management standards.**

Base Project, Alternative 1, and Alternative 2

*Intersection Spacing*

As stated previously, the City of Suisun City lacks formal driveway and intersection spacing guidelines. In the absence of formal City guidelines, standard engineering practice and Caltrans guidelines shall be applied.

The *Highway Design Manual* provides some general guidelines regarding the spacing of intersections but does not provide formal standards. For purposes of this analysis, Fehr & Peers used the stopping sight distance criteria documented in Table 201.1 to set the driveway interval. Stopping sight distance is the minimum length that a driver needs to bring a vehicle to a complete stop when traveling at a certain speed. Based on the information provided by Table 201.1, the minimum stopping sight distance for a travel speed of 35 miles per hour is approximately 300 feet.

If sufficient stopping sight distance is provided, then a vehicle traveling through an intersection would have sufficient distance to decelerate and stop if a driver exiting a driveway were to pull out in front of them. For example, Fehr & Peers would want to make sure that a driver turning from SR 12 onto Pennsylvania Avenue has sufficient time and distance to stop should another driver exit the a driveway in front of them. Fehr & Peers’ review of the project site plan indicates that all of the intersections are spaced 300 feet or more from the adjacent intersections which would be sufficient for the proposed project.

*Project Driveway Sight Distance*

Fehr & Peers’ review of the project driveways also considered sight distance at the driveways. Driveway sight distance ensures that vehicles exiting the project site would

have an unobstructed view of oncoming traffic. Fehr & Peers applied a more restrictive sight distance standard and corner sight distance, to determine whether or not a sufficient sight distance is provided at the project driveways. This standard is provided by Table 405.1A in the *Design Manual*. According to this table, 500 feet of sight distance should be provided at the project driveways.

Fehr & Peers' review of the project site plan and subsequent visits to the project site indicates that there is generally good visibility from the proposed driveway locations in all directions, under the existing conditions since the site is currently vacant. The potential for signs and landscaping associated with the project may exist which could obstruct visibility at the project driveways.

Limited signage and landscaping adjacent to the project driveways would be essential. While signage and landscaping would be allowed, there must a clear space from approximately 3 feet to 8 feet, which corresponds to the viewing area of a driver in most cars found on the roadways today. The project site plan does not indicate whether there will be restrictions on landscaping and signage adjacent to the driveways. Therefore, a *potentially significant* impact would occur.

#### Mitigation Measure(s)

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

Mitigation Measure 4.5-50 is identified for the Base Project, Alternative 1, and Alternative 2.

- 4.5-50      *Prior to issuance of building permits the applicant shall submit to City Engineer, for review and approval, revisions to the project site plans to indicate any applicable restrictions on visually obstructive signage and landscaping at driveway locations.*

#### **Endnotes**

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<sup>1</sup> City of Suisun City General Plan, Volume I. 1992.

<sup>2</sup> *Gentry/Suisun Annexation Internal Review Draft Traffic Study*, Fehr & Peers, Transportation Consultants, February 2006.

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## 4.6 BIOLOGICAL RESOURCES

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## 4.6 BIOLOGICAL RESOURCES

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### INTRODUCTION

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This section of the Environmental Impact Report (EIR) evaluates potential biological resource impacts associated with the implementation of the proposed Gentry-Suisun Project and includes a discussion of the mitigation measures necessary to reduce impacts to a less-than-significant level where possible. The information contained in this analysis is primarily based upon the *Biological Assessment, Gentry-Suisun Project, City of Suisun City, Solano County, California* prepared by the Huffman-Broadway Group (HBG) (2006) and the *Wetland Delineation and Special-Status Species Survey Report* prepared by Vollmar Consulting (2003), although Raney Planning and Management, Inc., on behalf of the City, has reviewed those documents and exercised its own judgment with respect to the conclusions found therein. Additional details on plant and wildlife species presence are based upon field surveys performed by Foothill Associates' biologists. This report describes the habitat types, jurisdictional waters, and presence/absence of special-status plants and animals at the proposed project area and provides a review of existing literature, maps, and aerial photography pertaining to the biological resources of the area. This chapter also evaluates potential impacts of the proposed project in relation to CEQA and other environmental laws, and provides mitigation recommendations.

### ENVIRONMENTAL SETTING

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The following sections describe the regional and local setting of the Project area as well as the biological resources occurring in the Suisun Gentry proposed project area (project site).

#### **Regional Setting**

The project site is located within the Bay-Delta region, in the southern portion of the Sacramento Valley, and within Solano County. The Central Valley lies to the east, coastal mountain ranges lie to the west and north, and a large bay and estuary system are found to the south and west. Dominant geographic features in the region include coast range uplands, foothill terraces, Montezuma Hills, Potrero Hills, alluvial fans, terraces, basins, Delta marshlands, and Suisun Bay Marshlands. Many areas of native habitat have been impacted from agricultural practices and population and industrial growth (LSA Associates 2005). These impacts have resulted in the spread of non-native plant species; however, native habitats can still be found. Native habitats found in Solano County include upland seasonal wet grasslands, vernal pools, fresh and salt water marshes, riparian forests and scrub, oak woodland, chaparral, and open water (LSA Associates 2005). Non-native plant communities mixed within these native habitats include non-native annual grasslands, agricultural areas, and developed lands (LSA Associates 2005).

The Suisun Marsh is the largest contiguous brackish water marsh remaining on the west coast of North America. The Suisun Marsh is a critical migratory stop for birds using the Pacific Flyway and a critical part of the San Francisco Bay-Delta estuary ecosystem. Encompassing 116,000 acres, the Suisun Marsh includes vernal pools, managed wetlands, upland grasslands, tidal

wetlands and bays and sloughs. The Marsh is home to public and private waterfowl hunting areas and is important to the state's commercial salmon fishery by providing important tidal rearing areas for juvenile fish, and provides important habitat for many rare plant and animal species indigenous to California. In addition, the Marsh has 230 miles of levees that provide critical protection of the drinking water for 22 million people by preventing saltwater intrusion into the Delta.

### Local Setting

The project site is located immediately west of the City of Suisun and immediately south of the City of Fairfield, in southern Solano County within an unnumbered section of Township 5 north, Range 2 west, of the USGS 7.5-minute series *Fairfield South, California* quadrangle as shown on Figure 4.6-1. The 171.50-acre project site consists primarily of vacant agricultural land. Land uses surrounding the project site to the east and north are primarily urban and residential development. The land to the west is primarily agricultural land. The land to the south includes agricultural land and the Suisun Marsh.

The project site exhibits minimal topographic relief and has been modified from the original natural topography due to agricultural activity. Topography on the project site ranges from 5 to 10 feet above MSL. The 171.50-acre project site primarily consists of nearly level, grazed field dominated by introduced annual grassland. Within the annual grasslands several seasonal wetlands exist, many of which appear to be man-made or enhanced due to the presence of road berms, buried utility line berms, and ditches. A small remnant slough channel is located in the southern portion of the project site, which supports willows (*Salix* spp.) and other riparian vegetation. Areas of significant habitat value on the project site include seasonal and perennial marshes, vernal pools, seasonally saturated annual grasslands, riparian wetlands, and drainage channels. In addition, the majority of the project site consists of grazed pastureland, providing limited biological resources for wildlife.

Pennsylvania Avenue traverses the project site in a nearly north-south direction. The project site is bounded by, but does not include, Cordelia Road to the south, State Route (SR) 12 to the north, Ledgewood Creek to the west, and the Southern Pacific Railroad to the east. The Union Pacific Railroad (UPRR) is located along the southern border of the eastern portion of the project site and bisects the southern tip of the western portion of the project site as shown on Figure 4.6-1.

This biological resources chapter analyzes resources located within Planning Areas 1 through 5. The Planning Areas include the following properties: Gentry, Tooby, Gilbert, Ardave, and Barnfield properties. Although these five properties are identified as part of the proposed project, only the Gentry and Tooby properties are proposed for development at this time. The Gentry Property is located west of Pennsylvania Avenue, south of SR 12, east of Ledgewood Creek, and north of Cordelia Road as shown on Figure 4.6-2. The UPRR bisects the property east-west, creating a larger northern unit and a smaller southern unit. The Tooby Property is east of Pennsylvania Avenue, south of SR 12, west of the Union Pacific Railroad (UPRR), and north of Cordelia Road as shown on Figure 4.6-2. The Barnfield Property is south of the Gentry and Tooby properties, south of Cordelia Road, and is bordered on the west by Orehr Road, on the

east by the UPRR, and on the south by the upper Suisun Marsh (refer to Figure 4.6-2). The UPRR tracks along the eastern boundary of the Barnfield property separate the Barnfield property from the Peytonia Slough Ecological Reserve - a California Department of Fish and Game (CDFG) ecological reserve.

#### Gentry Property

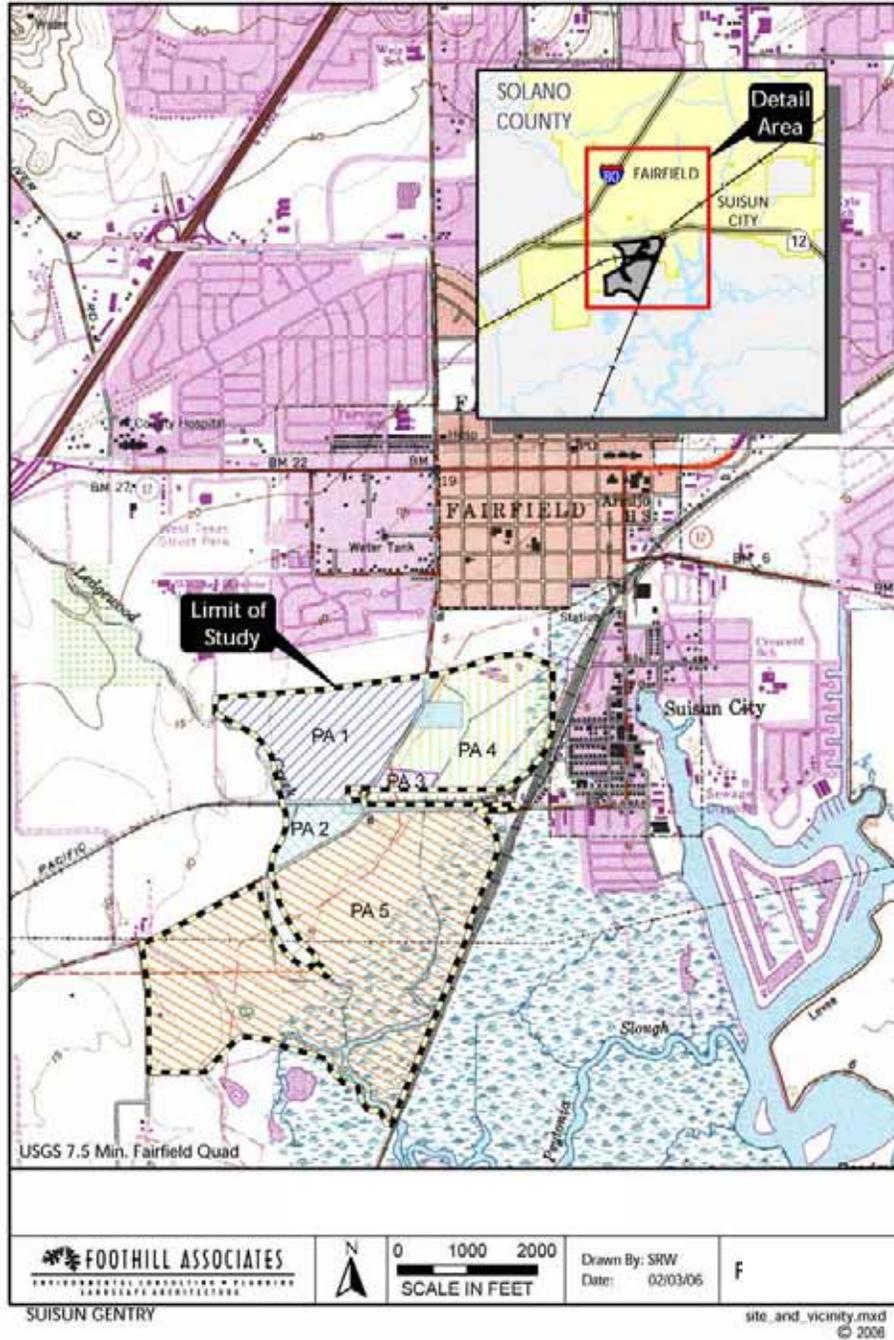
The Gentry Property consists of nearly level grazed annual grasslands, seasonally saturated annual grasslands, alkali seasonal marsh, seasonal wetlands, riparian wetlands, and vernal pools. The annual grasslands and seasonally saturated annual grasslands are dominated by introduced annual grass species. Within the seasonally saturated grassland habitat are several small seasonal wetlands and vernal pools that typically comprise less than a quarter acre. On the eastern edge of the property is a large shallow artificially created vernal pool that covers approximately 8.5 acres. Many of the pools appear to have formed or were enhanced due to the construction of berms, ditches, and partially blocked culverts. Elevation within the project site ranges from 5 to 10 feet MSL.

A small remnant slough channel that supports willows (*Salix* sp.) and other riparian vegetation is present on the western boundary of the Gentry property south of the Union Pacific Railroad line and north of Cordelia Road. The surrounding area is best described as a ruderal pasture; which is not currently grazed and is dominated by introduced annual grasses.

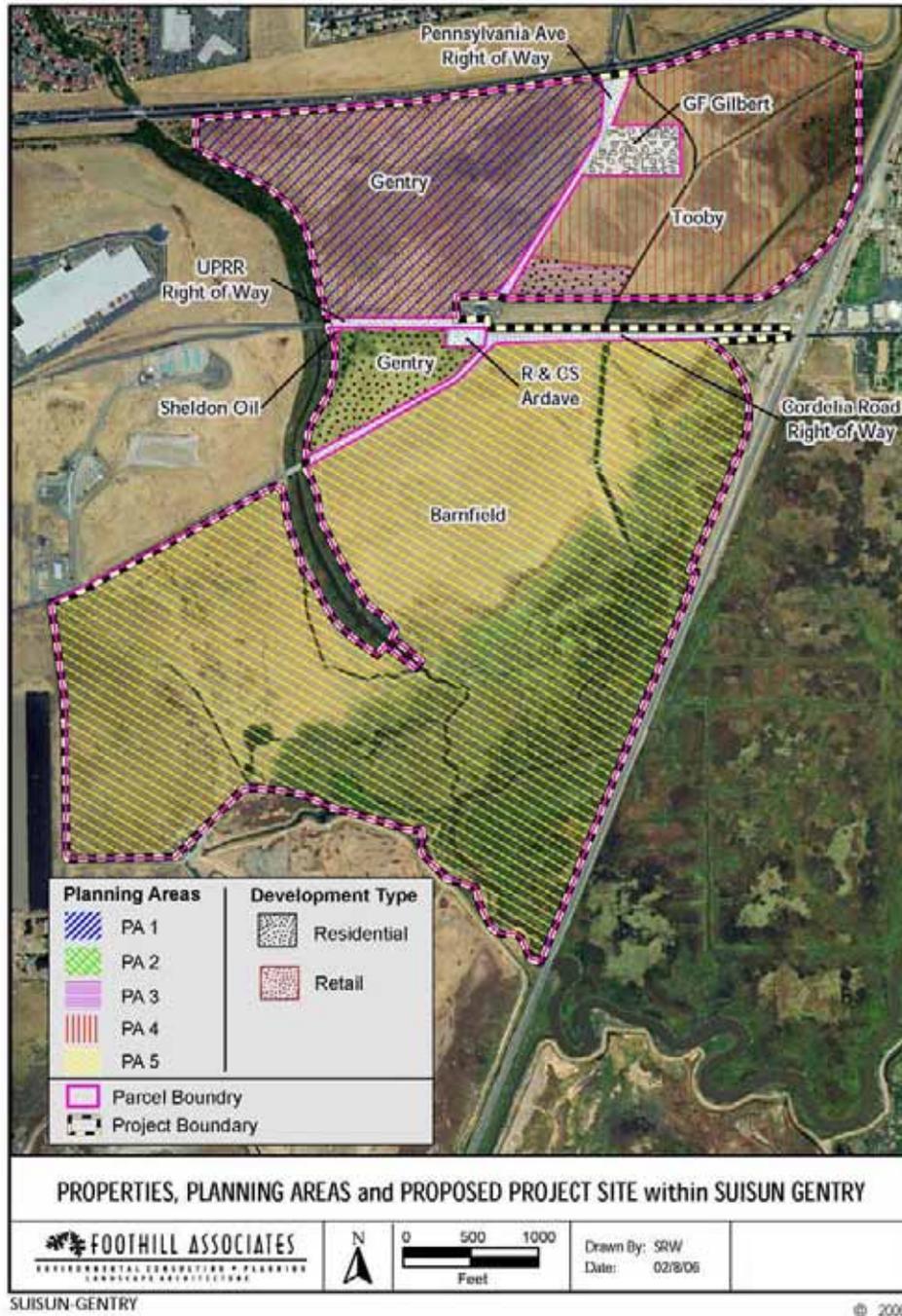
#### Tooby Property

The Tooby Property is dominated by a mix of wetland and upland habitats. A drainage ditch runs north to south through the western portion of the project site as shown on Figure 4.6-3. This ditch carries stormwater runoff from the City of Fairfield, and may also convey runoff from natural drainages north of Fairfield. The ditch flows directly to a slough feeding into Suisun Bay and is subject to tidal fluctuation. West of the ditch are several medium to large seasonal wetlands, including both vernal pools and alkali seasonal marshes. These are not tidally influenced but excess stormwater from this area drains into the ditch through a culvert. East of the ditch, most of the property supports perennial brackish marsh with dense stands of cattail (*Typha* sp.), California bulrush (*Scirpus californicus*), and pickleweed (*Salicornia virginica*). These wetlands receive tidal flow from the ditch, which is open to this portion of the project site. The limited upland areas on the project site support introduced annual grassland.

**Figure 4.6-1**  
**Gentry-Suisun Study Area**



**Figure 4.6-2  
 Properties, Planning Areas, and Proposed Project Site**



### Barnfield Property

The Barnfield Property, not part of the proposed project, is located along the upper edge of Suisun Marsh, which is a large estuarine marsh formed along the northern shore of Grizzly Bay and the larger Suisun Bay near the confluence of the Sacramento and San Joaquin rivers. The property consists of nearly level terrain with a gentle slope trending south-southeast toward Suisun Marsh. Elevation ranges from approximately 10 feet MSL to sea level. The higher areas in the northern and northwestern portions of the property support introduced nearly level, grazed, upland annual grasslands with interspersed seasonal wetlands including vernal pools, seasonal alkali marsh, and seasonally saturated annual grasslands. Lower areas in the south and southeast are dominated by perennial brackish marsh associated with the Suisun Marsh.

Peytonia Slough and several smaller unnamed sloughs cut through the perennial marsh habitat. These sloughs are subject to tidal fluctuations and are hydrologically connected to Grizzly Bay via Suisun Slough. A few freshwater drainages flow across the property from the northwest and drain into Peytonia Slough. Ledgewood Creek, which originates in the Gordon Valley several miles to the northwest, traverses through the center of the property. Two drainage ditches are located on the property. One ditch traverses the eastern portion of the property and carries stormwater runoff from the City of Fairfield, and may also convey runoff from natural drainages north of Fairfield. The second ditch is adjacent to and confluent with Ledgewood Creek. This ditch may be a remnant of Ledgewood Creek before it was straightened and diked by the Army Corps of Engineers. Ledgewood Creek on the Barnfield and Gentry properties is not part of the project site. Ledgewood Creek and the two ditches are subject to tidal fluctuations and support bankside stands of perennial brackish marsh vegetation. The eastern ditch has a flapgate a few hundred yards south of Cordelia Road that is intended to prevent tidal backflow. In addition to these drainages, two smaller excavated ditches exist, one that joins the eastern ditch, and one that traverses the western portion of the property. These ditches appear to convey local stormwater runoff. These ditches do not appear to be subject to tidal flow except for the lower half of the western ditch.

### Gilbert Property

The Gilbert parcel, which is also not proposed for development, is an approximately 5-acre parcel on the western edge of the Tooby property (refer to Figure 4.6-2). This parcel is primarily disturbed and ruderal and has been used as a dumpsite for construction debris, such as broken concrete and excavated soil. An asphalt road goes to the top of the property and hardscape occurs in the middle portion of the property. The preliminary wetland assessment identified approximately 0.01 acre of seasonally saturated annual grassland on this site.

### Ardave Property

The approximately 0.58-acre Ardave parcel is in the northeast corner of the southern portion of the Gentry parcel south of the UPRR right of way (ROW) as shown on Figure 4.6-2. This parcel is currently occupied by urban uses, though it is not part of the proposed project. Wetlands were not found on this parcel during the preliminary wetland assessment conducted by HBG in July 2005.

**Figure 4.6-3  
 Plant Communities on the Project Site**



### Sheldon Oil Parcel

The approximately 0.39-acre triangular shaped Sheldon Oil Parcel, also not proposed for development, is located in the northwest corner of Planning Area 2, adjacent to Ledgewood Creek (refer to Figure 4.6-2). Annual grassland habitat is present. Wetlands were not found on this parcel during the preliminary wetland assessment conducted by HBG in July 2005. The applicant is under contract to purchase the Sheldon Oil parcel.

### Pennsylvania Avenue Right of Way

The Pennsylvania Avenue ROW is approximately 2.18 acres and includes urban uses. Approximately 0.73 acre of seasonally saturated annual grassland was identified in this right of way during the preliminary wetland assessment as shown on Figure 4.6-3.

### Cordelia Road Right of Way

The approximately 4.02-acre Cordelia Road ROW comprises grassland areas, ruderal areas, and urban uses. Alkali seasonal marsh (0.94 acre) and a small area of perennial brackish marsh (0.03 acre) were identified in this right of way during the preliminary wetland assessment (refer to Figure 4.6-2 and Figure 4.6-3).

### UPRR Right of Way

The UPRR ROW is approximately 2.62 acres and comprises ruderal and urban areas and approximately 0.002 acre of seasonally saturated annual grassland (refer to Figure 4.6-2 and Figure 4.6-3).

### Mixed-Use Development

The proposed project includes the following components:

- Subdivision and development of a mixed-use project on 87.82 acres of the Annexation Properties (i.e., the “project site or the “mixed-use site”).
- Annexation of 171.50 acres from Solano County into the City of Suisun City (i.e., the “Annexation Properties”).

The proposed project would occur within the “project area”, which comprises 497.61 acres, south of SR 12 and west of the City of Suisun City, as shown on Figure 4.6-1. Figure 4.6-1 also shows the project area overlain on a portion of the Fairfield South 7.5-minutes United States Geological Survey (USGS) topographic map.

Five Planning Areas have been defined within the project area as shown on Figure 4.6-1. The mixed-use site would be developed within Planning Areas 1, 2, and 3. In addition, wetlands preservation is anticipated to be established within Planning Areas 4 and 5.

Figure 4.6-2 shows the parcels and names of the properties that comprise the project area, including both the project site and the annexation properties, and the five Planning Areas. Table 4.6-1 lists parcels numbers, acreages, and owners within the project area. Because previous wetlands delineations and special-status species studies that were incorporated into the biological assessment refer to the Gentry, Tooby, and Barnfield properties, this naming convention was used to reference all previous studies, although the Tooby and Barnfield properties, as well as the Gentry property, are now owned by Tom Gentry California Company.

- The Gentry property refers to Planning Area 1 (part of APN 0032-010-390) and part of Planning Area 2 (i.e., APN 0032-0190-260 only).
- The Tooby property refers to Planning Area 3 (part of APN 0032-020-100) and Planning Area 4 (part of APNs 0032-020-100, 0032-020,140, and 0032-020-160).
- The Barnfield property refers to Planning Area 5.

Figure 4.6-2 also shows the annexation properties to be annexed into the City of Suisun City. The annexation properties are also listed in Table 4.6-2. The annexation properties comprise 171.50 acres, which includes the 88.44-acre development project site as shown on Table 4.6-2. These properties include the Gilbert parcel, the Ardave Parcel, the Sheldon Oil parcel, and the Union Pacific Railroad (UPRR), Cordelia Road, and Pennsylvania Avenue rights-of-way.

### **Vegetation Communities and Wildlife Habitat**

Plant communities occurring on the project site are described below. The descriptions of plant community types at the project site follow the nomenclature used in *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986) and *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988). The discussion includes the common and special-status plant species observed, or expected to occur, in these communities. Plant communities on the project site include upland annual grassland and riparian. Within these plant communities are “Waters of the U.S.” under Corps jurisdiction; they include vernal pools, alkali seasonal marsh, seasonally saturated annual grasslands, perennial brackish marsh, and riparian wetland as shown in Figure 4.6-3. These features are also described below.

Biologists from Vollmar Consulting conducted botanical field surveys of the Gentry, Tooby, and Barnfield properties during the spring and summer of 2000, and the spring of 2001, 2002 and 2005. These surveys included an analysis of habitat types on the Gentry, Tooby, and Barnfield properties and surveys for special-status plant species. A complete list of plant species observed on the Gentry, Tooby, and Barnfield properties by Vollmar Consulting is included in Appendix G to this Draft EIR. Vollmar Consulting also conducted delineations of areas potentially under the jurisdiction of the United States Army corps of Engineers (Corps) as wetlands or other waters of the United States in the summer of 2000 and the spring of 2003 (Vollmar Consulting, January 2003, November 2003). These delineations were subsequently verified by the Corps.

<b>Table 4.6-1 Assessor's Parcels Comprising the Project Site</b>			
<b>Planning Area #</b>	<b>Assessors Parcel Number</b>	<b>Owner</b>	<b>Gross Acreage</b>
PA 1	0032-010-390 (part) <sup>1</sup>	Gentry	70.71
PA 2	0032-190-260	Gentry	12.72
	0032-190-160	Sheldon Oil <sup>1</sup>	0.39
PA 3	0032-020-100 (part)	Gentry	4.00
PA 4 (part)	0032-020-100 (part)	Gentry	48.24
	0032-020-140 (part)	Gentry	20.81
	0032-020-160 (part)	Gentry	0.23
N/A	0032-020-040	GF Gilbert	5.00
N/A	0032-190-020	R&CS Ardave	0.58
N/A	SPRR Right of Way	N/A	2.62
N/A	Cordelia Road Right of Way	N/A	4.02
N/A	Pennsylvania Avenue Right of Way	N/A	2.18
<b><i>Subtotal – Area To Be Annexed Into Suisun City</i></b>			<b>171.50</b>
PA 4 (part)	0032-020-110	Gentry	0.53
	0032-020-140 (part)	Gentry	2.92
	0032-020-160 (part)	Gentry	1.66
<b><i>Subtotal – Area Already Located In Suisun City</i></b>			<b>5.11</b>
PA 5	Various	Gentry	321.000
<b>Subtotal – Area To Remain Outside Of Suisun City</b>			<b>321.000</b>
<b>TOTAL GROSS ACREAGE WITHIN PROJECT SITE:</b>			<b>497.61</b>

<sup>1</sup> Note that two portions of this parcel are not part of the project site: the portion that comprises the west side of Pennsylvania Avenue to the north of Highway 12 (0.452 acres) and the portion that comprises the west side of Pennsylvania Avenue immediately north of the railroad right of way (0.129 acres).

<b>Table 4.6-2 Annexation Property</b>	
<b>Description</b>	<b>Gross Acreage</b>
A site on which a mixed-project would be developed (see below). Referred to herein as the “Mixed-Use Site.”	87.82
The parcels that comprise Planning Area 4 to the extent that they are not already located within the boundaries of the City of Suisun City.	69.28
The parcel owned by R& CS Ardave (APN 0032-190-020). Referred to herein as the “Ardave Parcel.”	0.58
The parcel owned by GF Gilbert (APN 0032-020-040). Referred to herein as the “Gilbert Parcel.”	5.00
Various rights of way including portions of Pennsylvania Avenue, Cordelia Road, State Route 12 and UPRR track. Collectively referred to herein as the “Rights of Way.”	8.82
<b>TOTAL:</b>	<b>171.50</b>

Qualitative information on the composition and distribution of plant species on the project site was obtained during these site visits. In addition, site reconnaissance visits were conducted by HBG biologists between February 2005 and July 2005 on the Gentry, Tooby, and Barnfield properties. An assessment of habitat types and a preliminary wetlands assessment were conducted by HBG for the additional parcels to be annexed (Gilbert, Ardave, and Sheldon Oil), as part of the project, in July 2005. A Foothill Associates biologist surveyed the additional annexation properties which include the Gilbert, Ardave, Sheldon Oil, rights of way for Cordelia Road, Pennsylvania Avenue, and the UPRR, on February 6, 2006.

The following habitat types were identified in the project area:

- Upland Annual Grassland
- Vernal Pools
- Alkali Seasonal Marsh
- Seasonally Saturated Annual Grasslands
- Perennial Brackish Marsh
- Riparian Wetland

These habitats are shown on Figure 4.6-3 and listed in Table 4.6-3. Areas determined to be Corps Jurisdictional areas are shown in Table 4.6-4 and Table 4.6-5. Each habitat type and its associated vegetation are described below. Wildlife species expected to use the habitat types here are listed in Appendix G of the Draft EIR in the Biological Assessment prepared by HBG.

<b>Table 4.6-3. Plant Communities</b>		
<b>Wetland Habitat Type</b>	<b>Total Acreage</b>	<b>Corps-Verified Jurisdictional</b>
<i>Alkali Seasonal Marsh</i>	63.77	63.77
<i>Brackish Marsh</i>	161.36	161.36
<i>Seasonally Saturated Annual Grassland</i>	86.09	81.40
<i>Vernal Pool</i>	23.01	23.01
<i>Riparian</i>	0.33	0.03
<i>Annual Grassland</i>	156.54	0
<b>Property Totals</b>	<b>491.1</b>	<b>329.57</b>

Source: Huffman-Broadway Group (2006)

<b>Table 4.6-4. Corps-Verified Jurisdictional Waters of the U.S.</b>				
<b>Wetland Habitat Type</b>	<b>Barnfield Property (ac)</b>	<b>Gentry Property (ac)</b>	<b>Tooby Property (ac)</b>	<b>Totals (ac)</b>
<i>Alkali Seasonal Marsh</i>	54.99	5.62	2.22	62.83
<i>Brackish Marsh</i>	105.75	0.00	48.36	154.11
<i>Seasonally Saturated Annual Grassland</i>	61.32	19.08	0.00	80.40
<i>Vernal Pool</i>	6.03	9.06	7.92	23.01
<i>Riparian</i>	0.00	0.03	0.00	0.03
<b>Property Totals</b>	<b>228.09</b>	<b>33.79</b>	<b>58.50</b>	<b>320.38</b>

Source: Huffman-Broadway Group (2006).

**Table 4.6-5. Preliminary Wetland Assessment of Areas Not Part of Verified Wetland Delineation**

<b>Wetland Habitat Type</b>	<b>Sheldon Oil Property (ac)</b>	<b>Barnfield Property (ac)</b>	<b>Gentry Property (ac)</b>	<b>GF Gilbert (ac)</b>	<b>R&amp;CS Ardave (ac)</b>	<b>UPRR Right of Way (ac)</b>	<b>Cordelia Rd. Right of Way (ac)</b>	<b>Pennsylvania Ave. Right of Way (ac)</b>	<b>Totals (ac)</b>
<i>Alkali Seasonal Marsh</i>	0	0	0	0	0.0	0	0.943	0	0.94
<i>Brackish Marsh</i>	0	7.223	0	0.0	0	0	0.027	0	7.25
<i>Seasonally Saturated Annual Grassland</i>	0	0.088	0.172	0.012	0	0.002	0	0.727	1.00
<i>Vernal Pool</i>	0	0	0	0	0	0	0	0	0
<i>Riparian</i>	0	0	0	0	0	0	0	0	0
<b>Property Totals</b>	<b>0</b>	<b>7.31</b>	<b>0.17</b>	<b>0.01</b>	<b>0</b>	<b>0.002</b>	<b>0.97</b>	<b>0.73</b>	<b>9.19</b>

Source: Huffman-Broadway Group (2006)

### Annual Grassland

The majority of the project site consists of grazed, annual grassland as indicated on Figure 4.6-3. Typically, annual grassland habitats are open grasslands primarily composed of annual plant species. Grazing patterns and weather largely influence the structure of this habitat type. Non-native plant species are common in annual grasslands. This habitat is dominated by several species of introduced annual grasses such as wild oat (*Avena fatua*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), foxtail fescue (*Festuca megalura*), and barley (*Hordeum murinum*). A variety of native and non-native herbs, such as butter-and-eggs (*Triphysaria eriantha* spp. *eriantha*), valley tassles (*Castilleja attenuata*), miniature lupine (*Lupinus bicolor*), bur-clover (*Medicago polymorpha*), and filaree (*Erodium botry*) also dominate the project site. In low-lying areas and areas bordering wetlands, species composition shifts to include some marginal wetland indicator species such as Italian ryegrass (*Lolium multiflorum*) and Mediterranean barley (*Hordeum marinum* var. *gussoneanum*). In general, a very low occurrence exists of noxious weeds within the grasslands such as yellow star-thistle (*Centaurea solstitialis*) and medusa head (*Taeniatherum caput-medusae*). Upland portions of the Cordelia ROW and the Sheldon Oil parcel also support introduced annual grassland. Large stands of Fennel (*Foeniculum vulgare*) were present on Planning Area 2 of the Gentry Property adjacent to the UPRR ROW and Ardane Property, as well as within the Sheldon Oil Property and the GF Gilbert Property.

