Emerson Property Project

Partially Recirculated Draft Environmental Impact Report

and

Responses to Comments

SCH# 2007052073

Prepared for

City of Oakley
California
A Place for Families in the Heart of the Delta

April 2010

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PARTIALLY RECIRCULATED DRAFT ENVIRONMENTAL IMPACT REPORT AND RESPONSES TO COMMENTS EMERSON PROPERTY PROJECT

State Clearinghouse # 2007052073

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INTRODUCTION

The Partially Recirculated Draft Environmental Impact Report and Responses to Comments (Partially Recirculated Draft EIR) was prepared in accordance with the California Environmental Quality Act of 1970 (CEQA) as amended. CEQA Guidelines Section 15088.5 requires the recirculation of some or all portions of a Draft EIR when significant new information is added to the Draft EIR after public notice is given. The City of Oakley is the lead agency for the environmental review of the proposed Emerson Property Project (proposed project) evaluated herein and has the principal responsibility for approving the proposed project. At the time it is called upon to consider approving the proposed project, the City Council of Oakley, as the lead agency's decision-making body, shall consider the information in the EIR along with other information that may be presented to the City during the environmental review process and public hearing(s) on the proposed project.

BACKGROUND

A Notice of Preparation (NOP) for the Draft EIR was released May 23, 2007 for a 30-day review period. In addition, a public scoping meeting was held on June 6, 2007. The comments received from the NOP were addressed in the Emerson Property Draft EIR. The Emerson Property Draft EIR was released for public review from November 19, 2008 to January 5, 2009 and extended to February 4, 2009.

A total of four comment letters were received during the open public comment period on the Draft EIR by residents and State and local agencies. The following is a list of comment letters received identifying the letter number and agency or person submitting the letter.

Letter 1. Lisa Carboni, State of California - Department of Transportation
Letter 2. Jorge Hernandez & Wes Cooley, Contra Costa County Flood Control & Water Conservation District
Letter 3. Moses Stites, State of California - Public Utilities Commission
Letter 4. Adams Broadwell Joseph & Cardozo, Attorney's at Law

The Draft EIR contained the following technical chapters:

- Chapter 4.2, Land Use and Agricultural Resources (including Williamson Act contracts);
- Chapter 4.3, Traffic and Circulation;
- Chapter 4.4, Air Quality;
- Chapter 4.5, Noise;
- Chapter 4.6, Hazards;

- Chapter 4.7, Biological Resources;
- Chapter 4.8, Geology and Soils;
- Chapter 4.9, Historical and Cultural Resources;
- Chapter 4.10, Hydrology, Water Supply, and Water Quality; and
- Chapter 4.11, Public Services and Utilities (includes potential impacts to recreation).

Based on the comments received on the Draft EIR for the Emerson Property project, the Traffic and Circulation report and data were updated. Subsequently the updated traffic data was utilized to update the air quality and noise analyses prepared for the proposed project. In addition, supplemental research was conducted regarding hazards, which resulted in changes to the Hazards Chapter of the Draft EIR. The applicant also asked that the EIR evaluate a new alternative. Based on the comments received on the Draft EIR and the additional analyses performed for the proposed project, the City of Oakley made the determination to further address four chapters of the Draft EIR: Traffic and Circulation (Chapter 4.3), Air Quality (Chapter 4.4), Hazards (Chapter 4.6), and Alternatives Analysis (Chapter 5).

The updated noise analysis determined that the largest relative changes in the noise environment based on the updated traffic volumes were noted along Cypress Road. However, the relative increase or decrease in traffic volumes, as compared to the volumes utilized in the Draft EIR, continue to yield the same conclusions made in regard to project and cumulative traffic noise impacts (Please refer to Appendix F1 of this Partially Recirculated Draft EIR). Therefore, the Noise chapter of the Draft EIR does not warrant recirculation.

The City chose to recirculate the four chapters separately from the original Draft EIR for an additional 45-day period (CEQA Guidelines Section 15162, 15163, and 15164). The information and changes to the Traffic and Circulation (Chapter 4.3), Air Quality (Chapter 4.4), Hazards (Chapter 4.6), and Alternatives Analysis (Chapter 5) chapters of the Draft EIR are included and addressed further in Section I of this Partially Recirculated Draft EIR. In addition, the Partially Recirculated Draft EIR includes detailed responses to all the comments received on the Draft EIR in Section II.

PARTIAL RECIRCULATION

CEQA requires a lead agency to issue new notice and "recirculate" a revised EIR, or portions thereof, for additional commentary and consultation if, subsequent to the commencement of public review and interagency consultation but prior to final EIR certification, the lead agency adds "significant new information" to an EIR. (Pub. Resources Code, Section 21092.1; CEQA Guidelines, Section 15088.5). CEQA Guidelines Section 15088.5 provides four examples of disclosure which constitute "significant new information" for purposes of requiring re-circulation of a revised EIR:

(1) A new significant environmental impact would result from the project or from a new mitigation measure proposed to be implemented;

(2) A substantial increase in the severity of an environmental impact would result unless mitigation measures are adopted that reduce the impact to a level of insignificance;

(3) A feasible project alternative or mitigation measure considerably different from others previously analyzed would clearly lessen the significant environmental impacts of the project, but the project's proponents decline to adopt it; or

(4) The Draft EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded.

For this EIR, the City determined that the updated traffic data, new impact analyses, and added alternative warranted recirculation. The revised environmental document must be subjected to the same "[…] critical evaluation that occurs in the draft stage," so that the public is not denied "[…] an opportunity to test, assess, and evaluate the data and make an informed judgment as to the validity of the conclusions to be drawn there from." (*Sutter Sensible Planning, Inc. v. Board of Supervisors* (1981) 122 Cal.App.3d 813, 822; see also *Save Our Peninsula Committee v. Monterey County Bd. of Supervisors* (2001) 87 Cal.App.4th 99, 131.)

Recirculation of an EIR requires public notice pursuant to CEQA Guidelines Section 15087, and consultation pursuant to Section 15086. (CEQA Guidelines, Section 15088.5, subd. (d).). Where an agency determines that recirculation is required, the agency can satisfy its obligation by reissuing only the revised part or parts of the EIR, rather than a whole new document. "If the revision is limited to a few chapters or portions of the EIR, the lead agency need only recirculate the chapters or portions that have been modified." (CEQA Guidelines, Section 15088.5, subd. (c).)

Notably, the recirculation of only "portions" of a Draft EIR does not permit commenters to comment anew on topics not subject to a partial re-circulation. CEQA Guidelines Section 15088.5, subdivision (f) (2), provides:

> When the EIR is revised only in part and the lead agency is re-circulating only the revised chapters or portions of the EIR, the lead agency may request that reviewers limit their comments to the revised chapters or portions of the re-circulated EIR. The lead agency need only respond to (i) comments received during the initial circulation period that relate to chapters or portions of the document that were not revised and re-circulated, and (ii) comments received during the recirculation period that relate to the chapters or portions of the earlier EIR that were revised and re-circulated. The lead agency's request that reviewers limit the scope of their comments shall be included either within the text of the revised EIR or by an attachment to the revised EIR.

Pursuant to this provision, the City of Oakley directs that public comments must be restricted to the newly circulated information contained in this document related to Traffic and Circulation, Air Quality, Hazards, and Alternatives Analysis.

The City is not obligated to respond to any new comments that are directed to the portions of the Draft EIR that were not revised and are not being recirculated in this document. The Final EIR for the proposed project will contain detailed responses to all comments made on this Partially Recirculated Draft EIR that are properly limited to the subjects of Traffic and Circulation, Air Quality, Hazards, and Alternatives Analysis. Responses to comments received on the Draft EIR (circulated in November 2008) are addressed in Section II of this Partially Recirculated Draft EIR, as noted below. The responses also cover comments on the prior versions of the four chapters being recirculated, so reviewers are asked to check and avoid repeating their previous comment.

Summary of Text Changes

Chapter 2.2 of Section II presents all of the revisions made to the Draft EIR in response to comments received and additional analysis conducted. New text is double underlined and deleted text is ~~struck through~~. Text changes are presented in the page order in which they appear in the Draft EIR. It should be noted that changes to text in the recirculated chapters (Chapter 4.3, Traffic and Circulation, Chapter 4.4, Air Quality, Chapter 4.6, Hazards, and Chapter 5, Alternatives Analysis) are not double underlined and struck through because the each of the chapters is essentially entirely new.

Responses to Comments

Responses to comments received on the Draft EIR during the public review period are presented in Section II, Chapter 2.3 of this Partially Recirculated Draft EIR. Comments were received during the public comment period solely from written correspondence.

Partially Recirculated Draft EIR Organization

The Emerson Property Project Partially Recirculated Draft EIR is organized as follows:

Section I – Partially Recirculated Draft EIR
Section I contains the recirculated Emerson Property project Draft EIR chapters.

Section I: Chapter 1.1 – Introduction to Recirculated Chapters
Provides an introduction and overview of the section describing the layout and intended use of the Partially Recirculated Draft EIR and the review process, as well as summarizes the chapters being recirculated.

Section I: Chapter 4.3 – Recirculated Traffic and Circulation
Contains a revised project-level and cumulative analysis of Traffic and Circulation issue areas associated with the proposed project. The chapter contains Introduction, Environmental Setting, Regulatory Context, and Impacts and Mitigation Measures.

Section I: Chapter 4.4 – Recirculated Air Quality
Contains a revised project-level and cumulative analysis of Air Quality issue areas associated with the proposed project. The chapter contains Introduction, Environmental Setting, Regulatory Context, and Impacts and Mitigation Measures.

Section I: Chapter 4.6 – Recirculated Hazards
Contains a revised project-level and cumulative analysis of Hazards issue areas associated with the proposed project. The chapter contains Introduction, Environmental Setting, Regulatory Context, and Impacts and Mitigation Measures.

Section I: Chapter 5 – Recirculated Alternatives Analysis
Contains enhanced discussions for all alternatives and the inclusion of an additional alternative.

Section II – Changes to Draft EIR Text and Response to Draft EIR Comments
Section II identifies all changes to the Draft EIR text, contains public and agency comment letters received during the public review period of the Emerson Property Draft EIR, and responses to each comment.

Section II: Chapter 2.1 – Introduction and List of Commenters
Chapter 2.1 provides an introduction and overview of the section and describes the background and organization of the Response to Draft EIR Comments. Chapter 2.1 also provides a list of commenters who submitted letters in response to the Draft EIR.

Section II: Chapter 2.2 – Revisions to the Draft EIR Text
Chapter 2.2 provides a summary of any changes made to the Draft EIR text in response to the comment letters.

Section II: Chapter 2.3 – Comments and Responses
Chapter 2.3 presents all of the comment letters received and responses to each comment. Each comment letter has been numbered at the top and then bracketed to indicate how the letter has been divided into individual comments, and each comment has been given a number. For reference, each number begins with the number of the letter, followed by the comment number.

Appendices
Includes technical information as referenced in the Partially Recirculated Draft EIR. Please note that the appendices circulated as part of the Draft EIR are not included in this Partially Recirculated Draft EIR.

SECTION I. RECIRCULATED CHAPTERS

1.1 INTRODUCTION TO RECIRCULATED CHAPTERS

1.1 INTRODUCTION TO RECIRCULATED CHAPTERS

Introduction

The Partially Recirculated Draft Environmental Impact Report (Partially Recirculated Draft EIR) reflects changes to the Emerson Property Draft Environmental Impact Report (Draft EIR) based on the response to public and agency comments received during the public review period of the Draft EIR. This document has been prepared by the City of Oakley in accordance with the California Environmental Quality Act (CEQA) Guidelines Section 15088.5.

Recirculated Chapters

Revised versions of the Traffic and Circulation, Air Quality, Hazards, and Alternatives Analysis chapters are included in this section. The revised Draft EIR chapters are recirculated with the same chapter numbering and titles to replace the Draft EIR chapters as follows:

- Chapter 4.3, Traffic and Circulation;
- Chapter 4.4, Air Quality;
- Chapter 4.6, Hazards; and
- Chapter 5, Alternatives Analysis.

Chapter 5, Alternatives Analysis, of the Draft EIR is being recirculated because an additional alternative (Apartment and Commercial Alternative) has been included and the existing discussions within Chapter 5 have been revised to include more detail.

The appendix lettering has been retained in the Partially Recirculated Draft EIR. New appendices have retained the original chapter appendix letter, but have been differentiated with a numeral, where appropriate, to aid in the review of additional analysis. For example, the original Air Quality appendix was "E," but with the additional analysis in this Partially Recirculated Draft EIR, the supplemental data is attached as Appendix E1.

The Traffic and Circulation (Chapter 4.3), Air Quality (Chapter 4.4), Hazards (Chapter 4.6), and Alternatives Analysis (Chapter 5) chapters in the Draft EIR have been replaced by the recirculated chapters in Section I of this Partially Recirculated Draft EIR.

Draft EIR Noise Chapter

It should be noted that although a revised traffic study was prepared for the project (necessitating recirculation of Chapter 4.3, Traffic and Circulation), it was determined that recirculation of the Chapter 4.5, Noise would not be necessary, based on the noise consultant's review of the January 2010 traffic data provided for the proposed project by the traffic consultant. The traffic data were analyzed and compared to the traffic data that was previously analyzed by the noise consultant

during preparation of the Draft EIR to determine if the changes made to traffic volumes expected along area roadways would adversely affect the results of the previous analysis.

The noise consultant's review of the traffic data indicates that traffic volumes on area roadways have changed under the Existing, Existing Plus Approved, Existing Plus Approved Plus Project, Cumulative, and Cumulative Plus Project traffic scenarios. The largest relative changes were noted along Cypress Road under the Existing Plus Approved and Existing Plus Approved Plus Project scenarios. However, according to the noise consultant, in all instances, the relative increase or decrease in traffic volumes, as compared to the June 2008 volumes, continue to yield the same conclusions made in regard to project and cumulative traffic noise impacts. The proposed project alone is not expected to substantially increase traffic noise levels on area roadways (noise increase attributable to the project is expected to be 2 dBA L_{dn} or less) but, as discussed in the Draft EIR, the project would continue to make a "cumulatively considerable" contribution to substantial cumulative noise increases expected on Cypress Road.

4.3 RECIRCULATED TRAFFIC AND CIRCULATION CHAPTER

4.3 TRAFFIC AND CIRCULATION

INTRODUCTION

The Traffic and Circulation chapter of the EIR describes the existing and future conditions for transportation and circulation both with and without the proposed project. The analysis provides information on local roadway networks, levels of service, and potential effects on transportation facilities and the local transportation system associated with traffic generated by the project. In addition, this chapter provides an assessment of the site access and internal site circulation. The information in this chapter is based on the traffic analysis prepared by Abrams Associates Traffic Engineering for the Emerson Property project (See Appendix D1 for the technical appendix data)[1] and a Memorandum from Rebecca Willis, Community Development Director,[2] which summarized assumptions for use in the traffic analysis (See Appendix D2).

EXISTING ENVIRONMENTAL SETTING

The Emerson property includes 140 acres and is located north of Cypress Road. The Emerson property is proposed for residential development consisting of up to 578 single-family residential units. The project includes five neighborhoods with varying lot sizes, with housing that would primarily consist of Single Family Residential, High Density dwelling units. In addition, the proposed project includes a 23.74-acre neighborhood shopping center located at the southeast corner of the project site adjacent to Cypress Road and Sellers Avenue. The commercial portion of the site would have signalized access to Cypress Road and would accommodate a neighborhood center of approximately 278,046 square feet and a gas station.

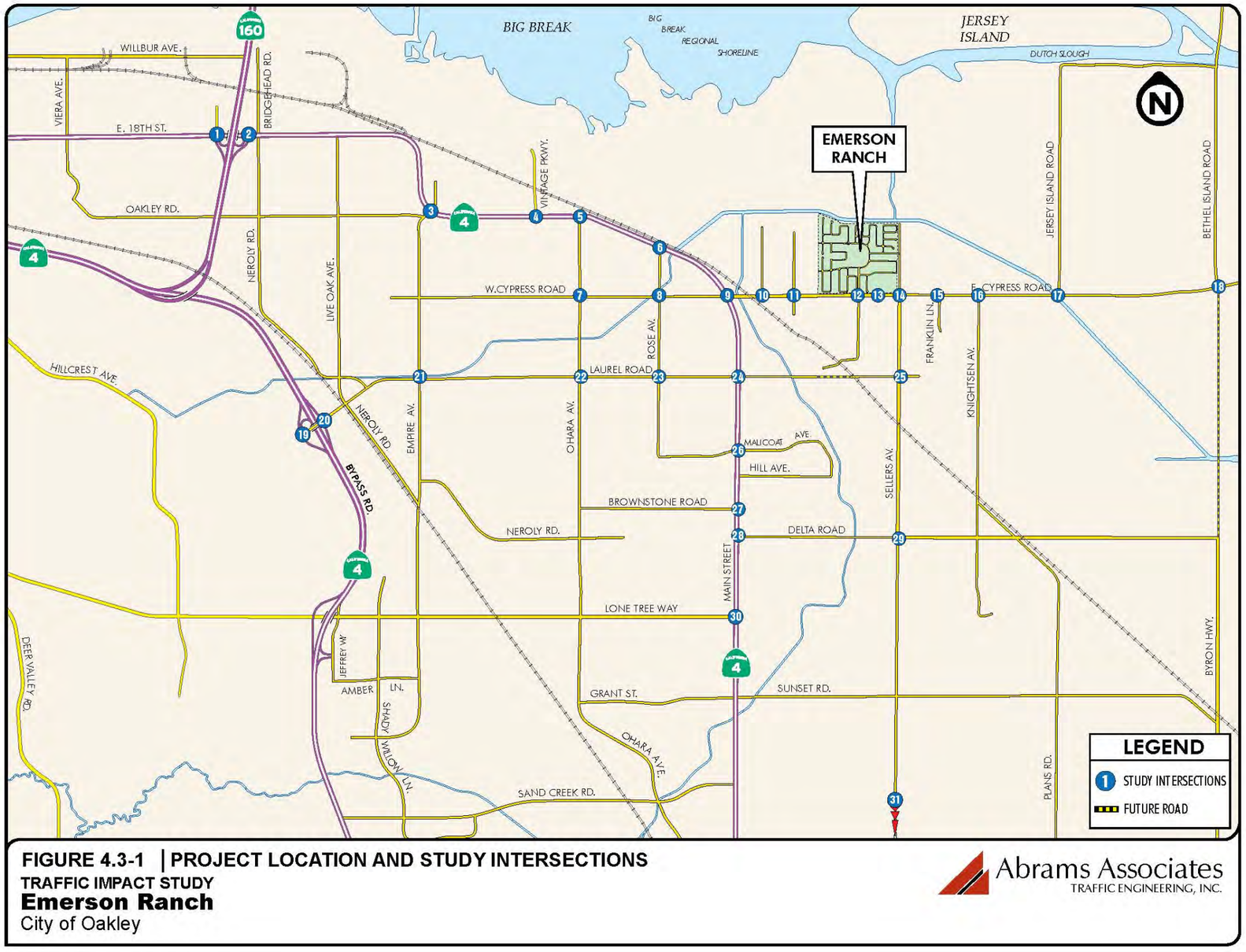
Implementation of the project would increase vehicular traffic in the area, which could adversely affect traffic operations, particularly at critical intersections in the area. Figure 4.3-1 shows the project location and the study intersections that were included in the analysis. Figure 4.3-2 shows the proposed project site plan. A discussion of the existing traffic and transportation conditions in the project study area is provided below.

Existing Conditions

Land Use

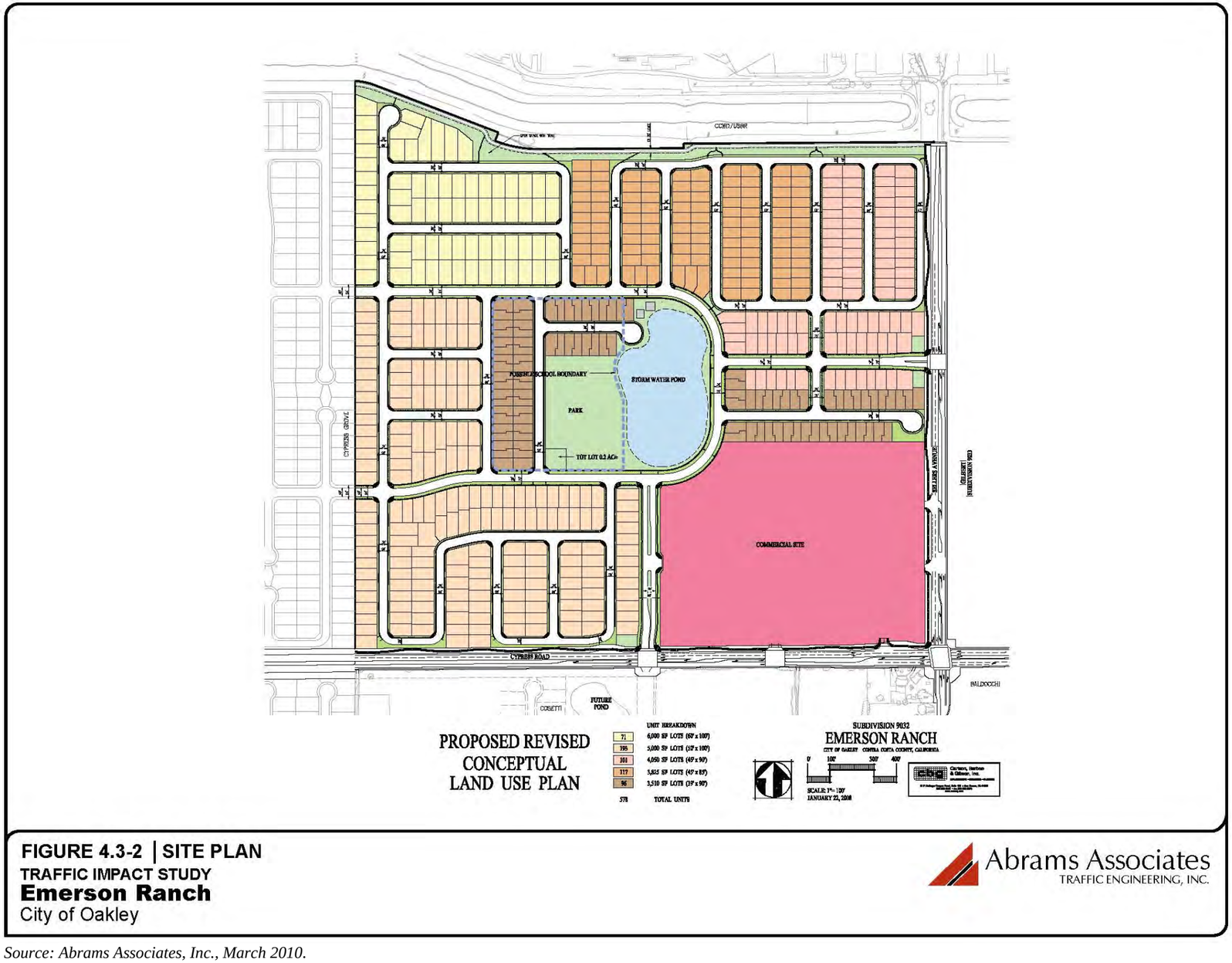
The project site has historically been used for dairy and agricultural purposes and is located to the east of the approved and partially developed Cypress Grove residential project, the Delta Vista Middle School and the Iron House Elementary School. The project site is bounded on the north by the Contra Costa Water District Canal (CCWD/USBR Canal), which separates the project site from the open space acreage to the north currently owned by the State of California.

Figure 4.3-1
Project Location and Study Intersections



Source: Abrams Associates, Inc., March 2010.

Figure 4.3-2
Site Plan



Source: Abrams Associates, Inc., March 2010.

As part of previous agreements with the City, the 55-acre portion of land immediately to the north of the CCWD/USBR canal and the project site at the end of Sellers Avenue will be conveyed to the City of Oakley for future use as a community park.

Roadways

Abrams Associates conducted an extensive analysis of the existing roadways in the vicinity of the project site. The following are descriptions of the primary roadways studied: State Route 4 (SR 4) / Main Street, Cypress Road, Sellers Avenue, Knightsen Avenue, Laurel Road, Delta Road, and Empire Avenue.

State Route 4 / Main Street is a two-lane major arterial that carries approximately 25,500 vehicles per day. Main Street is currently the only major north-south transportation corridor in the vicinity of the project that provides direct access from Oakley to the greater Bay Area and a link between Contra Costa County and San Joaquin County to the east. Mixed residential, commercial, and agricultural uses characterize the lands along both sides of SR 4 between Rose Avenue and Laurel Road. Maximum speeds posted on SR 4 in the project vicinity are: 35 miles per hour (mph) west of Rose Avenue, 45 mph between Rose and Bernard Road, and 40 mph south of Bernard Road.

Cypress Road is an east-west, two-lane residential arterial west of SR 4 and a two- to four-lane arterial east of SR 4 that is also referred to as East Cypress Road. The posted speed limit on Cypress Road is 50 mph east of SR 4 in the vicinity of the project site.

Sellers Avenue is a north-south, two-lane rural road that currently has residential lots and farmland south of Cypress Road and farmlands to the north.

Knightsen Avenue is a north-south, two-lane rural road that extends north from Eden Plains Road to terminate at East Cypress Road.

Laurel Road is an east-west two-lane residential collector street with residential and vacant land on both sides. The posted speed on Laurel Road is 45 mph. Laurel Road is located approximately one-half mile south of the project site, parallel to Cypress Road, and is planned to be extended to Sellers Avenue.

Delta Road is an east-west, two-lane rural road that extends east from Main Street and provides a future connection to the north end of the planned Byron Highway.

Empire Avenue is a major north-south roadway in the study area, providing a connection between Brentwood and Oakley, and between Antioch and Oakley. In the study area, Empire Avenue is typically a four-lane road.

Traffic Operations

During the AM peak hour, the primary direction of traffic in the vicinity of the project is westbound as area residents use SR 4 and other roadways to travel to employment in the Bay

Area. During the PM peak hour, the primary direction of traffic is eastbound as residents return home. Main Street is currently used as the primary route of travel to the nearest freeway (SR 4). Because Main Street is designated as a State highway in the study area, the roadway also serves a high truck volume (about 10 percent of vehicles are multi-axle trucks) that contributes to the congestion along the corridor. As mentioned previously, the Union Pacific (UP) Railroad crosses East Cypress Road about 650 feet east of Main Street. The crossing is currently at-grade and controlled by gates on East Cypress Road. Based on current observations, when trains cross East Cypress Road the eastbound East Cypress Road traffic can back to Main Street and interfere with the regular operations at the East Cypress Road/Main Street intersection, mainly during the PM peak hour.

Intersection Operations

The existing peak hour traffic volumes for the studied intersections are shown in Figure 4.3-3 and the existing lane configurations are shown in Figure 4.3-4. Each project study intersection was analyzed according to the methodology and standards set forth in the "Impacts and Mitigation Measures" section of this chapter.