A number of wildlife species use annual grasslands for foraging, nesting, and cover. Reptiles that may occur include common garter snake (*Thamnophis sirtalis*), gopher snake (*Pitouphis melanoleucus*), and western fence lizard (*Sceloporus occidentalis*). Bird species observed within the annual grassland community (including seasonally saturated areas) include turkey vulture (*Cathartes aura*), white-tailed kite (*Elanus leucurus*), red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus*), American kestrel (*Falco sparverius*), killdeer (*Charadrius vociferus*), burrowing owl (*Athene cunicularia*), rock pigeon (*Columba livia*), mourning dove (*Zenaida macroura*), Anna's hummingbird (*Calypte anna*), black phoebe (*Sayornis nigricans*), barn swallow (*Hirundo rustica*), European starling (*Sturnus vulgaris*), northern mockingbird (*Mimus polyglottos*), loggerhead shrike (*Lanius ludovicianus*), American crow (*Corvus brachyrhynchos*), savannah sparrow (*Passerculus sandwichensis*), white crowned sparrow (*Zonotrichia leucophrys*), song sparrow (*Melospiza melodia*), western meadowlark (*Sturnella neglecta*), Brewer's blackbird (*Euphagus cyanocephalus*), red-winged blackbird (*Agelaius phoeniceus*), brown-headed cowbird (*Molothrus ater*), house finch (*Carpodacus mexicanus*), and house sparrow (*Passer domesticus*). Several species will likely nest in the annual grassland including Western meadowlark and killdeer. Small mammals that may occur within the annual grasslands on the project site include California vole (*Microtus californicus*), pocket gopher (*Thomomys bottae*), black-tailed jackrabbit (*Lepus californicus*), California ground squirrel (*Spermophilus beecheyi*), California vole (*Microtus californicus*) and western harvest mouse (*Reithrodontomys megalotis*). Other observations by Foothill Associates within the project site include coyote scat (*Canis latrans*), raccoon (*Procyon lotor*) tracks, and mammal burrows ranging from less than one inch to greater than three inches in diameter.

### Riparian Wetland

A small section of riparian wetland is located within the project area in an inactive channel in the southern portion of the Gentry Property within Planning Area 2, adjacent to the Sheldon Oil Parcel as shown on Figure 4.6-3. This riparian wetland is likely a remnant cut-off oxbow of the original channel of Ledgewood Creek before the creek was straightened and diked. Dominant tree species include arroyo willow (*Salix lasiolepis*) and Goodding's black willow (*Salix gooddingii*). California blackberry (*Rubus ursinus*) and mugwort (*Artemisia douglasiana*) are the understory dominant species. The riparian wetland appears to be fed by a metal culvert within a concrete structure adjacent to the UPRR ROW. In addition, Ledgewood Creek is adjacent to the western border of the Gentry property, but the creek is not part of the project site. The creek transitions to perennial marsh habitat that bisects a portion of the Barnfield property, but the parcel containing Ledgewood Creek is not part of the Barnfield property parcels.

Riparian habitats are unique and ecologically important habitats that provide an important source of food, water, and protection for wildlife, as well as breeding and nesting habitat for both resident and migratory bird species. Patches of riparian habitat at the project site could support northern flicker (*Colaptes auratus*), California towhee (*Pipilo crissalis*), and lesser goldfinch (*Carduelis psaltria*), and wintering species such as ruby-crowned kinglet (*Regulus calendula*), yellow-rumped warbler (*Dendroica coronata*), Lincoln's sparrow (*Melospiza lincolni*), and golden-crowned sparrow (*Zonotrichia atricapilla*). Trees found in the small channel in Planning Area 2 may support nesting birds raptors observed here during surveys including white-tailed kite, Cooper's hawk (*Accipiter cooperii*), and loggerhead shrike. Other resident wildlife expected to forage in these areas include striped skunk (*Mephitis mephitis*), opossum (*Didelphis virginiana*), California ground squirrel, and California vole, as well as resident aquatic reptiles, amphibians, and invertebrate species (Mayer and Laudenslayer 1988). Pacific tree frog (*Hyla regilla*) larvae were observed in many of the wetland areas during site surveys.

### Vernal Pools

Vernal pools are seasonally flooded basins underlain by a restrictive soil layer (i.e., claypan, hardpan, or bedrock) that prevents downward percolation of rainwater. Vernal pools are inundated throughout the winter and gradually dry during the spring and summer, remaining dry and desiccated through the fall until the next rainy season. Vernal pools support unique plants and animals, including many rare species, which are specifically adapted to the unique hydrologic regime and soil chemistry. Vernal pools are distinguished from other seasonal wetlands by having a predominance of plant species considered to be vernal pool indicator species.

The vernal pools on the properties are concentrated in the center and eastern portions of the Gentry Property, in the western portion of the Tooby Property, and in the northern and northwestern portions of the Barnfield Property as shown on Figure 4.6-3. Many of the pools appear to have formed or were enhanced due to the construction of berms and ditches and partially blocked culverts on the project site. The partially blocked culverts and berms and ditches may collect and block the flow of water across the landscape. This is especially true in the Gentry and Tooby properties. The largest, deepest vernal pool occurs on the Gentry Property

and may be the result of, or enhanced by, the adjacent berm that runs parallel to Pennsylvania Avenue and a blocked culvert at the southernmost end of the vernal pool.

Dominant species within the pools on the three properties include a mix of classic vernal pool indicator species such as Vasey's coyote-thistle (*Eryngium vaseyi*), California semaphore grass (*Pleuropogon californica*), flat-faced downingia (*Downingia pulchella*), smooth goldfields (*Lasthenia glaberrima*), hyssop-leaved loosestrife (*Lythrum hyssopifolia*), and stipitate popcornflower (*Plagiobothrys stipitatus* var. *micranthus*), as well as a low cover of some alkali-tolerant species (halophytes) such as alkali heath (*Frankenia salina*), pickleweed (*Salicornia virginica*), and alkali weed (*Cressa truxillensis*).

Vernal pools support many of the same wildlife species as annual grasslands. Vernal pools are known to support a variety of endemic species that specialize in this habitat type including various types of fairy shrimp, Pacific treefrog (*Hyla regilla*), western toad (*Bufo boreas*), and California tiger salamander (*Ambystoma tigrinum californiense*). When they are full, these areas of open water also provide suitable foraging habitat for waterfowl, herons, and shorebirds. Both black-necked stilt (*Himantopus mexicanus*) and American avocet (*Recurvirostra americana*) may nest within shallow ponds that are wet through their nesting season (March to July). Many species of insectivorous birds (i.e., swallow, swifts, and flycatchers) hunt their prey over open water. Species observed in the pools include mallard (*Anas platyrhynchos*), snowy egret (*Egretta thula*), belted kingfisher (*Ceryle alcyon*), and red-winged blackbird (*Agelaius phoeniceus*).

#### Seasonally Saturated Annual Grasslands

The project site contains broad transitional wetland areas between the low-lying seasonal wetlands (vernal pools and alkali seasonal marsh) and the surrounding upland annual grasslands as shown on Figure 4.6-3. These transitional areas have prolonged periods of surface and subsurface saturation, but are rarely inundated. The dominant plants include a mix of facultative wetland species associated with both the annual grasslands and alkali seasonal marsh. Common species include Italian ryegrass, Mediterranean barley, alkali weed, and alkali heath (*Frankenia salina*). A substantial decrease in the historical seasonally saturated annual grassland habitat of the Suisun Marsh region has been documented (Goals Project, 1999). Small areas of seasonally saturated annual grassland were also noted on the Gilbert parcel and the UPRR, and Pennsylvania Avenue rights of way during the July 2005 preliminary wetlands assessment.

Wildlife found here are similar to those found in both annual grasslands and the seasonally wet vernal pool habitats described above.

#### Alkali Seasonal Marsh

The alkali seasonal marshes form in low-lying basins and clay flats. They become seasonally inundated or saturated during the rainy season and gradually dry through the spring and early summer. The salinity comes from residual salts concentrated in a buried silty clay loam soil horizon within the predominant soil type (Sycamore silty clay, saline).

Alkali seasonal marshes on the Gentry, Tooby, and Barnfield properties are located in the northeastern portion of the Gentry Property, the southwestern portion of the Tooby Property, and the northern and northwestern portions of the Barnfield Property as shown on Figure 4.6-3. Alkali seasonal marsh is also present in the Cordelia Road right of way. Dominant plant species within these wetlands include several halophytes (salt-loving plants) including sickle grass (*Parapholis incurva*), alkali weed, and alkali heath. Slightly lower areas within the wetlands are dominated by pickleweed (*Salicornia virginica*). The alkali seasonal marsh generally lacks vernal pool indicator species.

Wildlife found in alkali seasonal marsh include California vole, herons, mallard, killdeer, black-necked stilt, American avocet, greater yellowlegs (*Tringa melanoleuca*), and Wilson's snipe (*Gallinago delicata*).

#### Perennial Brackish Marsh

Perennial brackish marsh occurs throughout the southern and southeastern portions of the Barnfield Property and dominates the eastern portion of the Tooby Property (refer to Figure 4.6-3). During the preliminary wetlands assessment, a small area of brackish marsh was also mapped in the Cordelia Road ROW in the drainage ditch that traverse the Barnfield and Tooby properties as it crosses the Cordelia Road ROW. This habitat occurs in estuarine environments where there is a mixing of fresh and salt waters such as occurs in the Delta region. The soils are perennially inundated or saturated and are generally subject to some level of tidal fluctuation. The perennial brackish marsh habitat at the project site is subject to tidal fluctuations that extend from Suisun Bay, up tidal sloughs, and into drainage ditches that traverses the properties. The ditch on the Tooby site has one branch that extends northeast and provides water to the marsh habitat. In addition, water levels become elevated during the rainy season and gradually lower through the spring through evaporation, transpiration, and drainage. This is especially true for the northern portion of the marsh. The majority of alkalinity within the marsh habitat comes from residual salts in the silty clay soils in addition to salts carried through tidal fluctuations.

Within the Tooby Property, the deepest areas within the marsh (concentrated along the eastern portion of this property) are dominated by a mix of dense, tall-growing perennial marsh species including tule (*Scirpus acutus* var. *occidentalis*), Olney's bulrush (*Scirpus americanus*), California bulrush (*Scirpus californicus*), saltmarsh bulrush (*Scirpus maritimus*), broad-leaved cattail (*Typha latifolia*), and narrow-leaved cattail (*Typha angustifolia*). Slightly higher areas are dominated by low-growing species, especially pickleweed (*Salicornia virginica*) and brass buttons (*Cotula coronopifolia*). The upper perimeter of the marsh includes additional low-growing species such as saltgrass (*Distichlis spicata*), saltmarsh sand-spurrey (*Spergularia marina*), sicklegrass, and annual beard grass.

Dominant plant species within perennial brackish marsh on the Barnfield Property include a broad range of perennial emergent monocots and herbaceous and woody dicots often occurring in a mosaic dependent on local soil condition, hydrologic regime, and micro-elevation. Low-lying areas and the lower banks of sloughs are dominated by tall, dense emergent monocots including tule, Olney's bulrush, California bulrush, saltmarsh bulrush, broad-leaved cattail, and narrow-leaved cattail. Upper slough banks are dominated by a mix of woody dicots such as

annual saltmarsh aster (*Aster subulatus* var. *ligulatus*), Douglas' false-willow (*Baccharis douglasii*), western goldenrod (*Euthamia occidentalis*), and mugwort (*Artemisia douglasiana*). The special-status plants delta tule pea and Suisun Marsh aster occur in scattered locations along the upper slough banks (see "Special Status Species" section). Open areas along some of the smaller slough channels support some native herbs such as water-parsley (*Oenanthe sarmentosa*) and whorled pennywort (*Hydrocotyl verticillata*). Dense stands of pickleweed and saltgrass are located in some low-lying areas away from the slough channels.

Perennial marsh provides shelter and foraging habitat for several species of wildlife on the project site, including resident and migratory bird species, amphibians, reptiles, aquatic invertebrates, and foraging mammals. Wildlife expected to occur in the perennial marsh habitat on the project site include bullfrog (*Rana catesbiana*), Pacific tree frog, great blue heron (*Ardea herodias*), green heron (*Butorides virescens*), great egret (*Ardea alba*), American bittern (*Botaurus lentiginosus*), Virginia rail (*Rallus limicola*), sora (*Porzana carolina*), killdeer, American avocet, black-necked stilt, long-billed curlew (*Numenius americanus*), black phoebe (*Sayornis nigricans*), marsh wren (*Cistothorus palustris*), saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*), Suisun song sparrow (*Melospiza melodia maxillaries*), and red-winged blackbird. The bittern and stilt may nest in the area in the northeastern portion, but the long-billed curlew is a designated Species of Special Concern that is not known to nest in the project area.

### **Wildlife Corridors**

Many areas serve as habitat for several species of wildlife and as such provide shelter, food, water and other resources for wildlife. However, the concept of corridors for wildlife movement is often misunderstood. Discussions of wildlife dispersal are generally assumed to be primarily important for mammals, because birds can fly between habitat patches. In fact, even non-migratory birds limited to very specific habitat types have been found via banding studies to travel several miles, over large areas of non-habitat including roadways and residential developments, between habitat patches. Most amphibians travel within watercourses, and most insects can fly; thus, this discussion focuses on the movement of mammal and reptile species.

Wildlife species make use of travel routes within a given patch of habitat to find food, water, mates, and shelter or den sites. Species may also use wildlife crossings, which are generally small, narrow areas allowing wildlife to pass through an obstacle or barrier such as a roadway to reach another patch of habitat. Wildlife crossings are man-made and include culverts, drainage pipes, underpasses, tunnels, and, more recently, crossings created specifically for wildlife movement over or under highways. For example, the culverts under Cordelia Road and the UPRR railroad would be considered wildlife crossings.

A wildlife corridor, also called a habitat linkage or landscape linkage, is a large patch of habitat connecting two or more larger areas of habitat that would otherwise be isolated from one another. They are typically bordered on two sides by urban areas or other types of human development. A functioning wildlife corridor allows for ease of movement between habitat patches. Canyon bottoms with a well-developed tree canopy often serve as wildlife corridors and offer food, shelter, and water, as well as ease of movement, depending upon the density of

the understory. Corridors function to prevent habitat fragmentation that would result in the loss of species that require large contiguous expanses of unbroken habitat and/or that occur in low densities. Habitat fragmentation can result in increases in the number of non-native species and may allow inbreeding to occur in species whose populations are small because they have become confined to smaller areas. This, in turn, reduces the rate of reproductive success. Fragmentation also reduces functioning ecosystems to small pockets, decreasing biodiversity and the interactive processes required for healthy ecosystem functioning. Corridors promote gene flow, allow re-colonization of areas following catastrophic events such as fire, prevent the loss of large animals by linking suitable habitat areas, and help to ensure the survival of native species that cannot compete with more aggressive non-native species in fragmented habitats.

The project site is immediately south of SR 12 and residential areas of the City of Fairfield. The project site is bisected east-west by both the UPRR railway and Cordelia Road, and north-south by Pennsylvania Avenue. The project site is not located within an area designated as a key corridor by the Solano County Habitat Conservation Plan (HCP) (LSA Associates 2005). Both LedgeWood Creek and the smaller slough channels provide wildlife crossings of these impediments through culverts. However, the project site as a whole serves little value as a wildlife corridor due to the large amount of development and barriers that surround the corridor. While the Barnfield and Tooby Parcels do provide large areas of habitat for several sensitive salt marsh species, they are located at the northern extend of these species range in the immediate area and do not represent corridors between two large populations. The project is not anticipated to impact LedgeWood Creek which may serve a limited function as a wildlife corridor for species inhabiting the brackish and freshwater emergent vegetation within its channel.

### **Special-Status Species**

Special-status species are defined as plants and wildlife that may meet one or more of the following:

- Legally protected under the Federal Endangered Species Act (FESA) and California Endangered Species Act (CESA) or under other statutes or federal or state regulations;
- Considered sufficiently rare by the scientific community to qualify for such listing; or
- Considered sensitive because they are unique, declining regionally or locally, or at the extent of their natural range.

Special-status plant species may meet one or more of the following:

- Plants listed or proposed for listing as threatened or endangered under the FESA (50 CFR 17.12 for listed plants and various notices in the Federal Register for Proposed species);
- Plants that are candidates for possible future listing as threatened or endangered under the FESA (64 FR 205, October 25, 1999; 57533-57547);
- Plants that meet the definitions of rare or endangered species under the California Environmental Quality Act (CEQA) (CEQA Guidelines, Section 15380);
- Plants considered by the California Native Plant Society (CNPS) to be “rare, threatened, or endangered” in California (Lists 1B and 2 species in CNPS [2001]);

- Locally important occurrences of plants listed by CNPS as plants for which more information is needed and plants of limited distribution (Lists 3 and 4, respectively, species in CNPS [2001]);
- Plants listed or proposed for listing by the State of California as threatened or endangered under the CESA (14 CCR 670.5);
- Plants listed under the California Native Plant Protection Act (California Fish and Game Code 1900 et seq.). Plants considered sensitive by other federal agencies (i.e., U.S. Forest Service, Bureau of Land Management) or state and local agencies or jurisdictions; or
- Plants considered sensitive or unique by the scientific community or occurring at the limits of its natural range.

Special-status wildlife species may meet one or more of the following:

- Wildlife listed or proposed for listing as threatened or endangered under the FESA (50 CFR 17.11 for listed wildlife and various notices in the Federal Register for Proposed species);
- Wildlife that are candidates for possible future listing as threatened or endangered under the FESA (54 CFR 554);
- Wildlife that meet the definitions of rare or endangered species under the CEQA (CEQA Guidelines, Section 15380);
- Wildlife listed or proposed for listing by the State of California as threatened and endangered under the CESA (14 CCR 670.5);
- Wildlife Species of Special Concern to the CDFG (Remsen [1978] for birds; Williams [1986] for mammals); or
- Wildlife species that are fully protected in California (California Fish and Game Code, Section 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).

The following tables (Table 4.6-6 and Table 4.6-7) identify listed and special-status species identified on the USFWS species lists for Solano County and the *Fairfield South, California* 7.5-minute USGS quadrangle, all of which have occurred at least once in the vicinity of the project site (USFWS 2006). Species recorded in the California Natural Diversity Database (CNDDDB) within five miles of the project site are also included in Table 4.6-6 and Table 4.6-7 below and shown in Figure 4.6-4. Also included are species named in the Solano County HCP (LSA Associates 2005). “No local records,” means that none were detected in the 9-quad search or in the literature. Definitions of species potential for occurrence on the project site are as follows:

- **Present:** Species is known to occur within the Project area, based on CNDDDB records, and/or was observed on-site during the field survey(s).
- **May occur:** Species is known to occur on or near the Project area (based on CNDDDB or other records within 5 miles, and/or based on professional expertise specific to the project site or species), and suitable habitat exists on-site.
- **Not likely to occur:** Species is known to occur in the vicinity of the Project area; however, poor quality or marginal habitat exists in the Project area. Alternatively, suitable habitat exists in the Project area; however, records do not exist, or only historic

records within a 5-mile radius and the species were not observed during surveys. If these species were to occur at the site, it would either be because they would likely be migrants or because they may occasionally use the site for foraging but are not likely to be resident or reproduce at the site due to a lack of suitable habitat or because the site is outside of their known breeding range.

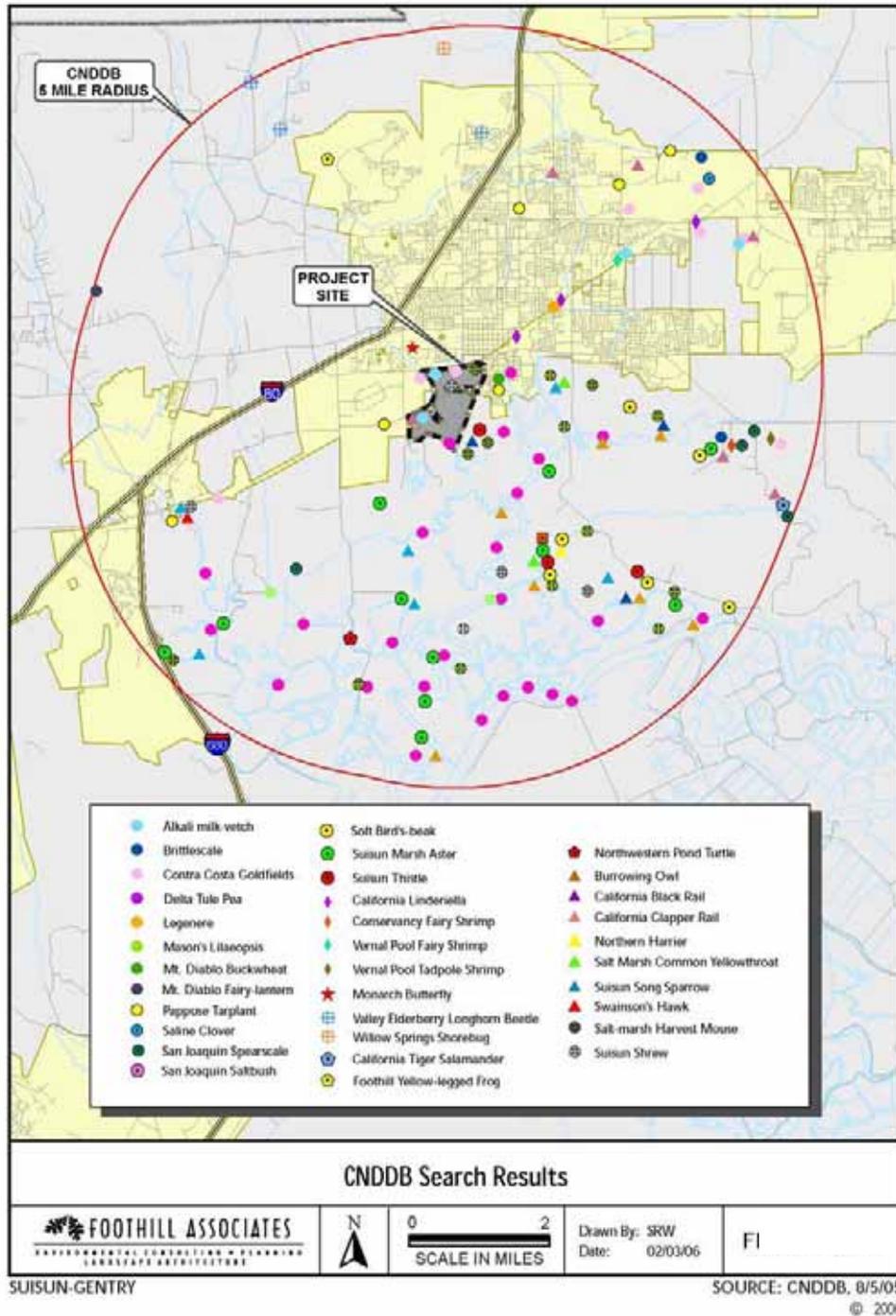
- **Absent:** Species is not known to occur on or in the vicinity of the Project area and suitable habitat does not exist for the species in the Project area, or Species was surveyed for during the appropriate season with negative results for species occurrence.

Only those species that are known to be present or that have a high or low potential for occurrence will be discussed further following the species table below.

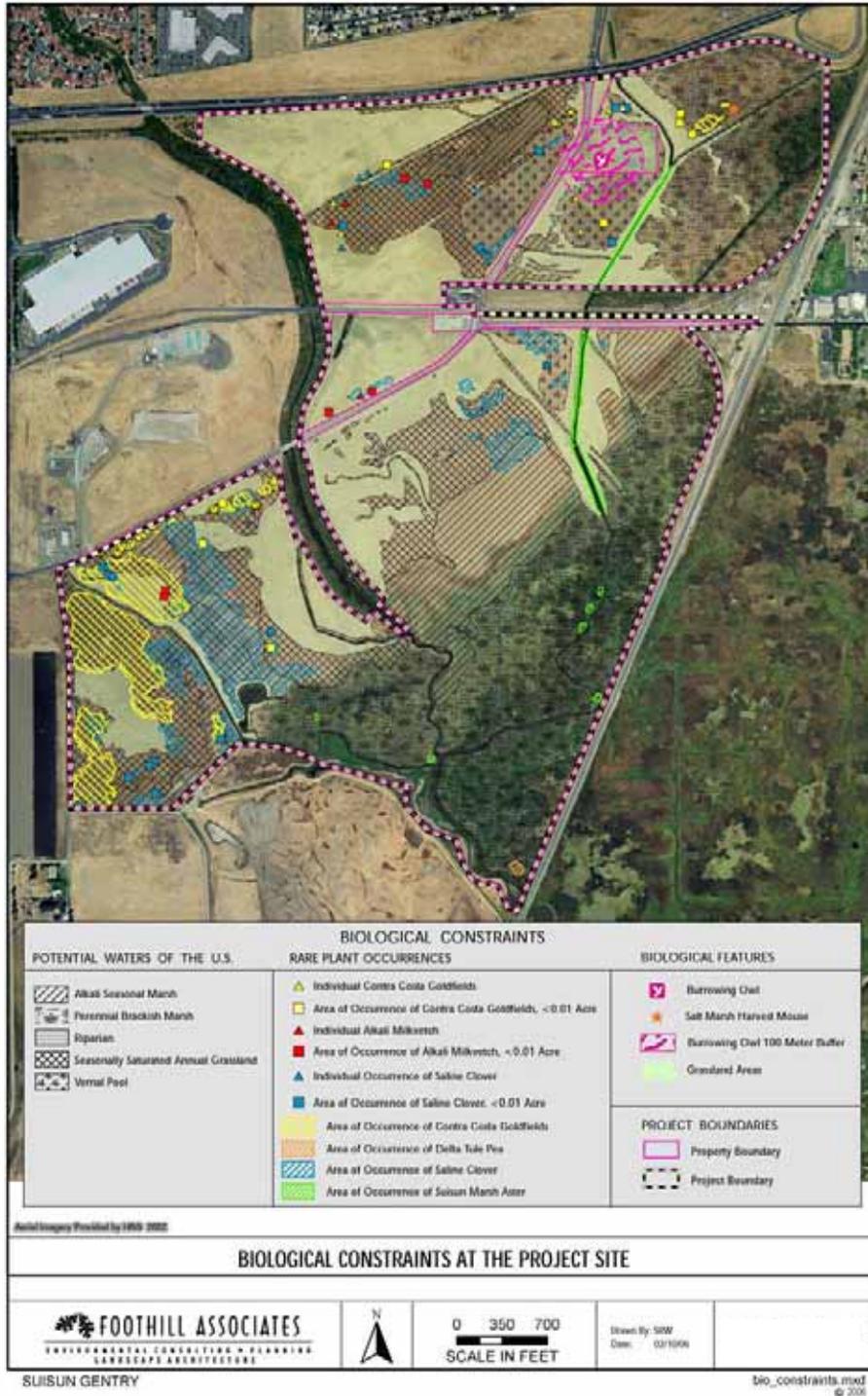
#### Special-Status Plant Species

Five special-status plant species were observed on the Gentry, Tooby, or Barnfield properties: Suisun Marsh aster (*Aster lentus*), alkali milk-vetch (*Astragalus tener* var. *tener*), Contra Costa goldfields (*Lasthenia conjugens*), Delta tulle pea (*Lathyrus jepsonii* ssp. *jepsonii*), and saline clover (*Trifolium depauperatum* var. *hydrophilum*). Contra Costa goldfields is a federally listed endangered species and is on the CNPS List 1B (plants rare, threatened or endangered over the entire range). Saline clover is also a CNPS List 1B species and alkali milk-vetch, delta tulle pea and Suisun Marsh aster are all federal species of concern as well as being on the CNPS List 1B. Each of these species and its occurrence on-site is discussed below. The location of each of these species on the Project area is shown on Figure 4.6-4.

**Figure 4.6-4**  
**California Department of Fish and Game Natural Diversity Database (CNDDDB)**  
**Search Results**



**Figure 4.6-5  
 Biological Constraints on the Project Site**



**Table 4.6-6  
 Listed and Special-Status Plant Species Potentially Occurring on the Project Site or in the Vicinity**

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	POTENTIAL FOR OCCURRENCE
Suisun Marsh aster ( <i>Aster lentus</i> )	FSC/-- CNPS 1B	Inhabits banks of sloughs and bays in the Suisun Bay and the mid Central Valley basin.	<b>Present.</b> There are several CNDDDB records east and south of the property along sloughs draining to Suisun Bay and CNPS has records in the Fairfield South quad. Special status plant surveys indicated this species is present on the Barnfield property in several locations on the eastern portion of the property and on the Barnfield and Tooby properties adjacent to a perennial brackish marsh ditch (Vollmar Consulting, 2005).
Ferris' milk-vetch ( <i>Astragalus tener</i> var. <i>ferrisae</i> )	FSC/-- CNPS 1B	Inhabits subalkaline vernal pools and grassland clay flats in the Delta and north Central Valley basin; extirpated from Solano Co.	<b>Not likely to occur.</b> There is a historic CNPS record several miles to the east of the property (Dozier quad). Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting.
Alkali milk-vetch ( <i>Astragalus tener</i> var. <i>tener</i> )	FSC/-- CNPS 1B	Inhabits subalkaline vernal pools and clay flats in grasslands; known from scattered locations in the Delta, Central Valley, and north SF Bay.	<b>Present.</b> There are CNDDDB records north and east of the property and CNPS records in Fairfield South quad. Special status plant surveys indicated this species is present in central areas of the Gentry parcel north of the Union Pacific Railroad and on the Gentry Parcel near Cordelia Road, as well as on the Barnfield Parcel.
Heartscale ( <i>Atriplex cordulata</i> )	FSC/-- CNPS 1B	Inhabits alkali flats with sandy soils in the Delta and Central Valley basin.	<b>May occur.</b> There is a historic CNDDDB record several miles north of the property and several CNPS records several miles north and east of the property. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting.
Brittlescale ( <i>Atriplex depressa</i> )	FSC/-- CNPS 1B	Inhabits alkali scrub, clay soils in mesic grasslands in the Delta, Central Valley basin.	<b>May occur.</b> There is a recorded CNDDDB occurrence 5 miles east of the property near Potrero Hills Landfill (Denverton quad). Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting.
San Joaquin spearscale ( <i>Atriplex joaquiniana</i> )	FSC/-- CNPS 1B	Inhabits alkali scrub and mesic grasslands in the Delta and Central Valley basin.	<b>May occur.</b> There are CNDDDB records at Travis AFB, and Potrero Hills Landfill and CNPS occurrence in Fairfield South quad. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005.

**Table 4.6-6  
 Listed and Special-Status Plant Species Potentially Occurring on the Project Site or in the Vicinity**

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	POTENTIAL FOR OCCURRENCE
Persistent-fruited [vernal pool] saltscale ( <i>Atriplex persistens</i> )	--/-- CNPS 1B	Inhabits alkali vernal pools, flats, and swales; known from scattered locations in the Delta and Central Valley basin.	<b>Not likely to occur.</b> No CNDDDB records in immediate vicinity of the property. CNPS records in Dozier quad several miles to the east. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting.
Big-scale (California) balsamroot ( <i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i> )	SLC/--/ CNPS 1B	Chaparral, cismontane woodland, valley and foothill grassland/sometimes serpentine; elevation 90-1400 meters.	<b>Not likely to occur.</b> No suitable habitat present on the project site. CNDDDB records from west of Fairfield and American Canyon, none within 5 mi. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting.
Mt. Diablo fairy-lantern	--/-- CNPS 1B	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland. On wooded and brushy slopes. 200-800m.	<b>Not likely to occur.</b> No suitable habitat present on the project site. CNDDDB records from Carquinez Strait Shoreline Park and Green Valley. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting.
Salt marsh owl's clover (Johnny-nip) ( <i>Castilleja ambigua</i> ssp. <i>ambigua</i> )	SLC/--/--	Coastal salt marsh, coastal scrub.	<b>Not likely to occur.</b> Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting. No CNDDDB records within 5 miles.
Holly-leaved ceanothus ( <i>Ceanothus purpureus</i> )	SLC/--/--	Coastal salt marsh, coastal scrub.	<b>Not likely to occur.</b> No suitable habitat present on the project site. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting. No CNDDDB records within 5 miles.
Pappose tarplant ( <i>Centromadia parryi</i> ssp. <i>parryi</i> )	SLC/--/ CNPS 1B	Chaparral, cismontane woodland/volcanic rocky; elevation 120-640 meters.	<b>Not likely to occur.</b> No suitable habitat present on the project site. Local record adjacent to the property. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting.
Suisun thistle ( <i>Cirsium hydrophilum</i> var. <i>hydrophilum</i> )	FE/--/ CNPS 1B	Inhabits the edges of brackish sloughs; only two known locations (Grizzly Island and lower Peytonia Slough), both in Solano County.	<b>May occur.</b> Excellent potential habitat near southern tip of the Barnfield property along Peytonia Slough. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting.

**Table 4.6-6  
 Listed and Special-Status Plant Species Potentially Occurring on the Project Site or in the Vicinity**

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	POTENTIAL FOR OCCURRENCE
Hispid bird's-beak ( <i>Cordylanthus mollis</i> ssp. <i>hispidus</i> )	FSC/--/ CNPS 1B	Inhabits alkali vernal mesic grasslands; known from scattered locations in the Delta, southern Central Valley basin.	<b>Not likely to occur.</b> There is a CNDDDB record 5 miles east-northeast of the property at Dozier vernal pools (Denverton quadrangle). Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting.
Soft bird's-beak ( <i>Cordylanthus mollis</i> ssp. <i>mollis</i> )	FE/CR CNPS 1B	Inhabits brackish tidal marsh and seasonal alkali marsh; known from fewer than 20 populations in Contra Costa, Napa, and Solano Counties.	<b>May occur.</b> CNDDDB records along Suisun Slough and Hwy 12 (5 miles east of the property). CNPS records in Fairfield South quad on the property. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting.
Recurved larkspur ( <i>Delphinium recurvatum</i> )	FSC/--/ CNPS 1B	Inhabits alkali scrub and vernal mesic grasslands in the Delta and southern Central Valley basin.	<b>Not likely to occur.</b> There is historic CNDDDB record (1902) near Vacaville. No CNPS records near the property. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting.
Dwarf downingia ( <i>Downingia pusilla</i> )	--/--/CNPS 2	Inhabits vernal pools in the Delta and Central Valley.	<b>Not likely to occur.</b> No CNDDDB records within 5 mi. of the property. CNPS occurrence in Denverton quad. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting.
Mt. Diablo [Contra Costa] buckwheat ( <i>Eriogonum truncatum</i> )	FSC/--/ CNPS 1A	Chaparral, coastal scrub, valley and foothill grasslands in dry exposed clay or sandy substrates at 100-600 meters elevation.	<b>Not likely to occur.</b> No suitable habitat present on the project site. One historic record (1888) from Suisun City. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting.
Fragrant fritillary ( <i>Fritillaria liliaceas</i> )	FSC/--/ CNPS 1B	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland/often serpentinite; elevation 3-410 meters.	<b>Not likely to occur.</b> No suitable habitat present on the project site. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting. No local records.
Adobe-lily ( <i>Fritillaria pluriflora</i> )	FSC/--/-- CNPS 1B	Inhabits adobe soils in grasslands and chaparral; occurs in the Delta, north Central Valley, and North SF Bay.	<b>Not likely to occur.</b> There is a historic CNPS record northeast of the property (Elmira quad). No CNDDDB records in vicinity. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting.

**Table 4.6-6  
 Listed and Special-Status Plant Species Potentially Occurring on the Project Site or in the Vicinity**

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	POTENTIAL FOR OCCURRENCE
Bogg's Lake hedge hyssop ( <i>Gratiola heterosepala</i> )	--/CE/ CNPS 1B	Inhabits vernal pools and margins of vernal lakes; known from scattered locations in the Delta, Central Valley, and north SF Bay.	<b>Not likely to occur.</b> There are CNPS records several miles east of the property; no CNDDDB records in the vicinity. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting.
Brewer's western flax ( <i>Hesperolinon breweri</i> )	FSC/--/ CNPS 1B	Chaparral, cismontane woodland, valley and foothill grassland; often found in rocky serpentine soil in serpentine chaparral and serpentine grassland at 30-885 meters.	<b>Not likely to occur.</b> No suitable habitat present. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting. No records within 5 mi.
Carquinez goldenbush ( <i>Isocoma arguta</i> )	FSC/--/ CNPS 1B	Inhabits alkaline flats, low benches and sides of mounds in swale areas; restricted to Solano and Contra Costa Counties.	<b>Not likely to occur.</b> There are three CNDDDB records several miles east of the property (Denverton quad: Dozier vernal pools, near Creed Road, near Highway 12). Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting.
Contra Costa goldfields ( <i>Lasthenia conjugens</i> )	FE/--/ CNPS 1B	Inhabits vernal pools and vernal mesic grasslands; most remaining occurrences restricted to the Fairfield region.	<b>Present.</b> Observed on-site in special status species surveys conducted by Vollmar consulting in 2000, 2001, 2002 and 2005.
Delta tule pea ( <i>Lathyrus jepsonii</i> var. <i>jepsonii</i> )	FSC/--/ CNPS 1B	Inhabits the banks of sloughs and bays in the Suisun Bay and Delta.	<b>Present.</b> Observed on-site on the Barnfield property during Vollmar Consulting special status plant surveys conducted in 2000. This species was not located on the Gentry or Tooby properties during this survey. It is not expected to occur on the Gentry property due to a lack of perennial brackish marsh habitat. The occurrence on the Barnfield property is located at the far southern tip along the eastern bank of Peytonia Slough, and is estimated to include 400 plants. This area is outside the Project development footprint. Also, there are numerous known occurrences south of the property on Suisun Slough, Peytonia Slough, and Suisun Marsh.

**Table 4.6-6  
 Listed and Special-Status Plant Species Potentially Occurring on the Project Site or in the Vicinity**

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	POTENTIAL FOR OCCURRENCE
Legenere ( <i>Legenere limosa</i> )	FSC/--/ CNPS 1B	Inhabits vernal pools; known from scattered occurrences in the Delta, north Central Valley, and north SF Bay.	<b>May occur.</b> Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting. However there is a moderate potential for this species to occur. CNDDDB records occurrences east of the property. CNPS records in Denverton and Elmira quads.
Heckard's pepper-grass ( <i>Lepidium latipes</i> var. <i>heckardii</i> )	SLC/--/ CNPS 1B	Valley and foothill grassland (alkaline flats); elevation 10-200 meters.	<b>Not likely to occur.</b> This species was not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting. No local records.
Mason's lilaepsis ( <i>Lilaeopsis masonii</i> )	FSC/CR/ CNPS 1B	Inhabits the edges of mudflats in brackish marsh and riparian scrub in the Delta.	<b>May occur.</b> There are CNDDDB records southeast of the property along Montezuma Slough, Grizzly Island and CNPS records in Fairfield South quad. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting.
Delta Mudwort ( <i>Limosella subulata</i> )	--/--/ CNPS 2	Inhabits the edges of mudflats in brackish marsh and riparian scrub in the Delta.	<b>Not likely to occur.</b> There are CNDDDB records southeast of the property along Montezuma Slough. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting.
Little mousetail ( <i>Myosurus minimus</i> ssp. <i>apus</i> )	FSC/--/ CNPS 3	Inhabits alkaline vernal pools in the Delta, Central Valley, and South Coast.	<b>Not likely to occur.</b> CNPS records occurrences several miles east of the property; no CNDDDB occurrences in Project vicinity. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting.
Baker's navarretia ( <i>Navarretia leucocephala</i> ssp. <i>bakeri</i> )	FSC/--/ CNPS 1B	Cismontane woodland, meadows and seeps, vernal pools, valley and foothill grassland, lower montane coniferous forest. Vernal pools and swales; adobe or alkaline soils at 5-950 meters elevation.	<b>Not likely to occur.</b> Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting. No records within 5 mi.
Colusa grass ( <i>Neostapfia colusana</i> )	FT/CE/ CNPS 1B	Inhabits large vernal pools and vernal lakes, occasionally stock ponds; known from fewer than 50 occurrences in the Delta, and southern Central Valley.	<b>Not likely to occur.</b> No suitable habitat present. Known population in Olcott Lake (Jepson Prairie). Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting. No local records.

**Table 4.6-6  
 Listed and Special-Status Plant Species Potentially Occurring on the Project Site or in the Vicinity**

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	POTENTIAL FOR OCCURRENCE
San Joaquin Valley orcutt ( <i>Orcuttia inaequalis</i> )	FT/CE/ CNPS 1B	Vernal pools 30-755 meters elevation.	<b>Not likely to occur.</b> Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting. No records within 5 mi.
Gairdner's yampah ( <i>Perideridia gairdneri</i> ssp. <i>gairdneri</i> )	FSC--/-- CNPS 4	Broadleaved upland forest, chaparral, coastal prairie, valley and foothill grassland, vernal pools/mesic; elevation 0-365 meters.	<b>Not likely to occur.</b> Suitable habitat not present. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting. No local records.
Bearded popcorn flower ( <i>Plagiobothrys</i> <i>hystriculus</i> )	--/--/ CNPS 1A	Vernal pools, valley and foothill grassland in wet sites at elevation 10-50 meters.	<b>Not likely to occur.</b> Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting. No records within 5 mi.
Marin knotweed ( <i>Polygonum marinense</i> )	SLC/--/ CNPS List 3	Marshes and swamps; elevation 0-10 meters.	<b>Not likely to occur.</b> No suitable habitat present; found in salt marshes. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting. No local records.
Rayless Ragwort ( <i>Senecio aphanactis</i> )	--/--/ CNPS 2	Generally associated with alkaline soils and seasonal wetland.	<b>Not likely to occur.</b> Suitable habitat at the project site, no records within 5 mi, nearest from Mare Is. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting.
Pacific cordgrass ( <i>Spartina foliosa</i> )	SLC/--/--	Coastal salt marshes along the coast of California and Mexico.	<b>Not likely to occur.</b> No suitable habitat present. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting. No local records.
Showy Indian clover ( <i>Trifolium amoenum</i> )	FE/--/ CNPS 1B	Inhabits moist clay grassland soils; known from one extant occurrence in Marin County.	<b>Not likely to occur.</b> Historic records in Solano County (type locality), 4 miles northeast of the property. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting.
Saline [water sack] clover ( <i>Trifolium depauperatum</i> var. <i>hydrophilum</i> )	--/--/CNPS 1B	Inhabits subalkaline vernal mesic grasslands and edges of vernal pools; restricted to the Delta and Central Coast.	<b>Present.</b> A total of 49 occurrences of saline clover were located on the three properties during the 2005 surveys. Fourteen occurrences were located on the Gentry property, three occurrences were located on the Tooby Property, and 32 occurrences were located on the Barnfield Property.

**Table 4.6-6  
 Listed and Special-Status Plant Species Potentially Occurring on the Project Site or in the Vicinity**

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	POTENTIAL FOR OCCURRENCE
Crampton's [Solano] tuctoria ( <i>Tuctoria mucronata</i> )	FE/CE/ CNPS 1B	Inhabits large vernal pools and vernal lakes; known from only three occurrences in Solano and Yolo Counties.	<b>Not likely to occur.</b> There are two populations in and adjacent to Jepson Prairie. Not likely to occur on the property due to a lack of suitable habitat. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting.

<sup>1</sup> Sources of information included California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California (Skinner and Pavlik 1994; electronic update 1999), CDFG's California Natural Diversity Data Base for the Fairfield North, Fairfield South, Denverton and Elmira USGS 7 ½ minute quadrangles (CNDDDB 2006), special-status species lists and technical reports prepared by Vollmar Consulting for other projects in the vicinity, and United States Fish and Wildlife Service (USFWS) lists of federal endangered and threatened species that occur in or may be affected by projects in Solano County or the Fairfield South USGS 7.5 minute quadrangle.

<sup>2</sup>Status Codes:

FE	Federally Endangered	CR	California Rare
FT	Federally Threatened	CSC	California Species of Special Concern
FPE	Federally Proposed Endangered	CNPS 1A	Plants Presumed Extinct in California
FPT	Federally Proposed Threatened	CNPS 1B	Plants Rare, Threatened or Endangered in California or elsewhere
FCS	Federal Candidate Species	CNPS LIST 2	Plants Rare, Threatened or Endangered in California, but more common elsewhere
FSC	Federal Species of Concern (most are former C2 Candidates and some former C1)	SLC	Species of Local Concern – other species of concern to the Sacramento Fish and Wildlife Office
CE	California Endangered	CNPS LIST 3	Plants about which more information is needed prior to assigning to a list
CT	California Threatened	CNPS LIST 4	Plants of limited distribution – a watch list

Based on known CNDDDB occurrence records and direct observation in the field, special-status plant species present on-site include Suisun Marsh aster, alkali milk vetch, Contra Costa goldfields, Delta tule pea, and saline clover. While not detected during surveys heartscale, brittlescale, San Joaquin spearscale [saltbush], Suisun thistle, Soft bird's-beak, Legenere, and Mason's lilaeopsis, may occur on-site according to an examination of the USFWS threatened and endangered species list of the area, CNDDDB occurrence records on or near the project site (CNDDDB 2006), CNPS literature (CNPS 2001, 2006), and other documents pertaining to the biological resources of the project site. Based on field observations and a search of CNDDDB occurrence records heartscale, Suisun thistle, soft bird's beak, and Mason's lilaeopsis are not likely to occur. A description of each species follows.

### Plant Species Detected During Surveys

#### *Suisun Marsh Aster*

Suisun Marsh aster is a three to four foot tall lavender-flowered perennial in the sunflower family (Asteraceae). Suisun Marsh aster is a federal Species of Concern and a CNPS List 1B species. Aster occurs along the margins of bays and the banks of slough channels with tidal brackish waters. Suisun Marsh aster range is restricted to the upper San Francisco Bay and Delta regions of California.

Suisun Marsh aster was observed in scattered locations along the southern portion of the drainage channel that traverses the eastern portion of the project site. This channel is subject to daily tidal fluctuations of mildly brackish waters. Total population size consists of a couple hundred plants. Additional occurrences have been reported within five miles of the project site (CNDDDB 2006). The locations of Suisun Marsh aster within the project area are shown on Figure 4.6-5.

**Gentry Property.** Suisun Marsh aster was not observed in the Gentry property during the 2000 – 2002 and the 2005 surveys. Therefore, Suisun Marsh aster is not expected to occur in this area due to a lack of suitable habitat.

**Tooby Property.** Suisun Marsh aster was observed in scattered locations along the southern portion of the drainage ditch that traverses the Tooby property during the previous late-season survey conducted August 15, 2000. During the August 8, 2005, late-season survey, all occurrences of Suisun Marsh aster were relocated and were found to have similar sizes and distribution as observed during the August 15, 2000, survey. The ditch is subject to daily tidal fluctuations of mildly brackish waters. Total population size was estimated at 200 plants.

**Barnfield Property.** Suisun Marsh aster was observed in several scattered colonies along slough banks in the southern and southeastern portions of the property during the previous late-season survey conducted August 15, 2000. During the August 8, 2005, late-season survey, all occurrences of Suisun Marsh aster were relocated and found to have similar sizes and distribution as observed during the August 15, 2000, survey. Dense colonies were also observed along the two ditches on the property. Total population size of all colonies was estimated at 4,000 plants.

### *Alkali Milk-vetch*

Alkali milk-vetch is a CNPS List 1B species and a federal Species of Concern. Alkali milk-vetch is a delicate plant that ranges from 1.57 to 11.81 inches (4 to 30 cm) tall. Alkali milk-vetch is a small, purple-flowered annual in the pea family (Fabaceae) and is associated with seasonally saturated grasslands with alkaline soils as well as the upper margins of alkaline vernal pools.

Alkali milk-vetch's historical range included the Central Coast, San Francisco Bay, Delta and mid Central Valley regions. However, due to habitat loss, alkali mil vetch has been extirpated from the Central Coast and Bay regions and most areas in the Central Valley. This species is still found in Alameda, Merced, Napa, Solano, and Yolo counties (Tibor 2001). Alkali milk-vetch grows in alkaline/saline soils in vernal wet playas, flats, and valley and foothill grassland, and flowers (February) March through June (Tibor 2001). Alkali milk-vetch is threatened primarily by loss of habitat through agricultural conversion. Figure 4.6-5 shows the occurrences of the alkali milk-vetch for the Gentry, Barnfield, and Tooby properties.

**Gentry Property.** In the surveys conducted between 2000 and 2002, alkali milk-vetch was observed in one location in seasonally saturated annual grassland near the western end of the Gentry property. This location consisted of approximately 20 plants in a 1-meter square area. The 2000 occurrence of alkali milk-vetch was also located during 2005. Alkali milk-vetch was one of seven occurrences located on the Gentry property during the 2005 surveys. The occurrence, located in 2000 as 20 plants, was relocated in 2005 as a single plant. This species is known to bloom sporadically and the change in number of plants from year to year is expected. Of the remaining six occurrences, three occurrences of alkali milk-vetch were located north of the Union Pacific Railroad and three were located south of the railroad. The northern occurrences included a single plant in the seasonally saturated grassland in the west, and two occurrences in the middle of the property, each consisting of two plants also located in the seasonally saturated grassland habitat. The southern occurrences include a single plant, an occurrence of two plants and an occurrence of three plants, all in weedy (ruderal pasture) annual grassland habitat. As this species is known to bloom sporadically from season to season, it is likely that the additional occurrences of alkali milk-vetch found in 2005 are to be expected during favorable years.

**Tooby Property.** Occurrences of alkali milk-vetch were not observed on the Tooby property during the 2000 – 2002 or 2005 surveys. While habitat for alkali milk-vetch does occur on the Tooby Property, the species is unlikely to occur on the Tooby property given that this species was not seen during the special-status plant surveys.

**Barnfield Property.** Alkali milk-vetch was observed in one location near the northwest corner of the Barnfield property in the 2000 – 2002 surveys. This occurrence consisted of several hundred plants. This population was observed in 2000 and 2002.

The 2000 occurrence of alkali milk-vetch in the northwestern region of the Barnfield property was also observed during the 2005 surveys. The 2005 occurrence is consistent with the 2000 survey. Approximately 200 plants were located within a 175-square-foot area. An additional new occurrence was located during 2005. The second occurrence, also located in the

northwestern region of the property, consisted of approximately 50 plants scattered in a 141-square-foot area.

### *Contra Costa Goldfields*

Contra Costa goldfields is a federally listed Endangered species and is a CNPS List 1B species. Contra Cost goldfield is a small, yellow-flowered annual in the sunflower family (Asteraceae). Goldfields are federally listed as endangered and are considered rare and endangered (List 1B) by CNPS. Goldfields are associated with vernal pools and seasonally saturated flats and depressions in annual grasslands. Approximately 15 populations of the species have been documented, all of which are in California's Delta and coastal regions, and a large majority of which are in the immediate vicinity of Fairfield, Solano County. Figure 4.6-5 shows the occurrences of the Contra Costa goldfields on the Gentry, Barnfield, and Tooby properties. The project site is within Vernal Pool Critical Habitat Unit 5B, Contra Costa Goldfields (USFWS 2006).

**Gentry Property.** During surveys conducted in 2000 – 2002, one occurrence of Contra Costa goldfields was observed on the Gentry Property near the northeast corner. Twenty to 30 plants were observed in a small depression within the seasonally saturated annual grasslands.

The single past occurrence of Contra Costa goldfields on the Gentry property was also located during the 2005 surveys. This occurrence consisted of approximately 20 plants in approximately the same location as the 2000 survey. One additional occurrence was located in the northeast region of the Gentry Property and three additional occurrences were located in the southwest region of the property. The occurrence of Contra Costa goldfields in the northeast region consisted of 9 plants in a small depression within seasonally saturated grassland habitat. Of the three occurrences in the southwest region, two were single plant occurrences located on the edge of seasonally saturated grassland habitat. The third occurrence consisted of approximately 50 plants scattered in a 583-square-foot area within the seasonally saturated grassland habitat adjacent to a man-made ditch.

**Tooby Property.** During surveys conducted in 2000 – 2002, four occurrences of Contra Costa goldfields were observed on the Tooby property. Two occurrences, each consisting of a single plant, were located in two vernal pools in the northwest region of the property. According to Dr. Robert Ornduff, a *Lasthenia* expert from U.C. Berkeley (recently deceased), these pools used to support larger goldfields populations, but the lack of grazing over the past several years has probably stifled their growth (Ornduff pers. comm. to J. Vollmar). Two additional occurrences were located in a larger vernal pool located in the southwest region of the property. These two occurrences each consisted of 10 to 20 plants near the upper edge of the pool basin.

Ten occurrences of Contra Costa goldfields were located on the Tooby property during the 2005 surveys; including six new occurrences. The two single occurrences of the 2000 survey were relocated in the two small vernal pools in the northern region of the property. The two moderate sized occurrences of the 2000 surveys were relocated in 2005 as single plant occurrences in the larger vernal pool in the south end of the property. Of the remaining six occurrences, one new occurrence was located in the large vernal pool in the south, and consisted of a dense patch of

approximately 100 plants in a 100-square-foot area. Five additional occurrences were located in the north-central region of the property along the west edge of the brackish marsh habitat, including an occurrence of 20 plants in a 100-square-foot area; an occurrence of 15 plants in a 100-square-foot area; an occurrence of 100 plants in a 536-square-foot area; an occurrence of 30 plants scattered in a 728-square-foot area; and an occurrence of 100 plants scattered in a 13,027-square-foot (0.3 acre) area.

**Barnfield Property.** During surveys conducted in 2000 – 2002 on the Barnfield property, Contra Costa goldfields were observed in several scattered colonies in the northwestern portion of the property that can be grouped into four primary areas. A few thousand plants were observed in five small, shallow vernal pools just south of Cordelia Road and west of Ledgewood Creek. Several thousand plants were observed along a low-gradient, seasonally saturated grassland slope near the northwestern corner of the property. This slope is just above a low-lying area that supports seasonal alkali marsh. The goldfields occupy an intermediate area along the slope gradient, which provides sufficient prolonged soil saturation without excessive soil salinity. In addition to these occurrences, a few thousand plants were observed across a broad area in the far western portion of the project site. This area consists of a terrace surrounding a small hill. The terrace has undulating mound/basin topography. The basins are generally small, less than 5 feet in diameter. Contra Costa goldfields occurred as individuals and small clusters within some of these basins.

The four previously mapped large scattered colonies of Contra Costa goldfields were located again during the 2005 surveys. The four colonies are more accurately mapped as 3 large polygons, 14 smaller polygons, and 1 single plant occurrence. The general locations of the 2005 occurrences are similar to the year 2000 surveys. The relocated occurrences are still within the northwest region of the Barnfield property, south of Cordelia Road and east of Orehr Road. The three large occurrences included an occurrence of roughly 7.7 million plants in a 5.2-acre area; an occurrence of 10,000 plants in a 3.5-acre area; and an occurrence of 3,000 plants scattered in an 8.5-acre area. The 14 smaller polygons vary from as few as 5 plants scattered in a 150 square-foot area to a dense patch of 10,000 plants in a 0.25-acre area.

Although the occurrences of Contra Costa goldfields within the Barnfield property are within the same general area of the property, significant changes in the extent and density of both the large and small polygons were noted. In previous years, the Contra Costa goldfields populations were typically limited to the ecotone of the lower edges of the seasonally saturated annual grassland habitat and the alkaline seasonal marsh habitat. In 2005 the Contra Costa goldfields extended west and up beyond this ecotone into the seasonally saturated annual grasslands and uplands where annual grasslands dominate. Although Contra Costa goldfields did occur in previous years in the more upland sites, the occurrences were limited to small scattered patches within micro depressions. During the high rainfall year of 2005, the plants in the two largest occurrences were scattered more or less continuously throughout the entire mapped polygons on a density gradient from high to low in an east to west direction, i.e., more dense in the east adjacent to the alkali seasonal marsh habitat, and more lightly scattered in the upper annual grassland habitat.

In addition to the increase in density, total extent and habitat location of the larger occurrences, the smaller occurrences of Contra Costa goldfields in 2005 also showed changes from previous years in density of plants per area and habitat. Many of the smaller polygons located in 2005 include a large number of plants in a relatively small total area. These smaller occurrences were often so dense as to obscure the ground. In addition, like the larger occurrences, the small occurrences extended to outside of the seasonal alkali marsh edge and into the seasonally saturated annual grassland.

#### *Delta tule pea*

Delta tule pea is a federal Species of Concern and a CNPS List 1B species. Delta tule pea is a perennial, climbing herb in the legume family (Fabaceae). Delta tule pea occurs in the Sacramento-San Joaquin river delta, from Tule Island in Middle River and Snodgrass Slough to the Carquinez Strait (Southampton Marsh), as well as in Napa River marshes (CNDDDB 2006). Delta tule pea currently occurs in Alameda, Contra Costa, Napa, Sacramento, San Joaquin and Solano counties. Delta tule pea grows in tidally influenced freshwater and brackish marshes, commonly on slough edges and levees. Delta tule pea has been observed co-occurring with, or near other rare plants, such as soft bird's-beak, Mason's lilaeopsis, Suisun Marsh aster, and delta mudwort (*Limosella subulata*). Delta tule pea blooms May through September (Hickman 1993; CNDDDB 2006; CNPS 2006).

The project site contains marginal habitat for Delta tule pea; this species does occur along the slough channels south of the site. Numerous CNDDDB occurrences of this species have been identified within a five-mile radius of the project site (CNDDDB 2006). However, because the project site contains only marginal habitat, Delta tule pea has a low potential to occur. The occurrences are mapped on Figure 4.6-5.

***Gentry and Tooby Properties.*** Delta tule pea was not located on the Gentry and Tooby properties in the 2000 – 2002 or 2005 surveys. Delta tule pea is not expected to occur because the species was not found and because the property does not have any natural slough channels connected to the Suisun Marsh.

***Barnfield Property.*** During the 2000 survey, Delta tule pea was observed in one localized area on the Barnfield Property, at the far southern tip along the eastern bank of Peytonia Slough. This occurrence was estimated to include 400 plants. Delta tule pea was not surveyed for in 2005 because the habitat for this species is well outside the area of project influence.

#### *Saline Clover*

Saline clover is a small, pink-flowered annual in the clover genus (*Trifolium*) of the pea family (Fabaceae). Saline clover is considered a CNPS List 1B species. Saline clover occurs in mesic grasslands and around vernal pools, typically in areas with subalkaline soils. Saline clover occurs in scattered locations throughout the Delta, San Francisco Bay, and Central Coast regions of California. Although saline clover does not have federal status, prior to the surveys on the Gentry property, saline clover was known from only three sites in Solano County. Additional sites in the San Francisco Bay area include one site in Yolo County, four sites in Sonoma County, and two sites in Napa County. Saline clover is threatened by the loss of seasonally

saturated annual grassland and vernal pool habitat. The locations of saline clover on the project area are shown on Figure 4.6-5.

**Gentry Property.** During surveys in 2000 – 2002, one large occurrence of saline clover was observed around the upper margins of the large vernal pool on the Gentry property. The population was estimated at several hundred plants. Sixteen occurrences of saline clover were located during 2005 surveys. The original occurrence located in 2000 was located again during the 2005 surveys. This occurrence is now mapped as seven individual occurrences surrounding the large vernal pool in the eastern region of the Gentry Property. Together these seven mapped points and polygons consisted of approximately 200 plants scattered in a total area of 15,292 square feet, or approximately 0.35 acre. Seven additional occurrences are located in or on the edge of the seasonally saturated grassland habitat in the northwest region of the property. These seven occurrences consist of three occurrences each with a single plant; a small polygon of 15 plants scattered in a 100-square-foot area; 20 plants scattered in a 971-square-foot area; 40 plants scattered in a 1,241-square-foot area; and 100 plants scattered in a 0.69 acre area. Two additional occurrences were located south of the Union Pacific Railroad line in the southern region of the Gentry Property within a weedy (ruderal pasture) annual grassland habitat. One occurrence consisted of 15 plants scattered in a 0.17-acre area and another consisted of 50 plants scattered in a 0.12-acre area. The seven occurrences outside of the large vernal pool and the two occurrences south of the railroad are new occurrences since the 2000 surveys. Saline clover is known to bloom sporadically from year to year based on weather conditions, and is often not present in the same location each year. The increase in number of plants from 2000 to 2005 is therefore to be expected.

**Tooby Property.** Saline clover was not located in the Tooby property during the 2000 – 2002 surveys. Habitat does exist for this species in the seasonally saturated grasslands and seasonal alkali marsh in this property. A total of three occurrences of saline clover were located in the Tooby Property during 2005 surveys. One occurrence of 15 plants in a 100-square-foot area was located in the large vernal pool in the southern region of the property. Two additional occurrences were located in the small vernal pools in the northern region of the property. These include 30 plants in a 231-square-foot area and 5 plants in a 100-square-foot area.

**Barnfield Property.** Saline clover was not located in the Barnfield property during the 2000 – 2002 surveys. In 2005, a total of 40 occurrences of saline clover were located throughout the Barnfield property. Most of the occurrences are located in seasonally saturated annual grasslands in the western region of the property, with minor amounts in nearby upland annual grasslands and a few occurrences were located in the shallow vernal pools in the far northeast region of the property. Together the 40 occurrences total approximately 6,300 plants in a total combined area of 19.04 acres.

Where saline clover is more heavily grazed, the flowers are often less visible and the plants are smaller and take on a more prostrate growth habit. The lack of saline clover occurrences located in the 2000 – 2002 surveys is likely related to the effects of grazing pressure as well as the sporadic nature of its blooming cycle. As described above, saline clover is known to bloom sporadically from year to year based on weather conditions, and is often not present in the same location each year. More importantly, the 2000 – 2002 surveys were focused more heavily on

the two properties proposed for development, the Gentry and Tooby Properties, and less so on the Barnfield Property.

### Plant Species Not Detected During Surveys that May Occur

#### *Brittlescale*

Brittlescale is a federal Species of Concern and a CNPS List 1B species. Brittlescale is a grayish annual herb up to 7.87 inches tall in the goosefoot family (Chenopodiaceae). The range of brittlescale extends from Kern County in the south to Butte and Glenn Counties in the north, and from Alameda County in the west to Madera and Tulare Counties in the east. Brittlescale has been extirpated from Stanislaus County and has not been reported in Sacramento or San Joaquin Counties (Tibor 2001). Brittlescale grows in relatively barren areas with alkaline clay soils within chenopod scrub, meadows, playas, vernal pools, and valley and foothill grassland. Occasionally, it is found in riparian marshes. Atriplex species are somewhat tolerant of disturbance. Brittlescale blooms from May through October, depending on local environmental conditions (Tibor 2001). Habitat destruction due to development, along with cattle grazing and the invasion of exotic species, has probably been the greatest threat to brittlescale in the recent past and present. The management of marshland to increase waterfowl forage is also a threat to the persistence of brittlescale populations (Tibor 2001).

While the project site contains habitat capable of supporting this species, none were found on site. One CNDDDB occurrence was identified within a five-mile radius of the project site near Potrero Hills Landfill (CNDDDB 2006). Based on the known occurrence and the presence of alkaline clay soils, vernal pools, annual grasslands, and riparian marshes at the project site, brittlescale has a high potential to occur at the site.

#### *San Joaquin Spearscale [Saltbush]*

San Joaquin spearscale [saltbush] (*Atriplex joaquiniana*) is a Federal Species of Concern and a CNPS List 1B species. This species is an erect, 4 to 40 inch tall annual herb in the goosefoot family (Chenopodiaceae). San Joaquin saltbush has been historically found in grasslands from Tulare County in the south to Glenn County in the north, and from Monterey County in the west to Tulare County in the east, but is currently believed to be extirpated from Santa Clara, San Joaquin, and Tulare Counties (Tibor 2001).

The species grows in seasonal alkali wetlands and alkali sinks in chenopod scrub, meadows, playas, and valley and foothill grassland, with Mediterranean barley (*Hordeum marinum ssp. gussoneanum*), alkali mallow (*Malvella leprosa*), and other alkali-associated plants. San Joaquin saltbush has been found growing with rare plants such as Contra Costa goldfields (*Lasthenia conjugens*), alkali milkvetch (*Astragalus tener var. tener*), and crownscale (*Atriplex coronata*). San Joaquin saltbush blooms April through October, depending on environmental conditions (Tibor 2001). Threats to San Joaquin saltbush include grazing, agricultural land conversion, and development (Tibor 2001).

The project site contains habitat capable of supporting this species; however, none were found on-site during surveys. Three CNDDDB occurrences have been identified to be located within

five miles of the project site (CNDDDB 2006). Based on the known occurrences and the presence of seasonal alkali wetlands and annual grasslands at the project site, San Joaquin saltbush has a high potential to occur at the project site.

#### *Suisun thistle*

Suisun thistle is federally listed as Endangered and is considered a CNPS List 1B species. Suisun thistle is a perennial herb from the aster family (Asteraceae). Flowers appear between July and September. Suisun thistle grows in the upper reaches of tidal marshes along the edges of brackish sloughs. Two known locations have been identified in the vicinity; one at Grizzly Slough and the other at lower Peytonia Slough.

The project site contains marginal habitat for Suisun thistle; this species does occur along the slough channels south of the site. Four CNDDDB occurrences of this species have been identified within a five-mile radius of the project site (CNDDDB 2006). However, because the project site contains only marginal habitat, Suisun thistle is not likely to occur.

#### *Soft bird's beak*

Soft bird's beak is federally listed as Endangered, is listed rare in California, and is considered a CNPS List 1B species. Soft bird's-beak is an annual herb of the snapdragon family (Scrophulariaceae). Soft bird's beak is widely scattered throughout coastal salt or brackish tidal marshes fringing San Pablo and Suisun Bays, in Contra Costa, Napa, and Solano counties. Generally, this species occurs in coastal salt marsh habitats. Soft bird's-beak is found predominantly in the upper reaches of salt grass/pickleweed marshes at or near the limits of tidal action.

The project site contains marginal habitat for soft bird's beak; this species does occur along the slough channels south of the site. Four CNDDDB occurrences of this species have been identified within a five-mile radius of the project site (CNDDDB 2006). However, because the project site contains only marginal habitat, soft bird's beak is not likely to occur.

#### *Legenere*

Legenere is a CNPS List 1B species. Legenere is found in vernal pools and swales, seasonal marshes, artificial ponds, floodplains of intermittent streams, and other seasonally inundated habitats (Holland 1986; CNDDDB 2006). Wetlands that support legenere are typically inundated for long periods and range in size from slightly more than 40 square feet to 100 acres (Holland 1986; CNDDDB 2004). Surrounding plant communities are usually grasslands. The flowering period for legenere is generally from April through June depending on the depth of the vernal pool or the duration of ponding (CNPS 2001).

The project site contains habitat capable of supporting this species; however, Legenere was not found on-site during surveys. Two CNDDDB occurrences are located within five miles of the project site (CNDDDB 2006). Based on the known occurrences and the presence of vernal pools and seasonally saturated habitat at the project site, legenere has a high potential to occur at the site.

### *Mason's lilaepsis*

Mason's lilaepsis is a federal Species of Concern, is listed rare in California, and is a CNPS List 1B species. Mason's lilaepsis is a small perennial plant in the carrot family (Apiaceae). Generally, this perennial herb occupies fresh and brackish water marshes and riparian scrub habitats (Skinner and Pavlik 1994). This species is semi-aquatic and is usually found on saturated clay soils that are regularly inundated by waves and tidal action (Mayer and Laudenslayer 1988). The known distribution of this plant extends from the margins of the Napa River in Napa County, east to the channels and sloughs of the Sacramento-San Joaquin Delta in Contra Costa, Solano, Sacramento, Yolo, and San Joaquin counties.

The project site contains marginal habitat for Mason's lilaepsis; this species does occur along the slough channels south of the site. Two CNDDDB occurrences are located within a five-mile radius of the project site (CNDDDB 2006). However, because the project site contains only marginal habitat, Mason's lilaepsis not likely to occur.

### *Heartscale*

Heartscale is a federal Species of Concern and a CNPS List 1B species. The flowers are inconspicuous and the plant is most easily identified after flowering. Heartscale occurs in the Central Valley, from Kern County in the south to Butte and Glenn Counties in the north, and from Alameda County in the west to Madera and Tulare Counties in the east. Heartscale is believed to be extirpated from San Joaquin, Stanislaus, and Yolo Counties and has not been reported in Sacramento County (Tibor 2001). The species grows in sandy, saline or alkaline flats, alkaline depressional seasonal wetland, in chenopod scrub, meadows, and valley and foothill grassland. Heartscale has been found growing with or near three other special-status species: dwarf downingia (*Downingia pusilla*), Carquinez goldenbush (*Isocoma arguta*), and legenere (*Legenere limosa*). Heartscale blooms April through October, depending on local environmental conditions (Tibor 2001). Development and conversion to agriculture were the greatest threat to heartscale in the recent past. Presently, grazing is most often cited as a threat to the persistence of heartscale populations (Tibor 2001).

While the project site contains habitat capable of supporting this species, none were found on-site. CNDDDB occurrences have not been identified within a five-mile radius of the project site (CNDDDB 2006). Because of the lack of known occurrence records in the nearby vicinity, heartscale is not likely to occur.