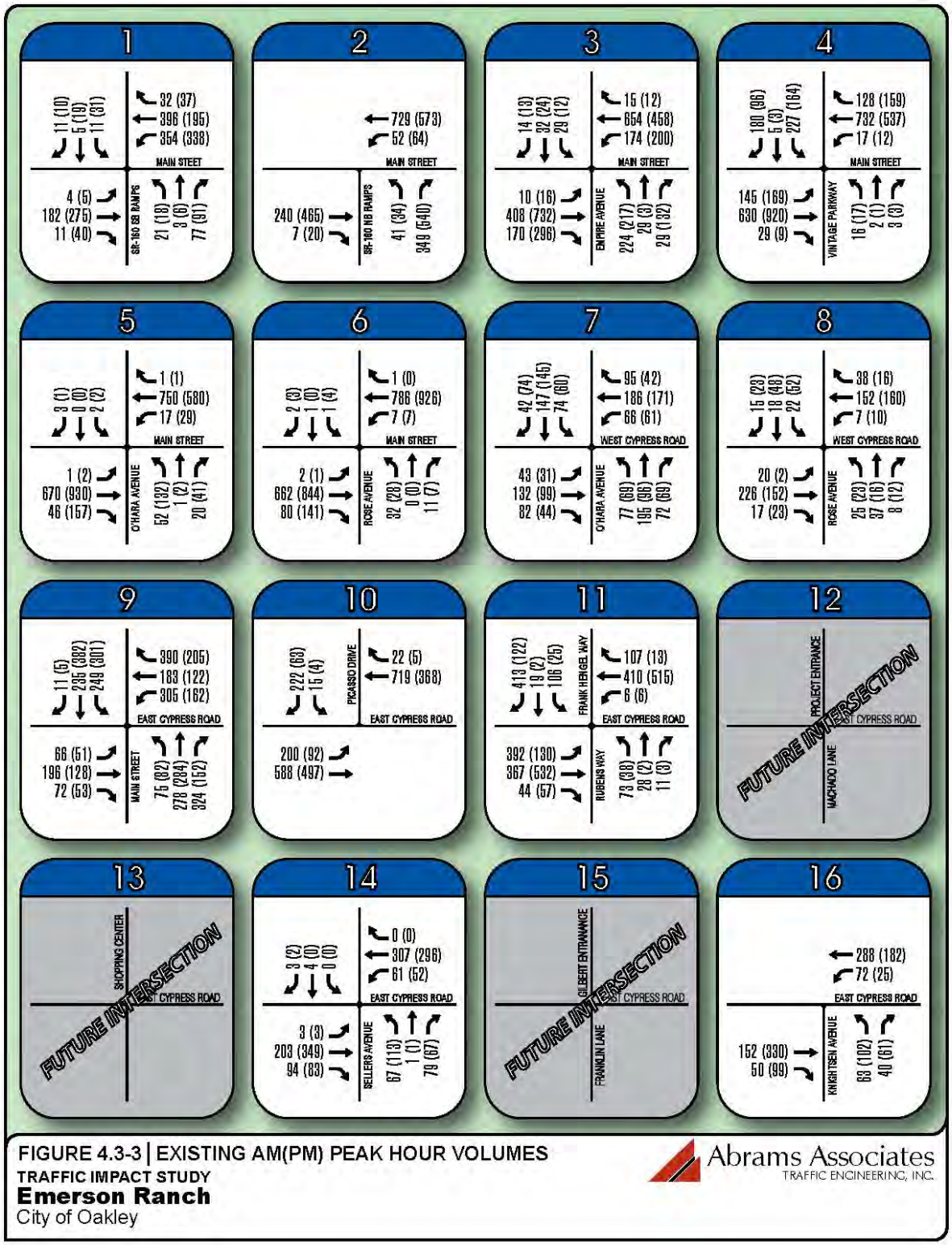
Existing intersection operations were evaluated for the weekday AM and PM peak hours at the study intersections. All signalized study intersections currently operate at an acceptable level of service (LOS), which is LOS D or better, according to City, County, and Caltrans standards (See Table 4.3-1 for LOS descriptions). However, it should be noted that three unsignalized intersections have side street approaches that operate at LOS F.

The stop-controlled T-intersections of Main Street with Rose Avenue, Brownstone Road, and with Delta Road, though operating at LOS A overall, all operate at LOS F on the stop-controlled side street movements during the peak hours. The motorists on unsignalized side streets such as these often have substantial delays before they can enter the stream of traffic on Main Street. The Main Street/Rose Avenue intersection currently does not meet any of the Caltrans' traffic signal warrants. However, the intersection of Main Street with Delta Road already meets the peak hour volume warrant under existing conditions. A review of the queue lengths for the southbound left-turn movement on Main Street indicates that the current traffic controls do not cause problems to the mainline operations. Observations at this intersection indicate that the current operations are acceptable with stop control on the Delta Road approach because the majority of traffic on the side street turns right onto Main Street. A significant portion of this side street traffic appears to be generated by commuters attempting to bypass congestion on SR 4 in Brentwood by using side streets such as the Byron Highway and Delta Road. Table 4.3-2 summarizes the existing traffic operations at the project study intersections.

Freeway Operations

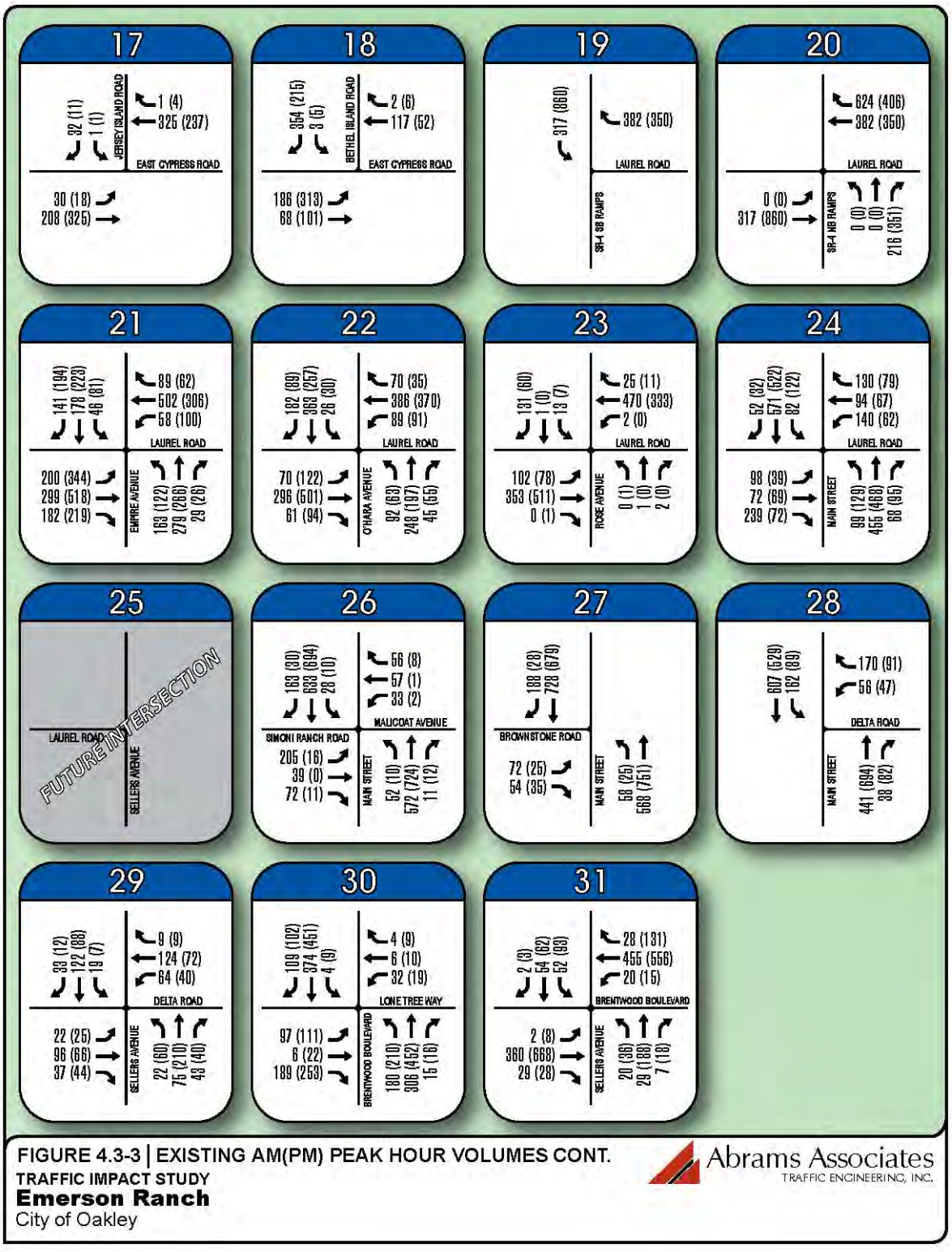
The existing SR 4 Bypass eastbound direction currently operates at LOS B during AM peak hour and LOS C during PM peak hour. The existing SR 4 Bypass westbound direction currently operates at LOS A during AM and PM peak hour. Both eastbound and westbound segments currently operate at acceptable LOS which is LOS D or better according to Caltrans standards.

Figure 4.3-3
AM (PM) Existing Peak Hour Traffic Volumes



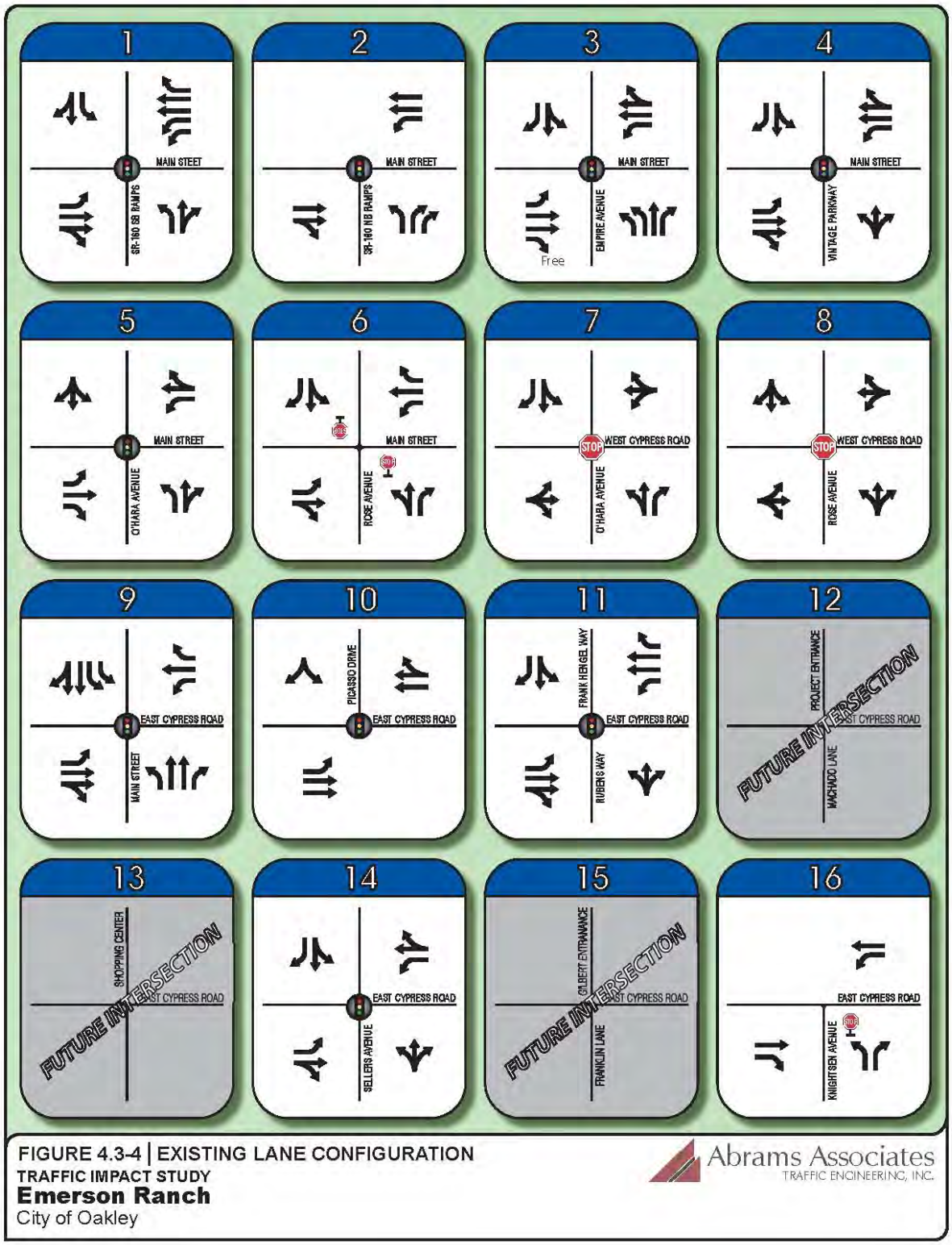
Source: Abrams Associates, Inc., March 2010.

Figure 4.3-3 (continued)
AM (PM) Existing Peak Hour Traffic Volumes



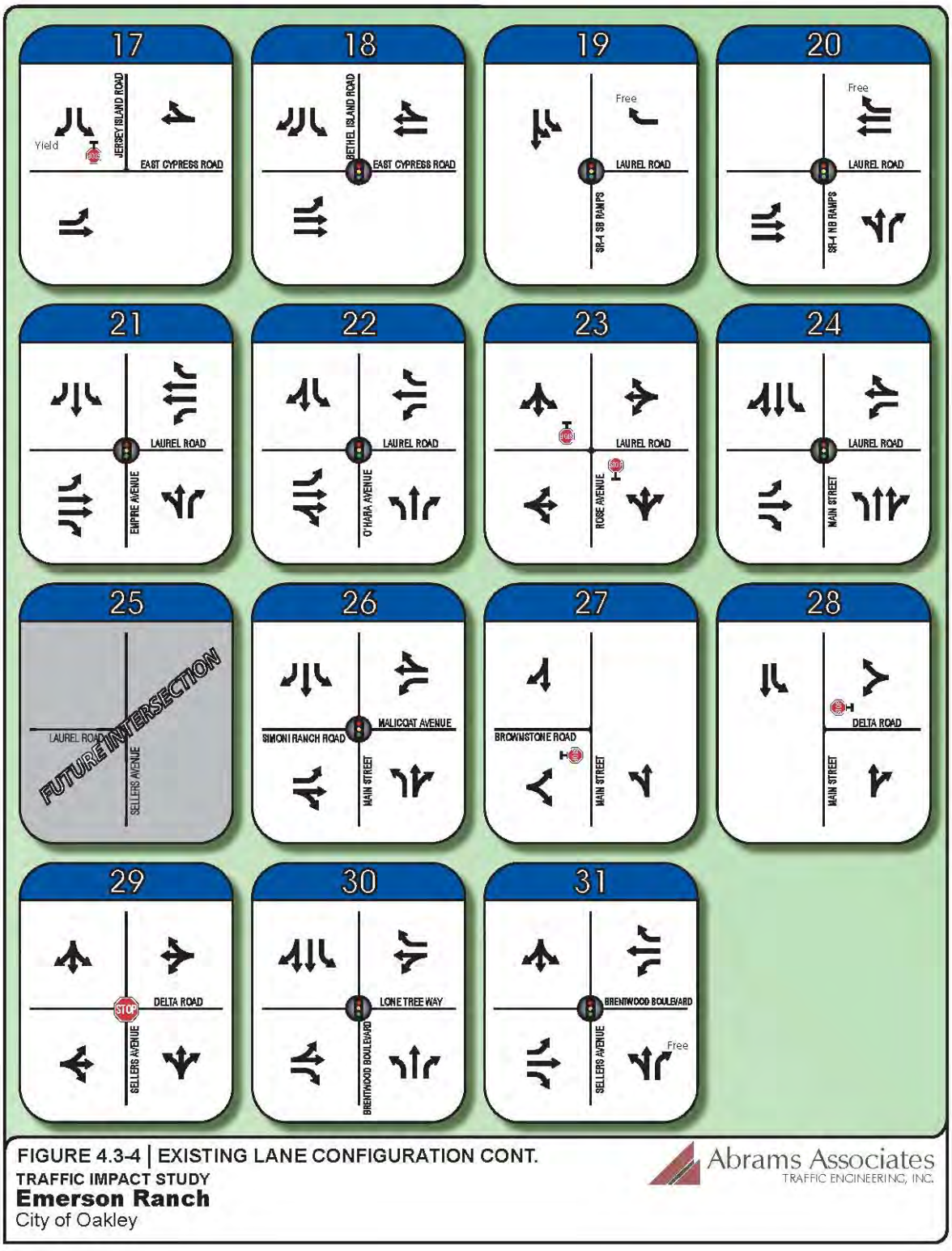
Source: Abrams Associates, Inc., March 2010.

Figure 4.3-4
Existing Lane Configurations



Source: Abrams Associates, Inc., March 2010.

Figure 4.3-4 (continued)
Existing Lane Configurations



Source: Abrams Associates, Inc., March 2010.

Table 4.3-1
Level of Service for Signalized Intersections

LOS	Description
LOS A V/C Range 0.00 - 0.60 Average Stop Delay (seconds) 0.0 - 10.0	Free flow. If signalized, conditions are such that no vehicle phase is fully utilized and no vehicle waits through more than one red indication. Very slight or no delay.
LOS B V/C Range 0.61 - 0.70 Average Stop Delay (seconds) 10.1 - 20.0	Stable flow. If signalized, an occasional approach phase is fully utilized; vehicle platoons are formed. Slight delay.
LOS C V/C Range 0.71 - 0.80 Average Stop Delay (seconds) 20.1 – 35.0	Stable flow or operation. If signalized, drivers occasionally may have to wait through more than one red indication. Acceptable delay.
LOS D V/C Range 0.81 - 0.90 Average Stop Delay (seconds) 35.1 - 55.0	Approaching unstable flow or operation; queues develop but quickly clear. Tolerable delay.
LOS E V/C Range 0.91 - 1.00 Average Stop Delay (seconds) 55.1 - 80.0	Unstable flow or operation; the intersection has reached ultimate capacity. Congestion and intolerable delay.
LOS F V/C Range[1] - Measured 1.00 or less - Forecast 1.01 or more Average Stop Delay (seconds) > 80	Forced flow or operation. Intersection operates below capacity. Jammed.

[1] While forecast demands can exceed maximum capacity, actual measured volumes theoretically cannot. Since traffic inefficiencies arise at capacity demand conditions, the calculated V/C ratios for LOS "F" conditions can be substantially below a V/C of 1.00.

Notes: The 2000 Highway Capacity Manual methodology for analyzing signalized intersections measures the performance by the control delay per vehicle in seconds. The Critical Movement Analysis Methodology, required by the CCTA, is described in Transportation Research Board's Circular 212 and defines LOS for signalized intersections in terms of the ratio of critical movement traffic volumes to an estimate of the maximum capacity for critical volume at an intersection. Critical movements at an intersection are calculated by determining the maximum traffic volumes for conflicting traffic movements (i.e., left-turns plus opposing through traffic) per single stream of traffic (by lane). For the Critical Movement Methodology the LOS for intersections is determined by the ratio of critical movement volume to critical movement capacity (volume-to-capacity ratio = V/C) for the entire intersection. Six categories of LOS are defined, ranging from LOS "A" with minor delay to LOS "F" with delays averaging more than 40 seconds during the peak hour.

Source: Abrams Associates, Inc., March 2010.

Table 4.3-2
Existing Volumes – Peak Hour Intersection LOS

	Intersection	Control	Peak Hour	CCTALOS Methodology		HCM Methodology	
				V/C Ratio	LOS	Measure (sec/veh)	LOS
1	MAIN STREET (SR-4) AT THE SOUTHBOUND SR-160 RAMPS	Traffic Signal	AM	0.232	A	24.2	C
			PM	0.286	A	25.4	C
2	MAIN STREET (SR-4) AT THE NORTHBOUND SR-160 RAMP	Traffic Signal	AM	0.307	A	19.4	B
			PM	0.330	A	19.6	B
3	MAIN STREET (SR-4) AT EMPIRE AVENUE	Traffic Signal	AM	0.341	A	23.3	C
			PM	0.437	A	25.9	C
4	MAIN STREET (SR-4) AT VINTAGE PARKWAY	Traffic Signal	AM	0.478	A	24.1	C
			PM	0.408	A	23.2	C
5	MAIN STREET (SR-4) AT O'HARA AVENUE	Traffic Signal	AM	0.487	A	23.2	C
			PM	0.661	B	19.6	B
6	MAIN STREET (SR-4) AT ROSE AVENUE	Stop Sign	AM	N/A	N/A	>50	F
			PM	N/A	N/A	>50	F
7	W. CYPRESS ROAD AT O'HARA AVENUE	Stop Sign	AM	N/A	N/A	11.9	B
			PM	N/A	N/A	9.2	A
8	W. CYPRESS ROAD AT ROSE AVENUE	Stop Sign	AM	N/A	N/A	8.9	A
			PM	N/A	N/A	8.1	A
9	E. CYPRESS ROAD/MAIN STREET (SR-4)	Traffic Signal	AM	0.433	A	36.1	D
			PM	0.339	A	33.6	C
10	E. CYPRESS ROAD/PICASSO DRIVE	Traffic Signal	AM	0.489	A	11.2	B
			PM	0.209	A	7.2	A
11	E. CYPRESS ROAD/FRANK HENGEL WAY (DELTA VISTA MIDDLE SCHOOL)	Traffic Signal	AM	0.474	A	18.0	B
			PM	0.263	A	9.9	A
12	E. CYPRESS ROAD/MAIN PROJECT ENTRANCE (FUTURE INTERSECTION)	Future	AM	N/A	N/A	N/A	N/A
			PM	N/A	N/A	N/A	N/A
13	E. CYPRESS ROAD/SHOPPING CENTER ENTRANCE (FUTURE INTERSECTION)	Future	AM	N/A	N/A	N/A	N/A
			PM	N/A	N/A	N/A	N/A
14	E. CYPRESS ROAD/SELLERS AVENUE	Traffic Signal	AM	0.294	A	21.9	C
			PM	0.387	A	23.6	C
15	E. CYPRESS ROAD/FRANKLIN LN (FUTURE INTERSECTION)	Future	AM	N/A	N/A	N/A	N/A
			PM	N/A	N/A	N/A	N/A
16	E. CYPRESS ROAD / KNIGHTSEN ROAD	Stop Sign	AM	N/A	N/A	13.0	B
			PM	N/A	N/A	13.9	D
17	E. CYPRESS ROAD/JERSEY ISLAND ROAD	Stop Sign	AM	N/A	N/A	10.6	B
			PM	N/A	N/A	10.0	B
18	E. CYPRESS ROAD/BETHEL ISLAND ROAD	Traffic Signal	AM	0.196	A	16.2	B
			PM	0.200	A	18.9	B
19	LAUREL ROAD AT THE SR-4 BYPASS WESTBOUND RAMPS	Traffic Signal	AM	0.101	A	0.2	A
			PM	0.275	A	0.2	A

Table 4.3-2
Existing Volumes – Peak Hour Intersection LOS

	Intersection	Control	Peak Hour	CCTALOS Methodology		HCM Methodology	
				V/C Ratio	LOS	Measure (sec/veh)	LOS
20	LAUREL ROAD AT THE SR-4 BYPASS EASTBOUND RAMPS	Traffic Signal	AM	0.509	A	22.7	C
			PM	0.473	A	23.6	C
21	LAUREL ROAD AT EMPIRE AVENUE	Traffic Signal	AM	0.569	A	29.7	C
			PM	0.585	A	31.6	C
22	LAUREL ROAD AT O'HARA AVENUE	Traffic Signal	AM	0.662	B	21.9	C
			PM	0.546	A	20.4	C
23	LAUREL ROAD AT ROSE AVENUE	Stop Sign	AM	N/A	N/A	17.3	C
			PM	N/A	N/A	29.6	D
24	MAIN STREET (SR-4) AT LAUREL ROAD	Traffic Signal	AM	0.426	A	22.7	C
			PM	0.344	A	17.8	B
25	SELLERS AVENUE AT LAUREL ROAD (FUTURE INTERSECTION)	Future	AM	N/A	N/A	N/A	N/A
			PM	N/A	N/A	N/A	N/A
26	MAIN STREET (SR-4) AT MALICOAT LANE/SIMONI RANCH ROAD	Traffic Signal	AM	0.608	B	23.7	C
			PM	0.467	A	5.8	A
27	MAIN STREET (SR-4) AT BROWNSTONE ROAD	Stop Sign	AM	N/A	N/A	>50	F
			PM	N/A	N/A	33.4	D
28	MAIN STREET (SR-4) AT DELTA ROAD	Stop Sign	AM	N/A	N/A	>50	F
			PM	N/A	N/A	>50	F
29	SELLERS AVENUE AT DELTA ROAD	Stop Sign	AM	N/A	N/A	8.4	A
			PM	N/A	N/A	8.5	A
30	BRENTWOOD BOULEVARD (SR-4) AT LONE TREE WAY	Traffic Signal	AM	0.324	A	19.4	B
			PM	0.371	A	21.1	C
31	BRENTWOOD BOULEVARD (SR-4) AT SELLERS AVENUE	Traffic Signal	AM	0.340	A	30.0	C
			PM	0.581	A	31.9	C

Existing Traffic Operations at the East Cypress Road Railroad Crossing

An analysis of the East Cypress Road railroad crossing was conducted to serve as the basis for determining if the proposed project would cause significant impacts on traffic operations in the vicinity of the crossing (when trains temporarily block the roadway). Based on field observations, a series of AM and PM commute hour traffic surveys were conducted at the East Cypress Road at-grade railroad crossing during May 2009 and then supplemented with additional field review of actual train crossings conducted during the PM commute period in July 2009. The detailed results of the railroad crossing surveys are included in Appendix D1 of the Partially Recirculated Draft EIR.

Not more than two trains were recorded during any of the surveys conducted and the average was about one train during the two-hour PM peak period. The analysis showed that the queues

that form at the crossing are directly related to the length of time that the roadway is closed for a train crossing. The average time for the closures is approximately 90 seconds with some shorter trains closing the roadway for as little as one minute. The longest closures are for larger freight trains that can close the roadway for over two minutes.

Amtrak passenger trains also use the tracks, but they are typically shorter and travel at higher speeds than the freight trains (resulting in less delay). It should also be noted that there are two parallel tracks that cross East Cypress Road. However, the frequency of trains in this particular corridor is limited by adjacent segments where the two tracks narrow to just one track.

Before some key traffic improvements were made to East Cypress Road in the vicinity of the railroad crossing, backups would regularly block the adjacent intersection at Main Street (west of the railroad crossing). However, now that East Cypress Road has been improved, the queues generally do not extend back to the Main Street intersection except on unusually busy days. On the eastbound approach the roadway can accommodate queues totaling about 45 vehicles before affecting the Main Street intersection, while the westbound approach stores about 32 vehicles before the signalized intersection of Picasso Drive is affected (See Figure 4.3-1 for signalized intersection locations).

While blockages to the Main Street intersection are now infrequent, there are still queues that have been observed to affect the Picasso Drive intersection located east of the East Cypress Road railroad crossing. During the commute periods, the queues can reach the Picasso Drive intersection during closures of 90 seconds or longer (i.e., longer freight trains). This primarily occurs when schools are in session due to the short but high peak in traffic that occurs right before school starts. However, Abrams Associates' observations indicate the queues associated with train crossings cause congestion, but do not in themselves cause any significant impacts on traffic safety. In addition, the backups that develop are only temporary.

It is acknowledged that blockages to other turning movements at the adjacent intersections can occur but the underlying cause for this is violations of the California Vehicle Code's basic "rules of the road." The train crossing queues may extend back to adjacent intersections but the blockages only occur when motorists illegally enter the intersections. The Anti-Gridlock Act of 1987 established that "a driver of a vehicle shall not enter an intersection or marked crosswalk unless there is sufficient space on the other side of the intersection or marked crosswalk to accommodate the vehicle driven without obstructing the through passage of vehicles from the either side." (C.V.C Sec. 22526)

In the vicinity of the railroad crossings East Cypress Road is straight with adequate sight distance for motorists to see congestion well in advance. Therefore, any blockages to side street traffic or safety problems that might occur would be expected to result from vehicle code violations for which motorists can be cited.

Transit Service

Tri-Delta Transit provides transit service in the area, providing three lines connecting Brentwood and the Pittsburg/Bay Point Bay Area Rapid Transit (BART) station. Tri-Delta Transit Route 391

operates during the commute hours on weekdays and Route 392 operates on weekends only. Both routes travel through local streets in Brentwood, Oakley, and Antioch. Route 300 is an express route on SR 4 with only four stops between Brentwood and the BART station. In the vicinity of the project, all three lines have bus stops located at the Main Street (SR 4)/Cypress Road intersection just to the southwest of the project site. However, service is not currently provided on Cypress Road east of SR 4/Main Street.

Baseline Conditions

In order to provide a more accurate forecast of the impact of the proposed project on traffic in the area, an analysis was conducted to determine the traffic that would be added from approved projects that could affect the study area. The adjusted data is based on a complete list of all approved and reasonably foreseeable projects provided by the City of Oakley in a memorandum summarizing the Emerson EIR traffic assumptions (See Appendix D2). The data was used to analyze the baseline (or "background") traffic conditions from which the effects of the proposed project are measured. The baseline represents the traffic conditions that are forecast to exist once already approved projects (and other reasonably foreseeable projects) are completed and occupied. The baseline traffic volumes are presented in Figure 4.3-5.