### *Other Special-Status Plant Species*

Other special-status plants were not observed on the project site. The vernal pools provide potential habitat for several special-status plant species listed in Table 4.6-6, such as dwarf downingia (*Downingia pusilla*), Bogg's Lake hedge-hyssop (*Gratiola heterosepala*), and legenere (*Legenere limosa*). Most known occurrences in the region of these species are several miles to the east. None of these species was observed during field surveys. Other vernal pool species listed in Table 4.6-6, including two Orcutt grasses, Colusa grass (*Neostapfia colusana*), and Crampton's tuctoria (*Tuctoria mucronata*), were considered target species during surveys. These two grasses typically occupy large and/or deep vernal pools that remain inundated into the

summer during an average rain year. The large pool in the Gentry property can be considered possible habitat for Colusa grass and Crampton's tuctoria. However, the two Orcutt grasses were not observed in this habitat and are not likely to occupy this habitat or any of the Gentry properties based on the three years of surveys and because this vernal pool is artificially created.

The alkali seasonal wetlands on the project site provide potential habitat for several of the special-status species listed in Table 4.6-6, especially San Joaquin spearscale (*Atriplex joaquiniana*) and other species of saltbush (*Atriplex* spp.). San Joaquin spearscale is known from Travis Air Force Base (a few miles northeast of the property) in habitat similar to that observed on the property (personal observation of J. Vollmar). However, because none of these species was observed during field surveys, they are unlikely to occur on the property.

Several of the species in Table 4.6-6 are associated with marsh habitat along brackish sloughs and bay margins including Suisun thistle (*Cirsium hydrophilum* var. *hydrophilum*), soft bird's-beak (*Cordylanthus mollis* ssp. *mollis*), and Mason's lilaepsis (*Lilaeopsis masonii*). Suisun thistle is known from only two locations, including one along lower Peytonia Slough. Potential habitat for this species exists along the slough channels in the southern portion of the Barnfield property. While this species was not observed during field surveys, Vollmar Consulting indicates that since this species can be cryptic and areas where it might grow were difficult to access, it is possible that this species may be present, but was not observed. Mason's lilaepsis and soft bird's beak are more likely to occur south of the property closer to Grizzly Bay though there is low potential for them to occur along sloughs in the far southern portion of the Barnfield property. As with Suisun thistle, the possibility exists that these species could be present, but Suisun thistle was not seen during field surveys due to the difficulty of accessing this area. However, it should be noted that this area is not proposed for development.

#### *Wildflower Fields*

Three large mapped occurrences of Contra Costa goldfields on the Barnfield property are included within substantial wildflower fields that contain a high cover of wildflower species associated with seasonally saturated grasslands and vernal pools. The wildflower fields are also notable for their lack of introduced annual grasses. In addition to the high cover of Contra Costa goldfields, other common wildflower species include California goldfields, (*Lasthenia californica*), smooth goldfields (*Lasthenia glaberrima*), three varieties of cowbag clover (*Trifolium depauperatum* var. *hydrophilum*, *Trifolium depauperatum* var. *amplectens*, and *Trifolium depauperatum* var. *depauperatum*), variegated clover, (*Trifolium variegatum*), butter and eggs (*Triphysaria eriantha*), little owl's clover (*Triphysaria pusilla*), Valley tassels (*Castilleja attenuata*), Vasey's coyote-thistle (*Eryngium vaseyi*), flat-faced downingia (*Downingia pulchella*), brass buttons (*Cotula coronopifolia*), and stipitate popcorn flower (*Plagiobothrys stipitatus* var. *micranthus*). The native vernal pool grass, California semaphore grass (*Pleuropogon californicus*), is a common associate in the lower depressions within the wildflower fields. Wildflower fields are identified as "sensitive" plant communities by the State of California based on statewide rarity and continuing decline. Occurrences of these communities are included in the CDFG's Natural Diversity Data Base (CNDDDB 2005). The three large polygons mapped as Contra Costa goldfields occurrences are also the boundaries of three wildflower fields present on the Barnfield property.

### Listed and Special-Status Wildlife

Based on a review of the USFWS lists, a records search of the CNDDDB, documents pertaining to the biological resources of the project site, and field surveys, potential habitat for the following special-status wildlife species occurs on the site: These species are described further below.

Based on the analysis provided in Table 4.6-7, the following species were eliminated from further consideration because 1) suitable habitat does not exist at the project site; 2) the project site is outside of their known range, or 3) accepted protocol-level surveys failed to detect the species at the project site. These species include the following:

- Ricksecker's Water Scavenger Beetle (*Hydrochara rickseckeri*)
- Curved-Foot Hygrotus Diving Beetle (*Hygrotus curvipes*)
- California Brown Pelican (*Pelecanus occidentalis californicus*)

**Table 4.6-7  
 Listed and Special-Status Wildlife Species Potentially Occurring on the project Site or in the Vicinity**

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	OCCURRENCE
<b>Invertebrates</b>			
Conservancy Fairy Shrimp ( <i>Branchinecta conservatio</i> )	FE/--	Inhabits large vernal pools, often with turbid water; known from fewer than 15 occurrences in the Delta (Jepson Prairie) and Central Valley.	<b>May occur.</b> Nearest known occurrence several miles to the east (Jepson Prairie). Not likely to occur on the Barnfield property due to a lack of suitable habitat. There was a low potential to occur in larger vernal pools on the Gentry or Tooby properties. Protocol -level wet season (2000) and dry season (2002 and 2005) sampling for vernal pool large Branchiopods was conducted by May Consulting Services and Helm Biological Consulting, respectively. Results were negative, but do not fulfill USFWS requirements. The project site is within an area identified by the HCP as a, "High Value Conservation area." The project site has been designated as Vernal Pool Critical Habitat.
Longhorn Fairy Shrimp ( <i>Branchinecta longiantenna</i> )	FE/--	Inhabits vernal pools; known from fewer than 15 occurrences along western edge of the mid Central Valley (including Contra Costa, Alameda Counties)	<b>Not likely to occur.</b> Nearest known occurrence approximately 50 miles to the south (west of Tracy) in pools on sandstone outcrops. Unlikely to occur on the project site. Protocol level wet season (2000) and dry season (2002 and 2005) sampling for vernal pool large Branchiopods was conducted by May Consulting Services and Helm Biological Consulting, respectively. Results were negative, but do not fulfill USFWS requirements. No local records. The project site is within an area identified by the HCP as a, "High Value Conservation area." The project site has been designated as Vernal Pool Critical Habitat.

**Table 4.6-7  
 Listed and Special-Status Wildlife Species Potentially Occurring on the project Site or in the Vicinity**

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	OCCURRENCE
<b>Invertebrates</b>			
Vernal Pool Fairy Shrimp ( <i>Branchinecta lynchi</i> )	FT/--	Inhabits vernal pools; occurs throughout the Delta and Central Valley.	<b>May occur.</b> Known from sites a couple of miles north and east of the property. Protocol-level wet season (2000) and dry season (2002 and 2005) sampling was conducted by May Consulting Services and Helm Biological Consulting, respectively, due to a moderate potential for this species to occur on the property. Results were negative, but do not fulfill USFWS requirements. The project site is within an area identified by the HCP as a, "High Value Conservation area." The project site has been designated as Vernal Pool Critical Habitat.
Midvalley Fairy Shrimp ( <i>Branchinecta mesovallensis</i> )	FSC/--	Vernal pools, swales, and ephemeral freshwater habitat.	<b>Not likely to occur:</b> Protocol level wet season (2000) and dry season (2002 and 2005) sampling for vernal pool large Branchiopods was conducted by May Consulting Services and Helm Biological Consulting, respectively. Results were negative, but do not fulfill USFWS requirements. No records within 5 miles. The project site is within an area identified by the HCP as a, "High Value Conservation area." The project site has been designated as Vernal Pool Critical Habitat.
Vernal Pool Tadpole Shrimp ( <i>Lepidurus packardii</i> )	FE/--	Inhabits vernal pools; known from scattered locations in the Delta and Central Valley.	<b>May occur.</b> Known CNDDDB records a couple miles east of the project site at Potrero Hill landfill and along Highway 12. Protocol-level wet season (2000) and dry season (2002 and 2005) sampling was conducted by May Consulting Services and Helm Biological Consulting, respectively, due to a moderate potential for this species to occur on the property. Results were negative, but do not fulfill USFWS requirements. The project site is within an area identified by the HCP as a, "High Value Conservation area." The project site has been designated as Vernal Pool Critical Habitat.

**Table 4.6-7  
 Listed and Special-Status Wildlife Species Potentially Occurring on the project Site or in the Vicinity**

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	OCCURRENCE
<b>Invertebrates</b>			
California Linderiella ( <i>Linderiella occidentalis</i> )	FSC/--	Seasonal pools in unplowed grasslands with old alluvial soils underlain by hardpan or in sandstone depressions.	<b>May occur.</b> Protocol level wet season (2000) and dry season (2002 and 2005) sampling for vernal pool large Branchiopods was conducted by May Consulting Services and Helm Biological Consulting, respectively. Results were negative, but do not fulfill USFWS requirements. It is likely this species, if present, would have been detected during this sampling program. Nearby recent records from Laurel Creek, N. of Suisun City, Denverton, and near Travis AFB. The project site is within an area identified by the HCP as a, "High Value Conservation area." The project site has been designated as Vernal Pool Critical Habitat.
California Freshwater Shrimp ( <i>Syncaris pacifica</i> )	FE/CE	Found in low-elevation (less than 53-foot) and low gradient (generally less than 1%) streams. Ideal habitat conditions include streams of 12-36" in depth with exposed live roots of trees such as alder and willow, undercut banks greater than 6" with overhanging woody debris or stream vegetation and vines such as stinging nettles, grasses, and mint.	<b>Not likely to occur.</b> No suitable habitat present at the project site. The portion of LedgeWood Creek traversing the Barnfield property is characterized as perennial brackish marsh. Brackish waters are not considered suitable habitat for California freshwater shrimp. No local records.
San Francisco Lacewing ( <i>Nothochrysa californica</i> )	FSC/--	Found in grassland habitat. Larvae are plant dwelling and feed primarily on aphid and scale insects.	<b>Not likely to occur.</b> Suitable annual grassland habitat is present. One historic (1950) record from Green Valley, no records within 5 miles. Surveys were not conducted for this species.
Sacramento Anthicid Beetle ( <i>Anthicus sacramento</i> )	FSC/--	Prefers well-developed riparian habitat.	<b>Not likely to occur.</b> Well-developed riparian habitat is not present. No records within 5-miles.
Antioch Dunes Anthicid Beetle ( <i>Anthicus antiochensis</i> )	FSC/--	Sandy beach habitat within a few hundred yards of water.	<b>Not likely to occur.</b> No suitable habitat present. No records within 5-miles.

**Table 4.6-7  
 Listed and Special-Status Wildlife Species Potentially Occurring on the project Site or in the Vicinity**

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	OCCURRENCE
<b>Invertebrates</b>			
San Joaquin Dune Beetle ( <i>Coelus gracilis</i> )	FSC/--	Inhabits fossil dunes and sites with other sandy substrates along the western edge of the San Joaquin Valley.	<b>Not likely to occur.</b> No suitable habitat present. No records within 5-miles.
Valley Elderberry Longhorn Beetle ( <i>Desmocerus californicus dimorphus</i> )	FT/--	Inhabits blue elderberry bushes (host plant); restricted to the Central Valley and adjacent foothills.	<b>Not likely to occur.</b> Dependent on blue elderberry as its exclusive host plant. CNDDDB records of elderberry bushes with exit holes along creeks northwest of Fairfield. However, no blue elderberry bushes were observed on the project site, therefore, no potential habitat exists for this species on-site.
Delta Green Ground Beetle ( <i>Elaphrus viridis</i> )	FT/--	Inhabits the drying edges of large vernal pools; presently only known from Jepson Prairie area. They prefer barren areas with an abundance of their favored prey, springtails.	<b>Not likely to occur.</b> CNDDDB records at Jepson Prairie. Unlikely to occur on the project site due to a lack of suitable habitat. Project area boundary is not within designated critical habitat.
Ricksecker's Water Scavenger Beetle ( <i>Hydrochara rickseckeri</i> )	FSC/--	Aquatic beetle that lives in weedy shallow, open water associated freshwater seeps, springs, farm ponds, vernal pools (playa type pools) and slow-moving stream habitats. Occurs in Jepson Prairie preserve in Solano County.	<b>Absent.</b> May Consulting Services conducted dip-net surveys for this species concurrently with surveys for large branchiopods. Survey results were negative. No records within 5 miles of the project site.
Curved-Foot Hygrotus Diving Beetle ( <i>Hygrotus curvipes</i> )	FSC/--	Inhabits small seasonal water bodies, mostly alkaline.	<b>Absent.</b> No CNDDDB records in the vicinity. May Consulting Services conducted dip-net surveys for this species concurrently with surveys for large branchiopods. Survey results were negative.
Monarch Butterfly ( <i>Danaus plexippus</i> ) (wintering sites)		Winter roost sites located in wind-protected tree groves (eucalyptus, Monterey pine, cypress) with nectar and water sources nearby.	<b>Not likely to occur.</b> No suitable habitat for winter roosting sites, none detected during winter surveys. Local records nearby, may occur as transient.

**Table 4.6-7  
 Listed and Special-Status Wildlife Species Potentially Occurring on the project Site or in the Vicinity**

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	OCCURRENCE
<b>Invertebrates</b>			
Callippe Silverspot Butterfly ( <i>Speyeria callippe callippe</i> )	FE/--	Habitat for this species is grassland, often with a significant component of native grasses and characterized by shallow rocky soils and numerous rock outcrops. Suitable grassland habitat may also include ridgelines and hilltops. For grasslands to be considered habitat, the larvae host plant, wild violet ( <i>Viola pedunculata</i> ) needs to be present in sufficient density to support a population of butterflies.	<b>Not likely to occur.</b> No suitable habitat or host plants present. The project site is not within Draft HCP Conservation Area No local records.

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	OCCURRENCE
<b>Fish</b>			
River Lamprey ( <i>Lampetra ayresii</i> )	FSC/--	Spawn in gravel bottomed streams, at the upstream end of riffle habitat, typically above suitable ammocoete habitat. Associated with large river systems such as the Klamath, Eel, and Sacramento Rivers. Beamish (1980) and others noted that production appears concentrated in lower reaches of particular large rivers.	<b>Not likely to occur.</b> No suitable habitat present. Ledgewood Creek is not characteristic of the large river systems River Lampreys are associated with. No local records.
Pacific Lamprey ( <i>Lampetra tridentata</i> )	FSC/--	Spawning takes place in low gradient sections of water, with gravel and sandy bottoms. Historically or recently documented in streams of SF Bay, including: Sonoma Creeks, and the Napa River. This species also occurs in the Sacramento River and tributaries, lower San Joaquin River and many tributaries.	<b>Not likely to occur.</b> No suitable habitat present. No local records.
Green Sturgeon ( <i>Acipenser medirostris</i> )	FPT/CSC	Green Sturgeon relies on streams, rivers, and estuarine habitat as well as marine waters during their lifecycle. They prefer to spawn in lower reaches of large rivers with swift currents and large cobble. They are found spawning in the Sacramento, Klamath and Rogue Rivers.	<b>Not likely to occur.</b> No suitable habitat present. Ledgewood Creek is not characteristic of the large river systems Green Sturgeon are associated with. No local records.
Coho Salmon-Central California Coast Evolutionary Significant Units (ESU) ( <i>Oncorhynchus kisutch</i> )	CE <sup>3</sup> /FE <sup>4</sup>	Coho Salmon spawn in streams that are narrow, shallow, clear, and cold with a strong upwelling of water through the gravel. This ESU encompasses the area from Punta Gorda in northern California south to and including tributaries to San Francisco Bay, excluding the Sacramento-San Joaquin river system.	<b>Not likely to occur.</b> This ESU is not known to occur east of Carquinez Strait. No local records.

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	OCCURRENCE
<b>Fish</b>			
Steelhead-Central California Coastal ESU ( <i>Oncorhynchus mykiss</i> )	FT <sup>5</sup> /--	Steelhead spawn in streams that are shallow, clear, and cold with a strong upwelling of water through the gravel. The ESU encompasses the San Pablo Bay/Napa River watersheds.	<b>May occur.</b> There is the potential for this species to occur within Ledge wood Creek on the Barnfield property. If present, this species will not be directly impacted by the proposed Project development. Ledge wood Creek is not currently known to support breeding/rearing habitat for this ESU. However, it is accessible from Suisun Slough and Steelhead could migrate upstream in search of suitable breeding habitat. No local records.
Steelhead-Central Valley ESU ( <i>Oncorhynchus mykiss</i> ).	FT <sup>6</sup> /--	Steelhead spawn in streams that are shallow, clear, and cold with a strong upwelling of water through the gravel. The ESU encompasses the Suisun Bay/Sacramento River Delta watersheds. Waterways currently known to support breeding/rearing habitat for steelhead in Solano County include Green Valley, Suisun Valley and American Canyon Creeks.	<b>May occur.</b> There is the potential for this species to occur within Ledge wood Creek on the Barnfield property. If present, this species would not be directly impacted by the proposed Project development. Ledge wood Creek is not currently known to support breeding/rearing habitat for this ESU. However, it is accessible from Suisun Slough and steelhead could migrate upstream in search of suitable breeding habitat. No local records.
Chinook Salmon-Central Valley fall/late fall-run ( <i>Oncorhynchus tshawytscha</i> )	FCS/CSC <sup>7</sup>	Chinook Salmon spawn in streams that are shallow, clear, and cold with a strong upwelling of water through the gravel. The ESU includes all naturally spawned populations of fall-run Chinook salmon in the Sacramento and San Joaquin River Basins and their tributaries, east of Carquinez Strait.	<b>May occur.</b> There is the potential for this species to occur within Ledge wood Creek on the Barnfield property. If present it would not be directly impacted by the proposed Project development. Ledge wood Creek is not currently known to support breeding/rearing habitat for this ESU. However, it is accessible from Suisun Slough and Chinook salmon could migrate upstream in search of suitable breeding habitat. No local records.
Chinook Salmon Central Valley spring-run ( <i>Oncorhynchus tshawytscha</i> ).	FT <sup>8</sup> /CT	Chinook salmon choose to spawn in streams that are shallow, clear, and cold with a strong upwelling of water through the gravel. The ESU encompasses the Sacramento River and its tributaries.	<b>May occur.</b> There is the potential for this species to occur within Ledge wood Creek on the Barnfield property. If present, this species will not be impacted by the proposed Project development. Ledge wood Creek is not currently known to support breeding/rearing habitat for this ESU. However, it is accessible from Suisun Slough and Chinook salmon could migrate upstream in search of suitable breeding habitat. No local records.

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	OCCURRENCE
<b>Fish</b>			
Chinook Salmon Winter-Run Sacramento River ( <i>Oncorhynchus tshawytscha</i> )	FE/CE	Chinook Salmon spawn in streams that are shallow, clear, and cold with a strong upwelling of water through the gravel. The ESU includes populations of winter-run Chinook Salmon in the Sacramento River and its tributaries.	<b>May occur.</b> There is the potential for this species to occur within Ledgewood Creek on the Barnfield property. If present, it would not be directly impacted by the proposed Project development. Ledgewood Creek is not currently known to support breeding/rearing habitat for this ESU. However, it is accessible from Suisun Slough and Chinook Salmon could migrate upstream in search of suitable breeding habitat. No local records.
Delta Smelt ( <i>Hypomesus transpacificus</i> )	FT/CT	During spawning they migrate upstream into shallow fresh or slightly brackish tidally-influenced backwater sloughs and ditch edges. In Solano County, Delta Smelt are found in Suisun Bay/Suisun Marsh sloughs and spawn in the Sacramento R. and in Barker, Lindsey, and Cache Sloughs, Montezuma and Suisun Sloughs and their tributaries.	<b>May occur.</b> There is the potential for this species to occur on the Barnfield and Tooby property. If present, it would not be directly impacted by the proposed Project development. The lower reach of Ledgewood Creek on the Barnfield property and a slough that runs through the Barnfield and Tooby property are hydrologically connected to Suisun Slough and may provide suitable spawning habitat. No local records.
Longfin Smelt ( <i>Spirinchus thaleichthys</i> )	FSC/--	Commonly collected from San Francisco Bay, Eel River, Humboldt Bay and Klamath River. As they mature in the fall, adults found throughout San Francisco Bay migrate to brackish or freshwater in Suisun Bay, Montezuma Slough, and the lower reaches of the Sacramento and San Joaquin Rivers. Spawning probably takes place in freshwater.	<b>May occur.</b> There is the potential for this species to occur on the Barnfield and Tooby property. If present, it would not be directly impacted by the proposed Project development. The lower reach of Ledgewood Creek on the Barnfield property and a slough that runs through the Barnfield and Tooby property are hydrologically connected to Suisun Slough and may provide suitable spawning habitat. No local records.

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	OCCURRENCE
<b>Fish</b>			
Sacramento Splittail ( <i>Pogonichthys macrolepidotus</i> )	FSC/CSC	Adults migrate upstream from brackish areas to spawn in freshwater areas subject to flooding, such as lower reaches of rivers, dead end sloughs, and in larger sloughs such as Montezuma Slough. Within Solano County, splittail are year-round residents of Suisun Marsh, concentrating in the dead-end sloughs with small streams feeding into them.	<b>May occur.</b> There is the potential for this species to occur on the Barnfield and Tooby property. If present, it would not be directly impacted by the proposed Project development. The lower reach of Ledgewood Creek on the Barnfield property and Peytonia slough on the Barnfield and Tooby property are hydrologically connected to Suisun Slough and may provide suitable spawning habitat. No records within 5 mi, known from Spring Branch, Goodyear Slough, Denverton Slough and near Ryer Island.

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	OCCURRENCE
<b>Amphibians</b>			
California Tiger Salamander ( <i>Ambystoma californiense</i> )	FT/CSC	Breeds in vernal pools/seasonal stock ponds; occurs in the Central Coast, Delta, and mid Central Valley.	<b>May occur.</b> Records to the northeast at Jepson Prairie. Suitable breeding habitat as well as grassland with multiple burrows occur at the project site. May Consulting Services conducted dip-net surveys concurrently with surveys for large branchiopods. Dip-net surveys included checking for larvae and egg masses. Surveys corresponded with the rainy period when breeding CTS are most likely observed migrating to breeding sites. Survey results were negative. In addition, none of the pools on the Barnfield property appeared to provide high potential habitat as pools were fairly shallow, with no murky water favored by this species. However, these surveys were not conducted according to USFWS protocol.
Western Spadefoot Toad ( <i>Spea (=Scaphiopus) hammondi</i> )	FSC/CSC	Breeds in vernal pools/seasonal stock ponds in the Central Valley and southern coast.	<b>Not likely to occur.</b> No CNDDDB records in vicinity of the property. Nearest recorded occurrences more than twenty miles to the east and south. In addition, May Consulting Services conducted dip-net surveys for this species concurrently with surveys for large branchiopods. Dip-net surveys included checking for larvae and egg masses. Dip-net surveys also corresponded with the rainy period when breeding toads are most likely to be observed migrating to breeding sites. Survey results were negative.

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	OCCURRENCE
<b>Amphibians</b>			
California Red-legged Frog ( <i>Rana aurora draytonii</i> )	FT/CSC	Inhabits freshwater creeks and ponds in the scattered areas along the Coast Ranges from northern California down to northern Baja.	<b>Not likely to occur.</b> There are known occurrences several miles to the northwest near the hills west of Green Valley and near Lake Berryessa. Between the project site and their known range there is extensive development and freeways would prevent them from moving west to east. Therefore, the project site is considered to be outside of the current range of this species. Additionally, non-tidal wetlands are seasonal and do not provide the perennial waters typically required for California Red-legged Frog. However, they are known to occur in brackish channels. The project site is not within Draft HCP Conservation Area.
Foothill Yellow-legged Frog ( <i>Rana boylei</i> )	FSC/CSC	Partly shaded shallow streams with riffles, with a rocky substrate in a variety of habitats; needs at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis. Frogs are usually found on stream banks, especially near riffles. They do not leave the immediate vicinity of their stream or pool.	<b>Not likely to occur.</b> No suitable habitat. Known from tributaries of Ledgewood Creek upstream of the project site. Extensive development and alteration of channels prevents likely dispersal to the project site. The portion of Ledgewood Creek traversing the Barnfield property is characterized as perennial brackish marsh. Brackish marsh habitat is not considered suitable habitat for Foothill Yellow-legged Frog.

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	OCCURRENCE
<b>Reptiles</b>			
Western Pond Turtle ( <i>Clemmys marmorata</i> )	FSC/CSC	Inhabits freshwater ponds and sluggish streams; occurs from WA to Baja, mostly west of the Sierra crest.	<b>May occur.</b> Known from the vicinity by CNDDDB records closer to Suisun Marsh within 3 mi downstream of the project site. Unlikely to occur due to a lack of perennial freshwater. May occur in brackish channels.

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	OCCURRENCE
<b>Reptiles</b>			
California Horned Lizard <i>(Phrynosoma coronatum frontale)</i>	FSC/CSC	Occurs in valley-foothill hardwood, conifer and riparian habitats, as well as pine-cypress, juniper and annual grass habitats. Basks on low boulders or rocks. Periods of inactivity and hibernation spent burrowed in soil under logs or rocks, in mammal burrows or in crevices.	<b>Not likely to occur.</b> No suitable habitat present. The portion of Ledgewood Creek traversing the Barnfield property is characterized as perennial brackish marsh. Brackish marsh habitat is not considered suitable habitat for California horned lizard. No local records.
Silvery Legless Lizard <i>(Anniella pulchra pulchra)</i>	FSC/CSC	Found primarily in areas with sandy or loose organic soils or where there is extensive leaf litter.	<b>Not likely to occur.</b> Suitable habitat of sandy or loose organic soil with leaf litter is not present. No local records.
Alameda Whipsnake <i>(Masticophis lateralis euryxanthus)</i>	FT/CT	Typically found in chaparral. Home ranges of this species are centered on shrub communities, but they venture up to 500 feet into adjacent habitats, including grassland, oak savanna, and occasionally oak-bay woodland. Rock outcrops are an important feature of habitat because they provide retreat opportunities for whipsnakes and promote lizard populations, an important prey item.	<b>Not likely to occur.</b> Chaparral habitat is not present. Outside known range. No records within 5 mi, known from Benecia Quad (location information suppressed).
Giant Garter Snake <i>(Thamnophis gigas)</i>	FT/CT	Uses marshes, sloughs, small lakes, low gradient streams, ponds, agricultural wetlands (irrigation and drainage channels) and adjacent uplands.	<b>Not likely to occur.</b> Not known to occur in Project area. Outside known range. The project site is not within Draft HCP Conservation Area. No local records.

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	OCCURRENCE
<b>Birds</b>			
California Brown Pelican ( <i>Pelecanus occidentalis californicus</i> ) (nesting colony and communal roosts)	FE/CE (CFP)	Found in estuarine, marine, subtidal, and marine pelagic waters along California coast. Nest is a small mound of sticks or debris on rocky or low brushy slopes of undisturbed islands, usually on ground, less often bushes.	<b>Absent.</b> No suitable habitat for a nesting colony or communal roost, or foraging habitat. No local records.
Great Egret (rookery site) ( <i>Ardea alba</i> )	--/CSC	Forms rookeries in large tree stands; occurs throughout California and elsewhere.	<b>Not likely to occur (Nesting).</b> Rookeries unlikely on the project site due to low numbers of suitable trees, none observed or known from brackish channels. Likely forages at the project site.
Great Blue Heron (rookery site) ( <i>Ardea herodias</i> )	--/CSC	Forms rookeries in large tree stands; occurs throughout California and elsewhere.	<b>Not likely to occur (Nesting).</b> Rookeries unlikely on the project site due to low numbers of suitable trees, none observed or known from brackish channels or on power towers. Likely forages at the project site.
American Bittern ( <i>Botaurus lentiginosus</i> )	FSC/--	Usually hides, nests and roosts solitarily amidst tall, dense, emergent vegetation on ground or near ground on log or stump. Feeds in tall, fresh or saline emergent wetlands; less often in adjacent shallow water of lakes, backwaters of rivers or estuaries, and occasionally along adjacent shores.	<b>Present.</b> American Bittern was observed in the northeast portion of the project site during the nesting season. This portion of the project site provides potentially suitable nesting habitat.
White-faced Ibis ( <i>Plegadis chihi</i> ) (rookery site)	FSC/CSC	Does not breed regularly in California. Winters mainly in San Joaquin Valley and Imperial Valley, but recorded widely as transient. Feeds in fresh emergent wetlands, shallow lacustrine waters and muddy ground of wet meadows or flooded pastures.	<b>Not likely to occur (Nesting).</b> Rookeries unlikely on the project site due to low numbers of suitable trees, none observed or known from brackish channels. Likely forages at the project site.
Cooper's Hawk ( <i>Accipter cooperii</i> ) (nesting)	CSC	Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms, on river floodplains; also nests in oaks.	<b>Present.</b> An adult detected by Foothill Associates on February 6, 2006. Limited potential nesting area at the project site, mainly in small riparian area in Planning Area 2.

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	OCCURRENCE
<b>Birds</b>			
Sharp-shinned Hawk ( <i>Accipter striatus</i> ) (nesting)	CSC	Forages in wooded areas, including suburban areas and riparian woodland.	<b>Not likely to occur (Nesting).</b> Suitable habitat for foraging and roosting in winter, project site is not within known nesting range.
Ferruginous Hawk ( <i>Buteo reglais</i> ) (wintering)	FSC/CSC	Inhabits open country. Winters in small numbers along California coast and inland valleys.	<b>May occur.</b> The species may occasionally use the project site as a winter foraging habitat.
Swainson's Hawk (nesting) ( <i>Buteo swainsoni</i> )	--/CT	Nests in trees and riparian stands; summer migrant to Central Valley.	<b>Not likely to occur (Nesting).</b> CNDDDB nest records primarily indicate this species nests several miles north and northeast of the project site. One nest record occurs 3.4 miles west/southwest of the Project area. Nests unlikely on the property due to a lack of suitable trees. Use of the project site for foraging is possible. The project site is not within Draft HCP Conservation Area.
Northern Harrier ( <i>Circus cyaneus</i> ) (nesting)	--/CSC	Forages and nests in grasslands, marshes, and agricultural fields; occurs throughout California, concentrated in the Central Valley and coastal valleys.	<b>Present (Nesting possible).</b> Observed on-site during the nesting season by HBG. Vollmar Consulting and Foothill Associates also observed individuals foraging over the perennial marsh and grassland habitats on the Barnfield and Gentry, and Tooby sites. High potential for nest sites on the Barnfield property; moderate potential on the Tooby property in perennial marsh habitat.
White-tailed Kite ( <i>Elanus leucurus</i> ) (nesting)	FSC/ (CFP)	Nests in dense oaks, willows, other trees; occurs in the Central Valley and adjacent low foothills.	<b>Present (Nesting).</b> Observed during surveys. Limited suitable nesting habitat at the project site.
Bald Eagle ( <i>Haliaeetus leucocephalus</i> ) (nesting and wintering)	FT/CE CFP (FPD)	In winter, maybe be found throughout most of California at lakes, reservoirs, rivers and some rangelands and coastal wetlands. California's breeding habitats are mainly located in mountains and foothill forests near permanent water sources.	<b>Not likely to occur.</b> No suitable habitat present, no local records. Transients possible.

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	OCCURRENCE
<b>Birds</b>			
American Peregrine Falcon ( <i>Falco peregrinus anatum</i> )	FD, CE, CFP	Nests on cliffs, but will use ledges on human-made structures such as buildings and bridges. Resident nesting population augmented in winter by migratory population. Forages in areas of high bird concentrations in open fields and marshes.	<b>Not likely to occur.</b> Suitable foraging habitat and prey species. No suitable nesting site on or adjacent to the project site.
California Black Rail ( <i>Laterallus jamaicensis coturniculus</i> )	FSC/CT (CFP)	Inhabits tidal salt and brackish marsh bordering sloughs and large bays.	<b>May occur.</b> Moderate potential on Tooby property in perennial marsh. Likely on Barnfield property. CNDDDB records for sloughs along edge of Suisun Bay. The perennial marsh habitat on the eastern portion of the Tooby property provides low to medium quality foraging and nesting habitat for the species. On the Barnfield property, limited vocalization surveys were conducted in March, June and July 2000 by Vollmar Consulting. Surveys were conducted within perennial brackish marsh along larger slough channels in the southern portion of the property. Though not detected during informal surveys, the species is likely to occur along slough channels with dense perennial marsh habitat in the southern portion of the property. May use limited suitable habitat on elsewhere on the property as high tide refuge and occasional foraging habitat.
California Clapper Rail ( <i>Rallus longirostris obsoletus</i> )	FE/CE (CFP)	Inhabits tidal salt marsh along larger sloughs and bays in the SF Bay and lower Delta.	<b>May occur.</b> CNDDDB records from within 2 mi south and east of the property in perennial marsh along the edge of Suisun Bay. Generally occurs closer to edge of Suisun Bay. May occur in suitable habitat on the Barnfield property. May use limited suitable habitat on elsewhere on the property as high tide refuge.

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	OCCURRENCE
<b>Birds</b>			
Greater Sandhill Crane ( <i>Grus axillarie tabida</i> ) (nesting and wintering)	--/CT (CFP)	Breeds in NE California. In summer, occurs in or near wet meadow, shallow lacustrine and fresh emergent wetland habitats. Winters primarily in the Sacramento and San Joaquin valleys from Tehama County south to Kern County, where it frequents grassland habitats, moist croplands, with rice or corn stubble, and open, emergent wetlands.	<b>Not likely to occur.</b> No suitable habitat present. No local records.
Western Snowy Plover ( <i>Charadrius alexandrinus nivosus</i> ) (nesting) (coastal population)	FT/CSC	In the San Francisco Estuary, salt pond levees and exposed salt pond beds (playa-like habitat), San Francisco Bay; rare in San Pablo Bay. Typical coastal habitat is on wide, sandy beaches with scattered debris.	<b>Not likely to occur.</b> Appropriate nesting habitat is not present on the project site. No local records.
Mountain Plover ( <i>Charadrius montanus</i> ) (wintering)	FSC/CSC	Winters in shortgrass plains, plowed fields, arid plains, alkali sink scrub, valley sink scrub, alkali playa, burned and annual grasslands, and open sagebrush areas that are barren or have sparse vegetation. Wintering plovers found in variable elevations but generally in valley bottoms below 300 meters.	<b>Not likely to occur.</b> Although Mountain Plovers winter in Solano County (e.g. area around Flannery and Robinson Roads) this species has not been reported as wintering in Project area. Habitat conditions at the project site are not likely to support wintering populations of Mountain Plover. Not reported from local area.
Marbled Godwit ( <i>Limosa fedoa</i> )	FSC/--	A common to abundant migrant and winter visitor from mid-August to early May in estuarine habitats the length of the state. Small numbers of non-breeders remain on the coast through the summer. Occurs in estuarine mudflats, sandy beaches, open shores, saline emergent wetlands, and adjacent wet upland fields.	<b>Not likely to occur.</b> Project site is outside of nesting range for the species. Wintering populations are more common coastally in the San Francisco Bay Region. May occur in migration and winter at wet and ponded areas.