Baseline Roadway Improvements

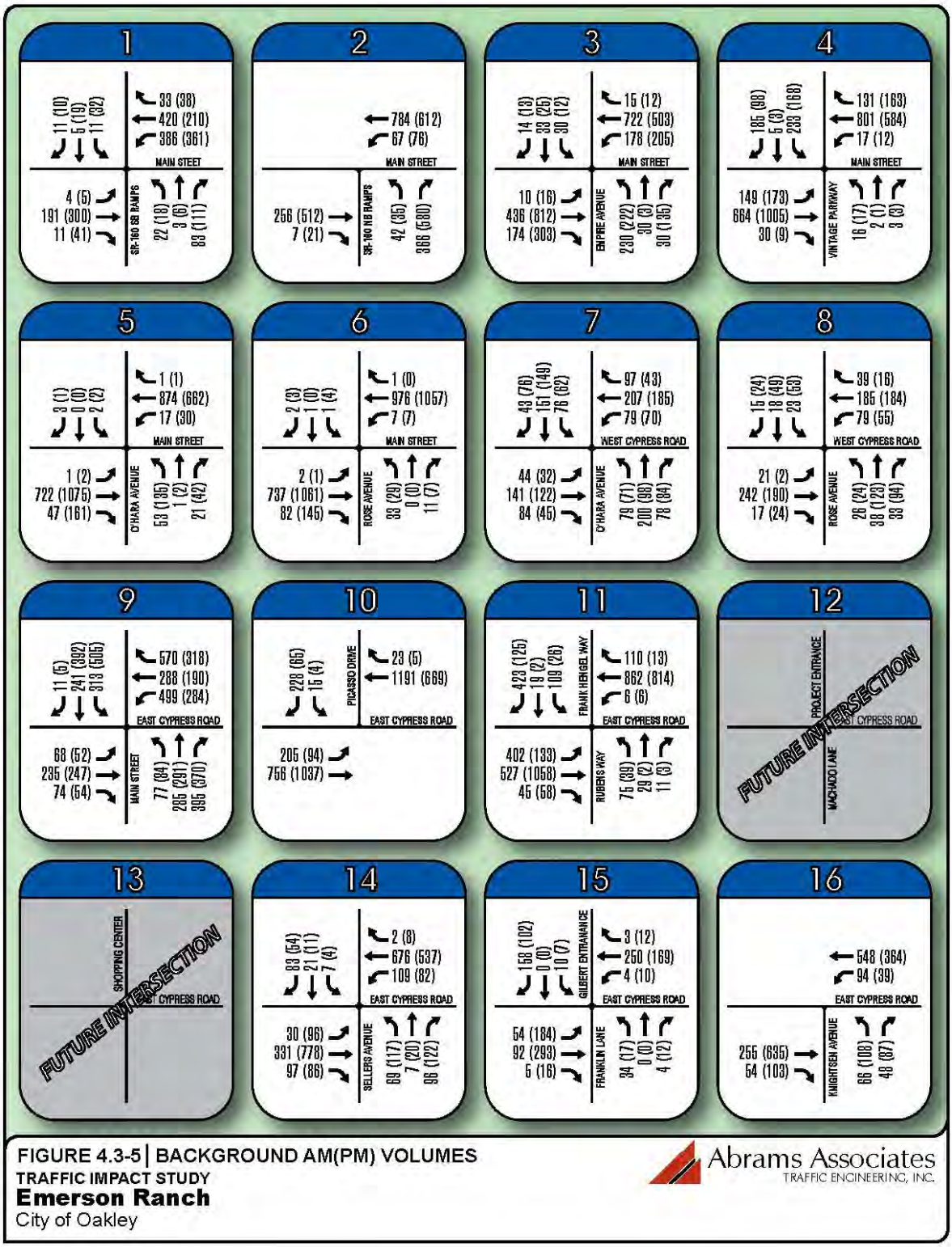
Only one roadway improvement included in the City's 5-year Capital Improvement Program (CIP) is assumed to be in place under Baseline conditions. Within the CIP the primary roadway improvement that could impact the volumes at the project study intersection is the improvements at the Main Street/Bridgehead Road/Neroly Road intersection where a second left turn lane is planned for the northbound Neroly Road approach.

Figure 4.3-6 presents the lane configurations at each of the study intersections used in the baseline scenario.

Intersections

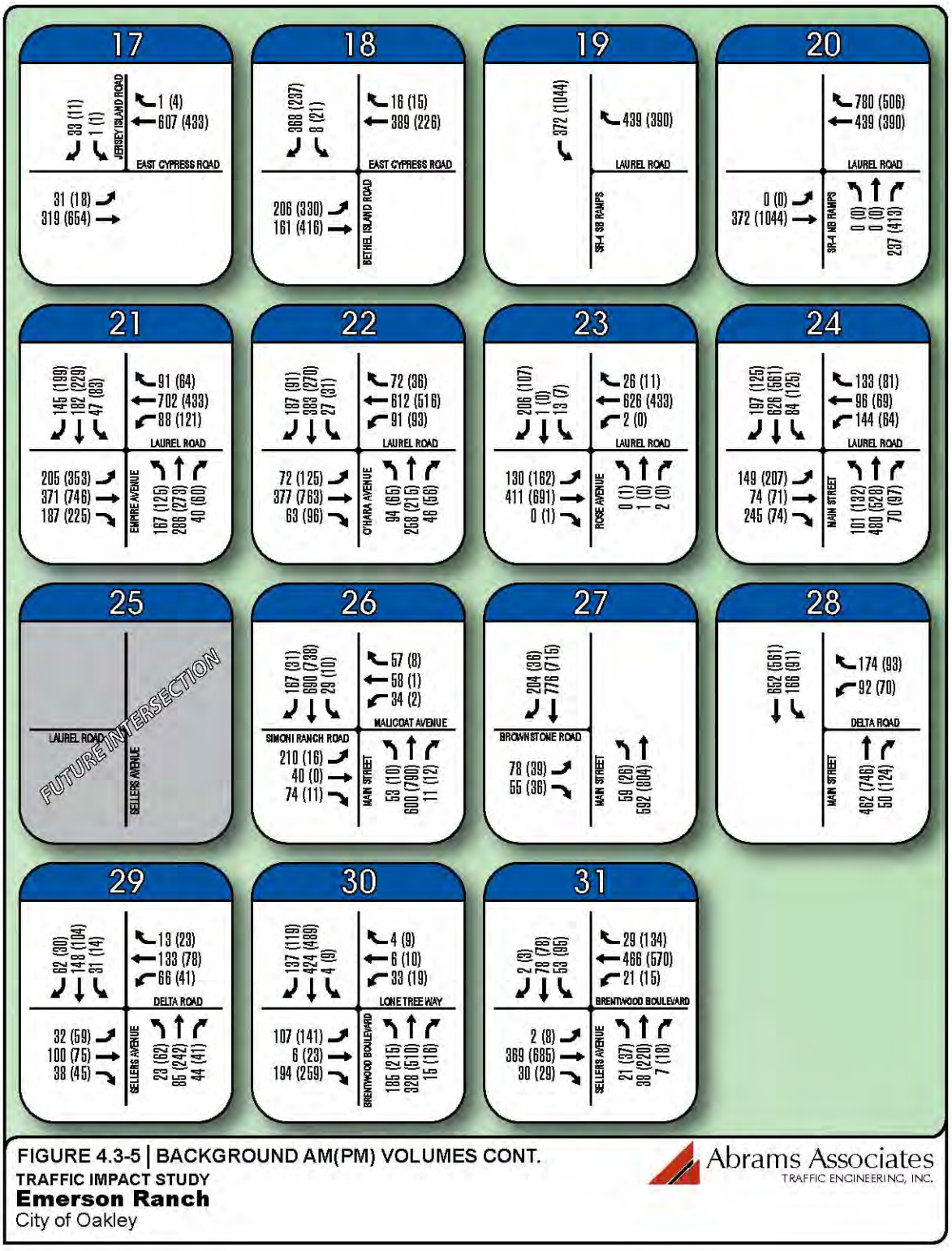
With the addition of the traffic from approved projects to the existing traffic volumes, one additional intersection would exceed the standards set forth by the City of Oakley and Contra Costa County (LOS D or better). Based on this analysis, the Intersection of Laurel Road with Rose Avenue (Intersection #23) would operate at LOS F on the stop-controlled side street movements during the peak hours. In general, some additional roadway improvements are already needed to adequately accommodate the projected traffic growth due to approved projects.

Figure 4.3-5
AM (PM) Existing Plus Approved (Background) Volumes



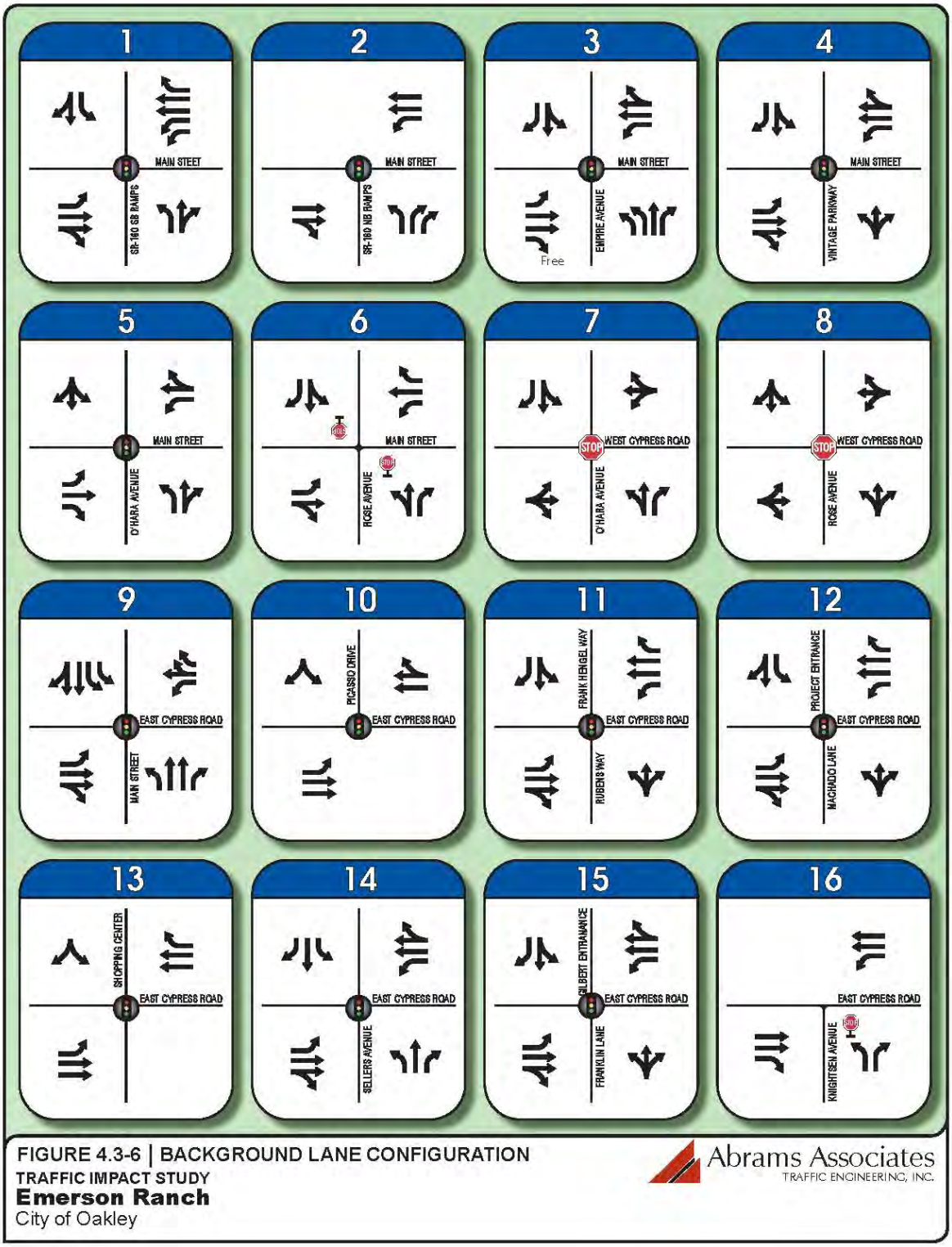
Source: Abrams Associates, Inc., March 2010.

Figure 4.3-5 (continued)
AM (PM) Existing Plus Approved (Background) Volumes



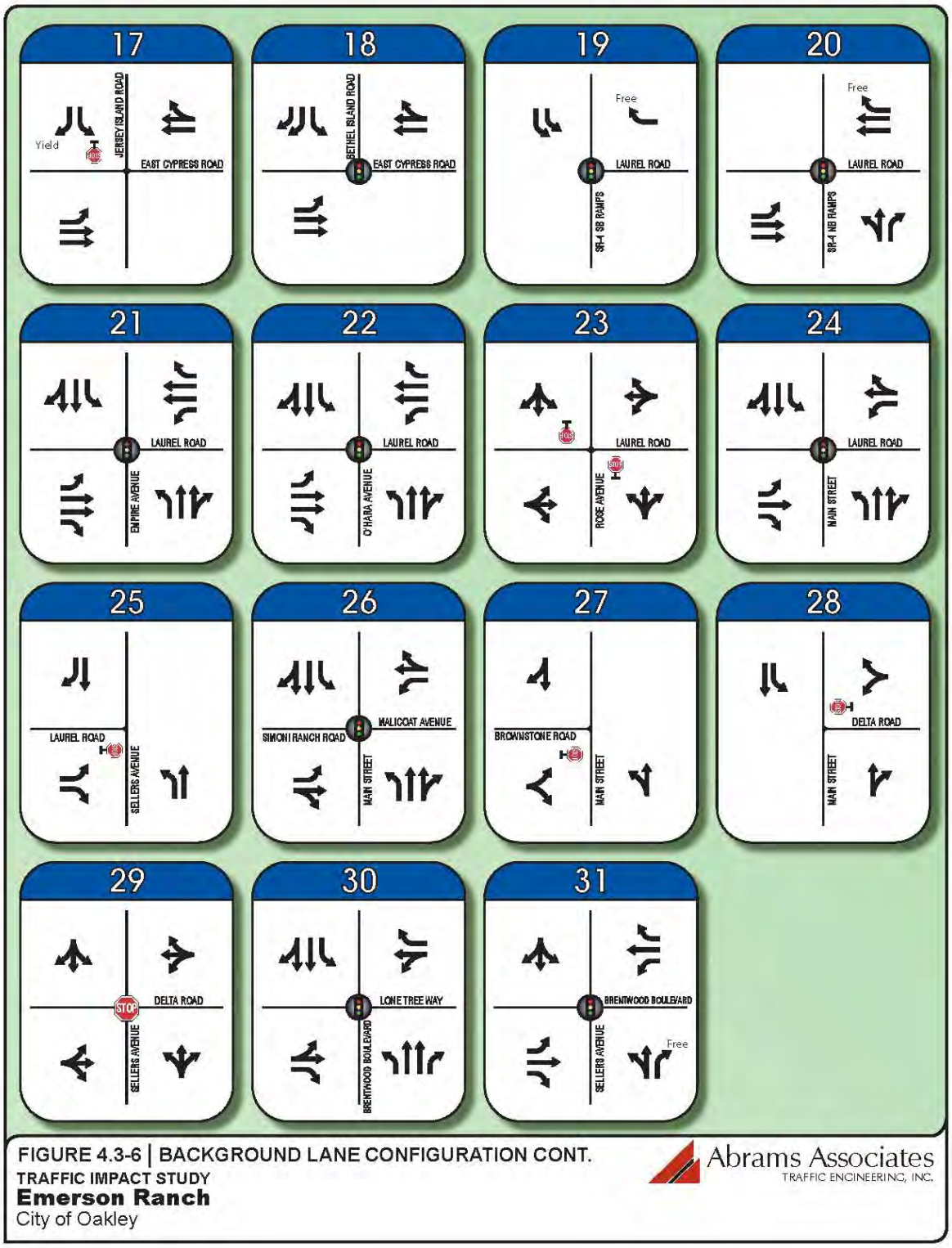
Source: Abrams Associates, Inc., March 2010.

Figure 4.3-6
Background Lane Configurations



Source: Abrams Associates, Inc., March 2010.

Figure 4.3-6 (continued)
Background Lane Configurations



Source: Abrams Associates, Inc., March 2010.

Although they are not assumed to be in place as part of the Baseline, many of the improvements required to address these problems (e.g., the Main Street Bypass) are already planned for the area and are discussed in the "Impacts and Mitigations Measures" section of this chapter. The results of the LOS analysis for baseline conditions are shown in Table 4.3-3. The detailed intersection LOS calculation worksheets are provided in Appendix D1. All of the new study intersections would continue to operate at acceptable LOS which is LOS D or better according to City and County standards.

Freeway Operations

While traffic volumes are slightly higher, the LOS on the SR 4 Bypass would be the same as existing conditions with eastbound direction at LOS B during the AM peak hour and LOS C during the PM peak hour. The westbound direction would continue to operate at LOS B during the AM peak hour and LOS B during the PM peak hour. Both the eastbound and westbound segments would continue to operate at acceptable LOS which is LOS D or better according to Caltrans standards.

East Cypress Road Railroad Crossing

For the purposes of the baseline conditions analysis, it was assumed that the frequency and length of trains would remain the same. This is based on the fact that the Burlington Northern Santa Fe Railroad owns the tracks and there are currently no approved projects for adding tracks in the area.[3] In addition, based on discussions with representatives at the Burlington Northern Santa Fe Railroad, there are no plans to increase the number of trains using the tracks at the East Cypress Road railroad crossing. However, under baseline conditions increased vehicle traffic is forecast for the area as a result of approved projects being completed. At the East Cypress Road Railroad Crossing there would be more frequent westbound temporary queuing impacts at the Picasso Drive intersection. These would continue to occur during the commute periods when schools are in session.

On the eastbound approach there would continue to be temporary queuing impacts at the signalized intersection at Main Street. However, based on the surveys, these impacts only occur with longer freight trains that result in closures of two minutes or more. Trains this long are less frequent and, as mentioned previously, two trains was the maximum number of crossings recorded during any of the two-hour surveys. However, the future frequency cannot be precisely defined because the train lengths and speeds are variable and unpredictable.

Table 4.3-3
Background Volumes – Peak Hour Intersection LOS

	Intersection	Control	Peak Hour	CCTALOS Methodology V/C Ratio	CCTALOS Methodology LOS	HCM Methodology Measure (sec/veh)	HCM Methodology LOS
1	MAIN STREET (SR-4) AT THE SOUTHBOUND SR-160 RAMPS	Traffic Signal	AM	0.249	A	18.8	B
			PM	0.314	A	20.9	C
2	MAIN STREET (SR-4) AT THE NORTHBOUND SR-160 RAMP	Traffic Signal	AM	0.324	A	12.0	B
			PM	0.360	A	18.0	B
3	MAIN STREET (SR-4) AT EMPIRE AVENUE	Traffic Signal	AM	0.355	A	16.8	B
			PM	0.467	A	19.1	B
4	MAIN STREET (SR-4) AT VINTAGE PARKWAY	Traffic Signal	AM	0.505	A	23.7	C
			PM	0.428	A	23.3	C
5	MAIN STREET (SR-4) AT O'HARA AVENUE	Traffic Signal	AM	0.563	A	35.0	C
			PM	0.752	C	29.1	C
6	MAIN STREET (SR-4) AT ROSE AVENUE	Stop Sign	AM	N/A	N/A	>50	F
			PM	N/A	N/A	>50	F
7	W. CYPRESS ROAD AT O'HARA AVENUE	Stop Sign	AM	N/A	N/A	13.4	B
			PM	N/A	N/A	9.7	A
8	W. CYPRESS ROAD AT ROSE AVENUE	Stop Sign	AM	N/A	N/A	19.4	A
			PM	N/A	N/A	9.3	A
9	E. CYPRESS ROAD/MAIN STREET (SR-4)	Traffic Signal	AM	0.587	A	20.2	C
			PM	0.520	A	31.3	C
10	E. CYPRESS ROAD/PICASSO DRIVE	Traffic Signal	AM	0.639	B	9.8	A
			PM	0.356	A	12.6	B
11	E. CYPRESS ROAD/FRANK HENGEL WAY (DELTA VISTA MIDDLE SCHOOL)	Traffic Signal	AM	0.615	B	31.3	C
			PM	0.369	A	13.0	B
12	E. CYPRESS ROAD/MAIN PROJECT ENTRANCE (FUTURE INTERSECTION)	Future	AM	N/A	N/A	4.5	A
			PM	N/A	N/A	24.9	C
13	E. CYPRESS ROAD/SHOPPING CENTER ENTRANCE (FUTURE INTERSECTION)	Future	AM	N/A	N/A	23.0	C
			PM	N/A	N/A	23.8	C
14	E. CYPRESS ROAD/SELLERS AVENUE	Traffic Signal	AM	0.298	A	24.5	C
			PM	0.389	A	22.7	C
15	E. CYPRESS ROAD/FRANKLIN LN (FUTURE INTERSECTION)	Traffic Signal	AM	0.185	A	23.1	C
			PM	0.181	A	10.4	B
16	E. CYPRESS ROAD / KNIGHTSEN ROAD	Stop Sign	AM	N/A	N/A	15.8	C
			PM	N/A	N/A	24.1	C
17	E. CYPRESS ROAD/JERSEY ISLAND ROAD	Stop Sign	AM	N/A	N/A	10.9	B
			PM	N/A	N/A	10.4	B
18	E. CYPRESS ROAD/BETHEL ISLAND ROAD	Traffic Signal	AM	0.285	A	26.7	C
			PM	0.270	A	25.9	C
19	LAUREL ROAD AT THE SR-4 BYPASS WESTBOUND RAMPS	Traffic Signal	AM	0.119	A	0.3	A
			PM	0.334	A	0.2	A

Table 4.3-3
Background Volumes – Peak Hour Intersection LOS

	Intersection	Control	Peak Hour	CCTALOS Methodology		HCM Methodology	
				V/C Ratio	LOS	Measure (sec/veh)	LOS
20	LAUREL ROAD AT THE SR-4 BYPASS EASTBOUND RAMPS	Traffic Signal	AM	0.277	A	11.6	B
			PM	0.567	A	17.7	B
21	LAUREL ROAD AT EMPIRE AVENUE	Traffic Signal	AM	0.515	A	19.4	B
			PM	0.528	A	16.5	B
22	LAUREL ROAD AT O'HARA AVENUE	Traffic Signal	AM	0.459	A	21.6	C
			PM	0.436	A	21.7	C
23	LAUREL ROAD AT ROSE AVENUE	Stop Sign	AM	N/A	N/A	38.8	E
			PM	N/A	N/A	>50	F
24	MAIN STREET (SR-4) AT LAUREL ROAD	Traffic Signal	AM	0.518	A	18.7	B
			PM	0.484	A	20.6	C
25	SELLERS AVENUE AT LAUREL ROAD (FUTURE INTERSECTION)	Future	AM	N/A	N/A	N/A	N/A
			PM	N/A	N/A	N/A	N/A
26	MAIN STREET (SR-4) AT MALICOAT LANE/SIMONI RANCH ROAD	Traffic Signal	AM	0.469	A	17.4	B
			PM	0.253	A	3.0	A
27	MAIN STREET (SR-4) AT BROWNSTONE ROAD	Stop Sign	AM	N/A	N/A	>50	F
			PM	N/A	N/A	>50	F
28	MAIN STREET (SR-4) AT DELTA ROAD	Stop Sign	AM	N/A	N/A	>50	F
			PM	N/A	N/A	>50	F
29	SELLERS AVENUE AT DELTA ROAD	Stop Sign	AM	N/A	N/A	8.8	A
			PM	N/A	N/A	9.1	A
30	BRENTWOOD BOULEVARD (SR-4) AT LONE TREE WAY	Traffic Signal	AM	0.356	A	19.2	B
			PM	0.408	A	20.9	C
31	BRENTWOOD BOULEVARD (SR-4) AT SELLERS AVENUE	Traffic Signal	AM	0.362	A	21.3	C
			PM	0.612	B	23.0	C

REGULATORY CONTEXT

Existing policies, laws and regulations that would apply to the proposed project are summarized below.

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 4. Any improvements to SR 4 would require Caltrans' approval.

Local

Contra Costa Countywide Comprehensive Transportation Plan (2004)

The transportation policies that are currently applicable within Contra Costa County are based on the previously referenced Contra Costa County Comprehensive Transportation Plan. This document identifies route specific actions for SR 4 and the SR 4 Bypass. The plan specifies that the full widening of Main Street through Oakley and Brentwood should be pursued and that completion of the phased projects on the SR 4 Bypass (as specified in the Action Plan) is supported.

Contra Costa County Transportation Authority

The Contra Costa Transportation Authority (CCTA) serves as the Congestion Management Agency (CMA) for Contra Costa County. CCTA adopted the County's first Congestion Management Program (CMP) in October 1991. The most recent CMP, referred to as the 2001 CMP Update, represents the fifth biennial update that the Authority has prepared.

Measure J

The overall goal of the CCTA Growth Management Program (GMP) called for in Measure C-1988 is to "achieve a cooperative process for Growth Management on a countywide basis, while maintaining local authority over land use decisions and the establishment of performance standards." Using a formula based on road miles and population, CCTA allocates 18 percent of the sales tax revenues it receives to local jurisdictions that comply with GMP requirements. Measure C sales tax has since expired and in 2004, the sales tax was renewed for an additional 25 years (to 2034) and a new expenditure plan adopted, the Measure J Expenditure Plan. As Contra Costa County's transportation sales tax agency, the Authority oversees the design and construction of the transportation projects included in the Expenditure Plans, carries out the programs included in the Expenditure Plans, most notably, the county's Growth Management Program, and provides the financial structure that ensures the optimum use of the sales tax dollars as intended by the voters. Oakley participates in the Measure J program as a member of the TRANSPLAN subregional transportation planning committee, which consists of Antioch, Brentwood, Oakley, Pittsburg, and the unincorporated portions of East County.

City of Oakley General Plan Policies

The Transportation and Circulation Element included in the General Plan is prepared pursuant to Section 65302(b) of the California Government Code, and has been a mandatory component of local General Plans since 1955. The Transportation and Circulation Element is required to address the location and extent of existing and planned transportation routes, terminals, and other local public utilities and facilities. Furthermore, the Transportation and Circulation Element must be consistent with the other elements of the General Plan, accommodating future travel demand and contributing to, rather than inhibiting, the attainment of desired land use patterns in the Land Use Element.

The General Plan identifies several roadway and transit goals and policies that have been adopted to ensure that the transportation system of the City will have adequate capacity to serve planned growth. These goals and policies are intended to provide a plan and implementation measures for an integrated, multi-modal transportation system that will safely and efficiently meet the transportation needs of all economic and social segments of the City and provide for the transport of goods and services within the City. The following applicable goals and policies are from the Oakley 2020 General Plan.

Open Space

Goal 2.6 Ensure that open space areas are properly managed and designed to conserve natural resources and enhance the community's character and provide passive recreational activities.

Policy 2.6.1 Provide public access to the Delta and the waterfront wherever appropriate and feasible. Typically, such access should be unobstructed to the public by foot or bicycle, and where appropriate by horse, automobile and/or boat.

Policy 2.6.4 All public recreational areas and facilities shall be accessible by a publicly maintained road.

Implementation Programs

2.6.B Through the development review process, ensure that development projects provide increased public access to the Delta and the waterfront. Consider the appropriate type of access (pedestrian, equestrian, vehicular, etc.) and require developer improvements to support such access.

Trails

Goal 2.7 Provide a system of multi-use trails that connects residential districts, parks and schools, employment centers and natural areas, throughout Oakley and the region, including the Delta.

Policy 2.7.1 Promote a comprehensive trail program throughout the Oakley community and give preference to developments that incorporate the design of the trails, including trails of neighboring communities where feasible, and associated open space into their design.

Implementation Programs

2.7.A Adopt and regularly update a City of Oakley Comprehensive Trail Plan within 2 years.

2.7.B Require dedications from developers proposing projects located adjacent to designated trail alignments.