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	OCCURRENCE
<b>Birds</b>			
Whimbrel ( <i>Numenius phaeopus</i> )	FSC/--	Fairly common to abundant as a spring migrant. Less common, but still numerous in fall migration. Absent, or very rare, in winter on the northern California coast and in the interior part of the state. Small numbers of non-breeders occur through the summer. Forages in wet meadow and pasture habitats adjacent to the Coast.	<b>Not likely to occur.</b> Project site is outside of nesting range for the species. Wintering populations are more common coastally in the San Francisco Bay Region. May occur in migration and winter at wet and ponded areas.
Red Knot ( <i>Calendris canutus</i> )	FSC/--	Does not breed in California. Uncommon to common during fall and spring migrations along coastal estuarine habitats. Prefers estuarine sand or mudflats. In winter, rare along California coast except at San Francisco and San Diego bays.	<b>Not likely to occur.</b> Project Site is outside of the breeding range for the species. Wintering populations are more common coastally in the San Francisco Bay Region. May occur in migration and winter at wet and ponded areas.
Long-billed Curlew ( <i>Numenius americanus</i> ) (nesting)	FSC/CSC	Breeds in northeastern California. Uncommon to locally very common as a winter visitant along most of the California coast and inland. Preferred winter habitats include large coastal estuaries, upland herbaceous areas, and croplands. Small numbers of nonbreeders remain on coast and in the Central Valley.	<b>Present</b> (no nesting). The Project area is not within the nesting range of the species. Observed in February 2006 on Barnfield Property and by HBG on June 11, 2005. The latter individuals were likely non-breeders lingering through the summer months.
Black Skimmer ( <i>Rynchops niger</i> ) (nesting colony)	FSC/CSC	Few nesting records from central CA, most in south SF Bay. Nests primarily on gravel bars, low islets, and sandy beaches in unvegetated sites. Requires shallow, calm water for foraging, and sand bars, beaches or ditches for roosting and nesting.	<b>Not likely to occur.</b> No suitable for a nesting colony of this species. No local records of nesting.
California Least Tern ( <i>Sterna antillarum browni</i> ) (nesting colony)	FE/CE (CFP)	Nests on coastal, sandy, open areas usually around bays, estuaries, and creek and river mouths. Forages in shallow estuaries and lagoons, diving head first into the water after a wide variety of small fish.	<b>Not likely to occur.</b> No suitable for a nesting colony of this species. No local records of nesting. Nearest colonies in Pittsburg and Port Chicago Marsh.

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	OCCURRENCE
<b>Birds</b>			
Short-eared Owl (nest site) <i>(Asio flammeus)</i>	--/CSC	Forages and nests in perennial marsh and grassland habitat; occurs in the Central Valley, coast, and east Sierra regions.	<b>May occur.</b> Moderate potential to occur. CNDDDB nest site records at Grizzly Island Wildlife Area. This species was not observed at the project site, however, the perennial brackish marsh on the eastern portion of the study area provides potential foraging and nesting habitat for the species. The annual grassland and wetland habitats on the rest of the project site generally not considered suitable habitat.
Western Burrowing Owl <i>(Athene cunicularia hypugea)</i> (burrow sites)	--/CSC	Nests in mammal burrows, rock cavities in grassland and scrub; occurs throughout much of mid and lower California.	<b>Present.</b> Two adults and an active burrow were detected by Foothill Associates on February 6, 2006 on the Gilbert Property. Numerous CNDDDB records in vicinity including one just southwest of the property next to the Cordelia Road. Many potential nesting burrows on the property along levee banks and other raised areas that do not become saturated during the winter and spring as are found adjacent to Planning Area 3 and elsewhere on project site.
Vaux's Swift <i>(Chaetura vauxi)</i> (nesting)	FSC/CSC	A summer resident of northern California. Breeds fairly commonly in the Coast Ranges from Sonoma County, and very locally south to Santa Cruz County; in the Sierra Nevada; and possibly in the Cascade Range. Prefers redwood and Douglas-fir habitats with nest sites in large hollow trees and snags.	<b>Not likely to occur</b> (Nesting). Suitable nesting habitat is not present. Likely observed overhead as a transient during migration. No stopover roosting habitat.
Black Swift <i>(Cypseloides niger)</i> (nesting)	FSC/CSC	Nests in moist crevice or cave on sea cliff above the surf, or on cliffs behind, or adjacent to, waterfalls in deep canyons. Forages widely over many habitats. In migration, rare and irregular outside the breeding range. Does not winter in California.	<b>Not likely to occur</b> (Nesting). Suitable nesting habitat is not present. In rare cases, may be observed overhead as a transient during migration. No stopover roosting habitat.

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	OCCURRENCE
<b>Birds</b>			
Rufous Hummingbird <i>(Selasphorus rufus)</i> (nesting)	FSC/--	A common migrant and uncommon summer resident in California. Found in a wide variety of habitats that provide nectar-producing flowers; uses valley foothill hardwood valley foothill hardwood conifer, riparian, and various chaparral habitats in both northward and southward migration; montane riparian, aspen and high mountain meadows used in southward migration.	<b>Not likely to occur</b> (Nesting). No suitable nesting habitat. May pass through the project site on migration.
Allen's Hummingbird <i>(Selasphorus sasin)</i> (nesting)	FSC/--	A common summer resident and migrant along most of the California coast. Breeders are most common in coastal scrub, valley foothill hardwood, and valley foothill riparian habitats, but also are common in closed-cone pine-cypress, urban, and redwood habitats. Occurs in a variety of woodland and scrub habitats as a migrant.	<b>Not likely to occur</b> (Nesting). Suitable nesting habitats for this species are not found at the project site. May pass through the project site on migration.
Lewis' Woodpecker <i>(Melanerpes lewis)</i> (nesting)	FSC/--	Requires open habitats with scattered trees and snags with cavities. Cover provided by cavities and foliage of trees and shrubs. Usually nests in Sycamore, Cottonwood, Oak or Conifer.	<b>Not likely to occur</b> (Nesting). No suitable nesting habitat. No local records.
Nuttall's Woodpecker <i>(Picoides nuttallii)</i>	SLC	A common permanent resident of low-elevation riparian deciduous and oak habitats. Nests located mostly in riparian habitat in dead (occasionally live) trunk or limb of willow, sycamore, cottonwood, or alder, rarely in oaks.	<b>May occur.</b> Suitable trees for nesting are not found at the project site. The species likely nests in the general area and the species could use limited riparian habitats at the project site for foraging.

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	OCCURRENCE
<b>Birds</b>			
Olive-sided Flycatcher ( <i>Contopus cooperi</i> ) (nesting)	FSC/--	Uncommon to common, summer resident in a wide variety of forest and woodland habitats below 2,800 meters throughout California. Requires large, tall trees, usually conifers, for nesting and roosting sites.	<b>Not likely to occur</b> (Nesting). Appropriate nesting habitat is not present.
Little Willow Flycatcher ( <i>Empidonax traillii brewsteri</i> ) (nesting)	FSC	Nests in shrubby riparian vegetation with some surface water or saturated soil conditions.	<b>Not likely to occur</b> (Nesting). Appropriate nesting habitat is not present. No local breeding records.
Loggerhead Shrike ( <i>Lanius ludovicianus</i> ) (nesting)	FSC/CSC	Habitat includes open areas such as desert, grasslands, and savannah. Nests in thickly foliated trees or tall shrubs. Forages in open habitat which contains trees, fence posts, utility poles and other perches.	<b>Present.</b> Observed by HBG in June 2005. Biologists from Vollmar Consulting also observed a single loggerhead shrike perched on a fence line along the western edge of the Tooby property in May 2000. Shrikes probably use the project site for foraging and perching. It is unlikely this species nests on-site due to a general lack of suitable habitat, but some nest sites are available in limited riparian habitat in Planning Area 2 and the Gilbert Property, as well as shrubs adjacent to the project site.
Bank Swallow ( <i>Riparia riparia</i> ) (nesting)	--/ST	A migrant in riparian and other lowland habitats west of the deserts. Uncommon and local summer resident, most of the breeding population in California along banks of Central Valley streams. Feeds over open riparian areas, brushland, grassland and cropland.	<b>Not likely to occur</b> (Nesting). Appropriate nesting habitat is not present on the project site.
Oak Titmouse ( <i>Baeolophus inornatus</i> ) (nesting)	FSC/SLC (nesting)	Oak and pine-oak woodland, chaparral and oak-riparian communities.	<b>Not likely to occur</b> (Nesting). Suitable nesting habitat is not present on the project site.
California Thrasher ( <i>Toxostoma redivivum</i> )	FSC/--	Common resident of foothills and lowlands in Cismontane California. Locally uses dense cover of chaparral or riparian thickets	<b>Not likely to occur.</b> No suitable habitat present.

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	OCCURRENCE
<b>Birds</b>			
Saltmarsh Common Yellowthroat ( <i>Geothlypis trichas sinuosa</i> )	FSC/CSC	Forages and nests in dense fresh and saltwater marsh habitat in the San Francisco Bay and lower Delta.	<b>Present.</b> Observed in dense perennial brackish marsh on the Barnfield property by HBG in June 2005 Also observed in the same area by Vollmar Consulting. Observed in brackish channels by Foothill Associates in February 2006. Probably also occasionally present in dense perennial marsh habitat along the eastern edge of the Tooby property. May nest in suitable emergent wetland vegetation.
Suisun Song Sparrow ( <i>Melospiza melodia axillaries</i> )	FSC/CSC	Forages and nests in dense marsh and scrub habitat along the margins of Suisun Bay.	<b>Present.</b> Observed by HBG in June 2005 foraging in the dense perennial marsh habitat on the Tooby and Barnfield properties. CNDDDB records south of the property along edge of Suisun Bay. Suisun song sparrows were also observed by biologists from Vollmar Consulting in April/May 2000. May also use the site for nesting.
San Pablo Song Sparrow ( <i>Melospiza melodia samuelis</i> )	FSC/CSC	Tidal, brackish or salt marshes, San Pablo Bay.	<b>Not likely to occur.</b> Site is outside the limited range of this species. Historic (1901) location in Selby.
Tricolored Blackbird ( <i>Agelaius tricolor</i> ) (nesting colony)	FSC/CSC	Nests in cattails, riparian scrub, and other dense marsh vegetation; occurs in SF Bay, Delta, and Central Valley basin.	<b>May occur.</b> Historic CNDDDB records several miles east of the study site. This species was not observed, however, there is a moderate potential to occur in dense perennial marsh on the property and forage with large blackbird flocks in grassland throughout the year, particularly in winter.
Lawrence's Goldfinch ( <i>Carduelis lawrencei</i> ) (nesting)	FSC/--	Breeds in open oak or other arid woodland and chaparral, near water.	<b>Not likely to occur</b> (Nesting). Suitable not present. No local records

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	OCCURRENCE
<b>Mammals</b>			
Suisun Shrew ( <i>Sorex ornatus sinuosus</i> )	FSC/CSC	Inhabits tidal marshes along the northern shores of San Pablo and Suisun Bays.	<b>May occur.</b> CNDDDB record immediately east of the Barnfield property. Likely to occur within perennial marsh on Tooby and Barnfield properties.
Pacific Western Big-eared Bat ( <i>Corynorhinus townsendii townsendii</i> )	FSC/CSC	Found in desert scrub and coniferous forests. Roost in caves or abandoned mines and occasionally are found to roost in buildings.	<b>Not likely to occur.</b> No suitable roost/maternity habitat. No local records.
Small-footed Myotis Bat ( <i>Myotis ciliolabrum</i> )	FSC/--	Occurs in a wide variety of habitats, primarily in relatively arid wooded and brushy uplands near water. Seeks cover in caves, buildings, mines, crevices, and occasionally under bridges and under bark. Maternity colonies of females and young are found in buildings, caves and mines. Prefers open stands in forests and woodlands as well as brushy habitats.	<b>Not likely to occur.</b> No suitable roost/maternity habitat. No local records. May forage over site.
Long-Eared Myotis Bat ( <i>Myotis evotis</i> )	FSC/--	Widespread in California, but uncommon in most of its range. This species has been found in nearly all brush, woodland and forest habitats, from sea level to at least 2,700 meters, but coniferous woodlands and forests seem to be preferred. Roosts in buildings, crevices, spaces under bark and snags. Caves primarily used as night roosts. Nursery colonies found in buildings, crevices, snags and behind bark.	<b>Not likely to occur.</b> No suitable roost/maternity habitat. No local records.
Fringed Myotis Bat ( <i>Myotis thysanodes</i> )	FSC/--	Occurs in a wide variety of habitats. Optimal habitats are pinyon-juniper, valley foothill hardwood, and hardwood conifer generally at 1,300-2,200m. Roosts in caves, mines, buildings and crevices. Maternity colonies of up to 200 individuals are located in caves, mines, buildings or crevices.	<b>Not likely to occur.</b> No suitable roost/maternity habitat. No local records.

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	OCCURRENCE
<b>Mammals</b>			
Long-legged Myotis Bat ( <i>Myotis volans</i> )	FSC/--	Most common in woodland and forest habitats above 1200m. Also forages in chaparral, Coastal scrub and in early successional slopes of woodlands and forests. Roosts in rock crevices, buildings, under tree bark, in snags, mines, and caves. Forms nursery colonies numbering hundreds of individuals, usually under bark or in hollow trees, but occasionally in crevices or buildings.	<b>Not likely to occur.</b> No suitable roost/maternity habitat. No local records.
Yuma Myotis Bat ( <i>Myotis yumanensis</i> )	FSC/CSC	Closely associated with water; always found near lakes, creeks or ponds. Skims over water to forage for flying insects. By day, roosts under building siding or shingles. Nursery colonies use caves, mines, buildings and under bridges.	<b>Not likely to occur.</b> No suitable roost/maternity habitat. No local records. May forage over the project site.
Greater Western Mastiff Bat ( <i>Eumops perotis californicus</i> )	FSC/CSC	Uncommon resident in Southeastern San Joaquin Valley and Coastal Ranges from Monterey County southward through southern California, from the coast eastward to the Colorado Desert. Occurs in many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub, and urban. Crevices in cliff faces, high buildings, trees or tunnels are required for roosting.	<b>Not likely to occur.</b> No suitable roost/maternity habitat. No local records.
San Joaquin Pocket Mouse ( <i>Perognathus inornatus</i> )	FSC/CSC	Occurs in dry, open grasslands or scrub areas on fine-textured soils between 350 and 600 meters in the Central and Salinas Valleys occurs in shrubby ridge tops and hillsides, characterized as being open, sandy areas with grasses and forbs. Digs burrows for cover.	<b>Not likely to occur.</b> No suitable roost/maternity habitat. No records within 5 mi.

SCIENTIFIC NAME	STATUS <sup>2</sup>	HABITAT/RANGE	OCCURRENCE
<b>Mammals</b>			
Salt Marsh Harvest Mouse <i>(Reithrodontomys raviventris)</i>	FE/CE (CFP)	Inhabits pickleweed salt marsh flats in the SF Bay and lower Delta.	<b>Present.</b> CNDDDB records an occurrence of the species in the perennial marsh habitat on eastern edge of the Tooby property. This area supports localized homogenous stands of pickleweed. Presumed to be still present. There are also a number of small pickleweed stands on the Barnfield property near the railroad tracks. Given the close proximity to the known location, it is likely the species occurs on the Barnfield property, as well.

<sup>1</sup> Sources of information included CDFG's California Natural Diversity Data Base for the Fairfield North, Fairfield South, Denverton and Elmira 7.5 minute USGS quadrangles (CNDDDB 2006), special-status species lists and technical reports prepared by Vollmar Consulting for other projects in the vicinity, United States Fish and Wildlife Service (USFWS) lists of federal endangered and threatened species that occur in or may be affected by projects in Solano County or in the Fairfield South USGS 7.5 minute Quadrangle.

<sup>2</sup> Status Codes:

FE	Federally Endangered	CE	California Endangered
FT	Federally Threatened	CT	California Threatened
FPE	Federally Proposed Endangered	CR	California Rare
FPT	Federally Proposed Threatened	CFP	California Fully Protected
FSC	Federal Species of Concern (most are former C2 Candidates and some former C1)	CSC	California Species of Special Concern
FD	Federal Delisted	SLC	Species of Local Concern – other species of concern to the Sacramento Fish and Wildlife office

<sup>3</sup> The state listing is limited to Coho south of San Francisco Bay.

<sup>4</sup> The Federal listing is limited to naturally spawning populations in streams between Punta Gorda, Humboldt County and the San Lorenzo River, Santa Cruz County.

<sup>5</sup> Federal listing includes all runs in coastal basins from the Russian River in Sonoma County, south to Soquel Creek in Santa Cruz County, inclusive. Includes the San Francisco and San Pablo Bay basins, but excludes Sacramento-San Joaquin River basins.

<sup>6</sup> Federal listing includes all runs in the Sacramento and San Joaquin Rivers and their tributaries.

<sup>7</sup> Refers to population spawning in the Sacramento and San Joaquin Rivers and their tributaries.

<sup>8</sup> Federal listing refers to Central Valley Spring-run ESU. It includes population spawning in the Sacramento River and its tributaries.

Based on the analysis provided in Table 4.6-7, the following species were eliminated from further consideration because 1) there are no local records in similar habitat; 2) they are not likely to occur at the site due to the poor or marginal quality of habitat, presence of non-native predators, recurring mowing or discing, 3) they are only migrants in the area, or 4) while they may occasionally use the site for foraging, they are not likely to be resident or reproduce at the site due to a lack of appropriate habitat or the site being outside of their known breeding range. These species include:

- Longhorn Fairy Shrimp
- Midvalley Fairy Shrimp
- California Freshwater Shrimp
- San Francisco Lacewing
- Sacramento Anthicid Beetle
- Antioch Dunes Anthicid Beetle
- San Joaquin Dune Beetle
- Valley Elderberry Longhorn Beetle
- Delta Green Ground Beetle
- Monarch Butterfly
- Callippe Silverspot Butterfly
- River Lamprey
- Pacific Lamprey
- Green Sturgeon
- Coho Salmon-Central California Coast ESU
- Western Spadefoot Toad
- California Red-legged Frog
- Foothill Yellow-legged Frog
- California Horned Lizard
- Silvery Legless Lizard
- Alameda Whipsnake
- Giant Garter Snake
- Great Egret
- Great Blue Heron
- White-faced Ibis
- Sharp-shinned Hawk
- Swainson's Hawk
- Bald Eagle
- American Peregrine Falcon
- Greater Sandhill Crane
- Western Snowy Plover
- Mountain Plover Marbled Godwit
- Whimbrel
- Red Knot
- Long-billed Curlew
- Black Skimmer

- California Least Tern Vaux's Swift
- Black Swift
- Rufous Hummingbird
- Allen's Hummingbird
- Lewis' Woodpecker
- Olive-sided Flycatcher
- Little Willow Flycatcher
- Bank Swallow
- Oak Titmouse
- California Thrasher
- San Pablo Song Sparrow
- Lawrence's Goldfinch
- Pacific Western Big-eared Bat
- Small-footed Myotis Bat
- Long-Eared Myotis Bat
- Fringed Myotis Bat
- Long-legged Myotis Bat
- Yuma Myotis Bat
- Greater Western Mastiff Bat
- San Joaquin Pocket Mouse

The following species was eliminated from further consideration because while this species is included in special animals' lists (CDFG 2005), special regulatory protection was not provided for this species. Protection of nesting habitat will be discussed in the section on *Migratory and Resident Nesting Birds*, below.

- Nuttall's Woodpecker

Based on field observations and literature review specific to the special-status animals listed in Table 4.6-7, the potential for occurrence has been determined for each species. These species will be discussed further below. Species that are present or may occur in the project area include:

- Conservancy Fairy Shrimp
- Vernal Pool Fairy Shrimp
- Vernal Pool Tadpole Shrimp
- California Linderiella
- Steelhead-Central California Coastal ESU
- Steelhead-Central Valley ESU
- Chinook Salmon-Central Valley fall/late fall-run
- Chinook Salmon Central Valley spring-run
- Chinook Salmon Winter-Run Sacramento River
- Delta Smelt
- Longfin Smelt

- Sacramento Splittail
- California Tiger Salamander
- Western Pond Turtle
- American Bittern
- Cooper's Hawk
- Ferruginous Hawk
- Northern Harrier
- White-tailed Kite
- California Black Rail
- California Clapper Rail
- Short-eared Owl
- Western Burrowing Owl
- Loggerhead Shrike
- Saltmarsh Common Yellowthroat
- Suisun Song Sparrow
- Tricolored Blackbird
- Suisun Shrew
- Salt Marsh Harvest Mouse

#### Threatened and Endangered Species Present or that May Occur at the Project Site

##### *Conservancy Fairy Shrimp (Branchinecta conservatio)*

The Conservancy fairy shrimp (*Branchinecta conservatio*) was listed as federally endangered in September 1994 (59 FR 48153). The Conservancy fairy shrimp is a small crustacean in the Branchinectidae family. Conservancy fairy shrimp are believed to have occurred historically throughout the Central Valley of California. This species inhabits lake-sized vernal pools (often called playa pools) that have turbid water. The pools at Jepson Prairie and Vina Plains inhabited by the Conservancy fairy shrimp have neutral pH, very low conductivity, total dissolved solids and alkalinity. Fairy Shrimp are not known to occur in permanent bodies of water, and are dependent upon seasonal fluctuations in their habitat, such as the absence or presence of water during specific times of the year.

Conservancy fairy shrimp are known primarily from the Jepson Prairie area within Solano County, including the Jepson Prairie Preserve and the potential Muzzy and Gridley mitigation banks. Additional records of the Conservancy fairy shrimp are from the large vernal pools lying along the base of the Potrero hills and one location near Collinsville. Suitable large pool habitat is also present in northeast Fairfield, north of Travis Air Force Base although the Conservancy fairy shrimp has yet to be documented there. (Draft Solano Multispecies Habitat Conservation Plan and Natural Community Conservation Plan, Appendix B, 2005). The project site is within an area designated as a "High Value Conservation Area" for vernal pools by the *Draft Solano Multispecies Habitat Conservation Plan* (LSA Associates 2005).

One wet and two dry season samplings were conducted for special-status vernal pool crustaceans (vernal pool tadpole shrimp, vernal pool fairy shrimp, and Conservancy fairy shrimp). Complete methods and details can be found in these reports and summarized in Huffman-Broadway (2006)

which can be found in Appendix G to the Draft EIR. The wet season survey was conducted in 2000 and the dry season surveys were conducted in the late fall of 2002 and late fall of 2005. The results of all three surveys were negative. The USFWS has indicated that protocol surveys must be conducted in two consecutive years and results are valid for five years. The surveys conducted in 2000 and 2002 were not during two consecutive years and it has been more than five years since the 2000 wet season surveys. The dry-season survey of 2005 would require a wet-season survey in 2006 in order to be considered a complete survey in accordance USFWS protocol. If present, project activities could impact this species.

*Vernal Pool Fairy Shrimp (Branchinecta lynchi)*

The vernal pool fairy shrimp (*Branchinecta lynchi*) is a small aquatic crustacean that ranges in size from ½ to one inch long. The vernal pool fairy shrimp is federally listed as a threatened species. Fairy Shrimp feed on algae, bacteria, protozoa, rotifers and bits of detritus. The vernal pool fairy shrimp occupies a variety of different vernal pool habitats, from small, clear, sandstone rock pools to large, turbid, alkaline, grassland valley floor pools. The vernal pool fairy shrimp tends to occur in smaller pools (less than 0.05-acre) that are most commonly found in grass or mud bottomed swales, or basalt flow depression pools in unplowed grasslands. Vernal pool fairy shrimp has also been collected in large vernal pools (e.g. 25 acres). Vernal pool fairy shrimp have been collected from early December to early May (USFWS 2005).

Vernal pool fairy shrimp populations are presently known from 32 localities in California, extending from Stillwater Plain in Shasta County through most of the length of the Central Valley to Pixel in Tulare county, and along the central coast range from northern Solano county to Pinnacles national Monument in San Benito County. Four other disjunct populations are located near Soda Lake in San Luis Obispo county, in the mountain grasslands of northern Santa Barbara county, on the Santa Rosa Plateau in Riverside County, and near Rancho California in Riverside County. Vernal pool fairy shrimp mature quickly and can both persist in short-lived shallow pools and longer lasting pools that remain later in the spring. This species inhabits pools with clear to tea-colored water, most commonly in grass or mud bottomed swales, or basalt flow depression pools in unplowed grasslands, but sometimes in sandstone rock outcrops and alkaline vernal pools. The water in these pools has low total dissolved solids, conductivity, alkalinity, and chloride. The project site is within an area designated as a, “High Value Conservation Area” for vernal pools by the *Draft Solano Multispecies Habitat Conservation Plan* (LSA Associates 2005).

One wet and two dry season samplings were conducted for special-status vernal pool crustaceans (vernal pool tadpole shrimp, vernal pool fairy shrimp, and Conservancy fairy shrimp). Complete methods and details can be found in these reports and summarized in Huffman-Broadway (2006). The wet season survey was conducted in 2000 and the dry season surveys were conducted in the late fall of 2002 and late fall of 2005. The results of all three surveys were negative. The USFWS has indicated that protocol surveys must be conducted in two consecutive years and results are valid for five years. The surveys conducted in 2000 and 2002 were not during two consecutive years and it has been more than five years since the 2000 wet season surveys. The dry-season survey of 2005 would require a wet-season survey in 2006 in order to be considered a complete survey in accordance USFWS protocol. If present, project activities could impact this species.

*Vernal Pool Tadpole Shrimp (Lepidurus packardii)*

The vernal pool tadpole shrimp was designated as threatened in its entire range on September 19, 1994 (*Federal Register* 59:48136-48153). Vernal pool tadpole shrimp (*Lepidurus packardii*) is a federally listed threatened species. Vernal pool tadpole shrimp require seasonally aquatic habitats that are wet for at least 7 weeks. Vernal pool tadpole shrimp occurs in a variety of natural and artificial seasonally inundated habitats including vernal pools, seasonal wetlands, alkaline pools, clay flats, vernal swales, stock ponds, railroad right of way pools, roadside ditches, and road rut pools resulting from vehicular activity. Occupied pools and wetlands typically have highly turbid waters or aquatic vegetation that may provide shelter from predators. Vernal pool tadpole shrimp has also been observed in clear waters.

The vernal pool tadpole shrimp is known from 19 populations in the Central Valley, ranging from east of Redding in Shasta County south to the San Luis National Wildlife Refuge in Merced County, from a small population near the Napa County airport, and from a single vernal pool complex on the San Francisco Bay National Wildlife Refuge in the City of Fremont, Alameda County. The ephemeral wetlands that support this network of populations are remnants of what was formerly a pristine vernal pool ecosystem, but which has been converted to mainly agricultural and urban uses. The project site is within an area designated as a “High Value Conservation Area” for vernal pools by the *Draft Solano Multispecies Habitat Conservation Plan* (LSA Associates2005).

One wet and two dry season samplings were conducted for special status vernal pool crustaceans (vernal pool tadpole shrimp, vernal pool fairy shrimp, and Conservancy fairy shrimp). Complete methods and details can be found in these reports and summarized in Huffman-Broadway (2006). The wet season survey was conducted in 2000 and the dry season surveys were conducted in the late fall of 2002 and late fall of 2005. The results of all three surveys were negative. The USFWS has indicated that protocol surveys must be conducted in two consecutive years and results are valid for five years. The surveys conducted in 2000 and 2002 were not during two consecutive years and it has been more than five years since the 2000 wet season surveys. The dry-season survey of 2005 would require a wet-season survey in 2006 in order to be considered a complete survey in accordance USFWS protocol. If present, project activities could impact this species.

*Steelhead-Central California Coastal ESU (Oncorhynchus mykiss), Steelhead-Central Valley ESU (Oncorhynchus mykiss), Chinook Salmon Central Valley Spring-Run (Oncorhynchus tshawytscha), and Chinook Salmon Winter-Run Sacramento River (Oncorhynchus tshawytscha)*

The Central Valley Evolutionarily Significant Unit (ESU) of steelhead, the Central Valley fall/late fall-run and the spring run Chinook salmon and the Sacramento River winter run of Chinook Salmon have the potential to occur in LedgeWood Creek. LedgeWood Creek is not currently known to support breeding or rearing habitat for these species; however, this creek is accessible from Suisun Slough and these fish could potentially migrate upstream in search of suitable breeding habitat. Indirect impacts of the proposed project on these species are discussed in the impact section, below. Additionally, the Delta smelt have the potential to occur on the Barnfield and Tooby properties. The lower reach of LedgeWood Creek on the Barnfield property and a slough that runs through the Barnfield and Tooby properties are hydrologically connected

to Suisun Slough and may provide suitable spawning habitat for these species. With implementation of a Stormwater Management Plan and Stormwater Pollution Prevention Plan (see below) the proposed project is not likely to have significant impacts on federally or state listed fish species.

*Chinook Salmon (Oncorhynchus tshawytscha)*

Smolts (juvenile salmon spawned upstream) move through the Bay-Delta area to feed in shallow water habitats, including salt marsh channels and submerged tidal mudflats. Adults also pass through this area during seasonal migrations upstream, and forage in both intertidal and subtidal habitats. They feed primarily on invertebrates and small fish. Tidal marsh and other estuarine habitats are reported to have an important role in Chinook salmon life-history. Tidal marshes are important habitats for small juveniles (fry), while older smolts tend to use deeper waters. Fry tend to occur near the shelter of submerged channel bank or marsh edge vegetation at high tide, and retreat with submerged habitat as the tide falls (Maragni 2000; USFWS 1995).

*Steelhead Trout (Oncorhynchus mykiss)*

Steelhead are trout species in the same genus as salmon, and they have life-histories essentially like those of Chinook salmon. Adults and juveniles pass through the Bay-Delta area and feed in subtidal and intertidal habitats, including tidal marsh channels and submerged mudflats, as they migrate upstream to freshwater streams or downstream to marine habitats. Steelhead trout are drift-feeders, consuming a wide range of aquatic invertebrates and small fish. Adult steelhead migrating upstream seldom feed. Small steelhead runs occur in South Bay tributaries (e.g., San Francisquito Creek, Guadalupe River, Alameda Creek), and in many creeks and rivers of the North Bay and Suisun Bay areas. The importance of tidal creeks and other transient estuarine habitats for steelhead is not well understood (Maragni 2000).

*Delta Smelt (Hypomesus transpacificus)*

Delta smelt are small, short-lived estuarine fish that migrate between shallow freshwater stream habitats in which they spawn, and brackish reaches of the San Francisco Estuary. Delta smelt also spawn at the terminal ends of tidal creeks in fresh-brackish tidal marshes. Downstream habitat is primarily limited to intertidal and subtidal habitats of Suisun Bay and its tidal marshes, but they occur also in San Pablo Bay, particularly during and after heavy freshwater flows. Their abundance in the Bay-Delta area is variable, and appears to be related to both Delta outflows and food supplied by plankton production.

*California Tiger Salamander (Ambystoma californiense)*

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

Adult California tiger salamanders inhabit grassland, savanna, or deciduous oak woodland habitats which contain natural ponds, vernal pools, intermittent streams, or stock ponds. They usually are not found unless there is this combination of ponded water for breeding and surrounding upland, with a predominant ground cover of grazed or ungrazed grassland. They spend the majority of their time below ground, in rodent burrows, or other natural crevices.

The known records for the California tiger salamander occur northeast of the property at Jepson Prairie. Grasslands, seasonally flooded annual grasslands, and vernal pools provide suitable breeding and cover for this species throughout the project site. Because a moderate potential exists for this species to occur in large vernal pools on the Tooby and Gentry properties, May Consulting Services conducted dip-net surveys for this species concurrently with the wet-season surveys for large branchiopods. Dip-net surveys included checking for mating adults, larvae, and egg masses. The dip net surveys also corresponded with the rainy period when breeding salamanders would be most likely to be observed migrating to breeding sites. Survey results were negative. In addition, none of the pools on the Barnfield property appeared to provide high potential habitat for this species because all pools were fairly shallow, and did not provide the murky water often favored by this species. However, these surveys were not conducted according to USFWS/CDFG protocol (USFWS and CDFG 2003), which states, "For sites with suitable breeding habitat, two consecutive seasons of negative larval surveys and a negative upland drift fence study in the intervening fall/winter are recommended to support a negative finding. For sites with no suitable aquatic breeding habitat, but where suitable upland habitat exists, two consecutive seasons of negative upland drift fence studies are recommended to support a negative finding. Surveys following these established protocols should be conducted in order to determine if this species is present at the project site.

*California Black Rail (Laterallus jamaicensis coturniculus)*

The California black rail (*Laterallus jamaicensis coturniculus*) is a small, secretive marsh bird. This bird is a state listed threatened species and a federal species of concern. This species is a scarce, yearlong resident of saline, brackish, and fresh emergent wetlands in the San Francisco Bay area, Sacramento-San Joaquin Delta, and coastal southern California at Morro Bay. The California black rail occurs most commonly in tidal emergent wetlands dominated by pickleweed, or in brackish marshes supporting bulrushes in association with pickleweed. This species is usually found in the immediate vicinity of tidal sloughs and typically occurs in the high wetland zones near the upper limit of tidal flooding, not in low wetland areas with considerable annual and/or daily fluctuations in water levels. Nests are concealed in dense vegetation, often in pickleweed, near the upper limits of tidal flooding (Mayer and Laudenslayer 1988).