2.7.C Seek grant funding and participation from regional, state and federal entities and agencies to support implementation of the City's Trail Plan.

2.7.D Coordinate Oakley's trail system with regional trail programs through the review of plans and programs of neighboring communities, the County and associated agencies that provide trails within the region.

The following applicable goals and policies are from the Oakley 2020 General Plan Circulation Element:

Roadway Goals

Goal 3.1 Provide an efficient and balanced transportation system.

Policy 3.1.1 Strive to maintain Level of Service D as the minimum acceptable service standard for intersections during peak periods (except those facilities identified as Routes of Regional Significance).

Policy 3.1.2 For those facilities identified as Routes of Regional Significance, maintain the minimum acceptable service standards specified in the East County Action Plan Final 2000 Update, or future Action Plan updates as adopted.

Policy 3.1.3 Keep roadway facilities in optimal condition.

Policy 3.1.5 Encourage a multi-modal circulation system that supports non-automobile travel.

Policy 3.1.6 Address future roadway needs through both new road construction and management of existing and planned roadway capacity.

Policy 3.1.8 Mitigate conflicts between new roadway improvements and existing rural roadways when the identified conflicts threaten public health, safety and welfare.

Bicycles and Pedestrians

Goal 3.2 Promote and encourage walking and bicycling.

Policy 3.2.1 Provide maximum opportunities for bicycle and pedestrian circulation on existing and new roadway facilities.

Policy 3.2.2 Enhance opportunities for bicycle and pedestrian activity in new public and private development projects.

Policy 3.2.3 Create a bicycle and pedestrian system that provides connections throughout Oakley and with neighboring areas, and serves both recreational and commuter users.

Public Transportation

Goal 3.3 Provide adequate, convenient, and affordable public transportation.

Policy 3.3.1 Design new roadways and facilities to accommodate public transit.

Policy 3.3.2 Ensure that new public and private development supports public transit.

Policy 3.3.3 Encourage transit providers to improve transit routes, frequency, and level of service to adequately serve the mobility needs of Oakley residents, including those dependent on public transit.

Neighborhood Traffic Management

Goal 3.4 Minimize the intrusion of through traffic on residential streets.

Policy 3.4.1 Direct non-local traffic onto collector streets and arterials.

Policy 3.4.2 Maintain traffic speeds and volumes on neighborhood streets consistent with residential land uses.

Policy 3.4.3 Provide adequate capacity on collector and arterial streets to accommodate travel within the City.

IMPACTS AND MITIGATION MEASURES

Standards of Significance

Based on the adopted policies of CCTA, TRANSPLAN, the City of Oakley, and Contra Costa County a traffic impact would be considered significant if any of the following conditions, or potential thereof, would result from implementation of the proposed project:

- Substantially increased traffic volumes in relation to existing traffic load and capacity of the street system;
- A decline in LOS at a signalized intersection to unacceptable Mid-D (V/C = 0.85) or lower;

- A decline in LOS at an unsignalized intersection to an unacceptable level – LOS E (Average Delay = 35 seconds) or lower;
- An unsignalized intersection is forecast to meet the warrants for installation of a traffic signal, as set forth by Caltrans;
- Failure of any street or portion of a street to meet accepted safety and design standards or guidelines;
- Failure to meet adopted alternative transportation policies, plans, or programs; or
- Inadequate access for emergency vehicles.

Method of Analysis

Abrams Associates Traffic Engineering, Inc. conducted a traffic impact analysis (See Appendix D1) for the proposed project dated March 2010. The analysis is intended to quantify the traffic impacts of the project and to address the circulation and roadway improvements needed to mitigate these impacts. The analysis, summarized herein, addresses traffic conditions occurring during the morning and evening peak hours, and the area studied encompasses all of the major intersections that would be affected by the proposed project. The analysis considers the project's impacts on the baseline traffic conditions as well as conditions occurring in the future under the City of Oakley and Contra Costa County General Plans.

Levels of Service Evaluations

Levels of service at each of the intersections studied were evaluated to demonstrate how the proposed project would impact the transportation and circulation system. Five study scenarios have been addressed as part of the supplemental traffic analysis. Three baseline and two cumulative scenarios were considered. Please note that the AM and PM peak hours were both analyzed for each of the scenarios listed below:

- *Existing Conditions* – The scenario evaluates the LOS at the studied intersections for the existing conditions based on traffic counts taken in May of 2008 at various times. Traffic counts were conducted at several locations in 2009, which verified the accuracy of the results presented.
- *Existing-Plus-Approved-Projects (Baseline) Conditions* – This scenario evaluates conditions for the Year 2015 that would result when adding traffic generated by already approved projects that might affect the study intersections to existing traffic conditions.
- *Background-Plus-Project Conditions* – This scenario begins with the conditions determined for the Baseline scenario and adds traffic that would be generated by the proposed Emerson Property project.
- *Year 2030 Conditions* – Future traffic conditions at the study intersections were projected based on the "Contra Costa County Travel Demand Model" developed by the Contra Costa Transportation Authority (CCTA).
- *Year 2030 Plus Project Conditions* – This scenario begins with the conditions determined for the Year 2030 conditions above and adds traffic that would be generated by the proposed Emerson Property project.

Already approved projects consist of developments that are either under construction, are completed but fully or partially unoccupied, or that are not yet built but have final development-plan approval from the City. The methodology used assumes that all approved projects (and other reasonably foreseeable projects) are completed and occupied.

Traffic Counts

Current traffic volume information was collected for all project study intersections. Traffic counts were conducted for seven of the study intersections in May 2009 (while area schools were still in session) and the remaining intersections were counted in November 2009. It should be noted that some of the traffic counts showed a decline in the volumes when compared to data from other previous traffic studies conducted in the area. The issue of a significant economic recovery occurring before the project is occupied was raised and reviewed carefully. However, it was determined there was no definitive pattern among the traffic counts that would warrant making adjustments to account for this possibility. In addition, the baseline volumes include the traffic from major approved projects such as the River Oaks Crossing Retail project and the Gilbert Residential Project. A major economic recovery would likely need to occur for these projects to actually be constructed and occupied within the next five years. Therefore, the baseline traffic scenario (with traffic from approved projects) being used to measure the project's impacts already assumes that an economic recovery will occur and the volumes should be considered conservative.

Trip Generation

Trip generation is defined as the number of one-way vehicle trips produced by a particular land use or study site. Trips generated by the Emerson Property project were estimated using the rates contained in *Trip Generation, Eighth Edition,* published by the Institute of Transportation Engineers (ITE).

Trip Distribution and Assignment

Trip distribution is the process of determining in what proportion vehicle trips will travel between different locations within a traffic study area. Trip assignment is the allocation of vehicle trips to available routes (local streets) between locations in the traffic study area. Traffic was distributed to the roadway system manually based on existing travel patterns. Future traffic generated by approved and buildout developments was distributed and assigned to the local street system using information from the City of Oakley and Contra Costa County General Plans and from the "Eastern Contra Costa County Travel Demand Model," which takes into account likely peak-hour route choices.

Intersection Operations

The LOS measurement is a qualitative description of traffic operating conditions for intersections and roadways. Levels of service describe these conditions in terms of such factors as speed, travel time, delays, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. Levels of service are given letter designations ranging from A to F, which are defined in Table

4.3-1 for signalized intersections and Table 4.3-4 for unsignalized intersections. The LOS measurement that is used to determine the significance of any impacts a project might have on traffic and circulation is an intersection's overall LOS. Separate methodologies are used to determine levels of service at signalized and unsignalized intersections.

Signalized Intersections

The operating conditions at the signalized study intersections were evaluated using the Contra Costa County Transportation Authority's (CCTA) LOS methodology using the Traffix CCTA analysis module that was released in 2006. This is the intersection analysis methodology currently required by the CCTA. This methodology uses the TRB (Transportation Research Board) Circular 212 methodology to analyze the operations at signalized intersections based on the utilization of intersection capacity. The LOS definitions for signalized intersections are included in Table 4.3-1.

Unsignalized Intersections

For unsignalized intersections the methodology set forth in Chapter 10 of the 2000 Highway Capacity Manual (HCM) was used, with the assistance of the Traffix (version 7.7) computer software. This methodology is based on average total delay (seconds/vehicle).

As with signalized intersections, six levels of service are identified for unsignalized intersections, A through F, which represent conditions from best to worst, respectively. Table 4.3-4 shows the corresponding average total delay per vehicle at unsignalized intersections for each LOS category from A to F. It should be noted that delay results become erratic and unreliable over LOS F conditions; therefore, the delay is listed as ">50".

Table 4.3-4
Level of Service for Unsignalized Intersections

LOS	Average Total Delay (sec/veh)	Traffic Condition
A	< 10	No Delay
B	>10 - 15	Short Delay
C	>15 – 25	Moderate Delay
D	>25 – 35	Long Delay
E	>35 – 50	Very Long Delay
F	> 50	Volume>Capacity

Source: Abrams Associates, Inc., March 2010.

Freeway Operations

Traffic counts were conducted for both directions of the SR 4 Bypass at the Laurel Road interchange during May 2009. The detailed Highway Capacity Software (HCS) calculation worksheets are provided in Appendix D1.

The LOS is a quality measure describing operation conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. The LOS for a freeway segment is based on the density given in units of passenger cars per mile per lane. Table 4.3-5 provides the LOS thresholds for the freeway segments based on density. The operations were analyzed using procedures contained in the 2000 HCM using the HCS.

Table 4.3-5
Level of Service for Basic Freeway Segments

LOS	Density (pc/mi/ln)	Traffic Condition
A	< 11	No Delay
B	>11 – 18	Short Delay
C	>18 – 26	Moderate Delay
D	>26 – 35	Long Delay
E	>35 – 45	Very Long Delay
F	> 45	Volume>Capacity

Source: Abrams Associates, Inc., March 2010.

East Cypress Road Railroad Crossing

The analysis of the East Cypress Road railroad crossing was conducted to forecast the potential effects the traffic from the proposed project would have on traffic operations in the vicinity of the crossing (when trains temporarily block the roadway). Based on field observations and a review of the traffic volume characteristics on East Cypress Road a series of commute hour traffic surveys were scheduled. These were conducted at the East Cypress Road at-grade railroad crossing during May 2009 and then supplemented with additional field review conducted in July 2009. The detailed results of the railroad crossing surveys are included in Appendix D1 of the Partially Recirculated Draft EIR.

As mentioned previously, no more than two trains were recorded during any of the surveys conducted and the average was about one train during the two-hour PM peak period. The analysis showed that the queues that form at the crossing are directly related to the length of time that the roadway is closed for a train crossing. The average time for the closures was found to be approximately 90 seconds with some shorter trains closing the roadway for as little as one minute. The longest closures were for larger freight trains that can close the roadway for over two minutes.

The surveys recorded the queues that formed at the railroad crossing when trains came by during the afternoon commute period (between 4:00 and 6:00 PM). Data from one of the days had to be thrown out because of a fire on the tracks in Stockton that affected service in the area. It is important to note that there were no trains at all during the peak period on two of the five days where valid survey data was collected.

Baseline Plus Project Conditions

Trip Generation – Emerson Property Project

As mentioned previously, the Emerson Property project is proposed to include a residential component that consists of 578 single-family residential in addition to an approximately 278,000 square-foot neighborhood shopping center. The trip generation rates for the single-family residential portion of the project were based on the most current Institute of Transportation Engineers (ITE) fitted curve equations included in the eighth edition of the ITE Trip Generation Manual. ITE general shopping center rates were used by the original 2008 study in the Draft EIR. However, for this updated recirculated chapter, a number of different trip generation calculation alternatives were analyzed for the commercial portion of the project and the most conservative approach was selected. For this approach, the trip generation rates for each category (e.g., bank, restaurant, supermarket) were applied to the various retail uses that were specified on the (conceptual) commercial site plan. The fitted curve equations for the general shopping center category were used to estimate traffic from the remaining 63,000 square feet of undefined retail uses. The detailed trip generation calculations are included in Appendix D1.

It is important to note that when the general shopping center rates are used they already account for internal shared trips between different retail uses. However, when the uses are calculated individually, a reduction factor must be applied to account for the effects of shared internal trips (i.e., shared trips between different on-site uses that do not generate new trips on the surrounding street system.) The ITE Trip Generation Handbook indicates the internal capture rate for trips between retail uses in a multi-use development is 20 percent. More recent data is available that supports the use of a lower reduction. At ITE's 2007 annual meeting a study was presented entitled Trip Sharing Between Multiple Retail Developments in Retail Corridors. This traffic study identified an average reduction of 11 percent to account for internal/shared trips between different retail uses. The updated study has used the lower 11 percent reduction instead of 20 percent, which the original 2008 report assumed. The lower percentage provides more conservative (higher) estimates of traffic. The reduction of 11 percent was applied to the commercial uses prior to the application of the pass-by rates because including the internal trips in those calculations would overstate the pass-by traffic. The use of the individual rates together with the 11 percent reduction resulted in PM peak hour trip generation numbers that were about 50 percent higher than the results using the general shopping center rates.

An analysis of shared trips between the residential and commercial portions of the project was also conducted using the methodology set forth in Chapter 7 of the ITE Trip Generation Handbook. This methodology is based on surveys of internal capture rates that are used to estimate the maximum amount of shared traffic that could occur between various land uses. The methodology requires that the volumes be balanced by selecting the lowest possible internal trip numbers because the shared trips are constrained by the land use with the lowest potential for shared trips. For this project the methodology indicated the maximum allowable assumption for shared trips between the commercial and residential area would 122 PM peak hour trips. This equated to about a 7 percent reduction to the overall project trip generation or about a 10 percent reduction to the traffic from the commercial portion of the project. For comparison, the

commercial traffic from the East Cypress Specific Plan was reduced by 22 percent to account for internal trips between the commercial and residential uses.

At the project entrances, the project is expected to generate about 16,085 vehicle trips per day, with about 905 trips during the AM peak hour and about 1,584 trips during the PM peak hour. A summary of the estimated project trip generation during the AM and PM peak hours is shown on Table 4.3-6.

Table 4.3-6
Trip Generation for the Emerson Property Project

Development	Daily Trips	AM Peak Hour (8:00-9:00 AM)			PM Peak Hour (5:00-6:00 PM)		
		In	Out	Total	In	Out	Total
Single-Family Detached Housing (578 units)	4,219	104	312	416	320	188	509
Supermarket (65,000 square feet)	3,785	81	52	133	198	190	388
Shopping Center (208,459 square feet)	6,441	112	84	196	299	312	611
Fast Food Restaurant (4,587 square feet)	1,013	51	50	101	36	33	69
Gasoline/Service Station (18 Fueling Stations)	1,566	58	55	113	64	65	129
Internal Trip Reduction (Residential to Retail)	939	28	26	54	70	52	122
Total Project Trips	16,085	378	527	905	848	736	1,584

Source: Abrams Associates Inc., March, 2010.

Pass-By Traffic

Pass-by trips are project trips that are assumed to enter the site and then resume travel in the same direction. They are trips made as intermediate stops on the way from an origin to a primary destination. For the purposes of this analysis the pass-by adjustments have only been applied to the shopping center component of the Emerson project. The individual rates from the ITE Trip Generation Handbook were used for each of the specific uses. Please note that for the undefined retail areas, the pass-by reduction for the shopping center category was used. The shopping center category includes a fitted curve equation which (based on the project's size) resulted in a reduced pass-by rate of 29 percent. This was utilized instead of the average 34 percent pass-by percentage in order to present a conservative analysis, but for all other uses fitted curve equations were not available and the weighted average rates were used.

Site Access and Circulation

On East Cypress Road, the proposed project would have a signalized primary entrance at the main residential entrance, another signalized entrance into the shopping center, and a secondary stop-controlled entrance for the shopping center. It should be noted that the stop-controlled exit from the shopping center onto East Cypress Road would need to be restricted to right turns only. Two unsignalized entrances to the project would be located on Sellers Avenue; one would be aligned with the potential future entrance to the Gilbert Property and the other would be located centrally in the commercial portion of the project site. In addition, the project would have two internal connections to the existing Cypress Grove neighborhood to the west.

Emergency Vehicle Access

Factors such as number of access points, roadway width, and proximity to fire stations determine whether a project has sufficient emergency access. In this case, the proposed project would provide multiple access points from the arterials in the area. Therefore, if one of the roadways is blocked or obstructed, an emergency vehicle could use an alternate route to access the project. All lane widths within the project would meet the minimum width that can accommodate an emergency vehicle.

Construction Traffic

Principal construction activities that are expected to generate traffic are evaluated below. Assumptions underlying the evaluation are also briefly noted.

- Employee trips are based on the number of employees estimated to be on site during different points throughout the project. Each employee is assumed to drive to and from the site alone each day, and it is assumed that 20 percent of the workers leave and return to the site for various purposes during the day.

- Demolition export is based on the number of trucks required to remove all demolition material from the site. The estimated demolition export volume and required trips is based on the use of trucks with a 15 cubic yard (CY) capacity.

- Construction import is based on the number of trucks required to deliver construction materials to the site, including building materials such as wood, steel, and masonry.

- Heavy equipment is based on the number of large construction vehicles expected to be used on-site over the course of the project's demolition, site preparation, and construction. Some of this equipment would be delivered to the site on large flatbed trucks because they are not "road authorized."

Each construction activity listed above would generate different volumes of traffic at different points in the project. For example, the delivery and removal of heavy equipment to the project

site would happen only a few times during the project duration. The construction-related traffic is expected to remain relatively consistent throughout the project.

Roadway Improvement Funding and Timing Assumptions

Based on information provided by the City and data contained in the East County Travel Demand Model, long-term scenarios include major improvements to the traffic network as described below in the Cumulative Impact section of this Chapter 4.3. The Year 2030 analyses are based on the assumption that these key roadway improvements in the study area will be fully completed as planned by 2030 or earlier. As described above, the Baseline analysis assumes one improvement to be built in the next few years.

The City implements transportation improvements by first including them in the Transportation Impact Fee Program (TIFP) in order to begin collecting funding and start planning for the construction work. When a funding schedule is determined and the intended timing for construction is confirmed, each road improvement project is listed in the City's five-year Capital Improvement Program (CIP). The CIP is updated annually to reflect any changes to the status of projects, City priorities, or funding estimates. Financing for the CIP work relies on a combination of development-based fees, the City's share of sales tax and gas tax revenues, Redevelopment Agency funding, and other sources.

Separately from the City's program, the East Contra Costa Regional Fee and Finance Authority (ECCRFFA) administers a program to build the State Route 4 Bypass and other road improvements of importance to East County. In addition to the TIFP fees, the City collects a separate fee from new development to fund those regional improvements (the Regional Transportation Development Impact Mitigation [RTDIM] fee) – also paid upon issuance of individual building permits. The ECCRFFA Strategic Plan also proposes to use a share of sales taxes to fund the road improvements, plus state and federal grants and other sources.

The traffic study covered two timeframes: Year 2015 (Baseline) and Year 2030 (Cumulative). Baseline or Cumulative impacts that can be mitigated by improvements included in the CIP or TIFP, respectively, are deemed mitigated by payment of the City's fair share Transportation Impact Fee. For transportation improvements that are not included in the City's lists when building permits are issued for the project, which are required to avoid significant impacts, the project proponent will be required to install the improvements and then be eligible for reimbursement. In addition, Cumulative impacts that require mitigation through road improvements that are under the jurisdiction of the ECCRFFA are deemed mitigated by the project's fair share payment of the RTDIM fee.

The City's CIP operates under a financing schedule based on fee payment at the time of either building permit issuance or building occupancy. CEQA allows the assumption that road improvement identified in adopted plans and programs will be built as scheduled, despite potential uncertainty whether financing will be available when expected.

Road improvement needs are tied to traffic growth, which generally results from new development. The current economic slowdown will both delay payment of traffic fees from this

project and other development and slow traffic increases, and so postpone the need for road improvements. Furthermore, the City continues to collect sales and gas taxes (albeit at a reduced rate) to help fund road work.

The City and regional agency cannot guarantee that road improvements will be synchronized with traffic increases generated by new development, even when funding is plentiful. City policy and practice has been to collect traffic fees from new development and then allocate the funds to various road projects based on priorities set by the City Council. This means that fees paid by a particular development may not be used to build the particular improvements identified as needed to serve that development; however, the City has been able to rearrange its CIP priorities as needed to build road improvements when required to accommodate new development.

There may be a lag between occupancy of new homes and businesses and completion of road work. The City accepts that its method of implementing the CIP may result in a temporary delay in handling traffic increases resulting from individual projects.

This EIR recognizes that depending on the circumstances, all or portions of the Emerson project may be occupied and begin generating traffic before all planned road improvements are completed, which may result in temporary congestion at one or more location. Except as specifically noted in this Chapter, such congestion is not considered to be a significant impact under CEQA, but rather an acceptable and less-than-significant temporary consequence of implementing the CIP in a logical manner. All the listed road improvements are planned to be built and will mitigate the project-related and cumulative impacts identified by the EIR.

Project Phasing Assumptions

The traffic study assumed full construction and occupancy in one phase in order to study worst-case potential impacts. More rapid buildout of the entire project would increase traffic more quickly and would be more likely to cause new or increased congestion before planned road improvements could be built. In contrast, extended development in phases would spread out traffic increases, giving the City and regional agency more time to implement road improvements.

It is not feasible for this EIR to attempt to analyze traffic effects by phase, as the applicant is not able to provide a phasing plan or schedule. There are too many variables affecting when portions of the project may be built, or in what order. Current and anticipated future economic conditions prevent large-scale construction on speculation, so the market will dictate what is built and when. In such a situation, CEQA does not require the EIR to speculate about possible phasing, but rather to identify and evaluate the reasonable conservative worst case scenario – which in this case would be single-phase buildout.

Project-Specific Impacts and Mitigation Measures

4.3-1 Demolition and construction activities associated with the proposed project would result in an increase in traffic to and from the site and could lead to unsafe conditions near the project site.

The increase in traffic as a result of demolition and construction activities associated with the proposed project has been quantified assuming a worst-case single phase construction period of 24 months.

Heavy Equipment

Approximately eight pieces of heavy equipment are estimated to be transported on and off the site each month throughout the demolition and construction of the proposed project. Heavy equipment transport to and from the site could cause traffic impacts in the vicinity of the project site during construction. However, each load would be required to obtain all necessary permits, which would include conditions. Prior to issuance of grading and building permits, the project applicant would be required to submit a Traffic Control Plan.

The requirements within the Traffic Control Plan include, but are not limited to, the following: truck drivers would be notified of and required to use the most direct route between the site and SR 4 or the bypass, as determined by the City Engineering Department; all site ingress and egress would occur only at the main driveway to the project site on Sellers Avenue or on East Cypress Road upon approval of the City Engineer; specifically designated travel routes for large vehicles would be monitored and controlled by flaggers for large construction vehicle ingress and egress; warning signs indicating frequent truck entry and exit would be posted on East Cypress Road; and debris and mud on East Cypress Road and other nearby streets caused by trucks would be monitored daily and would require instituting a street cleaning program. In addition, eight loads of heavy equipment being hauled to and from the site each month would be short-term and temporary.

Employees

The weekday work is expected to begin around 7:00 AM and end around 4:00 PM. The construction worker arrival peak would occur between 6:30 AM and 7:30 AM, and the departure peak would occur between 4:00 PM and 5:00 PM. These peak hours are before the citywide commute peaks of 8:00 AM and 9:00 AM and 5:00 PM and 6:00 PM. It should be noted that the number of trips generated during construction would not only be temporary, but would also be substantially less than the proposed project at buildout.

Based on past construction of similar projects, construction workers could require parking for up to 250 vehicles during the peak construction period. Additionally, deliveries, visits, and other activities may generate peak non-worker parking demand of 10 to 15 trucks and automobiles per day. Therefore, up to 265 vehicle parking spaces

may be required during the peak construction period for the construction employees. Furthermore the Traffic Control Plan requires construction employee parking be provided on the project site to eliminate conflicts with nearby residential areas. Because the construction of the project can be staggered so that employee parking demand is met by using on-site parking, the impacts of construction-related employee traffic and parking are considered less-than-significant.

Construction Material Import

The project would also require the importation of construction material, including raw materials for the building pads, the buildings, the parking area, and landscaping. Based on past construction of similar projects, importing this material is estimated to require approximately 6,000 trucks for raw materials, approximately 800 trucks of concrete, and a maximum of 1,500 trucks for the parking lots, asphalt paving, and landscaping material, totaling approximately 8,300 trucks. Each truck will generate one inbound and one outbound trip, accounting for two trips for a total of 16,600 trips. During the maximum peak construction period, the project could generate approximately 800 truck trips per day. Furthermore, under the provisions of the Traffic Control Plan, if importation and exportation of material becomes a traffic nuisance, then the City Engineer may limit the hours the activities can take place.

Conclusion

Prior to issuance of grading and building permits, the project applicant would be required to submit a Traffic Control Plan for the City Engineer approval. The Traffic Control Plan would specifically designate travel routes for large vehicles and also stipulate the site access points be monitored and controlled by flaggers for large construction vehicle ingress and egress. Furthermore, the Traffic Control Plan would include provisions for regular street sweeping near the site and require that construction employee parking be provided on the project site to eliminate conflicts with nearby residential areas. The Traffic Control Plan would indicate how parking for construction workers would be provided during construction and ensure a safe flow of traffic in the project area during construction. This analysis assumed construction of the entire project in one phase to identify the potential worst-case traffic effects. If the project is built in phases over time, the effects of each phase will be the same or less. Each phase will be subject to a Traffic Control Plan and oversight by the City Engineer. The last phase may require added worker parking measures, depending on the circumstances, as there will not be any remaining vacant land for parking. Therefore, the demolition and construction activities associated with the proposed project or its individual phases would not lead to noticeable congestion in the vicinity of the site or the perception of decreased traffic safety resulting in a ***less-than-significant*** impact.

Mitigation Measure(s)
None required.

4.3-2 Project contribution to unacceptable LOS operations at the intersection of East Cypress Road and the minor (stop-controlled) shopping center entrance, the intersection of Laurel Road and Rose Avenue and at the Main Street intersections at Rose Avenue, Brownstone Road, and Delta Road.

Based on ITE trip rates, the daily and peak hour project trips have been calculated. At the three proposed entrances onto East Cypress Road, the project is expected to generate a substantial increase in trips during the PM peak hour. A summary of the estimated trip generation during the AM and PM peak hours is shown in Table 4.3-6. The construction of the proposed project would be expected to contribute to the already unacceptable LOS F operations during the peak hours at East Cypress Road and the minor (stop-controlled) shopping center entrance and also the intersections of Laurel Road and Rose Avenue and at the Main Street intersections at Rose Avenue, Brownstone Road, and Delta Road.