Two occurrence records of California black rail have been identified within a five-mile radius of the project site (CNDDDB 2006). These occurrences are in marsh habitat bordering Suisun Bay and associated sloughs. Based on the known occurrences and the presence of suitable habitat, California black rail has a high potential to occur on-site. Black rails are typically located by hearing their calls. Black rails were not seen or heard on the project site, though no formal vocalization surveys were conducted. The CNDDDB records black rail occurrences south of the project site in marsh habitat bordering Suisun Bay and associated sloughs. The perennial marsh

habitat on the eastern portion of the Tooby Property provides low to medium quality foraging and nesting habitat for the species. Though not detected during informal surveys, the species is likely to occur along slough channels with dense perennial marsh habitat in the southern portion of the Barnfield property.

This project area provides a large benefit to this species by containing the majority of core habitat areas (alkali seasonal marsh and brackish marsh) of this species at the project area within the off-site Barnfield (Planning Area 5) and Tooby (Planning Area 4) properties (approximately 211 ac). However, some loss of upland areas used as refuges may occur during high water events within the proposed development area. Additionally, an estimated 5.62 ac of alkali seasonal marsh exists on the Gentry Property; and 0.94 acre of alkali seasonal marsh and 0.27 acre of brackish marsh will be impacted in the Cordelia ROW. However, very little emergent vegetation is located in these areas and it is highly unlikely that this species occurs in these areas other than as temporary refuge or as a transient. Habitat along Cordelia Road may play a minor role in connecting the marsh habitats north and south of the road. However, the slough channel that goes under the road likely provides the most benefit and it will not be impacted by the project. Indirectly, this project may impact this species through additional lighting, pollution, and by both domestic animals and wildlife attracted to human development that may prey upon them.

*California Clapper Rail (Rallus longirostris obsoletus)*

The California clapper rail is a federal and state Endangered species. This species is locally common year round in coastal wetlands and brackish areas around San Francisco, Monterey, and Morro bays. The clapper rail forages in higher marsh vegetation along vegetation and mudflat interface, and along tidal creeks. Habitat preference for this species is emergent wetland, dominated by pickleweed and cordgrass (*Spartina* spp.), and brackish emergent wetland with pickleweed, cordgrass, and bulrush. Breeding habitat preference is for saline emergent wetlands, with nests mostly in lower zones where cordgrass is abundant and tidal sloughs are nearby (Mayer and Laudenslayer 1988). The perennial marsh habitat along the eastern portion of the project site provides suitable habitat for this species; however, this species was not observed during site surveys. Two occurrence records of California clapper rail have been identified within a five-mile radius of the project site (CNDDDB 2006). Based on the known occurrences and the presence of suitable habitat, California clapper rail has a high potential to occur on-site.

The adjacent Barnfield Property (Planning Area 5) provides core habitat areas (alkali seasonal marsh and brackish marsh) of this species off-site as well as on-site core habitat area on the Tooby property (Planning Area 4). However, some loss of upland areas used as refuges may occur during high water events within the proposed development area. Additionally, an estimated 5.62 ac of alkali seasonal marsh exists on the Gentry Property; and 0.943 acre of alkali seasonal marsh and 0.27 acre of brackish marsh will be impacted in the Cordelia ROW. However, very little emergent vegetation is located in these areas and it is highly unlikely that this species occurs in these areas other than as temporary refuge or as a transient. Habitat along Cordelia Road may play a minor role in connecting the marsh habitats north and south of the road. However, the slough channel that goes under the road likely provides the most benefit and it will not be impacted by the project. Indirectly, this project may impact this species through

additional lighting, pollution, and by both domestic animals and wildlife attracted to human development that may prey upon them.

*Salt Marsh Harvest Mouse (Reithrodontomys raviventris)*

The salt marsh harvest mouse was federally listed as endangered in its entire range in 1970 (*Federal Register* 35:16047). The salt marsh harvest mouse is also state listed as endangered and a California fully protected species. The salt marsh harvest mouse is a small native rodent. Two subspecies exist: the northern (*R. r. halicoetes*) and the southern (*R. r. raviventris*). The northern subspecies lives in the marshes of the San Pablo and Suisun bays, the southern subspecies resides in the marshes of Corte Madera, Richmond and South San Francisco Bay. Salt marsh harvest mice are critically dependent on dense cover and their preferred habitat is dominated by pickleweed (*salicornia virginica*). In marshes with an upper zone of peripheral halophytes (salt tolerant plants), mice use the vegetation to escape the higher tides, and may even spend a considerable portion of their lives there. Mice also move into the adjoining grasslands during the highest winter tides. Salt marsh harvest mice probably live on leaves, seeds, and stems of plants. The northern subspecies of the salt marsh harvest mouse can drink sea water for extended periods but prefers fresh water.

The CNDDDB records an occurrence of the species in the perennial marsh habitat along the eastern portion of the Tooby Property as shown on Figure 4.6-5 as well as marshland adjacent to the project site. This area also supports localized, homogeneous stands of pickleweed and is surrounded by other wetland features as well as upland grasslands. These species are still assumed to be present in this location. In addition, a couple of small pickleweed stands exist on the Barnfield property near the railroad tracks along the southeastern property line. Given the occurrence of salt marsh harvest mice in similar habitat nearby, it is likely the species also occurs within the perennial marsh habitat on the southern portion of the Barnfield property. The species is unlikely to occur on the rest of the site due to a lack of suitable habitat.

While this species was not observed during any of the site surveys, this species is assumed to present in areas that provide habitat. The adjacent Barnfield Property (Planning Area 5) provides core habitat areas (alkali seasonal marsh and brackish marsh) of this species off-site as well as on-site core habitat area on the Tooby property (Planning Area 4). However, some loss of upland areas used as refuges during high water events may occur within the proposed development area. Additionally, an estimated 5.62 ac of alkali seasonal marsh exists on the Gentry Property; and 0.94 acre of alkali seasonal marsh and 0.27 acre of brackish marsh will be impacted in the Cordelia ROW. Known species have not been identified as occurring on the Gentry Property which is isolated from known areas by Pennsylvania Avenue. While the habitat in the Cordelia ROW is not likely large enough and too highly disturbed (between a road and railroad track) to support permanent habitation, it may provide some value to this species as foraging habitat and more importantly in maintaining movement between marshes north and south of Cordelia Road. Indirectly, this project may impact this species through additional lighting, pollution, and by both domestic animals and wildlife attracted to human development that may prey upon them.

## Critical Habitat

### *Vernal Pool: Contra Costa Goldfields*

The project site is within Vernal Pool Critical Habitat Unit 5B, Contra Costa Goldfields (USFWS 2006a). Units 5A-B consist of 839 acres of Local/Private land. This area is among 14,730 ac designated for Contra Costa goldfields. This habitat type is described by USFWS (2006a) as, “Topographic features characterized by isolated mound and intermound complex within a matrix of surrounding uplands that result in continuously, or intermittently, flowing surface water in the depressional features including swales connecting the pools described below in paragraph (2)(ii), providing for dispersal and promoting hydroperiods of adequate length in the pools; (ii) Depressional features including isolated vernal pools with underlying restrictive soil layers that become inundated during winter rains and that continuously hold water or whose soils are saturated for a period long enough to promote germination, flowering, and seed production of predominantly annual native wetland species and typically exclude both native and nonnative upland plant species in all but the driest years. As these features are inundated on a seasonal basis, they do not promote the development of obligate wetland vegetation habitats typical of permanently flooded emergent wetlands; (3) Existing manmade features and structures, such as buildings, roads, railroads, airports, runways, other paved areas, lawns, and other urban landscaped areas do not contain one or more of the primary constituent elements. Federal actions limited to those areas, therefore, would not trigger a consultation under Section 7 of the Act unless they may affect the species and/ or primary constituent elements in adjacent critical habitat.”

### Other Special-Status Species that Are Present or May Occur at the Project Site

#### *California Linderiella (Linderiella occidentalis)*

The California linderiella (*Linderiella occidentalis*), also known as the California fairy shrimp, is a federal species of concern. The California linderiella is a member of the fairy shrimp family Linderiellidae and is generally found in the same types of aquatic habitats as *B. lynchi* and frequently co-occurs with this species. This species tends to live in large, fairly clear vernal pools and lakes. However, they can survive in clear to turbid water with a pH from 6.1 to 8.5, and they have also been found in very small pools. They are tolerant of water temperatures from 41 degrees to 85 degrees F, making them the most heat tolerant fairy shrimp in California.

The California fairy shrimp is the most common fairy shrimp in the Central Valley. The fairy shrimp has been documented in most land forms, geologic formations and soil types supporting vernal pools in California, at altitudes as high as 3,800 feet above sea level. The range extends from Shasta County south to Fresno County and across the valley to the coast and Transverse Ranges from Willits in Mendocino County south to near Sulfur Mountain in Ventura County. (USFWS 2005). The project site is within an area designated as a “High Value Conservation Area” for vernal pools by the *Draft Solano Multispecies Habitat Conservation Plan* (LSA Associates 2005).

One wet and two dry season samplings were conducted for special status vernal pool crustaceans. Complete methods and details can be found in these reports and summarized in Huffman-Broadway (2006). The wet season survey was conducted in 2000 and the dry season

surveys were conducted in the late fall of 2002 and late fall of 2005. The results of all three surveys were negative. The USFWS has indicated that protocol surveys must be conducted in two consecutive years and results are valid for five years. The surveys conducted in 2000 and 2002 were not during two consecutive years and it has been more than five years since the 2000 wet season surveys. The dry-season survey of 2005 would require a wet-season survey in 2006 in order to be considered a complete survey in accordance USFWS protocol. If present, project activities could impact this species.

*Chinook Salmon-Central Valley fall/late fall-run (Oncorhynchus tshawytscha), Longfin Smelt (Spirinchus thaleichthys), and Sacramento Splittail (Pogonichthys macrolepidotus)*

Chinook Salmon have the potential to occur in Ledgewood Creek. Ledgewood Creek is not currently known to support breeding or rearing habitat for these species; however it is accessible from Suisun Slough and these fish could potentially migrate upstream in search of suitable breeding habitat. Indirect impacts of the project on these species are discussed in the impact section, below. Additionally, the longfin smelt and Sacramento splittail have the potential to occur on the Barnfield and Tooby properties. The lower reach of Ledgewood Creek on the Barnfield property and a slough that runs through the Barnfield and Tooby properties are hydrologically connected to Suisun Slough and may provide suitable spawning habitat for these species. With implementation of a Stormwater Management Plan and Stormwater Pollution Prevention Plan, the proposed Project would have no effect on federally or state listed fish species.

*Longfin Smelt (Spirinchus thaleichthys)*

The longfin smelt (*Spirinchus thaleichthys*) occurs from Prince William Sound, Hinchinbrook Island, Alaska, southward to the Sacramento-San Joaquin estuary and Delta, and south to southern San Francisco Bay. In the fall, adults move from San Francisco Bay and San Pablo Bay to the fresher waters of Montezuma Slough, Suisun Bay, and the lower reaches of the Sacramento and San Joaquin rivers, a sign of anadromous behavior. The longfin smelt spawn in the freshwater portions of the Delta from December through the spring months. They feed on *Diaphanosoma*, *Diatomus*, and *Epischura*, mysid shrimp and other small crustaceans (Miller and Lea 1972).

*Sacramento Splittail (Pogonichthys macrolepidotus)*

Sacramento splittail is the only species in a unique genus of large, native minnows. The Sacramento splittail inhabits the Sacramento-San Joaquin river system and the Delta. The species has been collected in tidal waters as salty as 18 parts per thousand salinity, but splittail abundance is greatest in salinity lower than 10 parts per thousand. Sacramento splittail occurs primarily in the Suisun Bay area, but reaches northern San Pablo Bay regularly in years of high river discharge. They spawn in fresh or nearly fresh, non-saline shallow waters with submerged vegetation. Within the Bay-Delta area, they are reported to be most abundant in small tidal creeks, particularly those with freshwater discharges or partially submerged marsh vegetation (Sommer and Herbold 2000).

*Western Pond Turtle (Clemmy marmorata)*

The western pond turtle is a medium-sized brown or olive-colored aquatic turtle. The pond turtle is normally found in and along riparian areas, although gravid females have been reported up to a mile away from water in search of appropriate nest sites. The preferred habitat for these turtles includes ponds or slow-moving water with numerous basking sites (logs, rocks, etc.), food sources (plants, aquatic invertebrates, and carrion), and few predators (raccoons, introduced fishes, and bullfrogs). The western pond turtle were not observed during general wildlife surveys. However, special effort was not made to detect reptiles and amphibians. This species is not likely to breed here, although may occur as a transient. If they do occur here, they are likely to be found in the slough channels and Ledgewood Creek and therefore are not likely to be impacted by project activities.

*American Bittern (Botaurus lentiginosus)*

The American bittern (*Botaurus lentiginosus*) is a federal species of concern. The American bittern usually hides, rests, and roosts, solitarily amidst tall, dense, emergent vegetation, on ground, or near ground on logs, stumps or on emergent plants. The American bittern nest is a platform of matted emergent aquatics, other herbaceous stems, sticks and/or leaves, usually in shallow water, but sometimes floating, or on ground and is concealed in tall, dense, fresh emergent vegetation. An American bittern was observed in the northeast portion of the project site, by HBG, during the nesting season. This portion of the project site provides suitable nesting habitat. Project activities are not planned for the Tooby Parcel, or other areas with extensive tule or cattail marsh, therefore this project is not likely to impact this species.

*Cooper's Hawk (Accipter cooperii) (nesting)*

The Cooper's hawk preys upon medium-sized birds. Cooper's hawks use wooded areas with adjacent open fields. Preferred nesting habitat includes dense stands of live oak woodland or riparian areas. Cooper's hawks are uncommon breeders in southern California. They may perch and forage in the mixed riparian habitats. This species might breed in larger trees in the riparian areas on or within 250 feet of the project site. However, surveys during the nesting season did not detect nesting birds. The project has the potential to impact this species.

*Ferruginous Hawk (Buteo reglais) (wintering)*

The ferruginous hawk, a federal and state Species of Concern, is a winter resident and migrant of California. In the winter this species can be found throughout California, with the exception of the extreme northeastern and northwestern regions (Zeiner 1990a). Ferruginous hawks migrate to California in August or September and return to their breeding grounds in late February or early March. This species occurs in open habitats, including grasslands, shrub steppes, sagebrush, deserts, saltbush-greasewood shrublands, and the outer edges of pinyon pine and other forest. Ferruginous hawks forage for prey (rabbits [*Lepus* sp.], ground squirrels [*Spermophilus* sp.], and mice [*Peromyscus* sp.]) by low flights over open, treeless areas, and glide to intercept prey on the ground.

Ferruginous hawk is not known to exist within five miles of the project site (CNDDDB 2006). Although this species was not observed during the assessment, suitable wintering habitat and

prey for ferruginous hawks exists within the annual grasslands at the site. Consequently, this species has a low potential to occur on-site. This species would only be expected to occur during the rainy season. Therefore, significant impacts to this species are not expected because initial grading would not be expected to occur during the rainy season.

*Northern Harrier (Circus cyaneus) (nesting)*

The northern harrier (*Circus cyaneus*) is a medium-sized raptor. The females are brown with a white tail patch while the males are gray and white. The northern harrier is a state Species of Special Concern with respect to nesting. Northern harriers mostly nest in emergent wetlands, or along rivers and lakes, but may nest in grasslands. Northern harrier nests are found on the ground in shrubby vegetation, usually at the edge of marshes. This species was observed on the project site by HBG during nesting season. Vollmar Consulting also observed individuals foraging over the perennial marsh and grassland habitats on the Barnfield site. The species forages over open habitats and annual croplands and nests in grassland and marsh habitats. The northern harrier is assumed to occasionally use the project site for foraging. A high potential exists for nest sites on the Barnfield property in the perennial marsh and a moderate potential for nest sites to occur in the perennial marsh habitat along the eastern portion of the Tooby Property. These areas are not included in areas that may be developed, therefore the project is not likely to impact this species.

*White-tailed Kite (Elanus leucurus) (nesting)*

White-tailed kite is a federal Species of Concern and fully protected by the CDFG. White-tailed kites have recovered from near extinction in the 1930s and are now common in central and northern California, but have been slower to recover in southern California. They require relatively open habitat for foraging, as well as trees (isolated or within stands) for nesting and roosting. Habitats with abundant prey populations (ungrazed or little grazed grasslands, agriculture, and grass dominated wetlands) support more kites. Primary concerns include the response of white-tailed kites to reduced foraging and nesting opportunities as prey habitats are urbanized (e.g., conversion of agricultural lands), and as nest site competition increases with the loss of nesting habitats (e.g., riparian corridors and wooded grasslands).

While documented occurrences of the white-tailed kite do not exist within five miles of the project site (CNDDDB 2006), one was observed flying over the site during a site survey. A small area of marginal quality exists that could support nesting kites within the riparian area on Parcel 2. They have not been recorded nesting here and are not anticipated to do so. This species could however, be impacted by the project.

*Short-eared Owl (Asio flammeus) (nest site)*

The short-eared owl (*Asio flammeus*) is a state Species of Special Concern. This owl is found in freshwater and saltwater marshes, lowland meadows, and irrigated alfalfa fields. Tule patches or heavily-grassed areas are needed for nesting and daytime seclusion. These owls nest on dry ground in depressions concealed in vegetation. Short-eared owls were not observed on the project site. The CNDDDB records numerous nesting occurrences at the Grizzly Island Wildlife Area in both perennial marsh and grassland habitat. The perennial brackish marsh along the eastern portion of the project site provides potential foraging and nesting habitat for the species.

The annual grassland and wetland habitats on the rest of the project site are generally too short to provide suitable habitat. Therefore, the project is not likely to impact this species.

*Western Burrowing Owl (Athene cunicularia hypugea) (burrow sites)*

Western burrowing owl is a federal and state Species of Concern and a yearlong resident of the Central Valley (CDFG, 2000b). The western burrowing owl is afforded special protection by the CDFG, and surveys and mitigation are required within areas of suitable habitat in the state (CBOC 1993, CDFG 1995). Burrowing owl habitat can be found in annual and perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. In California, burrowing owls most commonly use California ground squirrel burrows, but they also may use manmade structures, such as concrete culverts; concrete, asphalt, or wood debris piles; or openings beneath concrete or asphalt pavement. Burrowing owls may use a site for breeding, wintering, foraging, and/or migration stopovers during migration. Often, the burrowing owl can be found perching in open sunlight in the early morning, and moves to shade or to the burrow in hotter temperatures. Burrowing owls primarily feed on insects, small mammals, reptiles, birds, and carrion. Breeding occurs from March through August, with the peak breeding time occurring in April and May. Young emerge from the burrow at about two weeks and fly at about four weeks (Zeiner 1990a).

This species was formerly a common, even locally abundant, permanent resident throughout much of California, but a decline noticeable by the 1940s (Zeiner 1990a) has continued through to the present time. The decline has been almost universal throughout California (CDFG 2000b). Conversion of grasslands and pasturelands to agriculture and destruction of ground squirrel colonies have been the main factors causing the decline of the burrowing owl population (Zeiner 1990a). Assimilation of poisons applied to ground squirrel colonies has probably also taken a toll. The burrowing owls' propensity for nesting in roadside banks also makes them particularly vulnerable to roadside shooting, being hit by cars, road maintenance operations, and general harassment (CDFG 2000b).

Two adult burrowing owls and at least one active burrow were detected on February 6, 2006 on the GF Gilbert property. The CNDDDB records another burrow off the site adjacent to Cordelia Road. Numerous CNDDDB (2006) occurrences have been identified within a five-mile radius of the project site. In addition, multiple rodent burrows greater than three inches in diameter were observed throughout the project site, particularly on raised areas such as the GF Gilbert Property, berms adjacent to Planning Area 3, the boundary with Ledgewood Creek and other raise berms. Most of the grasslands on the project site do not provide suitable burrowing habitat for the species since they are seasonally saturated by near-surface groundwater. Protocol-level surveys will need to be conducted to determine the location of nesting and wintering burrows throughout the property. If ground disturbing activities or other project activities are to take place near an active burrow, the project has the potential to impact this species.

*Loggerhead Shrike (Lanius ludovicianus) (nesting)*

The loggerhead shrike (*Lanius ludvicianus*) is a medium-sized, predatory songbird somewhat similar in appearance to the mockingbird. The loggerhead shrike is a federal and state Species of Concern and is a common resident and winter visitor in the lowlands and foothills throughout

California. This species prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. This species forages in open habitats and nests in dense tree and shrub foliage. Nesting preference is for a well-concealed stable branch in densely foliated shrubs or trees (Mayer and Laudenslayer 1988).

This species was observed on-site by HBG in June 2005. Biologists from Vollmar Consulting also observed a single loggerhead shrike perched on the fence line along the western edge of the Tooby parcel in May 2000. Shrike probably use the project site for foraging and perching but it is unlikely to nest on the site due to a general lack of suitable habitat, although some nest sites are available in limited on-site riparian habitat and scrub in Planning Area 2 and on the north side of the GF Gilbert property.

If clearing and grubbing, grading or other project activities occurred during the nesting season within or adjacent to nesting habitat, this species could be impacted by the project.

*Saltmarsh Common Yellowthroat (Geothlypis trichas sinuosa)*

The saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*) is a medium-sized songbird with a distinctive yellow throat patch. The saltmarsh common yellowthroat is both a federal and state Species of Special Concern. This species nests in fresh and salt water, including perennial brackish marshes, with thick, continuous cover, down to water level. They nest from early April to August, with peak activity in May and June.

Saltmarsh common yellowthroats were observed in dense perennial brackish marsh habitat on the Barnfield property by HBG in June 2005. They were also observed in the same area by Vollmar Consulting. The species forages and nests in dense emergent vegetation in salt and brackish marsh habitats.

The proposed project would have some impacts to brackish marsh within the Cordelia Road ROW and adjacent to Parcel 3. These activities may impact this species.

*Suisun Song Sparrow (Melospiza melodia axillaries)*

The Suisun song sparrow (*Melospiza melodia maxillaries*) is a federal species of concern and a state Species of Special Concern endemic to Suisun Bay. Intermixed stands of bulrush (*Scirpus* spp.), cattail (*Typha* spp.), and other emergent vegetation provide suitable habitat. Suisun song sparrows forage on the bare surface of tidally exposed mud among the tules and along slough margins in the brackish marshes of Suisun Bay during low tides. They feed on *Scirpus* seeds from the ground once they fall from flower heads above. The Suisun song sparrow also feed on insects (mostly mosquito larvae and flies) and other invertebrates exposed during low tides. This species' nests are strung along the edges of sloughs and bays in linear fashion. Each territory must have enough area for nesting and foraging, including tidally exposed mud, water, and vegetation suitable for nesting and cover while foraging. The vegetation must also harbor food, and include permanent water or moisture in the form of tidal ebb and flow. Suisun song sparrows are physiologically and behaviorally adapted to naturally occurring brackish water conditions of Suisun Marsh. They are one of the few passerine birds that are adapted to allow

direct consumption of saline water. This species prefers to consume water of the average salinity range that naturally occurs within its habitat.

Previously, the literature suggested that these birds are confined to undiked tidal marshes. Recent field surveys have noted Suisun song sparrows along ditches, permanent ponds, and other areas in diked wetlands of Suisun Marsh where required plant assemblages and brackish water conditions exist.

Individuals of this species were observed by HBG in June 2005 foraging in the dense perennial marsh habitat on the Tooby and Barnfield properties. This species was also observed by Vollmar Consulting biologists, foraging in the dense perennial marsh habitat along the eastern portion of the Tooby Property during April and May 2000. The species uses the perennial marsh habitat on the project site for foraging and may use the site for nesting.

The proposed project would have some impacts to alkali seasonal marsh on the Gentry Property, and both alkali seasonal marsh and brackish marsh within the Cordelia Road ROW and adjacent to Parcel 3. Project activities may impact this species.

#### *Tricolored Blackbird (Agelaius tricolor) (nesting colony)*

The tricolored blackbird (*Agelaius tricolor*) is a medium-sized songbird similar in appearance to the more common red-winged blackbird but with white on the wing as opposed to yellow. Tricolored blackbird nesting colonies are protected as both a federal and state Species of Special Concern. Tricolored blackbirds nest in large colonies near freshwater, usually in emergent wetlands with tall, dense cattails or in thickets of willow, blackberry, or wild rose. Nesting colonies prefer heavy growth of cattails and tules. Tricolored blackbirds use grasslands and agricultural lands for foraging. Tricolored blackbirds were not observed on the project site and there are no current CNDDB records for the species in the vicinity. However, the perennial marsh habitat along the eastern portion of the Tooby Property and stands of tules within the channels within the Cordelia ROW and within the Tooby and Barnfield Properties adjacent to Planning Area 3 and the Cordelia ROW does provide suitable nesting habitat for the species. Project activities may impact this species.

#### *Other Nesting Raptors*

Other raptor species forage and nest in a variety of habitats throughout Solano County. Raptor nests are protected under the Migratory Bird Treaty Act and Section 3503.5 of the California Fish and Game Code, which makes it illegal to destroy any active raptor nest. Several raptor species, including red-tailed hawk (*Buteo jamaicensis*), Cooper's hawk (*Accipiter cooperii*), and northern harrier (*Circus cyaneus*), White-tailed kite and American kestrel forage and nest in various habitats throughout Solano County. Marginal nesting habitat exists within the project site in Planning Area 2. Suitable tall trees are also found within 500 ft (150 m) of the project site and nests within these trees could be impacted by project activities. Additionally, American kestrels are known to use power poles and Barn Owls may nest under the eaves of buildings adjacent to the project site. The project does have the potential to impact nesting raptors.

### *Migratory and Resident Nesting Birds*

Several special-status migratory and resident bird species have the potential to occur on the project site. Migratory and resident birds forage and nest in various natural and artificial habitat communities including coniferous forest, oak woodlands, agricultural croplands, riparian woodlands, cattail and blackberry thickets, horticultural/landscaped areas, and grasslands. The nests of all migratory birds are protected under the Migratory Bird Treaty Act, which makes it illegal to destroy any active migratory bird nest. The project site supports many of these habitats and does provide suitable nesting habitat for some migratory and resident birds. Consequently, nesting migratory or resident birds have the potential to occur on the project site. Because the project proposes to maintain the eastern half of the project site (where the perennial brackish marsh is located) as open space, there will be no impacts to life history activities of the migratory and resident birds that may potentially be present within that area. However, if activities take place within the areas to be developed during the nesting season, there is the potential to impact nesting birds.

### *Suisun Shrew (Sorex ornatus sinuosus)*

Suisun shrew (*Sorex ornatus sinuosus*) typically inhabit tidal marshes characterized in order of decreasing tolerance to inundation, by *Spartina foliosa*, *Salicornia ambigua*, and *Grindelia cuneifolia* and brackish marshes dominated by *Scirpus californicus* and *Typha latifolia*. The Suisun shrew inhabits tidal marshes along the northern shores of San Pablo and Suisun Bays and is a federal and state species of concern. They require dense, low-lying cover where invertebrates are abundant. Breeding occurs in sites with driftwood and other litter above the mean high tide line (Rudd 1955). Upland habitats are needed during prolonged flooding of marshes and dikes to provide cover and food (Williams 1983).

The CNDDDB records an occurrence within the property as well as immediately east and south of the Barnfield site as shown on Figure 4.6-4. The Suisun shrew likely occurs on the project site within the perennial marsh habitat along the eastern portion of the Tooby Property, as well. The Suisun shrew is unlikely to occur elsewhere on the project site due to a lack of suitable habitat. Given the close proximity of this occurrence and the presence of suitable habitat, it is likely the Suisun shrew occurs within the perennial marsh habitat on the southern portion of the Barnfield property.

The adjacent Barnfield Property (Planning Area 5) provides core habitat areas (alkali seasonal marsh and brackish marsh) of this species off-site as well as on-site core habitat area on the Tooby property (Planning Area 4). However, there may be some loss of upland areas used as refuges during high water events within the proposed development area. Additionally, an estimated 5.62 ac of alkali seasonal marsh is located on the Gentry Property; and 0.94 acre of alkali seasonal marsh and 0.27 acre of brackish marsh will be impacted in the Cordelia ROW. Known species have not been determined to occur on the Gentry Property which is isolated from known areas by Pennsylvania Avenue. While the habitat in the Cordelia ROW is not likely large enough and too highly disturbed (between a road and railroad track) to support permanent habitation, it may provide some value to this species as foraging habitat and more importantly in maintaining movement between marshes north and south of Cordelia Road. Indirectly, this

project may impact this species through additional lighting, pollution, and by both domestic animals and wildlife attracted to human development that may prey upon them.

### Special-Status Natural Communities

#### *Northern Claypan Vernal Pool*

A CNDDDB record exists for this habitat type on the property. A complete description of the habitat, its location, and acreage are described above and provided on Figure 4.6-5 and in Tables 4.6-3, 4.6-4, and 4.6-5. The project as proposed may impact this habitat type.

### Habitat, Wildlife, and Natural Areas

Most of the non-urbanized land in Solano County is currently used for agriculture. The stated purpose of the County's General Plan is to provide long-term goals for development and growth in a manner that would protect agriculture and natural resources (Solano County Planning Department 1980).

Areas considered having wildlife habitat value within the project site include the following:

- alkali seasonal marsh;
- perennial brackish marsh;
- seasonally saturated annual grassland;
- vernal pools;
- riparian wetland; and
- drainage canals.

In addition, Solano County is situated in a strategic position in the Pacific Flyway, a major migration route for waterfowl and other birds in North America.

### Jurisdictional "Waters of the U.S."

Jurisdictional "Waters of the U.S." include jurisdictional wetlands, as well as all other "Waters of the U.S." such as creeks, ponds, and intermittent drainages. Wetlands are defined as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (U.S. Corps of Engineers 1987). The majority of jurisdictional wetlands in the United States meet three wetland assessment criteria: hydrophilic vegetation, hydric soils, and wetland hydrology. Jurisdictional Waters of the U.S. can also be defined by exhibiting a defined bed and bank and ordinary high water mark (OHWM).

The potential wetland areas within the majority of the project site have been formally delineated (see Vollmar Consulting, 2003) and the Corps has verified these acreages. The seven annexation parcels shown in Table 4.6-5 were not included in the area originally verified by the Corps and have been subject to a preliminary wetland assessment as provided in (HBG 2006). HBG intends to verify these parcels as part of an overall re-verification of the project site by the Corps (R. Pererra pers. comm.).

A total of 63 jurisdictional wetland polygons were delineated on the Barnfield, Gentry, and Tooby parcels. On the Barnfield portion of the project site, 39 of the delineations were mapped entirely as wetlands and other two consisted of a mix of wetlands and navigable waters but were included in the perennial brackish marsh category in the Corps verified delineation map. Figure 4.6-3 shows the Corps verified wetlands within the project area boundary. The verified wetlands on the Gentry site totaled 33.79<sup>2</sup> acres; the wetlands on the Tooby site total 58.50 acres; the wetland on the Barnfield Site totaled 228.09<sup>3</sup> acres; and the seven annexation properties shown on Table 4.6-5 totaled 9.19 acres. The delineated wetlands include vernal pools, alkali seasonal marsh, seasonally saturated annual grassland, perennial brackish marsh, and a riparian wetland. Aquatic habitats, other than wetlands, were not delineated on the property.

Perennial brackish marsh, is found on the eastern portion of the Tooby Property (48.36 ac), Barnfield Property (105.75 acres verified, 7.22 acres added in the preliminary delineation), and in the Cordelia ROW (0.027 ac).

Nine vernal pools, totaling 16.98 acres, were delineated on the Gentry/Tooby sites. Most of these were artificially created or enhanced due to the presence of road or utility line berms. Nearly all of the vernal pools on the Barnfield site (totaling 6.03 acres) are fairly small and shallow and dry in early to mid spring. The one exception is a pool in which the hydrology has been enhanced (or created) by the adjacent ditch berm.

Alkali seasonal marsh, totaling 7.84 acres, was delineated in seven separate areas on the Gentry and Tooby sites, 54.99 acres was delineated on Barnfield Property, and 0.94 acre in the Cordelia ROW. These features range from seasonally inundated basins to seasonally saturated flats. Some of these features appear to be artificially enhanced by berms. Some of the features are artificially enhanced or created by excavation or berms that restrict drainage. Others appear to be natural features associated with the upper margin of Suisun Marsh.

Seasonally saturated annual grassland was delineated in four areas on the Gentry site, totaling 19.08 acres as shown on Figure 4.6-3. These wetlands occur on flat terrain and encompass a broad transitional zone between vernal pools or alkali seasonal marsh and adjacent upland annual grasslands. Wetland characteristics in these areas were marginal. Seasonally saturated annual grassland areas on the Barnfield property which total 61.32 acres, were verified and 0.09 acre detected in the preliminary delineation and are all transitional between upland annual grasslands and other wetland habitats on the project site. Approximately 1.00 acre occurs in the annexation areas.

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<sup>2</sup> It should be noted that during the preliminary wetland assessment of the additional parcels for annexation conducted by HBG, an additional 0.172 acre area of seasonally saturated annual grassland was noted in roadside drainage channels on the Gentry property. See Table 4 in Section 4.4 and Figure 10.

<sup>3</sup> It should be noted that during the preliminary wetland assessment of the additional parcels for annexation, conducted by HBG, approximately 0.088 acre of seasonally saturated grassland were noted on the Barnfield property that was not included in the wetland delineation verified by the Corps. These areas are in roadside drainage channels not previously delineated. In addition, according to the current boundary of the Barnfield property, an additional approximately 7.223 acres of brackish marsh would be included within the project area boundary on the Barnfield property. These areas were not included within the boundary of the verified wetland delineation on the southern boundary and the eastern boundary of the Barnfield property.

Riparian wetland totaling 0.03 acre was delineated in one area near the southern end of the Gentry Property. This feature is a remnant of Ledgewood Creek or an excavated slough channel, approximately 300 feet long, 10-15 feet wide, and 6 feet deep. Jurisdictional riparian wetlands occur in the very bottom of the channel. The total area of riparian habitat is somewhat larger and will likely be claimed as under CDFG Jurisdiction.