Trip Distribution

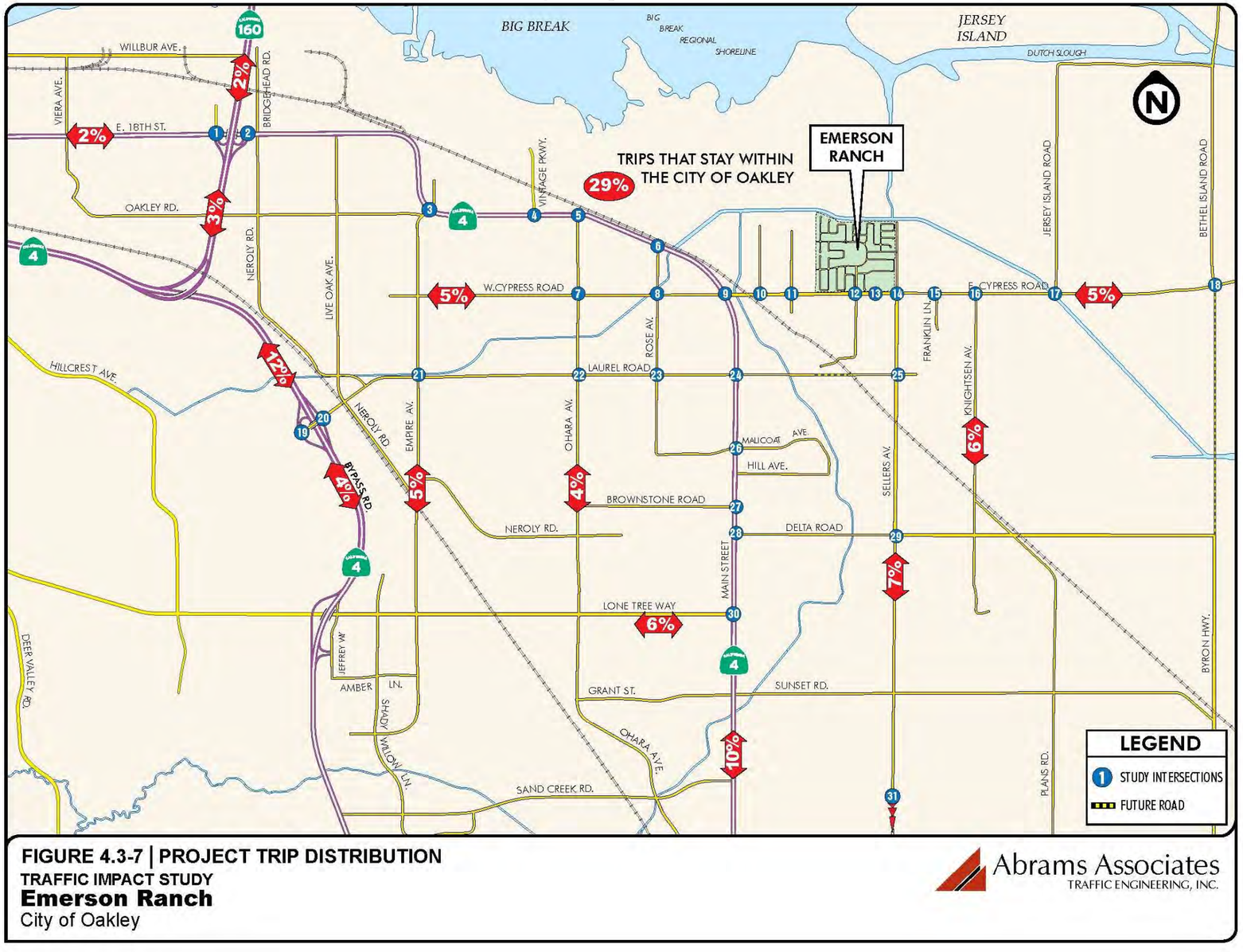
Figure 4.3-7 shows the trip distribution percentages that were used in the analysis. The project trips forecast to be added to each of the study intersections are shown on Figure 4.3-8. Figure 4.3-9 shows the resulting baseline plus project turning movements at each of the study intersections. East Cypress Road would remain the primary access to the project but, in the future, a large portion of the traffic from this area is assumed to travel to and from the south on Sellers Avenue to access the SR 4 Bypass via the planned extension of Laurel Road.

The analysis also forecast that approximately 29 percent of the project traffic would be internal trips within the Oakley city limits. These trips would be distributed through most of the project intersections along East Cypress Road and Main Street into Downtown Oakley with perimeter intersections to the south and beyond Oakley's commercial areas. The adjustments for traffic internal to the City of Oakley were mainly taken at the perimeter intersections to the south and beyond Oakley's commercial areas. In addition, the analysis includes local trips generated by the commercial portion of the project site.

Project Roadway Improvements

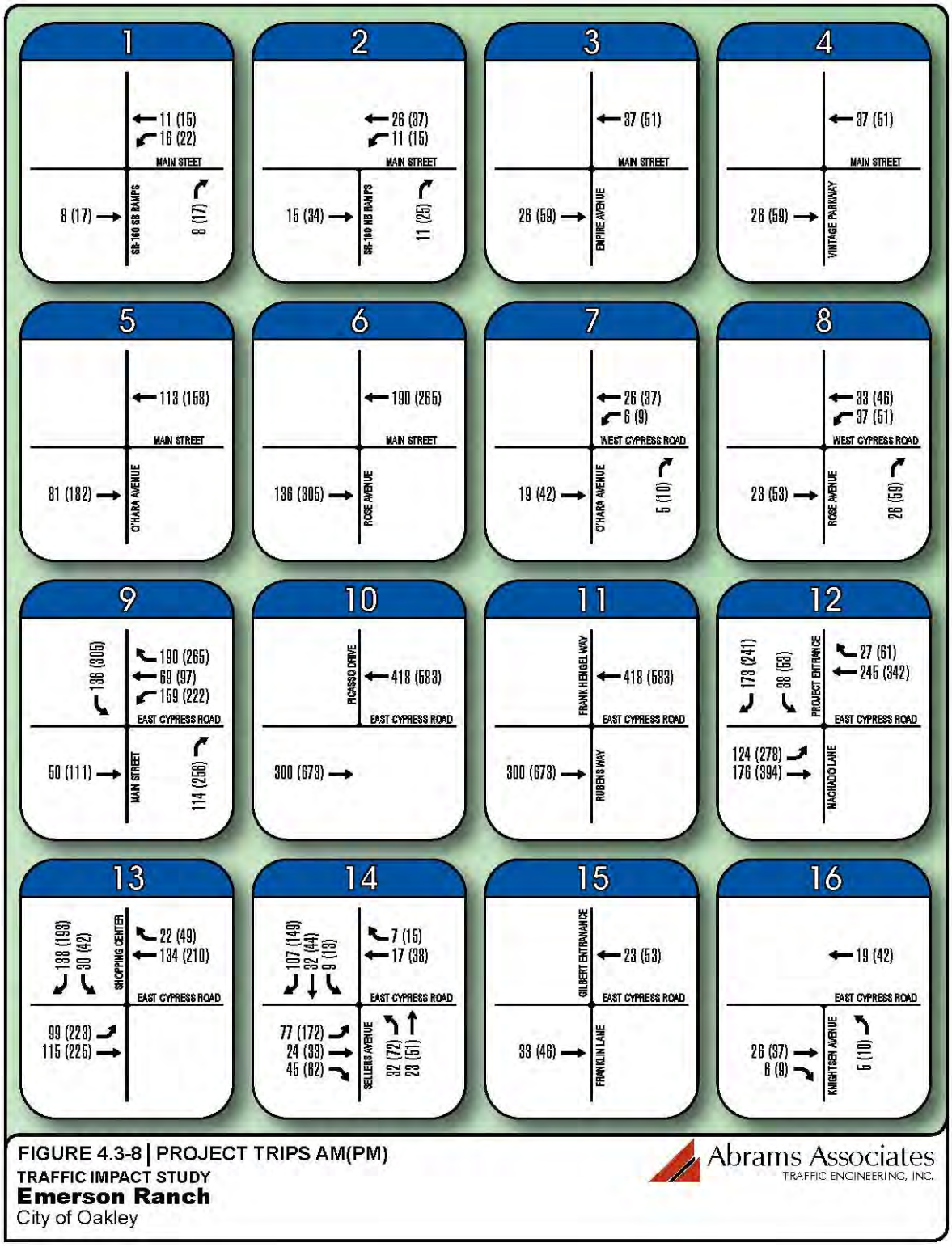
Consistent with the Oakley 2020 General Plan, roadway infrastructure would be constructed to meet the needs of new residential neighborhoods and provide access to this portion of Oakley. Street widths would be designed in accordance with traffic studies completed for the project as well as the Oakley 2020 General Plan. Local streets would be designed and constructed per City of Oakley standards.

Figure 4.3-7
Project Trip Distribution



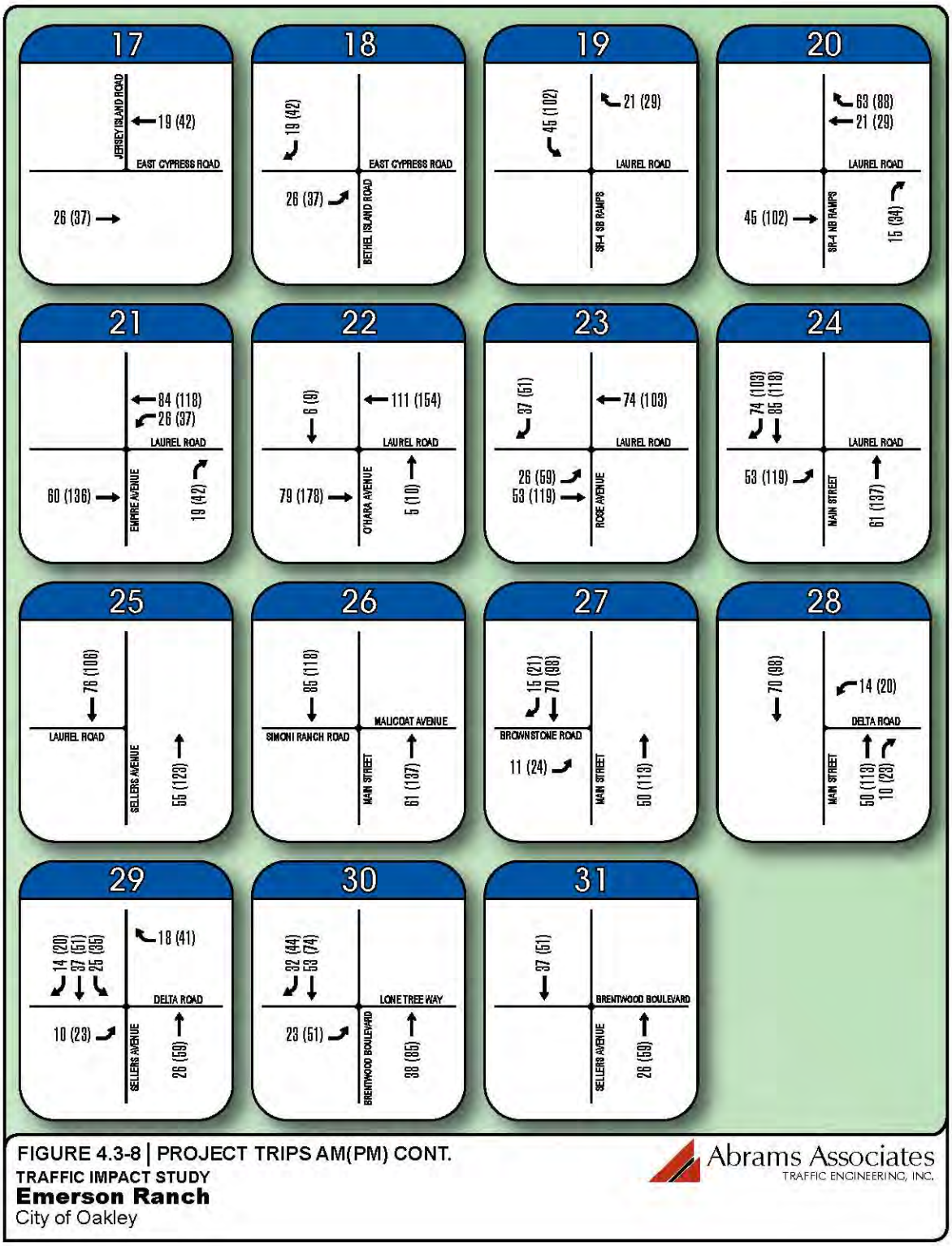
Source: Abrams Associates, Inc., March 2010.

Figure 4.3-8
Project Trips



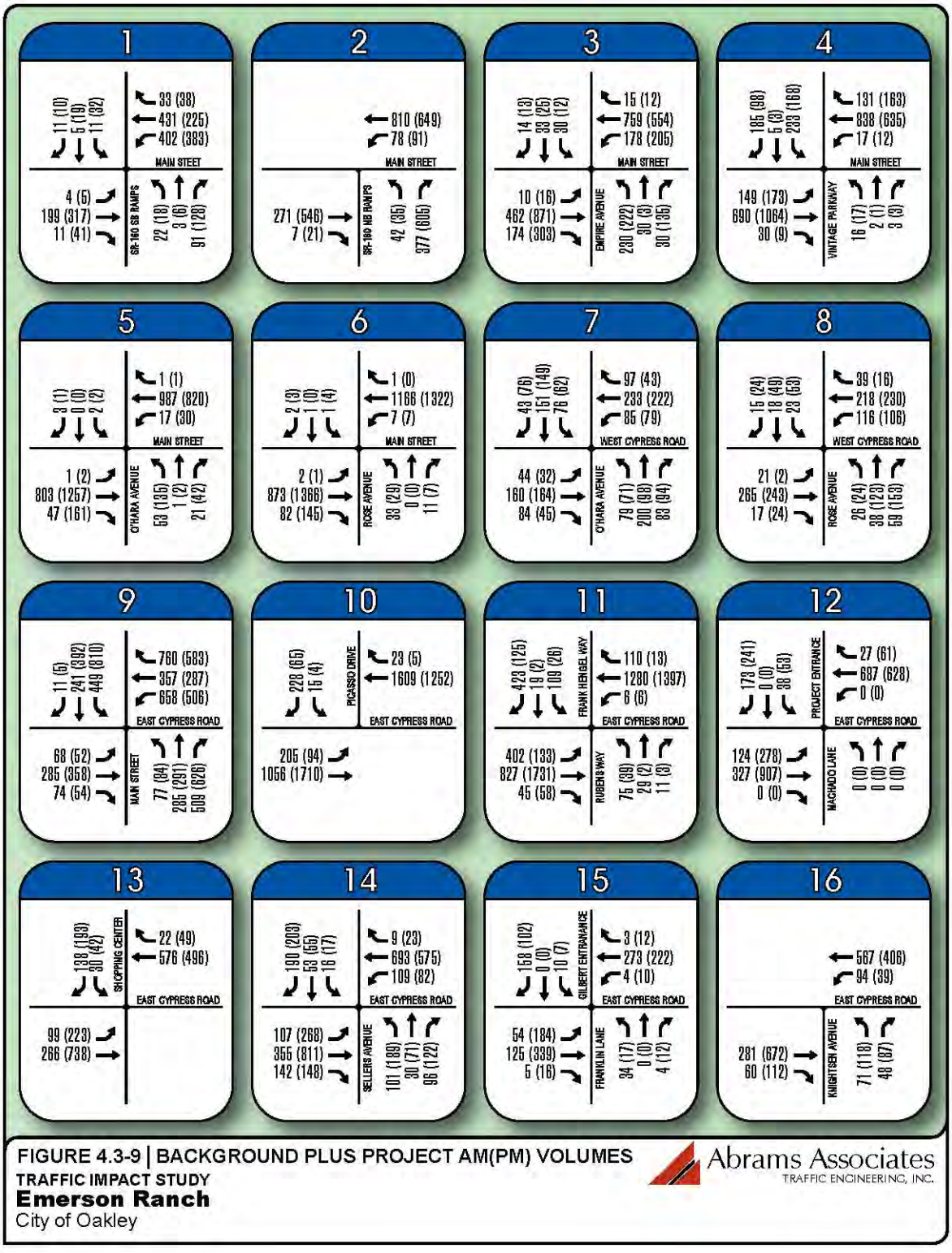
Source: Abrams Associates, Inc., March 2010.

Figure 4.3-8 (continued)
Project Trips



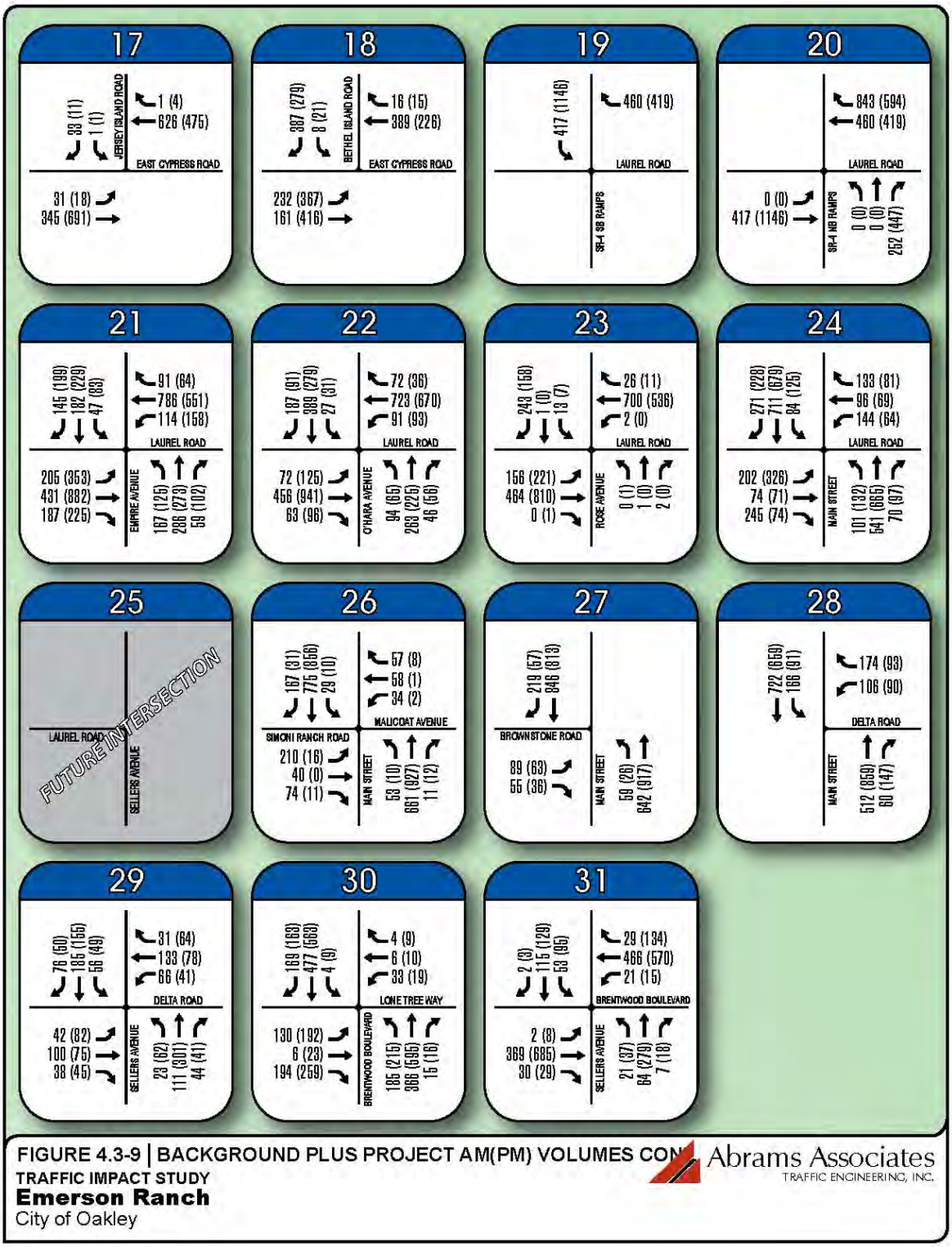
Source: Abrams Associates, Inc., March 2010.

Figure 4.3-9
AM (PM) Background Plus Project Volumes



Source: Abrams Associates, Inc., March 2010.

Figure 4.3-9 (continued)
AM (PM) Background Plus Project Volumes



Source: Abrams Associates, Inc., March 2010.

East Cypress Road in the vicinity of the project is planned by the City to be a four-lane divided road with a landscaped median. East Cypress Road already is built out to the west of the project site along the adjacent Cypress Grove development. Along the project frontage and to the east it presently is a two-lane undivided road. Portions of the ultimate southern right-of-way (across from the project site) are on private property. The project applicant would dedicate land along the project frontage needed to provide the ultimate northern portion of right-of-way. The applicant would improve East Cypress Road along the project site so that it provides a landscaped frontage, a bike lane, two west-bound travel lanes and a central painted median used for turning lanes. The existing eastbound roadway would be slurried and paved to conform to new construction and include one east-bound lane. The remainder of the ultimate road plan (raised, landscaped median and second east-bound lane) would be constructed at some future time either as part of development of the property to the south or through the City's Capital Improvement Program. Any right-of-way required would be either dedicated by the future southern property developer or acquired by the City.

Sellers Avenue along the eastern side of the project site currently is a two-lane undivided road. It is planned by the City to be a four-lane divided road with a landscaped median between East Cypress Road and the project entry, and a two-lane divided road with a landscaped median from the project entry north to the CCWD canal. Portions of the ultimate eastern right-of-way (across from the project site) are on private property. The project applicant would dedicate land along the project frontage needed to provide the ultimate western portion of right-of-way. Between East Cypress Road and the project entry, the applicant would improve Sellers Avenue along the project site so that it provides a landscaped frontage, a bike lane, two south-bound travel lanes and a central painted median for turning lanes. Between the project entry and the CCWD canal, the applicant would improve Sellers Avenue along the project site so that it provides a landscaped frontage, a bike lane, one south-bound travel lane and a central painted median for turning lanes. The existing north-bound paved roadway would be slurried and paved to conform to new construction and include one north-bound lane. The remainder of the ultimate road plan (second north-bound lane from East Cypress Road to the project entry and a raised, landscaped median) would be constructed at some future time either as part of development of the property to the east or through the City's Capital Improvement Program. Any right-of-way required would be either dedicated by the future eastern property developer or acquired by the City.

Other roadway improvements associated with the Emerson Property project include the following:

- Transition of Sellers Avenue north to the CCWD Canal Boundary;
- Modification of existing traffic signal at Sellers Avenue and East Cypress Road and installation of two new traffic signals at the main entrances to the residential area and to the shopping center;
- Minor modification of existing private driveways on East Cypress Road and Sellers Avenue to tie into roadway improvements; and

- Modification of existing East Cypress Road improvements (adjacent to Cypress Grove development) along western boundary for connection.

Intersection Operations

The capacity calculations for the Background Plus Project scenario are shown in Table 4.3-7. As seen in this table, the addition of traffic from the proposed project would contribute to the failing LOS at the intersection of Laurel Road and Rose Avenue and at the Main Street intersections at Rose Avenue, Brownstone Road, and Delta Road. It should also be noted that the minor (stop controlled) entrance to the shopping center would be expected to have operational problems as a result of the close proximity to the proposed traffic signal at Sellers Avenue. Beyond these intersections, the analysis indicates the project would not cause any other significant impacts to Background Plus Project traffic operations in the area.

Conclusion

The implementation of the proposed project would contribute to the volume of traffic in the area. As illustrated in Table 4.3-7, the development of the proposed project would lead to an increase in waiting times at nearby intersections. Mitigation of the unacceptable conditions at intersections on Main Street would be partially achieved through the planned construction of improvements to Laurel Road and Sellers Avenue as discussed below. The improvement would provide an alternative route to Main Street and alleviate some of the congestion on Main Street.

Traffic signals are already planned for the impacted intersections including Laurel Road and Rose Avenue, and the Main Street intersections at Rose Avenue, Brownstone Road, and Delta Road.

The development of the Emerson Property project would result in an increased demand on local traffic circulation in the vicinity of the proposed development. Therefore, without the implementation of recommended mitigations, the development of the proposed project would result in a ***potentially significant*** impact to the LOS at East Cypress Road and the minor (stop-controlled) shopping center entrance, the intersection of Laurel Road and Rose Avenue and the Main Street intersections at Rose Avenue, Brownstone Road, and Delta Road.

Mitigation Measure(s)

The required roadway improvements outlined above have been included in the City's Transportation Impact Fee program; therefore, implementation of the following mitigation measures would reduce the impact to a *less-than-significant* level.

4.3-2(a) *Prior to issuance of each building permit, or later as determined by the City Council, the proposed project would contribute to the mitigation of the above-identified impacts by paying the proposed project's fair share of the cost to implement the improvements through the payment of the City's*

Transportation Impact Fee. The amount of the project's fair-share fee shall be as established at the time of building permit issuance.

4.3-2(b) *The minor (stop-controlled) shopping center driveway on East Cypress Road shall be restricted to right-turns only for both ingress and egress due to the close proximity to the planned signalized intersection at Sellers Avenue.*

Table 4.3-7
Background Plus Project – Peak Hour Intersection LOS

	Intersection	Control	Peak Hour	CCTALOS Methodology		HCM Methodology	
				V/C Ratio	LOS	Measure (sec/veh)	LOS
1	MAIN STREET (SR-4) AT THE SOUTHBOUND SR-160 RAMPS	Traffic Signal	AM	0.261	A	18.0	B
			PM	0.337	A	20.7	C
2	MAIN STREET (SR-4) AT THE NORTHBOUND SR-160 RAMP	Traffic Signal	AM	0.331	A	12.3	B
			PM	0.382	A	16.5	B
3	MAIN STREET (SR-4) AT EMPIRE AVENUE	Traffic Signal	AM	0.363	A	16.9	B
			PM	0.485	A	19.1	B
4	MAIN STREET (SR-4) AT VINTAGE PARKWAY	Traffic Signal	AM	0.516	A	23.5	C
			PM	0.442	A	22.4	C
5	MAIN STREET (SR-4) AT O'HARA AVENUE	Traffic Signal	AM	0.632	B	28.3	C
			PM	0.862	D	50.0	D
6	MAIN STREET (SR-4) AT ROSE AVENUE	Stop Sign	AM	N/A	N/A	>50	F
			PM	N/A	N/A	>50	F
7	W. CYPRESS ROAD AT O'HARA AVENUE	Stop Sign	AM	N/A	N/A	15.7	C
			PM	N/A	N/A	10.8	B
8	W. CYPRESS ROAD AT ROSE AVENUE	Stop Sign	AM	N/A	N/A	10.3	B
			PM	N/A	N/A	11.5	B
9	E. CYPRESS ROAD/MAIN STREET (SR-4)	Traffic Signal	AM	0.744	C	26.9	C
			PM	0.790	C	46.5	D
10	E. CYPRESS ROAD/PICASSO DRIVE	Traffic Signal	AM	0.766	C	9.2	A
			PM	0.560	A	4.0	A
11	E. CYPRESS ROAD/FRANK HENGEL WAY (DELTA VISTA MIDDLE SCHOOL)	Traffic Signal	AM	0.736	C	33.2	C
			PM	0.564	A	11.8	B
12	E. CYPRESS ROAD/MAIN PROJECT ENTRANCE (FUTURE INTERSECTION)	Traffic Signal	AM	0.388	A	11.1	B
			PM	0.505	A	14.3	B
13	E. CYPRESS ROAD/SHOPPING CENTER ENTRANCE (FUTURE INTERSECTION)	Traffic Signal	AM	0.336	A	19.6	B
			PM	0.428	A	19.0	B
14	E. CYPRESS ROAD/SELLERS AVENUE	Traffic Signal	AM	0.389	A	23.5	C
			PM	0.492	A	22.4	C
15	E. CYPRESS ROAD/FRANKLIN LN (FUTURE INTERSECTION)	Traffic Signal	AM	0.192	A	20.8	C
			PM	0.196	A	13.4	B

Table 4.3-7
Background Plus Project – Peak Hour Intersection LOS

	Intersection	Control	Peak Hour	CCTALOS Methodology		HCM Methodology	
				V/C Ratio	LOS	Measure (sec/veh)	LOS
16	E. CYPRESS ROAD / KNIGHTSEN ROAD	Stop Sign	AM	N/A	N/A	17.0	C
			PM	N/A	N/A	30.2	D
17	E. CYPRESS ROAD/JERSEY ISLAND ROAD	Stop Sign	AM	N/A	N/A	11.1	B
			PM	N/A	N/A	10.7	D
18	E. CYPRESS ROAD/BETHEL ISLAND ROAD	Traffic Signal	AM	0.298	A	26.5	C
			PM	0.291	A	24.4	C
19	LAUREL ROAD AT THE SR-4 BYPASS WESTBOUND RAMPS	Traffic Signal	AM	0.133	A	0.3	A
			PM	0.366	A	0.2	A
20	LAUREL ROAD AT THE SR-4 BYPASS EASTBOUND RAMPS	Traffic Signal	AM	0.292	A	12.2	B
			PM	0.618	B	17.5	B
21	LAUREL ROAD AT EMPIRE AVENUE	Traffic Signal	AM	0.540	A	19.7	B
			PM	0.563	A	17.5	B
22	LAUREL ROAD AT O'HARA AVENUE	Traffic Signal	AM	0.494	A	22.0	C
			PM	0.493	A	21.1	C
23	LAUREL ROAD AT ROSE AVENUE	Stop Sign	AM	N/A	N/A	>50	F
			PM	N/A	N/A	10.7	D
24	MAIN STREET (SR-4) AT LAUREL ROAD	Traffic Signal	AM	0.595	A	23.9	C
			PM	0.617	B	24.0	C
25	SELLERS AVENUE AT LAUREL ROAD (FUTURE INTERSECTION)	Future	AM	N/A	N/A	N/A	N/A
			PM	N/A	N/A	N/A	N/A
26	MAIN STREET (SR-4) AT MALICOAT LANE/SIMONI RANCH ROAD	Traffic Signal	AM	0.494	A	16.5	B
			PM	0.293	A	2.9	A
27	MAIN STREET (SR-4) AT BROWNSTONE ROAD	Stop Sign	AM	N/A	N/A	>50	F
			PM	N/A	N/A	>50	F
28	MAIN STREET (SR-4) AT DELTA ROAD	Stop Sign	AM	N/A	N/A	>50	F
			PM	N/A	N/A	>50	F
29	SELLERS AVENUE AT DELTA ROAD	Stop Sign	AM	N/A	N/A	9.4	A
			PM	N/A	N/A	0.0	B
30	BRENTWOOD BOULEVARD (SR-4) AT LONE TREE WAY	Traffic Signal	AM	0.394	A	19.0	B
			PM	0.472	A	21.4	C
31	BRENTWOOD BOULEVARD (SR-4) AT SELLERS AVENUE	Traffic Signal	AM	0.383	A	20.1	C
			PM	0.646	B	20.9	C

4.3-3 Impacts to traffic at nearby unsignalized intersections.

Traffic signals are used to provide for an orderly flow of traffic through an intersection. Many times they are needed to provide side street traffic an opportunity to access a major road where high volumes and/or high vehicle speeds block crossing or turn movements. The signals do not, however, necessarily increase the capacity of an intersection (i.e., increase the intersection's ability to accommodate additional vehicles) and, in fact, often slightly reduce the number of total vehicles that can pass through an intersection in a given period of time. Signals can also cause an increase in traffic accidents if installed at improper locations.

Eleven possible tests exist (called "warrants") set forth by Caltrans (and the Manual of Uniform Traffic Control Devices) for determining whether a traffic signal should be considered for installation. The tests consider criteria such as traffic volumes and delay, pedestrian volumes, presence of school children, and accident history. Usually, two or more warrants must be met before a signal is installed. If the Peak Hour Volume Warrant (Warrant #11) is met at an intersection that is usually a strong indication that a more detailed signal warrant analysis covering all possible warrants is appropriate.

As mentioned above, future traffic signals are already planned at the four unsignalized intersections that have side streets with poor operations and one future traffic signal is planned for an unsignalized intersection that operates at LOS A. Although the project would contribute to the need for these traffic signals, they would not be required as mitigation because the overall LOS at these intersections would remain at acceptable levels and the traffic from the proposed project alone would not cause any intersections to meet the warrants where they were not already warranted.

The development of the proposed project would increase the total traffic during both AM and PM peak hours and result in a decrease in the levels of service of existing intersections which are currently regulated by stop signs. The traffic study conducted by Abrams Associates Traffic Engineering reveals, the AM/PM peak hour LOS is currently F (failing) at the unsignalized intersections of Main Street/Rose Avenue, Main Street/Brownstone Road, Main Street/Delta Road, and Laurel Road/Rose Avenue. Wait times at these intersections would be expected to be more than 50 seconds on the side street approaches.

The development of the proposed project would increase the traffic through these intersections, resulting in additional waiting times at these stop signs. Although the overall LOS at these unsignalized intersections would remain unchanged with the addition of project generated trips, traffic would be added to minor movements that would continue to operate at LOS F. Traffic signals will ultimately be warranted at each of these locations regardless of whether or not the proposed project is implemented. The addition of these signals would provide the necessary traffic controls to bring the LOS delays at these intersections within acceptable levels. The addition of project traffic would contribute to the need for traffic signals at Main Street and Rose Avenue, Main Street and Brownstone Road, Main Street and Delta Road, and Laurel Road and Rose

Avenue. Therefore, the development of the proposed project would be expected to have a ***potentially significant*** impact to nearby unsignalized intersections.

Mitigation Measure(s)
The required roadway improvements outlined above have been included in the City's Transportation Impact Fee program; therefore, implementation of the following mitigation measure would reduce the impact to a *less-than-significant* level.

4.3-3 Implement Mitigation Measure 4.3-2(a).

4.3-4 Impacts to freeway operations.

The development of the proposed project would increase the total traffic during both AM and PM peak hours. According to Table 4.3-8, State Route 4 Bypass LOS Conditions, the background plus project SR 4 Bypass eastbound direction would operate at LOS B during AM peak hours and LOS D during PM peak hours. The background plus project SR 4 Bypass westbound direction would operate at LOS B during AM peak hours and LOS C during PM peak hours.

Table 4.3-8
State Route 4 Bypass Freeway LOS Conditions

Scenario	Direction	AM Peak Hour			PM Peak Hour		
		Volume	Density (pc/mi/ln)	LOS	Volume	Density (pc/mi/ln)	LOS
Background	EB	1611	15.8	B	2608	25.6	C
	WB	1590	15.6	B	1772	17.4	B
Background Plus Project	EB	1656	16.2	B	2710	26.6	D
	WB	1653	16.2	B	1860	18.2	C

Source: Abrams Associates, Inc., March 2010.

Both eastbound and westbound segments under background plus project would operate at acceptable LOS, which is LOS D or better according to Caltrans standards. Therefore the proposed project would have a ***less-than-significant*** impact to freeway operations.

Mitigation Measure(s)
None required.

4.3-5 The project could result in impacts to the railroad crossing on East Cypress Road.

The proposed project is expected to generate up to 683 eastbound trips on East Cypress Road during the evening peak hour and up to 418 trips on westbound East Cypress Road during the morning peak hour. This increase represents the highest vehicle trips during peak hours that would result from the proposed project. The increased volume would result in increased congestion, which would extend the temporary queues that occur at the existing railroad crossing on East Cypress Road to the west of the project site. The project site is not located adjacent to the railroad crossing along East Cypress Road and

project implementation would not alter the existing configuration of the East Cypress Road railroad crossing.

At the at-grade railroad crossing on East Cypress Road significant impacts to traffic operations are assumed to occur when the traffic temporarily backs up into the adjacent signalized intersections at Main Street (SR 4) and Picasso Drive. When this occurs there are increased delays at the adjacent intersections and the City's LOS standards are theoretically exceeded for a short period of time. However, it is important to note that the City's LOS standards are based on conditions measured over a one hour period and the effects of the train crossings do not significantly alter the peak hour volumes or the associated LOS results using the CCTA methodology.

The distance to the adjacent signalized intersections is different for each approach and, therefore, each approach was analyzed separately. For eastbound traffic there is approximately 560 feet of queuing space in two travel lanes before the adjacent signalized intersection at Main Street is affected. This equates to storage for approximately 45 cars in the two lanes before the queues would cause temporary delays at the Main Street intersection. On the westbound approach there is approximately 420 feet of queuing space in two travel lanes before the adjacent signalized intersection at Picasso Drive is affected. This equates to storage for approximately 32 cars in the two lanes before the queues would cause temporary delays at the Picasso Drive intersection.

Before some key roadway improvements were made to East Cypress Road in the vicinity of the railroad crossing the backups used to regularly block the adjacent intersection at Main Street. Now that East Cypress Road has been widened to four lanes in the vicinity of the crossing the queues generally do not extend back to the Main Street intersection except on the busiest days, due in part to traffic volumes at the study intersections decreasing because of the opening of the SR 4 Bypass.

During the commute periods the queues on the westbound approach would continue to reach the Picasso Drive intersection. This would primarily occur when schools are in session due to the short but high peak in traffic that occurs right before school starts. Significant safety impacts would not result from the queuing. However, installation of appropriate signage reminding motorists to keep intersections clear could help reduce infractions, which could potentially increase due to project traffic.

On the eastbound approach, there are also backups that impact the signalized intersection at Main Street. However, these backups would only be expected to occur with longer freight trains. The baseline plus project traffic operations indicate that with the addition of project traffic the temporary queuing impacts at the Picasso Drive and Main Street intersections during the commute periods would continue to occur. However, it is important to note that these backups would still only be temporary in nature and would only occur one to two times during each peak period.

Based on discussions with representatives at the Burlington Northern Santa Fe Railroad, there are no plans to increase the number of trains using the tracks at the East Cypress

Road railroad crossing.[4] However, the number and length of trains is subject to change in the future. It should again be noted that Amtrak passenger trains also use the tracks, but they are typically shorter and travel at higher speeds than the freight trains (resulting in less delay).

The proposed project would result in an increase in traffic flows that would contribute to the existing congestion at the current railroad crossing, even with the recent widening of East Cypress Road to four lanes; therefore, a ***significant*** impact would result from the proposed project.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the magnitude of the above impact. However, the impacts associated with the at-grade railroad crossing on East Cypress Road would remain *significant and unavoidable.* It is not feasible to build a grade separation for the railroad crossing on East Cypress Road due to its close proximity to Marsh Creek. In addition, both the Main Street and Picasso Drive intersections are too close to accommodate the required underpass or overpass improvements with proper grades.

4.3-5 *Prior to approval of Improvement Plans, the Improvement Plans shall show that signs and pavement markings reading "Keep Intersections Clear" (or similar wording) shall be installed at the East Cypress Road intersections with Main Street and Picasso Drive.*

4.3-6 Impacts related to alternative transportation facilities.

Oakley currently has limited bicycle facilities within the City. Bicycle lanes are provided on Cypress Road between Rose Avenue and Marsh Creek. The Contra Costa Countywide Transportation Plan designates Oakley Road/Empire Avenue/Cypress Road as a Regional Bicycle Route, providing a connection to the Marsh Creek Regional Trail. The Marsh Creek Regional Trail, along with the Delta de Anza Regional Trail (between Neroly Road and Cypress Road), is a multi-use, paved trail for hikers, horses, and bicycles. The proposed roadway improvements are designed to meet minimum City of Oakley standards, which could accommodate bicycle and pedestrian facilities.

For pedestrian access the roadways within the project would provide sidewalks on at least one side of the roadway. Trails would also be provided on top of the levees surrounding the project site. For bicycles, off-street multi-use trails (Class I facilities) would be located along the top of the levees surrounding the project site, and the park within the site. On-street bicycle lanes (Class II facilities) would be provided along both sides of East Cypress Road and Sellers Avenue. Dedicated bicycle facilities would not be provided along the internal roads or local streets within the neighborhoods.

Transit for the local area, but not the project site itself, is provided by Tri-Delta Transit. Tri-Delta Transit does not currently service the site; however, given the amount of planned development in the areas surrounding the project, Tri Delta Transit will provide

regular transit service in the future. The arterials and collectors within the project area would provide adequate lane widths to accommodate future transit vehicles, and bus pullouts are currently planned for East Cypress Road at Sellers Avenue. The proposed roadway improvements associated with the project would be designed to meet minimum City of Oakley standards, which would accommodate transit services, and the project would not conflict with the City's adopted alternative transportation policies and plans. Tri-Delta Transit, after reviewing the conceptual development plan, indicated that the proposed project could be served in the future if bus stops and/or shelters are included in the designs. However, the current lack of bus service to the project area results in a ***potentially significant*** impact.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce impacts related to transit to a *less-than-significant* level.

4.3-6 *The project shall include a bus stop on the north side of Cypress Road near Sellers Avenue. The final design and location of this bus stop shall be subject to the approval of the Oakley City Engineer prior to approval of final maps. The City Engineer shall coordinate with Tri-Delta Transit as to the placement of the bus stop.*

4.3-7 Impacts related to site access and circulation.

The proposed project's residential development would have a signalized primary entrance on Cypress Road at the main residential entrance, another signalized entrance into the shopping center, and a secondary stop-controlled entrance for the shopping center. Two unsignalized entrances to the project site would be located on Sellers Avenue; one would be aligned with the potential future entrance to the Gilbert Property and the other would access the commercial site. In addition, the project would have two internal connections to the existing Cypress Grove neighborhood to the west.

Based on a review of the proposed site plan it was determined that the site circulation should function well and would not cause any safety or operational problems. The project site design has been required to conform to City design standards and is not expected to create any significant impacts to pedestrians, bicyclists or traffic operations. All necessary truck turning movements can also be accommodated. Therefore, impacts related to site access and circulation to the proposed project would be ***less-than-significant***.

Mitigation Measure(s)
None required.

4.3-8 Impacts regarding emergency vehicle access on and surrounding the proposed project site.

Sufficient emergency access is determined by factors such as number of access points, roadway width, and proximity to fire stations. The land use plan for the proposed project would have a signalized primary entrance on East Cypress Road at the main residential entrance, another signalized entrance into the shopping center, and a secondary stop-controlled entrance for the shopping center. Two unsignalized entrances to the project site would be located on Sellers Avenue; one would be aligned with the potential future entrance to the Gilbert Property and the other would access the commercial site. All lane widths within the project would meet the minimum width that can accommodate an emergency vehicle; therefore, the width of the internal roadways would be adequate. Therefore, the development of the proposed project is expected to have ***less-than-significant*** impacts regarding emergency vehicle access.

Mitigation Measure(s)
None required.

4.3-9 Impacts relating to the presence and availability of adequate parking.

The proposed project is expected to provide a minimum of two off-street parking spaces for each residential unit and would provide adequate parking for the shopping center to ensure consistency with the City requirements. New on-street parking spaces would be created along the new internal project roadways and would not infringe upon other streets in the area. Therefore, the proposed project is not expected to create parking impacts on the surrounding areas, and impacts related to adequate parking would be ***less-than-significant***.

Mitigation Measure(s)
None required.

Cumulative Impacts and Mitigation Measures

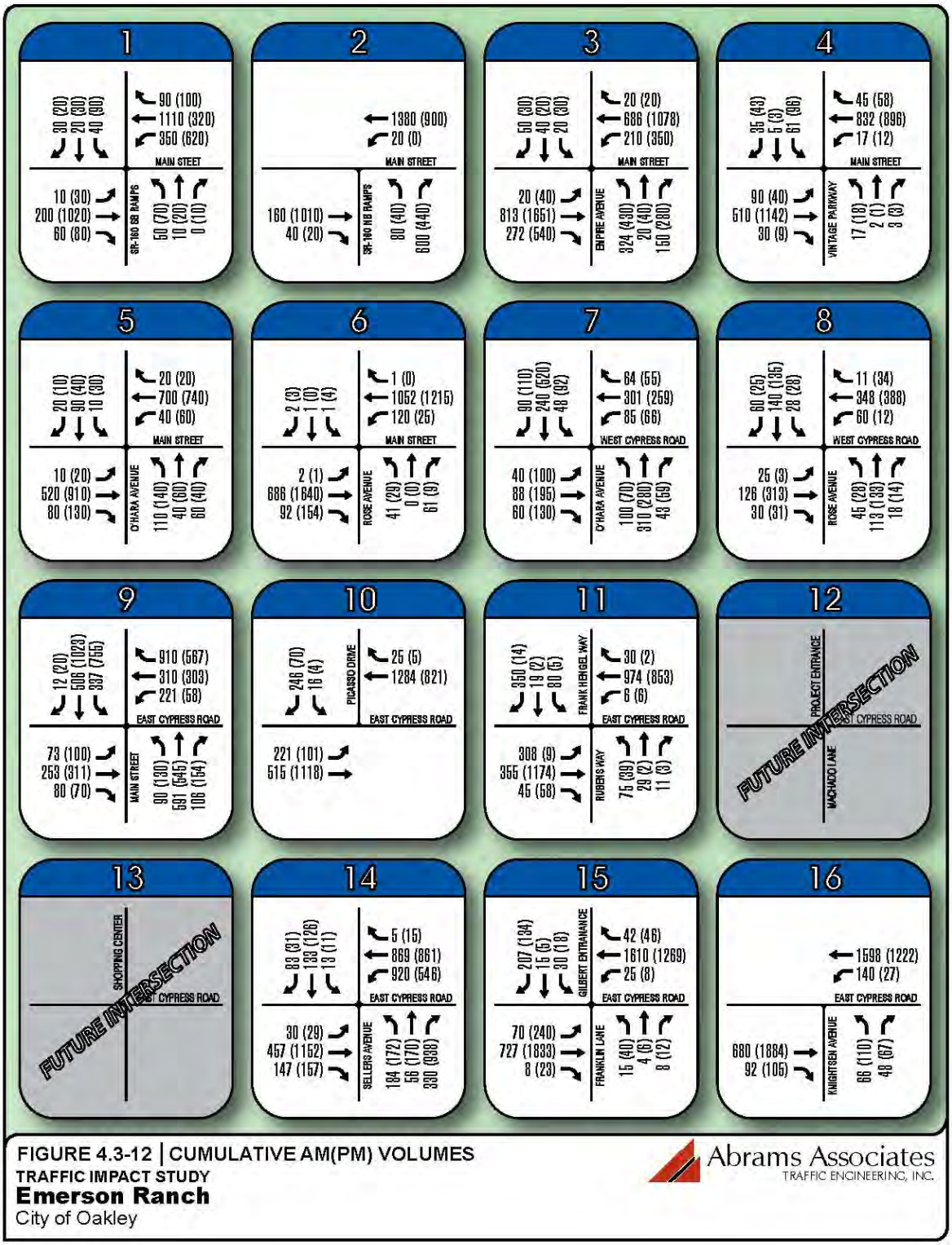
Cumulative (2030) Traffic Forecasts

Cumulative traffic forecasts for this study were based on information obtained from the East County Travel Demand Model and the East Cypress Road Specific Plan Traffic Study 1. The model was executed with the following land use assumptions:

- Buildout of the Oakley General Plan within the City of Oakley; and
- The Association of Bay Area Governments (ABAG) Projections 2000 land use forecasts extended to year 2030 for areas outside of Oakley.

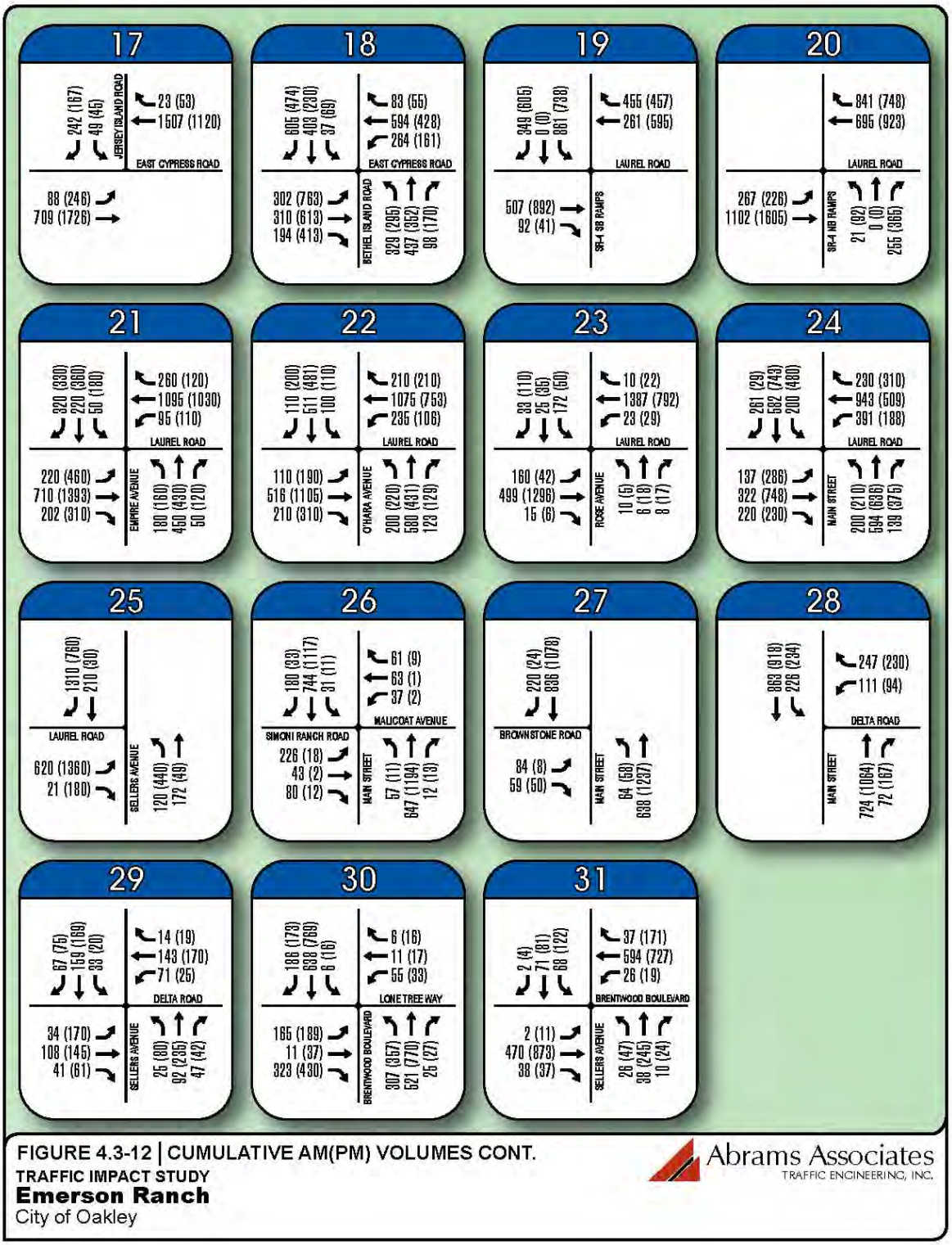
The resulting Cumulative (No Project) traffic volumes at each of the project study intersections are shown on Figure 4.3-10.

Figure 4.3-10
AM (PM) Cumulative (No Project) Volumes



Source: Abrams Associates, Inc., March 2010.

Figure 4.3-10 (continued)
AM (PM) Cumulative (No Project) Volumes



Source: Abrams Associates, Inc., March 2010.

Cumulative (2030) Planned Roadway Improvements

This analysis assumes that several roadway improvements would be constructed in the interim period between the Baseline and Cumulative analysis years. Only roadway improvements with identified funding or improvements that are identified as mitigation measures under Baseline conditions were included in this scenario.

Major roadway improvements that are funded through the East Contra Costa Regional Fee and Financing Authority (ECCRFFA), the Regional Transportation Development Impact Mitigation (RTDIM) fee, the City of Oakley's Traffic Impact Fee Program (TIFP), and/or the City of Oakley's Capital Improvement Program (and planned to be completed by 2030) include the following:

- Completion of SR 4 Bypass Segment 2 as a four-lane freeway between Lone Tree Way and Balfour Road with interchanges at Sand Creek Road and Balfour Road;
- Widening of Main Street to a six-lane arterial between Big Break Road and SR 160;
- Extension of Laurel Road from Empire Avenue to Antioch City Limits;
- Completion of a two-lane bridge over Rock Slough connecting Bethel Island Road and Byron Highway;
- Widening of East Cypress Road to a six-lane arterial between Sellers Avenue and Jersey Island Road;
- Extension of Laurel Road between Union Pacific Railroad and Sellers Avenue as a four-lane arterial;
- Widening of Sellers Avenue to a four-lane arterial between East Cypress Road and Laurel Road;
- Widening of Laurel Road to a four-lane arterial between Empire Avenue and Main Street;
- Signalization of the intersections of Main Street with Rose Avenue, Brownstone Road, and Delta Road and the intersections of Sellers Avenue with Laurel Road and Delta Road; and
- Completion of the Main Street Downtown Bypass.

4.3-10 The proposed project would result in impacts to intersections under cumulative conditions.

The results of the Year 2030 (No Project) levels of service are summarized in Table 4.3-9. Under the No Project scenario, the above-listed assumptions were made as to transportation improvements. Based on the information provided by the City and the data contained in the East County Travel Demand Model, the long-term scenarios considered major improvements to the traffic network that are included in the City's TIF program such as the extension of Laurel Road to Sellers Avenue.

Even assuming completion of the proposed transportation network improvements the intersection of Laurel Road with Empire Avenue is still forecast to degrade to unacceptable operations with the traffic growth estimated by the Year 2030.

Table 4.3-9
Cumulative (No Project) Volumes – Peak Hour Intersection LOS

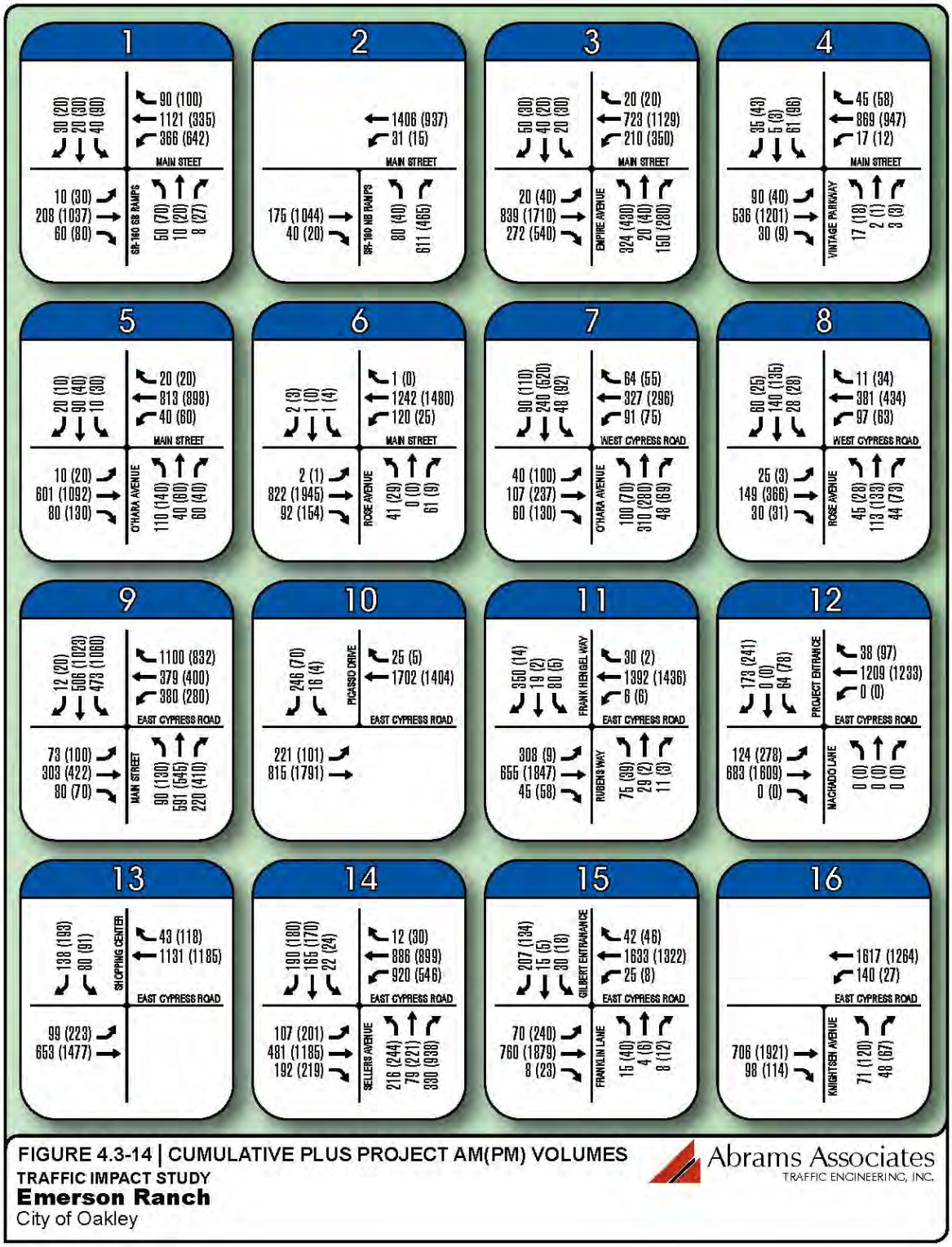
	Intersection	Control	Peak Hour	CCTALOS Methodology		HCM Methodology	
				V/C Ratio	LOS	Measure (sec/veh)	LOS
1	MAIN STREET (SR-4) AT THE SOUTHBOUND SR-160 RAMPS	Traffic Signal	AM	0.387	A	19.2	B
			PM	0.623	B	27.3	C
2	MAIN STREET (SR-4) AT THE NORTHBOUND SR-160 RAMP	Traffic Signal	AM	0.472	A	12.9	B
			PM	0.355	A	6.3	A
3	MAIN STREET (SR-4) AT EMPIRE AVENUE	Traffic Signal	AM	0.379	A	16.2	B
			PM	0.624	B	19.7	B
4	MAIN STREET (SR-4) AT VINTAGE PARKWAY	Traffic Signal	AM	0.356	A	21.1	C
			PM	0.410	A	12.1	B
5	MAIN STREET (SR-4) AT O'HARA AVENUE	Traffic Signal	AM	0.558	A	13.1	B
			PM	0.692	B	19.3	B
6	MAIN STREET (SR-4) AT ROSE AVENUE	Traffic Signal	AM	0.321	A	6.4	A
			PM	0.531	A	11.0	B
7	W. CYPRESS ROAD AT O'HARA AVENUE	Traffic Signal	AM	0.464	A	19.5	B
			PM	0.619	B	29.2	C
8	W. CYPRESS ROAD AT ROSE AVENUE	Stop Sign	AM	N/A	N/A	11.8	B
			PM	N/A	N/A	14.3	B
9	E. CYPRESS ROAD/MAIN STREET (SR-4)	Traffic Signal	AM	0.681	B	32.6	C
			PM	0.661	B	26.8	C
10	E. CYPRESS ROAD/PICASSO DRIVE	Traffic Signal	AM	0.661	B	12.9	B
			PM	0.368	A	11.8	B
11	E. CYPRESS ROAD/FRANK HENGEL WAY (DELTA VISTA MIDDLE SCHOOL)	Traffic Signal	AM	0.576	A	26.2	C
			PM	0.390	A	6.5	A
12	E. CYPRESS ROAD/MAIN PROJECT ENTRANCE (FUTURE INTERSECTION)	Future	AM	N/A	N/A	5.1	A
			PM	N/A	N/A	4.1	A
13	E. CYPRESS ROAD/SHOPPING CENTER ENTRANCE (FUTURE INTERSECTION)	Future	AM	N/A	N/A	5.7	A
			PM	N/A	N/A	3.3	A
14	E. CYPRESS ROAD/SELLERS AVENUE	Traffic Signal	AM	0.637	B	23.3	C
			PM	0.712	C	32.5	C
15	E. CYPRESS ROAD/FRANKLIN LN (FUTURE INTERSECTION)	Traffic Signal	AM	0.609	B	10.5	B
			PM	0.584	A	16.0	B
16	E. CYPRESS ROAD / KNIGHTSEN ROAD	Traffic Signal	AM	0.503	A	3.0	A
			PM	0.627	B	4.4	A
17	E. CYPRESS ROAD/JERSEY ISLAND ROAD	Traffic Signal	AM	0.585	A	12.2	B
			PM	0.528	A	10.7	B
18	E. CYPRESS ROAD/BETHEL ISLAND ROAD	Traffic Signal	AM	0.724	C	43.8	D
			PM	0.702	C	42.7	D