Navigable waters include open water area subject to the ebb and flow of the tide as well as some large freshwater rivers and lakes used or potentially used for interstate commerce. The limit of jurisdiction in tidal areas is generally considered to be local mean high tide. For the San Francisco Bay region, this mark is 2.77 feet above sea level (2.77 NGVD). According to the USGS 7.5' Fairfield South topographic quadrangle, the channel areas of Ledgewood Creek, the two ditches, and all the sloughs that occur on the property are below 2.77 NGVD and are therefore considered jurisdictional navigable waters. In addition, the southern one-third of the excavated ditch crossing the western side of the property is below 2.77 NGVD and is therefore considered navigable water. Navigable waters on the Barnfield property total 6.46 acres and were included in the perennial brackish marsh category on the verified wetland delineation map.

#### Habitat Managed for Wildlife

Solano County has a number of significant marsh and wetland habitat areas including Suisun Marsh. Suisun Marsh is an 85,000-acre tidal marsh, which provides habitat for shorebirds, waterfowl, and other wildlife that is of statewide importance. The marsh is protected under the State Suisun Marsh Preservation Act of 1977. The Suisun Marsh Management Area, as designated by the Solano County General Plan (Solano County Planning Department 1980), is located immediately south of the project site. The marsh designation is “designed to preserve and enhance the quality and diversity of marsh habitats”.

#### REGULATORY CONTEXT

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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 Endangered Species Act

The United States Congress passed the Federal Endangered Species Act (FESA) in 1973 to protect species that are endangered or threatened with extinction. Under FESA, the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NOAA Fisheries) have authority over projects that may result in the take of a species listed as threatened or endangered (FESA) (i.e., a federally listed species). In general, persons subject to FESA (including private parties) are prohibited from the “take” of endangered or threatened fish and wildlife species on private property, and from the “take” of endangered or threatened plants in areas under federal jurisdiction or in violation of state law. Under the FESA, the definition of “take” is to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” USFWS has also interpreted the definition of “harm” to include significant habitat modification that could result in

take. If a project would result in take of a federally listed species, either an incidental take permit, under Section 10(a) of the FESA, or a federal interagency consultation, under Section 7 of the FESA, is required prior to the take occurring. Such a permit typically requires various types of mitigation to compensate for or to minimize the take.

The USFWS also has the responsibility for identifying Critical Habitat areas for endangered and threatened plants and animals. When a species is proposed for listing as endangered or threatened under the FESA, the USFWS must consider whether there are areas of habitat essential to the species' conservation, which may be proposed for designation as Critical Habitat. Critical Habitat is a specific geographic area that contains features essential for the conservation of a threatened or endangered species that may require special management and protection. In determining the Critical Habitat for a species, the USFWS is required to use the best scientific data available. In addition, before designating any particular area as Critical Habitat, the USFWS must consider the economic impact, and any other relevant impact, associated with this designation. If the costs associated with designating an area as Critical Habitat outweigh the benefits, the USFWS may exclude that area from Critical Habitat, unless excluding the area would result in the extinction of the species in question.

Section 7 of FESA prohibits actions by federal agencies, such as the issuance of wetland permits pursuant to Section 404 of the Clean Water Act (CWA), that would jeopardize the existence of threatened or endangered wildlife or plant species or result in the destruction or adverse modification of critical habitat for such 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 Migratory Bird Treaty Act (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 California Fish and Game 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."

#### Clean Water Act

The Corps regulates discharge of dredged or fill material into "Waters of the United States" under Section 404 of the Clean Water Act (CWA). "Discharge of fill material" is defined as the addition of fill material into "Waters of the U.S.," including but not limited to the following: placement of fill that is necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; and fill for intake and outfall pipes and sub-aqueous utility lines (33 C.F.R. §328.2(f)). In addition, Section 401 of the CWA (33 U.S.C. 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into "Waters of the United States" to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards.

“Waters of the U.S.” include a range of wet environments such as lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, and wet meadows. Wetlands are defined as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 C.F.R. §328.3(b)).

Furthermore, jurisdictional “Waters of the U.S.” can be defined by exhibiting a defined bed and bank and ordinary high water mark (OHWM). The OHWM is defined by the Corps as “that line on shore established by the fluctuations of water and indicated by physical character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas” (33 C.F.R. §328.3(e)).

## **State**

### California Endangered Species Act

The State of California enacted the California Endangered Species Act (CESA) in 1984. The CESA is similar to the FESA but pertains to state-listed endangered and threatened species. The California Fish and Game Commission is responsible for “listing” species as endangered or threatened under CESA, and the California Department of Fish and Game (CDFG) is responsible for administering this act. CESA prohibits the “take” of listed and candidate (petitioned to be listed) species. “Take” as defined by CESA is to “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch capture, or kill,” and does not include the verbs “harm” and “harass,” as used in federal FESA regulations. Pursuant to Section 2081 of the California Fish and Game Code, an incidental take permit from the CDFG is required for projects that could result in the take of a state-listed threatened or endangered species, except that plants may be taken without a permit pursuant to the terms of the California Native Plant Protection Act (Fish & G. Code, § 1900 et seq.). To ensure that actions proposed by an agency do not jeopardize the continued existence of any endangered or threatened species or result in destruction or adverse modification of essential habitat, lead agencies should consult with the CDFG prior to project implementation.

### Section 401 of the Federal Clean Water Act/Porter Cologne Water Quality Act

Pursuant to section 401 of the Federal Clean Water Act, projects that require a Corps permit for the discharge of dredge or fill material must obtain water quality certification that confirms a project complies with state water quality standards before the Corps permit is valid. State water quality is regulated/administered by the State Water Resources Control Board and its nine Regional Water Quality Control Boards (RWQCB). The state also maintains independent regulatory authority over the placement of waste, including fill, into waters of the State under the Porter-Cologne Act.

### CDFG 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 Community Conservation Planning Act (NCCP) 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 California Natural Community Conservation Planning Act, is broader in its orientation and objectives than CESA and FESA; these laws are designed to identify and protect individual species that are already listed as threatened or endangered. The primary objective of the NCCP program is to conserve natural communities at the ecosystem scale while accommodating compatible land use (CDFG 2003).

In March 1999, the USFWS, in accordance with section 7 of the federal Endangered Species Act of 1973 (as amended), issued a Biological Opinion regarding the Solano Project Water Service Contract Renewal between the Bureau of Reclamation and the Solano County Water Agency (SCWA). As a condition of the Biological Opinion, SCWA and its member agencies are required to prepare a Habitat Conservation Plan (HCP), per Section 10(a)1(B) of the federal Endangered Species Act, in order to obtain authorization for incidental take of listed species that may be impacted by activities associated with future water use in the Solano Project contract service area. The draft Solano HCP/NCCP (LSA Associates 2005) has been developed to support the issuance of a Section 10(a)1(B) “incidental take permit” under FESA. This permit is required by the March 19, 1999 Solano Project Contract Renewal Biological Opinion between the USFWS and Bureau of Reclamation. The purpose of the HCP/NCCP is to promote conservation of biological diversity consistent with the recognition of private property rights, providing for a healthy economic environment for the citizens, agriculture, and industries, and on-going maintenance and operation of public and private facilities in Solano County.

#### California Department of Fish and Game-Streambed Alteration Agreement

Section 1602 of the California Fish and Game Code requires any person, governmental agency, or public utility proposing any activity that will divert or obstruct the natural flow or change the bed, channel or bank of any river, stream, or lake, or proposing to use any material from a streambed, to first notify CDFG of such proposed activity. CDFG may propose reasonable modifications, based on the information contained in the notification form and a possible field inspection, CDFG may propose reasonable modifications in the proposed construction as would allow for the protection of fish and wildlife resources. Upon request, the parties may meet to discuss the modifications. If the parties cannot agree and execute a Lake and Streambed Alteration Agreement, then the matter may be referred to arbitration.

#### California Department of Fish and Game Fish and Game Code 3503 and 3503.5

Section 3503 of the Fish and Game Code makes it unlawful to take, possess, or needlessly destroy the nests or eggs of any bird.. Section 3503.5 makes it unlawful to take or possess birds of prey (hawks, eagles, vultures, owls) or destroy their nests or eggs.

## California Department of Fish and Game Fully Protected Species

Species classified as Fully Protected Species under state statutes may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock. (See, e.g., Cal. Fish & G. Code, §§ 3511, 4700, 5050.)

### **Local**

#### Draft Solano Multispecies Habitat Conservation Plan and Natural Community Conservation Plan (Solano HCP/NCCP)

In March 1999, the USFWS, in accordance with Section 7 of the federal Endangered Species Act of 1973 (as amended), issued a Biological Opinion regarding the Solano Project Water Service Contract Renewal between the Bureau of Reclamation and the Solano County Water Agency (SCWA). The contract provides for continued delivery of Solano Project water throughout the SCWA contract service area. SCWA delivers Solano Project water in accordance with its eight Member Agency contracts, which includes the City of Suisun City. The Bureau of Reclamation, SCWA, and the member agencies have agreed to implement conservation measures to ensure the protection of threatened and endangered species and their habitat within the SCWA contract service area. As a condition of the Biological Opinion, SCWA and its member agencies are required to prepare a Habitat Conservation Plan (HCP), per Section 10(a)1(B) of the Federal Endangered Species Act, in order to obtain authorization for incidental take of listed species that may be impacted by activities associated with future water use in the Solano Project contract service area.

The Solano HCP/NCCP has expanded the scope of the Biological Opinion requirements to comply with the State's Natural Communities Conservation Planning Act (NCCPA) of 2002 and includes additional voluntary plan participants and additional species for incidental take coverage. These additional species include federally listed fish species under the jurisdiction of the National Marine Fisheries Service (NOAA Fisheries) and species listed as threatened or endangered under the State's Endangered Species Act. The HCP/NCCP also addresses other species of concern (i.e., species recognized by groups such as the CDFG and the CNPS as having declining or vulnerable populations, but not officially listed as threatened or endangered species.) Seventy-seven species are proposed to be covered under the Solano HCP/NCCP. The purpose of the HCP/NCCP is to promote conservation of biological diversity consistent with the recognition of private property rights, providing for a healthy economic environment for the citizens, agriculture, and industries, and on-going maintenance and operation of public and private facilities in Solano County.

The Solano Multi-Species HCP/NCCP establishes a framework for complying with State and Federal endangered species regulations while accommodating future urban growth, infrastructure development, and ongoing operation and maintenance activities associated with flood control, irrigation facilities, and other public infrastructure. It will account for all activities undertaken by or under the permitting authority and control of the Plan participants within Solano County, of which Suisun City is a plan participant and therefore the proposed project would be subject to

appropriate HCP/NCCP conservation measures. The Solano HCP/NCCP is currently in draft form.

The Solano HCP/NCCP includes Planning Areas 1 – 4 of the proposed project area in Zone 1 “Urban Zone.” This zone is defined as the existing and identified potential urban development areas within the member agency cities of Vacaville, Fairfield, Suisun City, Rio Vista, Dixon and Vallejo. Although Planning Area 5 is not part of the proposed project, this portion of the project area is within Zone 3, which is designated as the Remainder of the County. Covered activities within this zone are primarily related to implementation of the HCP/NCCP conservation measures (i.e., management, enhancement, habitat restoration/construction, monitoring, scientific collection, and associated compatible activities on designated reserves, mitigation sites/banks, and open space lands and adjacent lands) and non-agricultural activities carried out under the authority of or participation by the Plan Participants on lands outside of the designated urban boundaries (communication towers, water supply reservoirs, recreational facilities management).

#### Solano County General Plan

In addition to federal and state regulations, the Solano County General Plan (Solano County Planning Department 1980) identifies the following policies to provide further protection to biological resources within the County’s unincorporated areas. Although these policies would not apply to the Project if the City of Suisun is successful in accomplishing annexation of the project site, the policies are nevertheless set forth below:

##### Marsh and Wetland Habitat

#### **Policies**

- Protect marsh waterways, managed and natural wetlands, tidal marshes, seasonal marshes, and lowland grasslands, which are critical habitats for marsh-related wildlife.
- Continue existing uses in upland grasslands and cultivated area surrounding the critical habits of the Suisun Marsh in order to protect the marsh and preserve valuable marsh-related wildlife habitats. Where feasible, enhance the value of the upland grasslands and cultivated lands as habitat for marsh-related wildlife.
- Limit agriculture within the Primary Management Area of the Suisun Marsh to activities compatible with, or intended for, the maintenance or improvement of wildlife habitat.
- Maintain agricultural uses consistent with protection of the Suisun Marsh, such as grazing and grain production, within the Secondary Management Area.

#### City of Suisun City General Plan

In addition to federal and state laws and regulations, the Open Space and Conservation Element of the City of Suisun City General Plan (May 2001) identifies the following objectives and policies to provide for a variety of open spaces to meet community needs for environmental protection, agriculture, recreation, flood management, and water quality.

Objective 1: To designate sufficient lands for various open space uses that will meet the parks and recreation requirements of the capital improvements program, protect the City from flooding, preserve the Suisun Marsh, preserve natural resources and amenities, and ensure continued agricultural production as an interim use:

Policy 1: Location of Open Space Lands. Suisun City will designate certain lands to remain undeveloped or developed only with uses that are consistent with plans and programs (Specific Plan, CIP, Marsh Protection District Plan, etc.) for the use of such lands.

Policy 2: Management of Open Spaces. In some cases, such as for park and recreation use, land will be acquired and managed publicly. In other cases, open space uses will be assured through cooperative agreements with private property owners or through public easements.

Policy 3: Types of Open Spaces. Open space lands will serve a variety of purposes:

- a. Outdoor recreational pursuits
- b. Resource Management and habitat preservation.
- c. Agricultural production
- d. Visual enjoyment and enhancement of community character.
- e. Flood management.
- f. Watershed and water quality protection.
- g. Ensuring the safety of the community by avoiding sites hazardous to urban development.

The City of Suisun City General Plan states that the environmental preservation goal is to improve the qualities and amenities of the Suisun Marsh environment as a natural habitat and recreation area and to the waterways emptying into the Marsh.

Objective 1: To increase the accessibility of the Marsh to residents of Suisun City, in conjunction with State action, while assuring its protection and enhancement in accordance with State policies governing the management of lands within and adjacent to the marsh.

Policy 7: Use and Protection of the Suisun Marsh. Land within the Primary management area prescribed by the Suisun Marsh Protection Plan will be preserved as open space for appropriate agricultural and wildlife habitat and limited outdoor recreational use compatible with the objectives of the Suisun Marsh Protection plan. Other use of the Primary management area will be limited to constructing any roads or bicycle and pedestrian paths, required for access to the marsh for the above uses, to publicly and privately sponsored recreation activities which are compatible with the marsh environment, and the transportation and utility corridor along the south side of Highway 12. Such access must be in conformity to the Marsh Protection Plan on utilities, facilities and transportation.

Policy 9: Protection of Watercourses and Floodways. Natural watercourses and drainage channels shall be protected and preserved to the extent possible; runoff from urban development and upland watershed areas will be contained by channels and reservoirs to control debris, sediment, and the rate and dispersal of runoff.

The City of Suisun City's General Plan currently designates all of the Gentry and Tooby parcels for urban development (mainly as limited industrial/business park, except portions designated as general commercial).

### Suisun Marsh Protection Plan

Development and use of the Suisun Marsh is regulated under State law. In 1974, the California legislature passed the Suisun Marsh Preservation Act because of the need to protect the marsh from potential residential, commercial and industrial developments and the need to preserve the marsh for future generations. The Act directs the San Francisco Bay Conservation and Development Commission (BCDC) and the Department of Fish and Game to prepare the Suisun Marsh Protection Plan to "preserve the integrity and assure continued wildlife use" of the Suisun Marsh.

The Plan divides Suisun Marsh into two zones: a primary management area and a secondary management area. The primary management area encompasses 89,000 acres of tidal marsh, managed wetlands, adjacent grasslands and waterways over most of which BCDC has jurisdiction. The secondary management area encompasses approximately 22,500 acres of buffer. Solano County administers the local protection program while BCDC represents the State's interest and also serves as the land use permitting agency for major projects in the primary management area.

In the primary management area, the protection of environmental values and existing uses is the primary consideration. Urban development is precluded and other uses such as oil and gas exploration and construction and operations of utilities and other facilities are highly regulated by BCDC. Nevertheless, these activities are not permitted if they conflict with the protection of the marsh's values and other practicable alternatives are available. Activities within the secondary management area are also severely restricted to activities that will not adversely impact the Marsh. The primary management area encompasses the entire Barnfield property. The primary and secondary management areas are discussed further below.

#### *Primary Management Area*

As indicated above, the function of the primary management area is to protect and manage the Suisun Marsh ("Marsh") to enhance the quality and diversity of habitats. Another function of the primary management area is to protect existing uses of the Marsh, such as agricultural and hunting related activities provided they be limited to activities compatible with, or intended for, the maintenance and improvement of wildlife habitat.

Within the primary management area "... land and water areas should be managed so as to achieve the following objectives:

- Preservation and enhancement of Marsh habitat.
- Provision of habitat attractive to waterfowl.
- Improvement of water distribution and levee systems.
- Encouragement of agricultural and grazing practices consistent with wildlife use, waterfowl hunting, and elimination of mosquito breeding.
- Restoration of historic wetlands.”

BCDC has jurisdiction over most of the primary management area and serves as the land-use permitting agency for major projects in the primary management area.

### *Secondary Management Area*

The Secondary management area encompasses approximately 22,500 acres of “significant buffer lands”, including upland grasslands and agricultural lands, surrounding the primary management area of the Suisun Marsh. The function of the secondary management area is to act as a buffer area protecting the Marsh habitats within the primary management area from adverse impacts of urban development. The secondary management area also serves as a transitional zone that is used by Marsh wildlife particularly when the wetlands are flooded and during periods of high hunting pressure in the Marsh. Goals of the secondary management area include:

- Returning historical marshes that have been converted for urban land use practices back to their original wetland status.
- Maintaining and enhancing Marsh-related wildlife habitats in the Secondary management area by planting or encouraging valuable wildlife food or cover plant species.
- Supporting existing agricultural land uses consistent with the protection of the Marsh, such as grazing and grain production.
- Establishing local runoff, erosion, and sediment control ordinances over the watershed of the Suisun Marsh to prevent or minimize earth disturbance, erosion, water pollution, and hazards to public safety.

The secondary management area's function as a buffer and transitional zone to protect the Marsh is the prime consideration in building and land-use restrictions over the area. The Suisun Marsh Protection Plan disfavors urban development, and encourages protection of existing grazing and agricultural practices. The Plan also tolerates existing commercial ventures, provided they do not cause adverse impacts on Suisun Marsh. These potential impacts, whether from an existing or proposed use, includes direct, quantifiable effects such as degradation of water quality, to less quantifiable impacts such as the intrusion of domestic pets.

Solano County, which has jurisdiction over the secondary management area, assesses compatibility of a proposed land use according to the policies defined in the Suisun Marsh Protection Plan and further detailed in Solano County's Local Protection Program. New commercial ventures in the secondary management area are not prohibited, but it is required that such ventures be compatible with the Local Protection Program. Solano County authorizes land use and development through a rigorous permitting process. In considering a permit, there are three principal concerns:

1. Construction should not be disruptive to the ecosystem.
2. New development should not "have lasting effects on wildlife by forming barriers and obstacles to their movements and flight patterns."
3. The process or development itself should not "stimulate urban development by providing services that are a prerequisite for such development."

Any development within the secondary management area must be authorized through the Marsh Development Permit process. An application for a Marsh Development Permit must be obtained by and filed with the Solano County Planning Department. In order for the Zoning Administrator or Planning Commission to grant a Marsh Development Permit, it must be demonstrated in the application that the proposed development shall be consistent with the policies defined in the Suisun Marsh Local Protection Program, which outlines Solano County's strategies for following policies defined in the Suisun Marsh Protection Plan for the secondary management area.

#### *Agency Responsibilities*

Rather than give one agency responsibility over the Suisun Marsh, the Suisun Marsh Protection Plan allows for control by multiple agencies that must maintain practices compatible with the policies of the Plan.

Local government agencies with jurisdiction over an area of the Marsh retain administrative control, including permit authority, and shoulder responsibility for day-to-day implementation of the Plan. For guidance, those agencies reference a "local protection program" that outlines how that area should conform to the Plan.

Besides administrating its own lands in the Marsh, the State maintains an oversight role, which is carried out by BCDC. The State's principal oversight duties are twofold: 1) "to ensure to the maximum extent feasible that existing uses of the Marsh continue," and 2) to ensure "that further development in the watershed does not adversely affect water quality." The means of oversight include a permit system for development in the primary management area, appellate review over local decisions that "significantly affect the Marsh," and certification of the Local Protection Program.

Solano County is responsible for preparing and administering Solano County's Local Protection Program and also has permit authority in the secondary management area. Solano County refers to a regulatory document called the "Solano County Policies and Regulations Governing the Suisun Marsh" for guidelines and policies concerning land use activities in the secondary management area. Solano County also refers to the County General Plan to determine marsh protection policies and land use designations.

Suisun City, Fairfield, and Benicia have permit authority in the region of the secondary management area that falls within the cities' boundaries. They reference their local protection programs and general plans to determine policies concerning land designations and land use activities within the secondary management area.

The Fish and Game Commission and CDFG maintain ultimate authority and responsibility for management of the fish and wildlife resources of the Marsh. CDFG manages lands acquired with State funds that are intended for wildlife habitat and recreational use. Because of the daily presence of its employees in the Marsh, and the ground-level understanding that comes from this presence, CDFG also has significant influence and responsibility over the general management of the Marsh. This includes review of the Local Protection Program, consultation on wildlife and water management and appeals, the development of Marsh programs, and the authority to inspect and report on the Marsh.

The Suisun Resource Conservation District (District) is empowered to regulate water management practices of private lands in the Marsh. Local agencies retain the responsibilities of day-to-day water management, and those agencies retain the power to enter into agreements with landowners. In instances where the District is unable to regulate water-management practices, then the appropriate State or special purpose district assumes those responsibilities. The State Water Resources Control Board sets salinity standards for water in the Marsh, while the Department of Water Resources administers any alternative freshwater source necessary to the Marsh.

The State Lands Commission advises the BCDC on State land title and ownership questions, and resolves ownership disputes. The Commission also carries out Plan management recommendations on lands under its stewardship.

The State is also authorized to acquire fee interests where appropriate, and to offer advice, data, and staff support to local agencies to help with implementation of the Plan. The Commission encourages to collaboration with non-profit corporations such as the Trust for Public Lands to make timely land purchases for inclusion in the Marsh public lands.

The Plan requires the continuation and expansion of research investigating how to better manage the Marsh. Federal and State agencies and the Solano County Mosquito Abatement District have the responsibility for conducting this research.

BCDC, which has jurisdiction over the primary management area, determines acceptance of permit applications based on whether the proposed land and water uses will be compatible with the maintenance and improvement of wildlife habitat and water quality in the Suisun Marsh. BCDC generally cannot authorize urban uses, such as houses, industries, roads, businesses and offices within the Primary management area. Obtaining authorization from BCDC is necessary before undertaking any of the following activities within the Commission's jurisdiction:

- Placing solid material, pilings, floating structures, boat docks, or other fill.
- Dredging or other extraction of material.
- Making a substantial change in use of a structure or an area.
- Undertaking most types of development including some subdivisions of property.

In addition to having permit authority over potential development projects in the primary management area, BCDC also regulates currently existing agricultural practices. This type of land use is supported provided it is compatible with management goals. Intensive agricultural

activities involving removal or persistent plowing of natural vegetation and maintenance of fallow land during part of the year is not permitted.

#### *Management Area Designations on the Project Site*

The Gentry Property and Tooby Property are north of Cordelia Road on the west and east sides of Pennsylvania Avenue, respectively. In this local region, Cordelia Avenue defines the northern boundary of the area regulated by the Suisun Marsh Protection Plan. Both properties are therefore located outside (north of) the jurisdictional area of the Suisun Marsh Protection Plan and are not subject to the land use regulations of the Plan.

The Barnfield Property (Planning Area 5), is not part of the proposed project, but is identified as a potential site for wetland mitigation and is located south of Cordelia Road. The entire property is situated within the jurisdictional area of the Suisun Marsh Protection Plan. Most of the property is located within the primary management area and the remainder is located within the secondary management area. The entire property is therefore subject to the regulations and land use restrictions of the Suisun Marsh Protection Plan.

The portion of the Barnfield Property located within the primary management area is under the jurisdiction and permitting authority of BCDC. Permitted development projects are typically restricted to the construction or maintenance of duck hunting club or wildlife viewing facilities, maintenance of levees, existing railways, roads, utilities, and buildings, gas and oil exploration, and construction and operation of natural gas wells. Residential or commercial development projects are generally not permitted in this area.

The small area along the western border of the Barnfield property located within the secondary management area is under the jurisdiction and permitting authority of Solano County. This area is zoned by the County as MP (Marsh Preservation District). A single primary residence is an allowed use on MP zoned lands. Other limited developments such as certain types of agricultural operations, hunting clubs or preserves, gas and oil exploration, and construction and operation of natural gas wells can also be permitted. Any proposed development project is authorized through the Marsh Development Permit and must conform to Solano County's General Plan and Suisun Marsh Local Protection Program.

Development is not proposed as part of the project for either the primary or secondary management areas on the Barnfield property.

#### **Other Statutes, Codes, and Policies Affording Limited Species Protection**

##### California Native Plant Society

The 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 (Tibor 2001). 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.

## IMPACTS AND MITIGATION MEASURES

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### Standards of Significance

For the purposes of this EIR, impacts are considered 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, substantially reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory (CEQA Guidelines Section 15065(a));
- Have a substantial adverse affect, either directly or through habitat modification, any endangered, threatened or rare species, as listed in Title 14 of the California Code of Regulations (Sections 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 (CNPS 2001, 2006);
- 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;
- Adversely affect federally protected wetlands (including but not limited to, marsh, vernal pool, coastal, etc.) 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 movement zones, including but not limited to, non-fragmented stream environment zones, avian and mammalian routes, and known concentration 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. Per CEQA guidelines this is intended to address all taxa irrespective of designated status;
- 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 in a manner that would result in an adverse 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. While these considerations are generally relegated to the realm of professional opinion, they are based on standard practice (i.e., industry standard).

### Methods of Analysis

Sources of information used for this section include the results of biological studies performed by Vollmar Consulting as described in their *Wetland Delineation and Special-Status Species Survey Report* (2003). In addition, this section includes the results from Foothill Associates' independent biological studies, as well as local, state, and federal resource agencies. Nomenclature for biological communities was based on *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988) with additional information provided by *A Manual of California Vegetation* (Sawyer and Keeler-Wolf 1995).

Documents pertaining to the biological resources of the project site that were reviewed for Foothill Associates' Biological Resources Report include the following:

- California Department of Fish and Game (CDFG 2006). California Natural Diversity Data Base (CNDDDB) (query for U.S. Geological Survey *Fairfield South, Fairfield North, Denverton, Elmira, Mt. George, Cordelia, Benicia, Vine Hill, and Honker Bay, California* 7.5-minute quadrangles). Sacramento, CA. October 2004.
- Solano County Planning Department. 1980. Solano County General Plan (as amended through July 1995).
- LSA Associates 2005. Solano Multispecies Habitat Conservation Plan and Natural Community Conservation Plan, Working Draft 2.1. LSA Project No. SCD930. Pt. Richmond, California.
- U.S. Fish and Wildlife. 2006. Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the *Fairfield South, California* USGS 7.5-minute series topographic quadrangle: February 2006.
- Vollmar Consulting. 2003. Wetland Delineation and Special-Status Species Survey Report for the Gentry and Tooby Properties, Suisun, Solano County, California.

- Vollmar Consulting. 2005. Gentry, Tooby and Barnfield Properties: Special-Status Plant Survey Report 2000-2002, & 2005 Field Seasons.
- Foothill Associates' biologists conducted field surveys on the project site on April 6, 2004. The field surveys included general plant and wildlife surveys and a focused special-status plant survey. Special attention was given to those areas on the project site with the potential to support special-status plant and wildlife species and sensitive habitats, including wetlands. Recent aerial photography (WAC Corporation 1999) was examined to identify biological resources and map biological communities in conjunction with field surveys.

## **Project Impacts and Mitigation Measures**

The following discussion of impacts is based on the implementation of the proposed project. Because the proposed project incorporates open space, but would alter existing on-site natural resources, this impact discussion reflects full build-out of the project.

### **4.6-1 Impacts to Annual Grassland Habitat.**

#### Base Project, Alternative 1, and Alternative 2

Development of the mixed-use site includes commercial and residential development as well as roads and other infrastructure which would result in the direct loss of approximately 52.7 acres of annual grassland habitat as indicated in Tables 4.6-3 and 4.6-3. Annual grassland is not considered a sensitive natural community according to the Federal Endangered Species Act (FESA), California Endangered Species Act (CESA), or California Native Plant Society (CNPS). Nor would the loss of this acreage substantially reduce the habitat of any fish or wildlife species, cause any fish or wildlife population to drop below self-sustaining levels, or threaten to eliminate any plant or animal community. For these reasons, the project would have a *less-than-significant* impact to annual grasslands.

#### Mitigation Measure(s)

*None Required.*

### **4.6-2 Impacts to wetlands within the project area.**

#### Base Project, Alternative 1, and Alternative 2

##### *Impacts to wetlands within the project area*

The proposed 87.82-acre project site includes 35.72 acres of wetlands and other waters under state and federal jurisdiction. Wetlands and waters of the U.S. subject to Corps jurisdiction would be filled to accommodate the proposed development. Wetland impacts related to project fill would total 35.72 acres. A consequent loss of the wetland functions and values would be expected within the areas and would be considered a *potentially significant* impact.

*Impacts to alkali seasonal marsh north of Planning Area 3*

Development of Planning Area 3 would not only directly impact alkali seasonal marsh habitat (See Figure 4.6-3) but could also indirectly impact the alkali seasonal marsh just north of the Planning Area through alterations in water quality or disruption to the wildlife that may use this area. Therefore, development of the proposed project would result in a ***potentially significant*** impact

*Impacts to perennial brackish marsh drainage ditch within Planning Area 3*

The eastern border of Planning Area 3 abuts a perennial brackish marsh drainage ditch. Development of the Planning Area 3 could indirectly impact the drainage ditch through alterations in water quality or disruption to the wildlife that may use this area and would result in a ***potentially significant*** impact.

Mitigation Measure(s)

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

- 4.6-2(a) *Prior to the issuance of grading permits, the project applicant shall provide a detailed preliminary wetland delineation assessment for all areas that were not part of the verified wetland delineation proposed for development. The preliminary wetland assessment shall indicate the presence of wetlands potentially under state or federal jurisdiction, as well as Corps verification of wetland delineations for any wetlands subject to federal jurisdiction.*
- 4.6-2(b) *Prior to the issuance of grading permits, the project applicant shall obtain a 404 permit(CWA) from the Corps. If a 404 permit is obtained, the applicant must also obtain a water quality certification from RWQCB under Section 401 of the CWA.*
- 4.6-2(c) *Prior to the issuance of grading permits, the project applicant shall compensate for the loss of wetland habitat to ensure no net loss of habitat functions and values. To mitigate for the direct loss of 35.72 acres of jurisdictional wetlands, the applicant shall create/restore wetlands at a ratio of 1:1 (1 acre created/restored for every acre lost) and the preservation of wetlands at a ratio of 2:1, either on the Tooby and Barnfield properties, or at a nearby location. Created/restored wetlands and preserved wetlands shall generally be in-kind for wetlands lost. In the event that the Corps, USFWS, or RWQCB, in granting approvals necessary to fill wetlands subject to federal and/or state jurisdiction, require ratios higher than those set forth in this measure, compliance with the 1:1 and 2:1 ratios set forth in this measure shall count as credit towards compliance with any such higher ratios imposed by the Corps or RWQCB.*

*A detailed wetland mitigation plan shall be required that includes monitoring and reporting requirements, responsibilities, performance success criteria, and contingency requirements. Mitigation lands would be subject to a conservation easement and an agency approved long-term management plan. The conservation easement would ensure that the wetlands were protected in perpetuity. The wetland mitigation plans would require approval by the City, the Corps, and the RWQCB.*

*Alternately, with Corps and RWQCB approval, the applicant can satisfy the wetland mitigation requirement in part, or in full, by purchasing wetland creation/restoration credits at a 1.5:1 ratio and preservation credits at a 2:1 ratio at an approved wetland mitigation bank.*

4.6-2(d) *Prior to the issuance of grading permits, the project applicant shall provide temporary fencing around all areas scheduled for development to provide an additional barrier for the unauthorized movement of people, pets, and wildlife associated with human development into the wetland areas and to keep sensitive species from entering the construction area. Fencing during construction will ensure that construction related disturbances such as soil compaction, fuel spills, and dust generation will not occur beyond the boundaries of the permanent riparian protection buffer. The location of the fencing shall be marked in the field with stakes and flagging and shown on the construction drawings. The construction specifications should include clear language that prohibits construction-related activities, vehicle operation, material and equipment storage, and other surface-disturbing activities within the fenced area. This fencing will be replaced with permanent fencing as soon as it is practicable to do so. This fencing should be adequate to deter people and domestic animals from entering the property and have provisions for maintenance. Signage should be provided, directing people to keep out of natural areas and mitigation sites. In addition, the project applicant shall be required to post signage stating that dogs, horses, and off-road vehicles are not permitted in these areas and will take all necessary measures to physically prevent them from entering. The fence will impede wildlife movement into the developed area, which is a desirable effect, as wildlife moving into the developed area would likely be killed by domestic pets or vehicle traffic. Additionally, there will be no suitable habitat or refuge for them in the developed area therefore in this case a barrier to movement is beneficial. Barriers to movement are negative when they restrict movement among/between areas with suitable habitats and/or viable populations.*

4.6.2(e) *Prior to the issuance of a grading permit, the project applicant shall provide an unmowed buffer having a minimum average width of 25 feet along the north boundary of Planning Area 3 where wetlands occur*

*adjacent to the boundary, to avoid potential indirect impacts to the alkali seasonal marsh adjacent to the northern boundary of Planning Area 3.*

*Alternatively, if the unmowed buffer is not feasible, wetlands within 25 feet of the northern boundary of Planning Area 3 would be considered indirectly impacted, and would require mitigation at a 1:1 ratio. Approximately 0.29 acre of alkali seasonal marsh lies within this 25-foot buffer area on the northern border and would require mitigation if indirectly impacted.*

4.6.2(f) *Prior to the issuance of grading permits, the project applicant shall indicate on the improvement plans, a minimum 25-foot buffer from the perennial brackish marsh drainage ditch at the eastern boundary of Planning Area 3. In addition to the 25-foot unmowed buffer, the fire department may require a 30-foot mowed firebreak adjacent to the residential fence line.*

4.6.2(g) *To avoid impacts to wetlands and special status plants outside of the Mixed-Use Site, the applicant will provide construction worker training and exclusionary fencing near wetlands and Contra Costa goldfield populations adjacent to the work zone.*

### **4.6-3 Impacts to vernal pools located within the proposed project site.**

#### Base Project, Alternative 1, and Alternative 2

Planning Area 1 includes 9.06 acres of vernal pool habitat which is proposed for development. In addition, vernal pools are located adjacent to Planning Area 3 and the Gibert Property. The project site is also located within designated critical habitat for vernal pools (USFWS 2006a); and is designated as both a “Draft Vernal Pool Core Area” and a “High Value Conservation Area” by the *Draft Solano Multispecies Habitat Conservation Plan* (LSA Associates 2005). Development of the proposed project would result in direct and indirect impacts to this habitat. Therefore, the project would result in a **potentially significant** impact.