Table 4.3-9
Cumulative (No Project) Volumes – Peak Hour Intersection LOS

	Intersection	Control	Peak Hour	CCTALOS Methodology		HCM Methodology	
				V/C Ratio	LOS	Measure (sec/veh)	LOS
19	LAUREL ROAD AT THE SR-4 BYPASS WESTBOUND RAMPS	Traffic Signal	AM	0.449	A	12.1	B
			PM	0.623	B	16.1	B
20	LAUREL ROAD AT THE SR-4 BYPASS EASTBOUND RAMPS	Traffic Signal	AM	0.506	A	15.7	B
			PM	0.679	B	20.2	C
21	LAUREL ROAD AT EMPIRE AVENUE	Traffic Signal	AM	0.768	C	23.5	C
			PM	0.897	D	64.8	E
22	LAUREL ROAD AT O'HARA AVENUE	Traffic Signal	AM	0.702	C	30.7	C
			PM	0.739	C	35.9	D
23	LAUREL ROAD AT ROSE AVENUE	Traffic Signal	AM	0.619	B	14.3	B
			PM	0.428	A	5.7	A
24	MAIN STREET (SR-4) AT LAUREL ROAD	Traffic Signal	AM	0.778	C	36.1	D
			PM	0.772	C	35.4	D
25	SELLERS AVENUE AT LAUREL ROAD (FUTURE INTERSECTION)	Traffic Signal	AM	0.602	B	30.8	C
			PM	0.738	C	31.1	C
26	MAIN STREET (SR-4) AT MALICOAT LANE/SIMONI RANCH ROAD	Traffic Signal	AM	0.505	A	18.8	B
			PM	0.374	A	2.9	A
27	MAIN STREET (SR-4) AT BROWNSTONE ROAD	Traffic Signal	AM	0.408	A	5.8	A
			PM	0.558	A	2.9	A
28	MAIN STREET (SR-4) AT DELTA ROAD	Traffic Signal	AM	0.427	A	13.3	B
			PM	0.549	A	17.1	B
29	SELLERS AVENUE AT DELTA ROAD	Traffic Signal	AM	0.303	A	20.4	C
			PM	0.432	A	22.3	C
30	BRENTWOOD BOULEVARD (SR-4) AT LONE TREE WAY	Traffic Signal	AM	0.552	A	20.4	C
			PM	0.632	B	23.9	C
31	BRENTWOOD BOULEVARD (SR-4) AT SELLERS AVENUE	Traffic Signal	AM	0.444	A	20.8	C
			PM	0.759	C	26.4	C

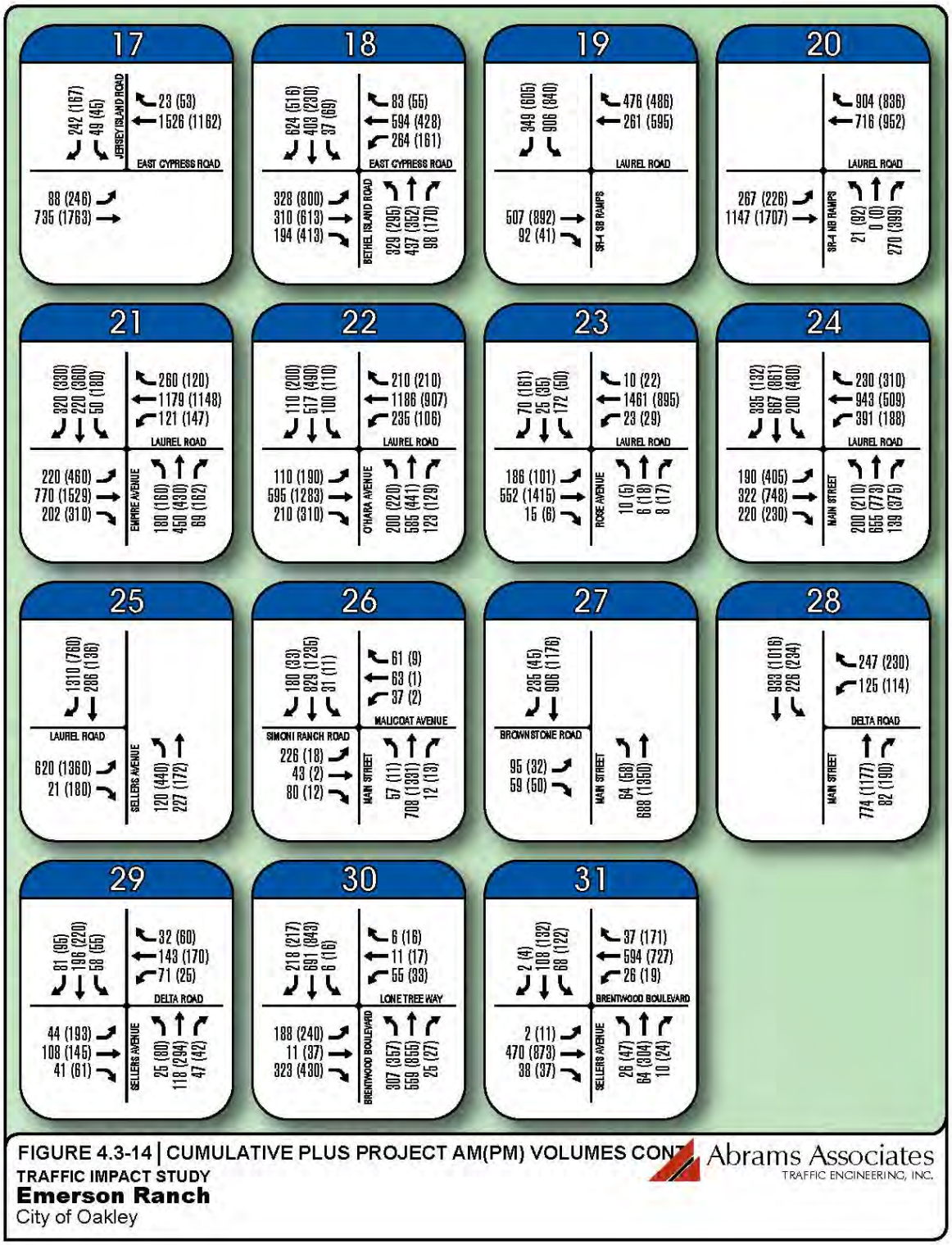
The Cumulative (2030) traffic volumes with the addition of traffic from the proposed project are shown in Figure 4.3-11 and the future lane configurations are shown in Figure 4.3-12. The resulting levels of service for the Cumulative Plus Project scenario are shown in Table 4.3-10. Although some of the intersections would be operating very close to the mid-LOS D threshold, all study intersections would have acceptable operations with implementation of the mitigation measures outlined in this chapter with the exception of one intersection, which is described below.

Figure 4.3-11
AM (PM) Cumulative Plus Project Volumes



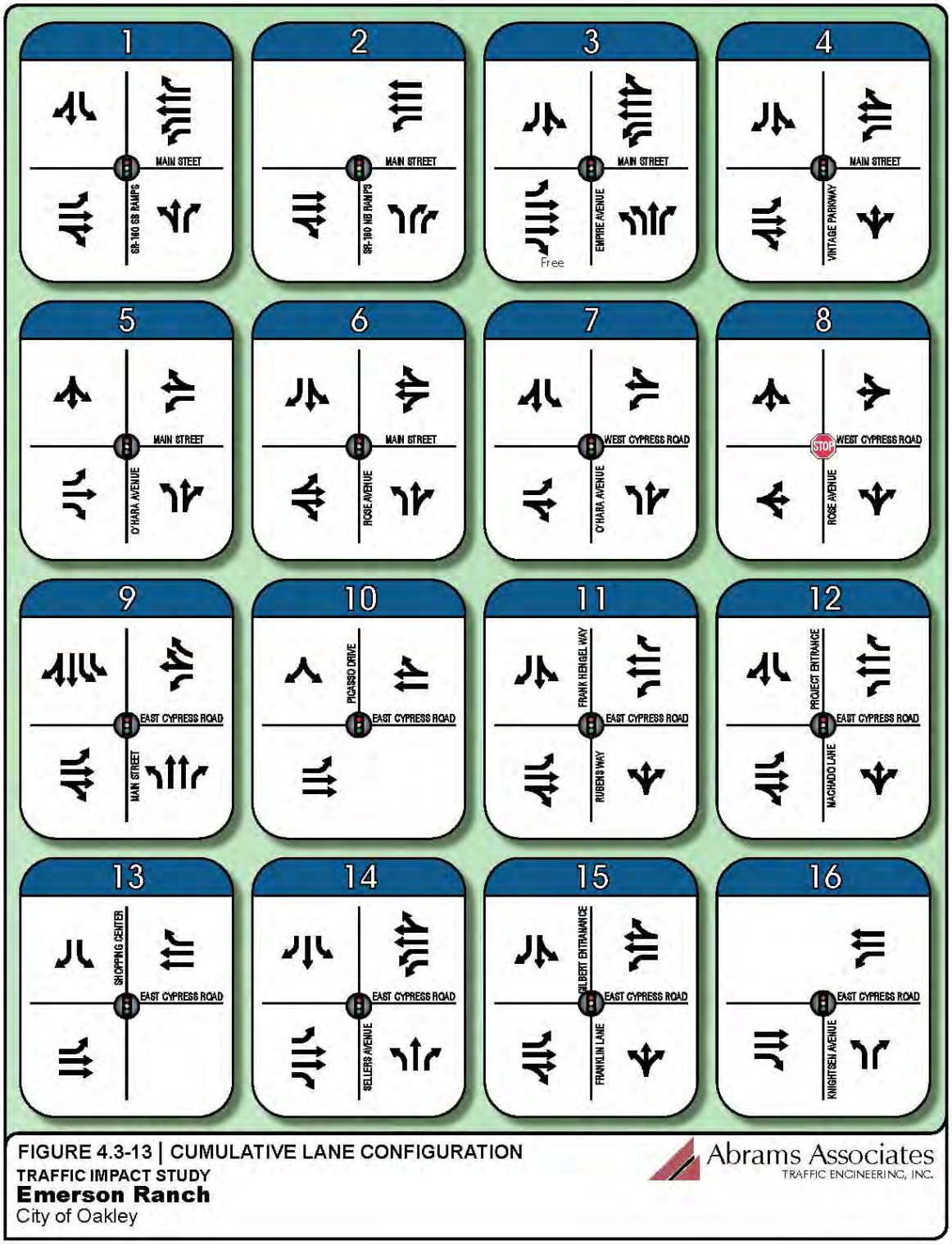
Source: Abrams Associates, Inc., March 2010.

Figure 4.3-11 (continued)
AM (PM) Cumulative Plus Project Volumes



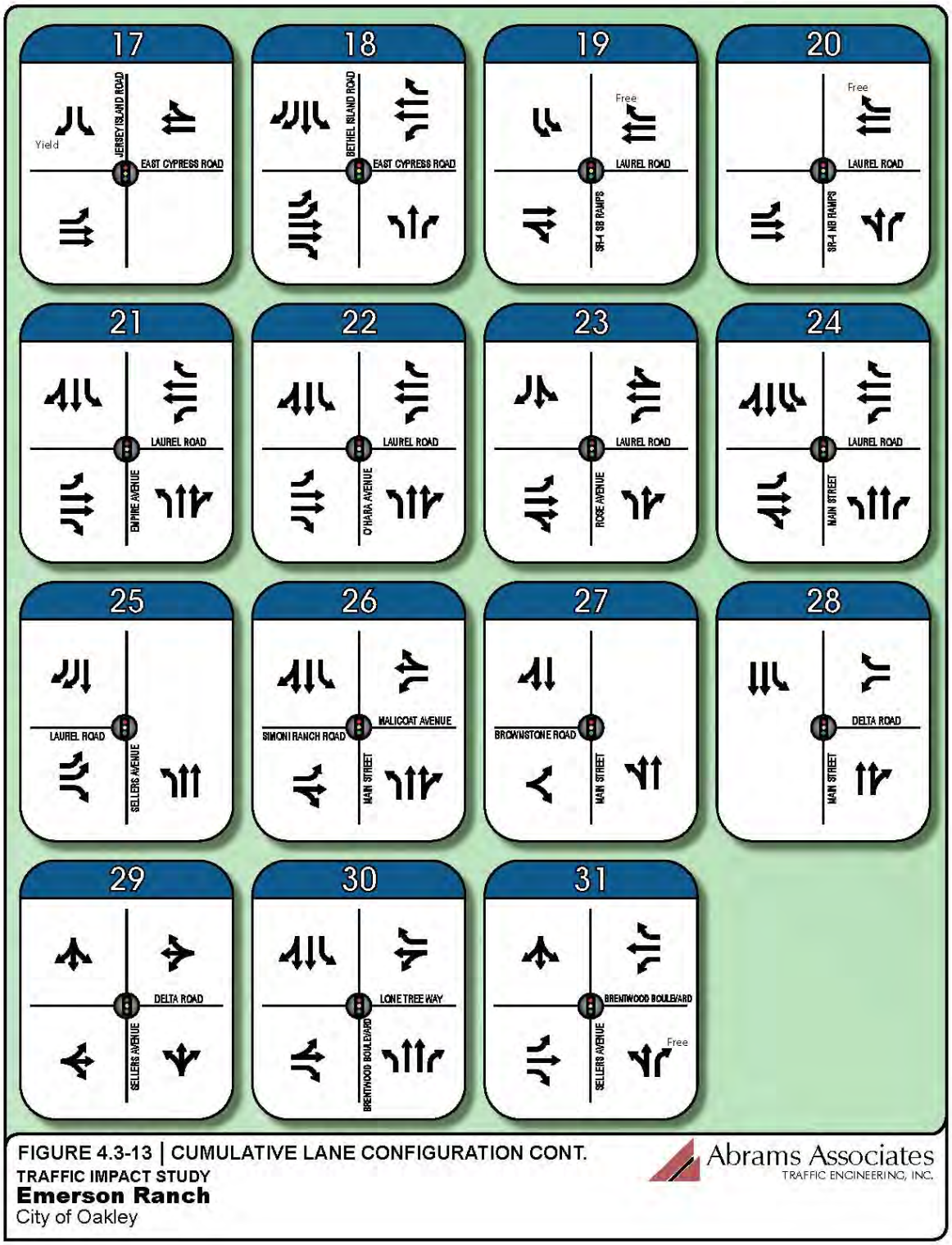
Source: Abrams Associates, Inc., March 2010.

Figure 4.3-12
Cumulative Lane Configurations



Source: Abrams Associates, Inc., March 2010.

Figure 4.3-12 (continued)
Cumulative Lane Configurations



Source: Abrams Associates, Inc., March 2010.

Table 4.3-10
Cumulative Plus Project – Peak Hour Intersection LOS

	Intersection	Control	Peak Hour	CCTALOS Methodology		HCM Methodology	
				V/C Ratio	LOS	Measure (sec/veh)	LOS
1	MAIN STREET (SR-4) AT THE SOUTHBOUND SR-160 RAMPS	Traffic Signal	AM	0.390	A	19.4	B
			PM	0.635	B	27.4	C
2	MAIN STREET (SR-4) AT THE NORTHBOUND SR-160 RAMP	Traffic Signal	AM	0.477	A	12.9	B
			PM	0.374	A	6.5	A
3	MAIN STREET (SR-4) AT EMPIRE AVENUE	Traffic Signal	AM	0.384	A	15.9	B
			PM	0.636	B	19.8	B
4	MAIN STREET (SR-4) AT VINTAGE PARKWAY	Traffic Signal	AM	0.366	A	20.6	C
			PM	0.427	A	11.6	B
5	MAIN STREET (SR-4) AT O'HARA AVENUE	Traffic Signal	AM	0.624	B	14.1	B
			PM	0.798	C	25.2	C
6	MAIN STREET (SR-4) AT ROSE AVENUE	Traffic Signal	AM	0.358	A	5.9	A
			PM	0.616	B	6.4	A
7	W. CYPRESS ROAD AT O'HARA AVENUE	Traffic Signal	AM	0.478	A	19.7	B
			PM	0.639	B	29.9	C
8	W. CYPRESS ROAD AT ROSE AVENUE	Stop Sign	AM	N/A	N/A	17.1	C
			PM	N/A	N/A	23.6	D
9	E. CYPRESS ROAD/MAIN STREET (SR-4)	Traffic Signal	AM	0.787	C	53.3	D
			PM	0.837	D	42.2	D
10	E. CYPRESS ROAD/PICASSO DRIVE	Traffic Signal	AM	0.783	C	11.3	B
			PM	0.564	A	4.5	A
11	E. CYPRESS ROAD/FRANK HENGEL WAY (DELTA VISTA MIDDLE SCHOOL)	Traffic Signal	AM	0.697	B	25.3	C
			PM	0.586	A	4.4	A
12	E. CYPRESS ROAD/MAIN PROJECT ENTRANCE (FUTURE INTERSECTION)	Traffic Signal	AM	0.546	A	8.9	A
			PM	0.688	B	11.1	B
13	E. CYPRESS ROAD/SHOPPING CENTER ENTRANCE (FUTURE INTERSECTION)	Traffic Signal	AM	0.451	A	12.6	B
			PM	0.549	A	14.1	B
14	E. CYPRESS ROAD/SELLERS AVENUE	Traffic Signal	AM	0.680	B	27.6	C
			PM	0.784	C	42.1	D
15	E. CYPRESS ROAD/FRANKLIN LN (FUTURE INTERSECTION)	Traffic Signal	AM	0.619	B	10.7	B
			PM	0.602	B	16.4	B
16	E. CYPRESS ROAD / KNIGHTSEN ROAD	Traffic Signal	AM	0.514	A	3.1	A
			PM	0.649	B	4.7	A
17	E. CYPRESS ROAD/JERSEY ISLAND ROAD	Traffic Signal	AM	0.594	A	12.1	B
			PM	0.544	A	9.6	A
18	E. CYPRESS	Traffic	AM	0.738	C	43.8	D

Table 4.3-10
Cumulative Plus Project – Peak Hour Intersection LOS

	Intersection	Control	Peak Hour	CCTALOS Methodology		HCM Methodology	
				V/C Ratio	LOS	Measure (sec/veh)	LOS
	ROAD/BETHEL ISLAND ROAD	Signal	PM	0.727	C	44.7	D
19	LAUREL ROAD AT THE SR-4 BYPASS WESTBOUND RAMPS	Traffic Signal	AM	0.464	A	12.0	B
			PM	0.623	B	16.1	B
20	LAUREL ROAD AT THE SR-4 BYPASS EASTBOUND RAMPS	Traffic Signal	AM	0.520	A	15.8	B
			PM	0.728	C	21.9	C
21	LAUREL ROAD AT EMPIRE AVENUE	Traffic Signal	AM	0.794	C	23.5	C
			PM	0.933	E	76.1	E
22	LAUREL ROAD AT O'HARA AVENUE	Traffic Signal	AM	0.737	C	33.3	C
			PM	0.795	C	42.9	D
23	LAUREL ROAD AT ROSE AVENUE	Traffic Signal	AM	0.656	B	15.8	B
			PM	0.462	A	6.9	A
24	MAIN STREET (SR-4) AT LAUREL ROAD	Traffic Signal	AM	0.826	D	40.8	D
			PM	0.843	D	40.7	D
25	SELLERS AVENUE AT LAUREL ROAD (FUTURE INTERSECTION)	Traffic Signal	AM	0.605	B	25.3	C
			PM	0.791	C	33.1	C
26	MAIN STREET (SR-4) AT MALICOAT LANE/SIMONI RANCH ROAD	Traffic Signal	AM	0.531	A	18.2	B
			PM	0.415	A	3.0	A
27	MAIN STREET (SR-4) AT BROWNSTONE ROAD	Traffic Signal	AM	0.439	A	6.0	A
			PM	0.591	A	3.6	A
28	MAIN STREET (SR-4) AT DELTA ROAD	Traffic Signal	AM	0.450	A	18.8	B
			PM	0.595	A	16.4	B
29	SELLERS AVENUE AT DELTA ROAD	Traffic Signal	AM	0.336	A	15.3	B
			PM	0.485	A	25.0	C
30	BRENTWOOD BOULEVARD (SR-4) AT LONE TREE WAY	Traffic Signal	AM	0.590	A	21.9	C
			PM	0.696	B	27.8	C
31	BRENTWOOD BOULEVARD (SR-4) AT SELLERS AVENUE	Traffic Signal	AM	0.465	A	18.1	B
			PM	0.794	C	51.8	D

The proposed project would contribute to the intersection of Laurel Road and Empire Avenue deteriorating to unacceptable operations. It should be noted that the intersection is forecast to have unacceptable operations regardless of whether or not the proposed project is implemented. However, the proposed project would further contribute to the failing LOS at the intersection; therefore, the proposed project would have a ***potentially significant*** impact under the Cumulative Plus Project scenario.

Mitigation Measure(s)
Implementation of the following mitigation measure would mitigate potential impacts to a *less-than-significant* level. This measure would minimize impacts to the intersection and change the LOS F to an LOS C and LOS D, respectively, during the evening peak hour.

4.3-10 *The Laurel Road/Empire Avenue intersection shall be revised to include exclusive right-turn lanes on the northbound and southbound approaches. This improvement is not currently included in the City's Capital Improvement Program; however, the improvement is covered in the City's Transportation Impact Fee Program. Therefore, the project applicant shall contribute to the mitigation by paying their fair share of the cost through the payment of the City's Transportation Impact Fee with the issuance of each building permit or later, as determined by City Council.*

4.3-11 The project could result in cumulative impacts to the railroad crossing on East Cypress Road.

At the at-grade railroad crossing on East Cypress Road, significant impacts to traffic operations are assumed to occur when the traffic temporarily backs up into the adjacent signalized intersections at Main Street (SR 4) and Picasso Drive. When this occurs there are increased delays at the adjacent intersections and the City's LOS standards are theoretically exceeded for a short period of time.

Under cumulative and cumulative plus project traffic operations at the East Cypress Road railroad crossing, there would be temporary queuing impacts at the adjacent signalized intersections when trains arrive during the commute periods.

It is expected that the queues that have been observed to affect the Picasso Drive and Main Street intersections would continue to occur. During the morning commute period the queues would continue to reach the Picasso Drive intersection under cumulative plus project conditions. The queues on the westbound approach would primarily occur when schools are in session due to the short but high peak in traffic that occurs right before school starts.

The queuing impacts would still be temporary in nature and would only occur one to two times during each peak period. The proposed project would result in an increase in traffic flows and would therefore contribute to the cumulative impacts to the railroad

crossing on East Cypress Road. Significant safety impacts would not result from the queuing. However, installation of appropriate signage reminding motorists to keep intersections clear could help reduce infractions, which could potentially increase due to project traffic.

While the railroads do not have any plans to increase the number of trains using the tracks at the East Cypress Road railroad crossing, traffic volumes indicate that when trains do arrive under cumulative conditions the impacts at the adjacent intersections would be more likely to occur with shorter closures. The possibility exists that the railroads could increase the length of trains, which would increase the time of closures. The proposed project would result in an increase in traffic flows that would contribute to congestion at the current railroad crossing resulting in temporary impacts on the adjacent signalized intersections under cumulative conditions, therefore, the project's contribution would result in a ***significant*** impact.

Mitigation Measure(s)
It is not feasible to build a grade separation for the railroad crossing on East Cypress Road due to its close proximity to Marsh Creek. In addition, both the Main Street and Picasso Drive intersections are too close to accommodate the required underpass or overpass improvements with proper grades. However, implementation of the following mitigation measure would reduce the magnitude of the above impact. Although the mitigation measure would reduce the above impact, temporary impacts on the adjacent signalized intersections would still occur. Therefore, the cumulative project-related impacts to the railroad crossing on East Cypress Road would remain *significant and unavoidable.*

4.3-11 Implement Mitigation Measure 4.3-5.

4.3-12 Cumulative impacts to freeway operations.

The development of the proposed project would increase the total traffic during both AM and PM peak hours. According to Table 4.3-11, State Route 4 Bypass LOS Conditions, the cumulative plus project SR 4 Bypass eastbound direction would operate at LOS C during AM peak hours and LOS D during PM peak hours. The cumulative plus project SR 4 Bypass westbound direction would operate at LOS C during AM peak hours and LOS C during PM peak hours.

Both eastbound and westbound segments under cumulative plus project would operate at acceptable LOS which is LOS D or better according to Caltrans standards. Therefore the proposed project would have a ***less-than-significant*** impact to freeway operations.

Mitigation Measure(s)
None required.

Table 4.3-11
State Route 4 Bypass Freeway LOS Cumulative Conditions

Scenario	DIR	AM Peak Hour			PM Peak Hour		
		Volume	Density (pc/mi/ln)	LOS	Volume	Density (pc/mi/ln)	LOS
Cumulative	EB	2102	20.6	C	3403	33.7	D
	WB	2074	20.3	C	2313	22.7	C
Cumulative Plus Project	EB	2147	21.0	C	3505	35.0	D
	WB	2137	21.0	C	2401	23.5	C

Source: Abrams Associates, Inc., March 2010.

Endnotes

[1] Abrams Associates Traffic Engineering, *Traffic Impact Analysis*, March 2010.
[2] City of Oakley, Memorandum from Rebecca Willis, Community Development Director, December 17, 2009.
[3] Oakley residents concerned about possible rail expansion, Contra Costa Times, Walnut Creek, CA, January 6, 2010.
[4] Personal Communication, John Fleming, Manager of Engineering, Burlington Northern Santa Fe Railroad, 10:30 AM, July 20, 2009.