#### Mitigation Measure(s)

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

4.6-3(a) *Implement mitigation measures 4.6-2(a) through 4.6-2(d).*

4.6.3(b) *Prior to the issuance of a grading permit, the project applicant shall indicate on the improvement plans, a minimum buffer of 250 feet from the vernal pool located north of Planning Area 3.*

*Alternatively, if the unmowed buffer is not feasible, vernal pools within 250 feet of the northern boundary of Planning Area 3 would be considered indirectly impacted, and would require mitigation at a 1:1 ratio.*

4.6-3(c) *Implement mitigation measure 4.6-11(a-f).*

#### **4.6-4 Impacts to riparian habitat.**

##### Base Project, Alternative 1, and Alternative 2

##### *Impacts to riparian habitat on the western boundary of Planning Area 1 and 2*

The western boundary of Planning Areas 1 and 2 abuts Ledgewood Creek. Development of the proposed project within these Planning Areas could reduce the value of the wildlife habitat of this riparian area as a result construction and grading activities which could result in degradation of sensitive habitat areas through increased erosion, increased sedimentation, spills during vehicle refueling, or disposal of food and trash. Therefore, the proposed project would result in a ***potentially significant*** impact.

##### *Impacts to Jurisdictional riparian habitat*

Development of the proposed project within Planning Area 2 would impact 0.03 acre of Corps Jurisdictional riparian habitat (i.e., wetlands) and approximately 0.33 acres of potential CDFG Jurisdictional riparian habitat that is a remnant portion of Ledgewood Creek. CDFG would need to make a determination of its jurisdictional areas as part of the 1602 streambed alteration agreement that would be prepared for this site. This area is now cut off from Ledgewood Creek, which lies west of the proposed project site. Because this area is within the development footprint, the anticipation is that this area will be filled as part of development or alternatively, used for stormwater detention before the stormwater is discharged offsite. Therefore, because this wetland is under federal jurisdiction and may be under state jurisdiction, a ***potentially significant*** impact would occur.

##### Mitigation Measure(s)

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

4.6-4 (a) *Prior to the issuance of a grading permit, the project applicant shall indicate on the improvement plans, a buffer that shall be set back on average 50 feet from the top of the bank or outside edge of riparian vegetation within Ledgewood Creek and Planning Area 2, whichever distance is greater.*

4.6-4 (b) *In addition to maintaining a riparian protection buffer average of 50 feet from the top of the bank or outside edge of riparian vegetation, the project applicant shall also install temporary fencing along the boundary of the riparian protection zone adjacent to construction activities during the construction of the project in the vicinity of the riparian area in Planning Areas 1 and 2, prior to the issuance of grading permits. Fencing during construction would ensure that construction related disturbances such as*

*soil compaction, fuel spills, and dust generation will occur beyond the boundaries of the permanent riparian protection buffer. The location of the fencing shall be marked in the field with stakes and flagging and shown on the construction drawings. The construction specifications should include clear language that prohibits construction-related activities, vehicle operation, material and equipment storage, and other surface-disturbing activities within the fenced area. Furthermore, signs and necessary fencing shall be constructed directing people to keep out of natural areas and mitigation sites, prior to obtaining any permits. In addition, the project applicant shall be required to post signage stating that dogs, horses, and off-road vehicles are not permitted in these areas and will take all necessary measures to physically prevent them from entering them.*

- 4.6-4 (c) *Prior to the issuance of grading permits, the project applicant shall install permanent fencing within Planning Areas 1 and 2 to avoid intrusion into the adjacent riparian areas. The fence shall be placed along the riparian setback (50-feet from top of bank or outside edge of riparian vegetation). This fencing should be adequate to deter people and domestic animals from entering the property and have provisions for maintenance. The existing permanent fencing may be sufficient for this purpose. In addition, prior to obtaining any permits, signs and if necessary fencing shall be constructed directing people to keep out of natural areas and mitigation sites. In addition, the project applicant shall be required to post signage stating that dogs, horses, and off-road vehicles are not permitted in these areas and to take all necessary measures to physically prevent them from entering them.*
- 4.6-4(d) *Implement mitigation measure 4.6-2(c).*
- 4.6-4 (e) *Prior to any construction activities, the project applicant shall consult with the Community Development Director to develop Best Management Practices (BMPs) to prevent erosion, blowing dust, and increased sedimentation for the proposed project. The proposed project shall comply with all designed and implemented Best Management Practices. Examples of these BMP's are described in the California Stormwater Quality Association (CASWQA)'s California Stormwater Best Management Practice Handbook: New Development and Redevelopment (CASWQA 2003).*
- 4.6-4(f) *All fueling and maintenance of vehicles and other equipment as well as locations of staging areas shall occur at least 75 feet from any riparian area proposed to be preserved (including those adjacent to the western boundaries of Planning Areas 1 and 2) and other wetlands proposed to be preserved (wetlands not within the mixed-use site). All workers shall be*

*informed, by the project contractor, of the importance of preventing spills and of the appropriate measures to take should a spill occur.*

4.6-4(g) *The number of access routes, and number and size of staging areas shall be limited to the minimum necessary to achieve the project goal. Routes and boundaries shall be clearly marked/flagged. These areas shall be outside of wetland areas and other sensitive areas proposed for preservation as determined by the Public Works Director.*

4.6-4(h) *Food, trash, and other solid wastes shall be disposed of in properly contained, covered refuse containers and regularly removed from the construction site. The project contractor shall be responsible for the above requirements during the full length of project construction.*

#### **4.6-5 Impacts to loss of wildlife corridor.**

##### Base Project, Alternative 1, and Alternative 2

The project site as a whole serves little value as a wildlife corridor due to the large amount of development and barriers that surround the site. While the Tooby Parcel and off-site Barnfield Parcel do provide large areas of habitat for several sensitive salt marsh species, they are located at the northern extent of these species' range in the immediate area and do not represent corridors between two large populations. Furthermore, the project is not anticipated to impact LedgeWood Creek which may serve a limited function as a wildlife corridor for species inhabiting the brackish and freshwater emergent vegetation within its channel. The project site is also not within an area designated as a key corridor by the HCP (LSA Associates 2005). Therefore, this project is anticipated to result in *less-than-significant* impacts related to wildlife corridors.

##### Mitigation Measure(s)

*None Required.*

#### **4.6-6 General Impacts to Special-Status Plant Species.**

##### Base Project, Alternative 1, and Alternative 2

The proposed project consists of commercial and residential development on approximately 88.4 acres. Contra Costa goldfields, saline clover, and alkali milk-vetch are known to occur on the project site. In addition, suitable habitat for brittlescale, heartscale, and San Joaquin saltbush occurs on-site. Implementation of the proposed project would directly impact the Contra Costa goldfields, saline clover, and alkali milkvetch populations and result in the loss of suitable habitat for brittlescale, heartscale, and San Joaquin saltbush. Furthermore, the draft Solano Habitat Conservation Plan currently identifies the project site as a conservation area for Contra Costa goldfields. Special-status plant species could be impacted if development were to occur in suitable habitat areas not previously surveyed for special-status plant species. Therefore, the proposed project would result in a *potentially significant* impact.

##### Mitigation Measure(s)

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

- 4.6-6(a) *Prior to construction, surveys for special-status plant species shall be undertaken in areas not previously surveyed, if development is proposed to occur in suitable habitat for special-status plant species. If additional locations of species are identified in these surveys, mitigation for those species shall be implemented as indicated below. Although not anticipated, if special-status species not discussed under impacts 4.6-7 through 4.6-10, are found then mitigation in the form of on-site protection, transplantation, or through purchasing mitigation credits in an authorized mitigation bank may be used to off-set impacts as necessary., as applicable for federally listed or state listed species (or state Species of Special Concern), respectively.*

#### **4.6-7 Impacts to Contra Costa Goldfields.**

##### Base Project, Alternative 1, and Alternative 2

On the basis of the 2000 – 2002 and 2005 surveys conducted by Vollmar Consulting, a 0.02 acre area occupied by the Contra Costa goldfields would be adversely affected by the proposed project. This population represents a 0.13 percent loss to the known population of Contra Costa goldfields in the Gentry, Tooby, and Barnfield properties during the survey years. The project site is within Vernal Pool Critical Habitat Unit 5B, Contra Costa Goldfields (USFWS 2006a).

Contra Costa goldfields occur on the Gentry property within seasonally saturated annual grasslands. On the Tooby property this species occurs in vernal pools. On the Barnfield property Contra Costa goldfields occurs in seasonally saturated annual grassland, alkaline seasonal marsh, and vernal pools. The loss of the seasonally saturated annual grassland, alkali seasonal marsh, and vernal pool wetland types represents the loss of potential Contra Costa goldfields habitat. Loss of potential Contra Costa goldfields habitat would therefore total 35.72 acres, which equals the amount of impacted jurisdictional wetlands within the project development site. Loss of this potential habitat would result in a ***potentially significant*** impact.

##### Mitigation Measure(s)

Implementation of the mitigation measure below would reduce this impact to a *less than significant* level.

- 4.6-7(a) *In coordination with a botanist familiar with Contra Costa goldfields salvage and relocation programs, the applicant shall attempt to establish new populations of Contra Costa goldfields that result in a net increase in plant numbers and/or areal extent of occupied habitat (resulting in a net increase in habitat) based on average populations derived from the 2000 – 2002 and 2005 surveys conducted by Vollmar Consulting. Establishing new populations may be accomplished by collecting seed from existing populations and salvaging seed and topsoil from occupied wetlands within*

*the impacted area. The restored or new Contra Costa goldfields populations may be established in constructed/restored and existing enhanced wetlands. A plan for the relocation and monitoring efforts shall be coordinated with the U. S. Fish and Wildlife Service.*

- 4.6-7(b) *The applicant shall preserve potential Contra Costa goldfields habitat at a ratio of 2:1 either on the Tooby and Barnfield property or at a nearby site (2 acres preserved for each acre lost) with the same general type of wetlands habitat as is found within the impacted site. The USFWS shall be consulted to determine the suitability of the preservation area to support Contra Costa Goldfields. This 71.44-acre wetland preservation area shall be protected in perpetuity by a conservation easement.*

#### **4.6-8 Impacts to Alkali Milk-Vetch.**

##### Base Project, Alternative 1, and Alternative 2

On the basis of 2005 survey data, approximately 0.02 acre of known occurrences of alkali milk-vetch would be impacted by development of the proposed project. The alkali milk-vetch is a federal species of concern and is on the CNPS List 1B.

This species was found in areas of seasonally saturated annual grassland on the Gentry property. In 2005, a year with very high rainfall, alkali milk-vetch was also found on the Gentry property in three locations of ruderal annual grassland habitat. The proposed project would impact approximately 19.67 acres of seasonally saturated annual grassland, which would be a potential habitat for the alkali milk-vetch. This represents a loss of potential habitat for the alkali milk-vetch of 19.67 acres. Therefore, the proposed project would result in a ***potentially significant*** impact.

##### Mitigation Measure(s)

Implementation of the mitigation measure below would reduce this impact; however, the impact would remain *significant and unavoidable* as relocation efforts would not be considered a feasible option.

- 4.6-8 *The preservation of seasonally saturated annual grassland habitat within the wetland habitat complex provided on the Barnfield property or other site as partial mitigation for the loss of potential habitat for the Contra Costa goldfields (MM 4.6-7(a) and 4.6-7(b)) would also serve as mitigation for the loss of potential alkali milk-vetch habitat. The preservation area shall be protected in perpetuity by a conservation easement. It should be noted that a salvage and relocation program is not considered a feasible mitigation measure for the alkali milk-vetch.*

#### **4.6-9 Impacts to Saline Clover.**

##### Base Project, Alternative 1, and Alternative 2

Impacts to 1.10 acres of the western Suisun population of Saline clover are anticipated as a result of project implementation, based on the 2000 – 2002 and 2005 surveys. Saline clover is a CNPS LIST 1B species.

Saline clover was observed around the upper margins of the large vernal pool in the Gentry property and in seasonally saturated annual grassland. The loss of the vernal pool habitat and the seasonally saturated annual grassland habitat within the project development footprint represents a loss of potential habitat for the saline clover and would result in a *potentially significant* impact.

Mitigation Measure(s)

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

4.6-9(a) *In coordination with a botanist familiar with salvage and relocation programs, the applicant shall attempt to establish new populations of saline clover that result in a net increase in plant numbers and/or occupied available habitat. Reestablishment shall be accomplished through collection of seed from extant populations and salvage of seed and top soil from occupied wetlands within the impacted area. The restored or new saline clover populations may be established in constructed/restored and enhanced wetlands.*

4.6-9(b) *The preservation of vernal pool, seasonally saturated annual grassland habitat, and alkali seasonal marsh on the Barnfield property or other nearby site as determined by USFWS as partial mitigation for the loss of potential habitat for Contra Costa goldfields (MM 4.6-7(a) and 4.6-7(b)), would also serve as mitigation for loss of potential saline clover habitat. A conservation easement shall be placed on this preservation area and it shall be protected in perpetuity.*

**4.6-10 Impacts to Suisun Marsh Aster.**

Base Project, Alternative 1, and Alternative 2

In the 2000 – 2002 and 2005 special-status plant surveys, the Suisun Marsh aster was observed in scattered locations along the ditch that traverses the Tooby Property. This population is estimated at 200 plants. Based upon the project development footprint, the eastern edge of Planning Area 3 could impact the Suisun Marsh aster along this ditch. The Suisun Marsh aster was also observed in scattered colonies along slough banks in the southern and southeastern portions of the Barnfield property. However, impacts would not be expected in this area because development is not proposed on the Barnfield property. Development of the proposed project would affect aster located on the edge of Planning Area 3 and would result in a *potentially significant* impact.

Mitigation Measure(s)

Implementation of the mitigation measure below, by providing a sufficient buffer to avoid adverse impacts on plants near the ditch, would reduce this impact to a *less-than-significant* level.

4.6-10            *Implement Mitigation Measure 4.6-2(f).*

#### **4.6-11 Impacts to Vernal Pool Habitat and Crustaceans.**

##### Base Project, Alternative 1, and Alternative 2

One wet and two dry season samplings were conducted for special-status vernal pool crustaceans (vernal pool tadpole shrimp, vernal pool fairy shrimp, and Conservancy fairy shrimp). The wet season survey was conducted in 2000 and the dry season surveys were conducted in the late fall of 2002 and late fall of 2005. The results of all three surveys were negative. The USFWS has indicated that protocol surveys must be conducted in two consecutive years and results are valid for five years. The surveys conducted in 2000 and 2002 were not during two consecutive years and it has been more than five years since the 2000 wet season surveys. The dry-season survey of 2005 would require a wet-season survey in 2006 in order to be considered a complete survey in accordance USFWS protocol. The survey is currently in progress. Although based on past surveys it is unlikely that special-status vernal pool crustaceans are present in wetland habitats within the project site, the survey results might determine that they are present after all. Indirect impacts to occupied habitat would include all habitats within 250 feet of the proposed development, and vernal pools supported by destroyed upland habitat. Therefore, because the proposed project could directly impact special-status vernal pool crustaceans due to the filling of wetlands for the proposed development a ***potentially significant*** impact would occur.

##### Mitigation Measure(s)

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

4.6-11(a)        *Prior to the issuance of a grading permit, the project applicant shall coordinate with the U.S. Fish and Wildlife Service to obtain approval for updated protocol-level surveys in 2006 for vernal pool crustaceans on the project site to fulfill any additional survey requirements of the USFWS.*

*If two consecutive protocol-level surveys are conducted and completed in accordance with USFWS Interim Survey Guidelines and the results are negative, no further mitigation is required.*

*If survey results indicate the presence of listed vernal pool crustaceans, mitigation measures 4.6-11(b-f) shall be implemented, subject to approval of the USFWS, through the consultation process under Section 7 of the Endangered Species Act. The consultation with the USFWS shall be initiated by the Corps as part of the Corps permit process under Section 404 of the Clean Water Act.*

The following mitigation measures are based on the USFWS's *Programmatic Formal Endangered Species Act Consultation on Issuance of 404 Permits for Projects with Relatively Small Effects on Vernal Pools Within the Jurisdiction of the Sacramento Field Office* (1995) and would be superseded by the terms and conditions of the USFWS's Biological Opinion for this project:

- 4.6-11(b) *For every acre of habitat directly or indirectly impacted, at least two vernal pool preservation credits shall be dedicated within a USFWS approved ecosystem preservation bank, or, based on USFWS evaluation of site-specific conservation values, 2 acres of vernal pool habitat may be preserved within the project area.*
- 4.6-11(c) *For every acre of habitat directly impacted, at least one vernal pool creation credit shall be dedicated within a USFWS approved habitat mitigation bank, or, based on Service evaluation of site-specific conservation values, one acre of vernal pool habitat will be created and monitored within the project area as approved by the USFWS.*
- 4.6-11(d) *Vernal pool habitat and associated upland habitat used as onsite mitigation shall be protected from adverse impacts and managed in perpetuity or until the Corps, the applicant and the USFWS agree on a process to exchange such area for credits within a USFWS-approved mitigation banking system.*
- 4.6-11(e) *If habitat is avoided (preserved) onsite, then a USFWS-approved biological monitor will inspect any construction-related activities at the proposed project site to ensure that no unnecessary take of listed species or destruction of their habitat occurs.*
- 4.6-11(f) *Fencing shall be placed and maintained around any avoided (preserved) vernal pool habitat to prevent impacts from vehicles.*

#### **4.6-12 Impacts to California Tiger Salamander.**

##### Base Project, Alternative 1, and Alternative 2

Development of the proposed project would impact the annual grasslands, vernal pools, and seasonal wetlands on-site (see Figure 4.6-5), which provide potential habitat for California tiger salamander. Biologists knowledgeable in the biology and identification of California tiger salamander have conducted dip-net surveys at pools within the property for vernal pool brachiopods. These surveys are on-going, but have failed to detect any larvae or adult California tiger salamanders; therefore, it is unlikely that the species occupies the site.

If, however, California tiger salamander is found or is subsequently deemed by regulatory agencies as potentially occurring on the site, the USFWS has indicated that protocol

surveys must be conducted in two consecutive years and results are valid for five years. Although unlikely to be present in areas planned for development, the California tiger salamander could be present within the annual grasslands, vernal pools, and seasonal wetlands on the project site. Therefore, because development of the proposed project could directly impact the California tiger salamander as a result of loss of this habitat, a **potentially significant** impact would occur.

Mitigation Measure(s)

The following mitigation measures would reduce adverse effects to tiger salamander to a *less-than-significant* level.

4.6-12(a) *If the Corps and USFWS determine that protocol-level surveys are necessary, then prior to the issuance of a grading permit the project applicant shall have a qualified, permitted biologist conduct protocol-level surveys in area subject to development for California Tiger Salamander according protocols (USFWS & CDFG 2003). If the survey results are negative, no further mitigation measures will be necessary.*

4.6-12(b) *If California Tiger Salamanders are detected on the project site during protocol-level surveys, the project applicant shall consult with the USFWS and CDFG regarding appropriate measures to mitigate any potential impacts. These measures may include:*

- *Conduct preconstruction surveys to find individuals and relocate them prior to ground disturbance activities;*
- *Set up construction zone limits using silt fencing to restrict salamander access onto construction areas;*
- *Mark exclusion areas with signs that identify protected habitat;*
- *Provide a qualified Biological Monitor during construction within potential California tiger salamander habitat;*
- *Find and relocate individuals prior to ground disturbance activities, and relocate to safe areas outside the construction zone limits.*

**4.6-13 Impacts to nesting populations of state and federal species of concern.**

Base Project, Alternative 1, and Alternative 2

Development of the proposed project could result in direct and indirect impacts to nesting populations of state and federal species of concern such as the American bittern, Cooper's hawk, northern harrier, white-tailed kite, short-eared owl, western burrowing owl, loggerhead shrike, saltmarsh common yellowthroat, Suisun song sparrow, or tricolored blackbird could occur through habitat removal or disturbance of potential nest sites during construction. Human disturbances from construction activities could cause nest abandonment and death of young or loss of reproductive potential at active nests on or near the project site. Therefore, the proposed project would result in a **potentially significant** impact.

Mitigation Measure(s)

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

4.6-13(a) *If construction activities are scheduled to occur during the breeding season (between February 1 and August 1), a qualified ornithologist shall conduct preconstruction surveys of all potentially active nest sites within 0.25 mile of the project site for the species listed above to ensure impacts to these species do not occur during the nesting season. The preconstruction surveys shall be conducted prior to the issuance of grading permit and shall be submitted to the Community Development Director. The presence of nests of these species may require delay of construction until young have fledged.*

*Surveys would not be required if construction activities are scheduled to occur during the non-nesting season. Clearing and grubbing and grading the project site during the non-nesting season would help to reduce the potential for nesting birds. Furthermore, mitigation would not be required if surveys indicate that nests are inactive or potential habitat is unoccupied during the construction period.*

4.6-13 (b) *If active nests are found and construction activities are scheduled to occur during the breeding season (February 1 – August 1), the project applicant shall establish buffers around active nests until a biologist determines that young have fledged. Buffers for raptors shall have a 300-foot radius; buffers for the migratory birds listed above should have a radius of 50 feet.*

*The size of individual buffers can be adjusted based on an evaluation of the site by a qualified biologist. The evaluation would include identifying topographic features that obstruct the line of site from construction activities to the nest and observing the sensitivity of the nesting pair to construction activities (road traffic for example). Evaluations and buffer adjustments may be undertaken done in consultation with appropriate resource agencies (CDFG, USFWS). No construction activities shall occur within the approved buffer unless the qualified biologist determines that specified construction activities based on site-specific conditions and the particular species in question. If construction activities occur only during the non-breeding season (between August 1 and February 1), no surveys would be conducted and no buffers would be required.*

**4.6-14 Impacts to Burrowing Owls.**

Base Project, Alternative 1, and Alternative 2

According to the CDFG's *Staff Report on Burrowing Owl Mitigation* (CDFG 1995), the following 3 items would have the potential to result in impacts:

1. Disturbance within 50 meters (approximately 160 feet) of burrows, which may result in harassment of owls at occupied burrows;
2. Destruction of natural and artificial burrows (culverts, concrete slabs and debris piles that provide shelter to burrowing owls); and
3. Destruction and/or degradation of foraging habitat adjacent (within 100 meters) of an occupied burrow.

Two adult burrowing owls were sited on the GF Gilbert Parcel on February 6, 2006. In addition, CNDDDB records indicated that another burrow exists off-site, adjacent to Cordelia Road. Furthermore, because burrowing owls were detected within the project area, the potential habitat exists for this species elsewhere on the project site. Therefore, because burrowing owls could be both directly and indirectly impacted as a result of the construction of the proposed project a *potentially significant* impact would occur.

Mitigation Measure(s)

Implementation of the following mitigation measures, which are outlined in the CDFG's 1995 mitigation measure memo, would reduce these impacts to *less-than-significant*.

- 4.6-14(a) *The Staff Report on Burrowing Owl Mitigation, published by CDFG (1995), recommends pre-construction surveys shall be conducted to locate active burrowing owl burrows. Prior to issuance of grading permits, this preconstruction survey shall be conducted by a qualified biologist or ornithologist during both the wintering and nesting season, unless the species is detected on the first survey. If possible, the winter survey shall be conducted between December 1 and January 31 (when wintering owls are most likely to be present) and the nesting season survey should be conducted between April 15 and July 15 (the peak of breeding season). Surveys conducted from two hours before sunset to one hour after, or from one hour before to two hours after sunrise, are preferable. The survey techniques shall be consistent with the Staff Report survey protocol and include a 260-foot-wide buffer zone surrounding the project area. Repeat surveys should also be conducted not more than 30 days prior to initial ground disturbance to inspect for re-occupation and the need for additional protection measures. The survey(s) shall be paid by the applicant and approved by the City.*
- 4.6-14(b) *Occupied burrows shall not be disturbed during the nesting season (February 1 through August 31) unless a qualified biologist approved by the Department verifies through non-invasive methods that either: (1) the birds have not begun egg-laying and incubation; or (2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.*

- 4.6-14(c) *Occupied burrows shall not be disturbed during the nesting season (February 1 through August 31) unless a qualified biologist approved by the Community Development Director verifies through non-invasive methods that either: (1) the birds have not begun egg-laying and incubation; or (2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.*
- 4.6-14(d) *If destruction of occupied burrows is unavoidable, during the non-breeding season, existing suitable burrows shall be enhanced or new burrows created at a ratio of 2:1 on the protected lands on-site or a site within a reasonable distance of the project area. If passive relocation of the owls is conducted, passive relocation techniques should be used, as described in the CDFG Staff Report.*
- 4.6-14(e) *The project sponsor shall provide funding for long-term management and monitoring of the protected lands.*

#### **4.6-15 Impacts to Swainson's Hawk.**

##### Base Project, Alternative 1, and Alternative 2

The grassland and wetland habitats on the project site represent potential foraging habitat for the Swainson's hawk if the project is located within the home range of an active Swainson's hawk nest. Nests are considered active if they have been used at least once during the last five years. Losses of suitable foraging habitat within 2 miles of a Swainson's hawk nest site should be mitigated by protection or creation of equally suitable foraging habitat elsewhere within the territory's 2-mile radius. The closest occurrence to the project site of a documented nesting Swainson's hawk is 3.4 miles west/southwest of the project site along Cordelia Slough, approximately 0.80 miles southeast of the junction of I-80 and I-680, and east of Cordelia. Most occurrences are east of the project site, with the closest being approximately 8.5 miles to the northeast of the project site on Cypress Lakes Golf Course, 3 miles southeast of Vacaville (CNDDDB 2005).

In addition, disturbance within ¼ mile of an active Swainson's hawk nest would negatively impact Swainson's hawk because construction-related disturbance may cause nest abandonment or forced fledging. The peak active nest period is usually between March 15 and August 31, or until fledglings are no longer dependent upon the nest tree habitat. Therefore, because construction-related on the project site could cause disturbances of an active Swainson's hawk nest site and because of the possibility of the disturbance of Swainson's hawk foraging habitat, a ***potentially significant*** impact would occur.

##### Mitigation Measure(s)

Implementation of the following mitigation measures, which are outlined in the CDFG's 1995 mitigation measure memo, would reduce these impacts to *less-than-significant*.

4.6-15(a) *If construction occurs during the breeding season (March-September 15), the project proponent shall conduct CDFG-recommended protocol-level surveys prior to construction per the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (CDFG 2000b). The area to be surveyed shall include a 0.5-mile radius area including and surrounding the project site and a qualified biologist should conduct the surveys. If no active nests are found during the protocol-level surveys, no further mitigation shall be required. If active nests are found, mitigation measures consistent with the Staff Report Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California (CDFG 1994) shall be incorporated in the following manner:*

- *No construction activities or other project-related activities that may cause nest abandonment or forced fledging, shall take place within 0.25 miles (buffer zone) of an active nest until the young have fledged. Weekly monitoring reports summarizing nest activities shall be submitted to the City of Davis and CDFG until the young have fledged and the nest is determined to be inactive.*
- *Nest trees shall not be removed unless there is no feasible way of avoiding it. If a nest tree must be removed, a Management Authorization (including conditions to offset the loss of the nest tree) must be obtained from CDFG with the tree removal period specified in the management Authorization, generally between October 1 and February 1.*

#### **4.6-16 Impacts to Black Rail, Clapper Rail, and Salt Marsh Harvest Mouse.**

##### Base Project, Alternative 1, and Alternative 2

The introduction of development on the proposed project site, especially in Planning Area 3, could have indirect impacts on the federal- and state-listed black rail, clapper rail, and salt marsh harvest mouse. For example, people and domestic pets could intrude near potential habitat for these species. In addition, upland areas adjacent to these marshes that may be used by these species as refuge during high water events would be impacted. Small areas of brackish marsh in the Cordelia Road ROW may provide some foraging habitat and support movement between marshes on the north and south side of the road. The CNDDDB reports that a salt marsh harvest mouse was trapped in the perennial brackish marsh on the Tooby property in 1986. The project biologist has assumed that salt marsh harvest mice could occur within suitable habitat on the project site. Figure 4.6-4 shows CNDDDB salt marsh harvest mouse listings in the project vicinity, as well as potential salt marsh harvest mouse habitat in the project area. CNDDDB occurrences have not been recorded for black rail or clapper rail on the project site, but they have been recorded for occurrences within 5 miles of the project site.

The proposed commercial development in Planning Area 1 and residential development in Planning Areas 2 and 3 could increase predation pressure on black rail, clapper rail, and salt marsh harvest mouse populations. Increased food availability associated with development could attract and support larger small mammal populations, including rats, house mice, feral and domestic cats, and raccoons that could prey on these species. In addition, as predator populations associated with development increase, other predators forced out of developed areas could infiltrate suitable habitat. In addition, these developments could provide additional habitat for crows and ravens with detrimental effects on special-status species. If desirable food is available and suitable nesting habitat exists nearby, gulls, crows, and ravens would likely breed and/or forage in the area. Therefore, because the potential for mammalian and avian predators would be present as a result of development of the project site, a *potentially significant* impact would occur.

Mitigation Measure(s)

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

- 4.6-16(a) *Implement Mitigation Measure 4.6-2 (d) and (e).*
- 4.6-16(b) *The existing culvert and slough channel that flows between the Tooby and Barnfield properties under Cordelia Road and the UPRR Railroad shall be maintained and not blocked or hindered by any project activities. Any future modifications of this culvert or Cordelia Road between the eastern boundary of the project site and the eastern boundary of the intersection of Cordelia Road and Pennsylvania Avenue shall be designed to avoid impacts or mitigate any impacts to movement of this species, for review and approval of the Public Works Director.*
- 4.6-16(c) *The Wetland Mitigation Plan, required in Mitigation Measure 4.6-2(c) shall include components for providing either natural or artificial high water refuges in areas subject to complete inundation in a high water event.*
- 4.6-16(d) *The applicant shall submit a plan, prior to initial occupancy, for review and approval of the Community Development Director, which shall include:*
- *Appropriate waste disposal procedures shall be adopted and enforced in the commercial and residential development of Planning Area 1-3 (i.e., all garbage will need to be placed in cans with lids) and regularly cleaned from adjacent parking areas.*
  - *Trees and shrubs that produce nuts or edible fruits shall be prohibited in the commercial and residential development of Planning Area 1-3 landscaping plan because they can provide forage for crows.*

- *Landscape trees in the residential development of Planning Areas 2-3 shall be ones that are relatively short at maturity.*
- *Buildings shall not provide sheltered perch sites or shall have such sites covered with anti-perching materials to discourage crows and ravens from roosting.*

4.6-16(e) *Prior to construction activities areas supporting potential habitat including areas of brackish marsh a qualified biologist in coordination with the USFWS shall conduct trapping surveys within the marsh. Pending approval by the USFWS all individuals captured shall be re-located to nearby habitat on the Barnfield or Tooby properties that is to be preserved in perpetuity.*

4.6-16(f) *A qualified biologist shall monitor construction activities when they are scheduled to occur within brackish marsh habitat. They shall inspect the site prior to work and be present during work. If a salt marsh harvest mouse is detected, work activities shall stop until the mouse is captured and removed from the work area to nearby habitat on the Barnfield or Tooby properties that is to be preserved in perpetuity.*

#### **4.6-17 Impacts to Suisun Shrew.**

The CNDDDB records an occurrence of the Suisun shrew east of the Barnfield property. This species is likely to be present within the perennial marsh on the Tooby and Barnfield properties. Residential development adjacent to the Suisun Marsh could introduce domestic animals such as cats and dogs into the area that could be predators of the Suisun shrew. Commercial development in Planning Area 1 could encourage local wildlife that benefits from human development such as raccoons and would result in a ***potentially significant*** impact.

##### Mitigation Measure(s)

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

4.6-17(a) *Implement mitigation measures 4.6-2(d), 4.6-5(a), 4.6-16(a-d).*

#### **Cumulative Impacts and Mitigation Measures**

##### **4.6-18 Cumulative Impacts to biological resources.**

CEQA mandates that project impacts be analyzed in conjunction with other related past, current, and probable future projects whose impacts might compound or interrelate with those of the project (Pub. Res. Code § 21083 (b), CEQA Guidelines § 15130). This project is one of many projects proposed in the project site vicinity. A large number of transportation, commercial, residential, and industrial projects are proposed and

underway for the Fairfield/Suisun City area. Recently completed projects within Fairfield and Suisun City have reduced the area's usefulness as a wildlife corridor and future projects would further reduce this function (see chapter 6 for discussion of applicable cumulative projects).

Areas of existing habitat in lands designated for development by the Solano County HCP, the Solano County General Plan, and the Suisun City General Plan would be reduced in the immediate future, resulting in a significant cumulative impact to biological resources.

In addition, the project's incremental contribution to cumulative biological impacts would be cumulatively considerable. All project-level impacts, except one (impacts to alkali milk-vetch), would be reduced to a less-than-significant level with implementation of applicable mitigation measures. However, because the project would contribute to cumulative biological impacts, which could not all be fully mitigated, a *significant* impact would occur.

#### Mitigation Measure(s)

Implementation of the following mitigation measures would reduce this impact; however, the impact would remain *significant and unavoidable*.

4.6-18            *Implement mitigation measures 4.6-2 to 4.6-4 and 4.6-6 to 4.6-17.*

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