4.4 RECIRCULATED AIR QUALITY CHAPTER

4.4 AIR QUALITY

INTRODUCTION

The Air Quality chapter of the EIR describes the effects of the proposed project on local and regional air quality. The chapter discusses existing air quality, construction-related impacts, direct and indirect emissions associated with the project, the impacts of these emissions on both the local and regional scale, and mitigation measures to reduce or eliminate any identified significant impacts. This chapter is based on the *Air Quality Impact Analysis for the Emerson Ranch Project*[1] prepared by Don Ballanti, Certified Consulting Meteorologist (See Appendix E1). This analysis was conducted using guidance provided by the Bay Area Air Quality Management District (BAAQMD).[2] The analysis also utilized proposed new thresholds of significance being considered by the BAAQMD.[3]

EXISTING ENVIRONMENTAL SETTING

Air Basin Characteristics

The City of Oakley is located on the south side of the San Joaquin River Delta, east of the Carquinez Strait, between the Bay Area and the Central Valley. The climate and air quality in Oakley is greatly influenced by both the Bay Area and Central Valley. Oakley is located at the eastern boundary of the nine-county San Francisco Bay Area Air Basin. Oakley is a few miles west of San Joaquin County, which is part of the eight-county San Joaquin Valley Air Basin.

Oakley has a relatively low potential for air pollution, given the persistent strong winds that are typical of the area. Wind records from the closest wind-measuring sites show a strong predominance of westerly winds. Average wind speed is relatively high and the frequency of calm winds is quite low. The winds dilute pollutants and transport them away from the area, so that emissions released in the project area have more influence on air quality in the Sacramento and San Joaquin Valleys than they do locally. However, the City of Oakley is located downwind of the greater Bay Area. The proximity to the Bay Area negatively affects the air quality of the City of Oakley.

Ambient Air Quality Standards

Both the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) have established ambient air quality standards for common pollutants. These ambient air quality standards for each contaminant represent safe levels that avoid specific adverse health effects. The ambient air quality standards cover what are called "criteria" pollutants because the effects of each pollutant are described in the criteria documents.

Table 4.4-1 identifies the major pollutants, characteristics, health effects and typical sources. The federal and California ambient air quality standards are summarized in Table 4.4-2.

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

The State of California regularly reviews scientific literature regarding the health effects and exposure to particulate matter and other pollutants. On May 3, 2002, the CARB staff recommended lowering the level of the annual standard for PM_{10} and establishing a new annual standard for $PM_{2.5}$ (particulate matter 2.5 micrometers in diameter and smaller). The new standards became effective on July 5, 2003. In early 2006, a new 8-hour standard for ozone (0.07 PPM) went into effect.

Ozone

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

Particulate Matter

Suspended particulate matter (airborne dust) consists of solid and liquid particles small enough to remain suspended in the air for long periods. “Respirable” PM consists of particles less than 10 microns in diameter, and is defined as “suspended particulate matter” or PM_{10}. Particles between 2.5 and 10 microns in diameter arise primarily from natural processes, such as wind-blown dust or soil. Fine particles are less than 2.5 microns in diameter ($PM_{2.5}$). $PM_{2.5}$, by definition, is included in PM_{10}. Fine particles are produced mostly from combustion or burning activities. Fuel burned in cars and trucks, power plants, factories, fireplaces, and wood stoves produces fine particles.

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

Table 4.4-1
Major Criteria Pollutants

Pollutant	Characteristics	Health Effects	Major Sources
Ozone	A highly reactive photochemical pollutant created by the action of sunshine on ozone precursors (primarily reactive hydrocarbons and oxides of nitrogen). Often called photochemical smog.	• Eye irritation. • Respiratory function impairment.	Combustion sources such as factories and automobiles, and evaporation of solvents and fuels.
Carbon Monoxide	An odorless, colorless gas that is highly toxic. Formed by the incomplete combustion of fuels.	• Impairment of oxygen transport in the bloodstream. • Aggravation of cardiovascular disease. • Fatigue, headache, confusion, dizziness. • Can be fatal in the case of very high concentrations.	Automobile exhaust, combustion of fuels, and combustion of wood in woodstoves and fireplaces.
Nitrogen Monoxide	Reddish-brown gas that discolors the air, formed during combustion.	• Increased risk of acute and chronic respiratory disease.	Automobile and diesel truck exhaust, industrial processes and fossil-fueled power plants.
Sulfur Dioxide	Sulfur dioxide is a colorless gas with a pungent, irritating odor.	• Aggravation of chronic obstruction lung disease. • Increased risk of acute and chronic respiratory disease.	Diesel vehicle exhaust, oil-powered power plants, industrial processes.
Particulate Matter (PM_{10} and $PM_{2.5}$)	Solid and liquid particles of dust, soot, aerosols and other matter, which are small enough to remain suspended in the air for a long period of time.	• Aggravation of chronic disease and heart/lung disease symptoms.	Combustion, automobiles, field burning, factories, and unpaved roads. Also a result of photochemical processes.

Source: Don Ballanti, March 2010.

Table 4.2-2
Ambient Air Quality Standards

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

ppm = parts per million
ug/m^3 = micrograms per cubic meter

Source: California Air Resources Board, http://www.arb.ca.gov/research/aaqs/aaqs2.pdf, accessed February 2, 2010.

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

Carbon Monoxide

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

Nitrogen Oxide

Nitrogen oxides (NO_X) are reddish-brown gasses that discolor the air and are produced from burning fuels, including gasoline and coal. Nitrogen oxides react with ROG (found in paints and solvents) to form smog, which can result in adverse impacts to human health, damage the environment, and cause poor visibility. Additionally, NO_X emissions are a major component of acid rain. Health effects related to NO_X include lung irritation and lung damage and can cause increased risk of acute and chronic respiratory disease.

Sulfates

Sulfates (SO_X) are colorless gases and constitute a major element of pollution in the atmosphere. SO_X is commonly produced by fossil fuel combustion. In the atmosphere, SO_X is usually oxidized by ozone and hydrogen peroxide to form sulfur dioxide and trioxide. If SO_X is present during condensation, acid rain may occur. Exposure to high concentrations for short periods of time can constrict the bronchi and increase mucous flow, making breathing difficult. Children, the elderly, those with chronic lung disease, and asthmatics are especially susceptible to these effects.

Toxic Air Contaminants

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

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

Attainment Status and Regional Air Quality Plans

The federal Clean Air Act and the California Clean Air Act of 1988 require that the State Air Resources Board, based on air quality monitoring data, designate portions of the state where the federal or state ambient air quality standards are not met as "nonattainment areas." Because of the differences between the national and state standards, the designation of attainment and nonattainment areas may be different under the federal and state legislation (i.e., a given air basin may be designated as nonattainment by the state, but could be designated attainment by federal standards because state standards are more stringent).

The Bay Area Air Basin is currently designated attainment, under federal standards, for the following criteria pollutants: carbon monoxide (8-hour and 1-hour), nitrogen dioxide, sulfur dioxide (24-hour and annual mean), and particulate matter – $PM_{2.5}$ (annual mean). The Bay Area

Air Basin is currently designated nonattainment, under federal standards, for ozone and particulate matter – $PM_{2.5}$ (24-hour), and unclassified for particulate matter –PM_{10} (24-hour).

Under the California Clean Air Act, Contra Costa County is a nonattainment area for ozone and particulate matter (PM_{10} and $PM_{2.5}$). The County is either attainment or unclassified for other pollutants. The California Clean Air Act requires local air pollution control districts to prepare air quality attainment plans. These plans must provide for district-wide emission reductions of five percent per year averaged over consecutive three-year periods or, provide for adoption of "all feasible measures on an expeditious schedule."

Local Air Quality Monitoring

The BAAQMD has for many years operated a multi-pollutant monitoring site in nearby Bethel Island. Table 4.4-3 shows historical occurrences of pollutant levels exceeding the state/federal ambient air quality standards for the three-year period 2006-2008. The number of days that each standard was exceeded is shown.

Table 4.4-3 shows that all federal ambient air quality standards are met in the Oakley area with the exception of ozone. Additionally, the State ambient standards of ozone and PM_{10} are regularly exceeded.

Table 4.4-3
Air Quality Data Summary for Bethel Island, 2006-2008

Pollutant	Standard	Days Standard Exceeded During: 2006	2007	2008
Ozone	1-Hour State	9	0	4
	8-Hour State	14	4	10
	8-Hour Federal	13	1	4
Carbon Monoxide	8-Hour State and Federal	0	0	0
	1-Hour State	0	0	0
Nitrogen Dioxide	1-Hour State	0	0	0
Sulfur Dioxide	1-Hour State	0	0	0
	24-Hour State	0	0	0
PM_{10}	24-Hour State	1	0	3
	24-Hour Federal	0	0	0

Source: Air Resources Board, Aerometric Data Analysis and Management (ADAM), 2010. (http: //www.arb.ca.gov./adam/cgi-bin/adamtop/d2wstart)

Sensitive Receptors

The BAAQMD defines sensitive receptors as facilities where sensitive receptor population groups (children, the elderly, the acutely ill and the chronically ill) are likely to be located. These land uses include residences, schools, playgrounds, childcare centers, retirement homes, convalescent homes, hospitals and medical clinics. Sensitive land uses near the project site include the existing Cypress Grove subdivision, Delta Vista Middle School and Iron House

Elementary School, all located directly west of the project site. Scattered single-family homes are located south of the site across Cypress Road.

Greenhouse Gases

The greenhouse effect is a natural process by which some of the radiant heat from the sun is captured in the lower atmosphere of the earth. The gases that help capture the heat are called greenhouse gases (GHGs). While GHGs are not normally considered air pollutants, all of these gases have been identified as forcing the earth's atmosphere and oceans to warm above naturally occurring temperatures. Some GHGs occur naturally in the atmosphere, while others result from human activities. Naturally occurring GHGs include water vapor, carbon dioxide, methane, nitrous oxide and ozone. Certain human activities add to the levels of most of these natural occurring gases.

According to the 2006 California Climate Action Team Report[4] (CCAT), the following climate change effects are predicted in California over the course of the next century:

- A diminishing Sierra snowpack declining by 70 percent to 90 percent, threatening the state's water supply.
- Increasing temperatures from eight to 10.4 degrees Fahrenheit under the higher emission scenarios, leading to a 25 to 35 percent increase in the number of days ozone pollution levels are exceeded in most urban areas.
- Coastal erosion along the length of California and seawater intrusion into the Delta from a 4- to 33-inch rise in sea level. This would exacerbate flooding in already vulnerable regions.
- Increased vulnerability of forests due to pest infestation and increased temperatures.
- Increased challenges for the state's important agriculture industry from limited water shortage, increasing temperatures, and saltwater intrusion into the Delta.
- Increased electricity demand, particularly in the hot summer months.

In September 2006, the California legislature passed the California Global Warming Solutions Act (CGWSA), which was added to Health and Safety Code Section 38500 (also commonly referred to as AB32). The CGWSA states that global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. Many scientists believe that anthropogenic emissions of GHGs (defined as carbon dioxide [CO_2], methane [CH_4], nitrous oxide [N_2O], hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) are having a significant impact on the global environment by accelerating or even causing global warming.

The CGWSA requires that the state reduce emissions of GHG to 1990 levels by 2020. The reduction will be accomplished through an enforceable statewide cap on GHG emissions that will be phased-in starting in 2012. To effectively implement the cap, CGWSA directs CARB to develop appropriate regulations and establish a mandatory reporting system to track and monitor GHG emission levels.

Pursuant to the CGWSA, CARB determined what the statewide GHG emissions level was in 1990 to serve as a statewide GHG emission limit to be achieved by 2020 (approved December 2007). In addition, CARB has approved a Scoping Plan to outline actions to reduce greenhouse gases in California (December 2008). On or before January 1, 2011, CARB must adopt GHG emission limits and emission reduction measures by regulation to achieve the maximum technologically feasible and cost-effective reductions in GHG emissions in furtherance of achieving the statewide GHG emissions limit, to become operative beginning on January 1, 2012.

The scientific community has largely agreed that the earth is warming, and that humans are contributing to that change. However, the earth's climate is composed of many complex mechanisms, including: ocean currents, cloud cover, as well as the jet-stream and other pressure/temperature weather guiding systems. These systems are in turn influenced by changes in ocean salinity, changes in the evapotranspiration of vegetation, the reflectivity (albedo) of groundcover, as well as numerous other factors. Some changes have the potential to reduce climate change, while others could form a feedback mechanism that would speed the warming process beyond what is currently projected. The climate system is inherently dynamic; however, the overall trend is towards a gradually warming planet.

REGULATORY CONTEXT

Air quality is monitored through the efforts of various federal, State, and local government agencies. These agencies work jointly and individually to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies responsible for regulating and improving air quality within the Oakley area are discussed below.

Federal

U.S. Environmental Protection Agency (EPA)

The U.S. EPA is responsible for enforcement of National Ambient Air Quality Standards (NAAQS). The EPA has adopted policies requiring states to prepare State Implementation Plans (SIP) that demonstrate attainment and maintenance of the NAAQS. After a review of the SIP, the EPA will further classify non-attainment areas according to a District's projected date of attainment. Districts that project attainment of standards in three to five years would be classified as near-term non-attainment, whereas Districts that cannot meet standards within five years would be classified as long-term non-attainment. For an area to be classified as near-term non-attainment, the District would be required to demonstrate that pollutant reductions of three-percent-per-year are obtainable and that maintenance of standards could occur for ten years.

The U.S. EPA has been directed to develop regulations to address the GHG emissions of cars and trucks. At the time of this writing, the only U.S. EPA regulation relating to GHG emissions is the Mandatory Reporting of Greenhouse Gases Rule. The rule requires reporting of GHG emissions from large sources and suppliers in the United States, and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHG, manufacturers of vehicles and engines, and facilities that emit

25,000 metric tons or more per year of GHG emissions are required to submit annual reports to EPA.

State

California Clean Air Act

The California Clean Air Act (CCAA) requires that air quality plans be prepared for areas of the State that have not met State air quality standards for ozone, CO, NO_X, and SO_2. Among other requirements of the CCAA, the plans must include a wide range of implemental control measures, which often include transportation control measures and performance standards. In order to implement the transportation-related provisions of the CCAA, local air pollution control districts have been granted explicit authority to adopt and implement transportation controls.

Assembly Bill 1493

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

Executive Order S-3-05

In 2005, Governor Schwarzenegger signed Executive Order S-3-05, which established total GHG emission targets. Specifically, emissions are to be reduced to year 2000 levels by 2010, 1990 levels by 2020, and to 80 percent below 1990 levels by 2050. The Executive Order directed the Secretary of the California Environmental Protection Agency (Cal-EPA) to coordinate a multi-agency effort to reduce GHG emissions to the target levels. The Secretary is also directed to submit biannual reports to the governor and state legislature describing: (1) progress made toward reaching the emission targets; (2) impacts of global warming on California's resources; and (3) mitigation and adaptation plans to combat these impacts.

To comply with the Executive Order, the Secretary of the Cal-EPA created a Climate Act Team (CAT) made up of members from various state agencies and commissions. In March 2006, CAT released their first report. In addition, the CAT has released several "white papers" addressing issues pertaining to the potential impacts of climate change on California.

Assembly Bill 32

In September 2006, Governor Arnold Schwarzenegger signed Assembly Bill (AB) 32, the California Climate Solutions Act of 2006. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by the year 2020. This reduction will be accomplished through an enforceable statewide cap on GHG emissions that will be phased starting in 2012. To implement the cap, AB 32 directs ARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB

1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then ARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

Senate Bill 1368

Senate Bill (SB) 1368 is the companion bill of AB 32 and was signed by Governor Schwarzenegger in September 2006. SB 1368 requires the California Public Utilities Commission (PUC) to establish a GHG emission performance standard for baseload generation from investor owned utilities by February 1, 2007. The California Energy Commission (CEC) must establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the GHG emission rate from a baseload combined-cycle natural gas fired plant. On January 27, 2007, the PUC adopted an interim Greenhouse Gas Emissions Performance Standard to require that all new long-term commitments for baseload power generation to serve Californians do not exceed the emissions of a combined cycle gas turbine plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the PUC and CEC. On May 28, 2007 the Energy Commission adopted regulations pursuant to SB 1368 establishing and implementing a GHG emission performance standard for baseload generation of local publicly owned electric utilities. The final rulemaking package was submitted to the Office of Administrative Law (OAL) on June 1, 2007 with a request for expedited review. On June 29, 2007 OAL issued a decision disapproving the rulemaking action. In response to the OAL, disapproval decision, the CEC revised the proposed regulations to establish and implement a greenhouse gases emission performance standard for California's publicly owned electric utilities in August 2007.

Senate Bill 1078

SB 1078 establishes a renewable portfolio standard (RPS) for electricity supply. The RPS requires that retail sellers of electricity, including investor-owned utilities and community choice aggregators, provide 20 percent of their supply from renewable sources by 2017. This target date was moved forward by SB 107 to require compliance by 2010. In addition, electricity providers subject to the RPS must increase their renewable share by at least 1 percent each year. The outcomes of this legislation will impact regional transportation powered by electricity.

Executive Order S-01-07

On January 18, 2007, Governor Schwarzenegger signed Executive Order S-01-07, which mandates that a statewide goal be established to reduce carbon intensity of California's transportation fuels by at least 10 percent by 2020. The Order also requires that a Low Carbon Fuel Standard for transportation fuels be established for California.

Senate Bill 375

In September 2008, Governor Arnold Schwarzenegger signed Senate Bill (SB) 375, which is intended to build on AB 32 by attempting to control GHG emissions by curbing sprawl. SB 375

enhances the CARB's ability to reach goals set by AB 32 by directing ARB to develop regional GHG emission reduction targets to be achieved from the automobile and light truck sectors for 2020 and 2035. In addition, ARB will work with the State's 18 metropolitan planning organizations to align their regional transportation, housing, and land-use plans and prepare a "sustainable communities strategy" to reduce the amount of vehicle miles traveled in their respective regions and demonstrate the region's ability to attain its GHG reduction targets. SB 375 provides incentives for creating walkable and sustainable communities and revitalizing existing communities, and allows home builders to get relief from certain environmental reviews under CEQA if they build projects consistent with the new sustainable community strategies. Furthermore, SB 375 encourages the development of alternative transportation options, which will reduce traffic congestion.

California Air Resources Board

The CARB is the agency responsible for coordination and oversight of State and local air pollution control programs in California and for implementing California's own air quality legislation called the California Clean Air Act (CCAA) adopted in 1988. The CARB has primary responsibility in California to develop and implement air pollution control plans designed to achieve and maintain the NAAQS established by the U.S. EPA. As discussed above, the CARB is charged with developing rules and regulations to cap and reduce GHG emissions.

The CCAA requires that air quality plans be prepared for areas of the State that have not met State air quality standards for ozone, carbon monoxide, nitrogen dioxide, and sulfur dioxide. Areas that met standards by 1994 were classified as moderate, those that attained standards between 1994 and 1997 were classified as serious, and those that could not attain standards until after 1997 were classified as severe. In order to implement the transportation-related provisions of the CCAA, local air pollution control districts have been granted explicit authority to adopt and implement transportation controls.

Senate Bill 97

Senate Bill (SB) 97, signed in August 2007, acknowledges that climate change is an important environmental issue that requires analysis under CEQA. This bill directs the Governor's Office of Planning and Research to prepare, develop, and transmit to the Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, by July 1, 2009. The Resources Agency is required to certify or adopt those guidelines by January 1, 2010. This bill also protects projects funded by the Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act of 2006, or the Disaster Preparedness and Flood Protection Bond Act of 2006 (Proposition 1B or 1E) from claims of inadequate analysis of GHG as a legitimate cause of action. This latter provision was repealed on January 1, 2010. Thus, this "protection" is highly limited to a handful of projects and for a short time period (CAPCOA 2009(b)).

Office of Planning and Research (OPR)

As directed by SB 97, the Natural Resources Agency adopted Amendments to the CEQA Guidelines for greenhouse gas emissions on December 30, 2009. On February 16, 2010, the

Office of Administrative Law approved the Amendments, which subsequently became effective on March 18, 2010.

The amendments include revisions to the *Appendix G Initial Study Checklist* that incorporates a new subdivision to address project-generated GHG emissions and contribution to climate change. The new subdivision emphasizes that the effects of GHG emissions are cumulative, and should be analyzed in the context of CEQA's requirements for cumulative impacts analysis. In addition, the revisions include a new subdivision to assist lead agencies in determining the significance of project related GHG emissions such as the extent to which the project may generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, and whether the project conflicts with an applicable plan, policy or regulation adopted for the purpose of reducing the emission of GHGs.

Local

Bay Area Air Quality Management District

The BAAQMD has permitting authority for stationary air pollutant sources in the region and operates a total of seven air monitoring sites within Contra Costa County. The BAAQMD is primarily responsible for assuring that the national and state ambient air quality standards are attained and maintained in the Bay Area. The BAAQMD is also responsible for adopting and enforcing rules and regulations concerning air pollutant sources, issuing permits for stationary sources of air pollutants, inspecting stationary sources of air pollutants, responding to citizen complaints, monitoring ambient air quality and meteorological conditions, awarding grants to reduce motor vehicle emissions, conducting public education campaigns, as well as many other activities. BAAQMD has jurisdiction over much of the nine-county Bay Area. The current *BAAQMD CEQA Guidelines* do not provide any significance thresholds for GHG emissions. In November 2009, the BAAQMD circulated an updated draft guidance document which is to be considered for adoption in June 2010. It should be noted that the draft guidance document would still be subject to additional revisions prior to adoption.

City of Oakley General Plan

The following applicable goals and policies are from the Oakley 2020 General Plan Open Space and Conservation Element:

Air Quality

Goal 6.2 Maintain or improve air quality in the City of Oakley.

Policy 6.2.1 Support the principles of reducing air pollutants through land use, transportation, and energy use planning.

Policy 6.2.2 Encourage transportation modes that minimize contaminant emissions from motor vehicle use.

Policy 6.2.3 Interpret and implement the General Plan to be consistent with the regional Bay Area Air Quality Management Plan (AQMP), as periodically updated.

Policy 6.2.4 Ensure location and design of development projects so as to conserve air quality and minimize direct and indirect emissions of air contaminants.

Policy 6.2.5 Encourage air quality improvement through educational outreach programs, such as Spare the Air Day.

IMPACTS AND MITIGATION MEASURES

Standards of Significance

Air Quality

California Environmental Quality Act (CEQA) guidelines provide that a project would have a significant air quality impact if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative threshold for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

The *BAAQMD CEQA Guidelines* provide the following refinements to the definition of a significant air quality impact:

- A project contributing to carbon monoxide (CO) concentrations exceeding the State Ambient Air Quality Standard of 9 parts per million (PPM) averaged over 8 hours or 20 PPM for 1 hour would be considered to have a significant impact.
- A project that generates criteria air pollutant emissions in excess of the BAAQMD annual or daily thresholds would be considered to have a significant air quality impact. The current thresholds are 15 tons/year or 80 pounds/day for Reactive Organic Gases (ROG), Nitrogen Oxides (NO_X) or PM_{10}. Any proposed project that would individually have a significant air quality impact would also be considered to have a significant cumulative air quality impact.
- Any project with the potential to frequently expose members of the public to objectionable odors would be deemed to have a significant impact.
- Any project with the potential to expose sensitive receptors or the general public to

substantial levels of toxic air contaminants would be deemed to have a significant impact. Numerical thresholds are an increased cancer risk of more than 10.0 in a million or increased non-cancer risk of more than 1.0 Hazard Index (Chronic or Acute).

The BAAQMD significance threshold for construction dust impacts is based on the appropriateness of construction dust controls. The *BAAQMD CEQA Guidelines* provide feasible control measures for construction emission of PM_{10}. If the appropriate construction controls are to be implemented, then air pollutant emissions for construction activities would be considered less-than-significant.

In September 2009, the BAAQMD circulated proposed new thresholds of significance for criteria air pollutants and GHG emissions as part of the update of the 1999 *BAAQMD CEQA Guidelines*. In November 2009, the BAAQMD circulated an updated draft guidance document which is to be considered for adoption in June 2010. The draft guidance provides for expanded and more stringent operational thresholds of significance for criteria pollutants, and provides for numerical thresholds of significance for construction. Proposed new significance thresholds include quantitative thresholds of significance for GHG emissions. The proposed new guidelines provide guidance in quantifying a project's construction- and operation-related GHG emissions, as well as new mitigation guidance. The following major changes are proposed:

- The operational thresholds of significance for ROG and NO_X would be reduced from 80 pounds per day to 54 pounds per day and 10 tons per year.
- The current PM_{10} operational threshold of 80 pounds per day would be modified to 82 pounds per day or 15 tons per year.
- A new operational threshold would be established for $PM_{2.5}$. The new threshold would be 54 pounds per day or 10 tons per year.
- New numerical thresholds of significance would be established for construction, equivalent to the new operational thresholds. The construction thresholds are based on averaged daily emissions.

As under current guidance, construction dust impacts would be determined by whether Best Management Practices are to be utilized. The definition of Best Management Practices is expanded, however. These draft guidelines and thresholds legally do not yet apply because they have not been adopted, and may be revised prior to adoption. However, they are useful in considering project effects.

Greenhouse Gases

California Environmental Quality Act (CEQA) guidelines provide that a project would have a significant GHG impact if it would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; and/or
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs.

The current *BAAQMD CEQA Guidelines* do not provide any significance thresholds for GHG emissions. In November 2009, the BAAQMD circulated an updated draft guidance document which is to be considered for adoption in June 2010. Proposed new significance thresholds include quantitative threshold of significance for GHG emissions. The proposed updated guidance provides that a development project, other than a stationary source, would have significant cumulative impact unless:

- The project can be shown to be in compliance with a qualified Climate Action Plan;
- Project emissions of CO_2 equivalent GHGs (CO_2e) are less than 1,100 metric tons per year; or
- Project emissions of CO_2 equivalent GHGs are less than 4.6 metric tons per year per service population (residents plus employees).

The service population for the project is 2,467 (assumes 3.2 persons per household and 26 employees per acre of commercial); therefore, if proposed guidance were in effect the effective threshold of significance for the project would be 11,348 metric tons per year (2,467 x 4.6 metric tons per year per service population).

Method of Analysis

Construction and operational emissions generated by the proposed project were estimated by the URBEMIS-2007 computer program, which estimates the emissions resulting from various land-use development projects. These emissions were compared to the thresholds of significance recommended by the BAAQMD. It should be noted that although construction would begin at a much later date, a construction start date of January 2010 was assumed in the model. The model accounts for an assumed increased construction equipment efficiency from federal and state regulations as time progresses. Therefore, a January 2010 start date would ensure a worst-case estimate of construction emissions.

A screening-level form of the CALINE-4 program was used to predict concentrations. Normalized concentrations for each roadway size (two lanes, four lanes, etc.) are adjusted for the two-way traffic volume and emission factor. Calculations were made for a receptor at a corner of the intersection, located at the curb. Emission factors were derived from the CARB EMFAC-2007 computer program based on a 2010 and 2030 Bay Area vehicle mix.

Air dispersion models were applied to anticipated construction and operational emissions of diesel particulate and benzene emissions from a proposed gasoline station to allow estimation of health risks.

This chapter relies on air quality data and analysis prepared for the proposed project by Don Ballanti, Certified Consulting Meteorologist. Additional detail on methodology and the technical data is included within Appendix E1.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on the implementation of the proposed project.

4.4-1 Impacts related to construction emissions.

Construction activities such as demolition, clearing, excavation and grading operations, construction vehicle traffic, and wind blowing over exposed earth would generate fugitive particulate matter emissions that would temporarily affect local air quality.

Construction dust would affect local air quality during construction of the proposed project. The dry, windy climate of the area during the summer months creates a high potential for dust generation when and if underlying soils are exposed to the atmosphere. The proposed project would involve substantial excavation and earthmoving associated with construction of the drainage basins on the project site. The project would also include grading and earthmoving activities associated with construction of other portions of the project. The movement of earth on the site is a construction activity with a high potential for creating air pollutants.

According to current *BAAQMD CEQA Guidelines*, emissions of ozone precursors (ROG and NO_X) and carbon monoxide related to construction equipment are already included in the emission inventory that is the basis for regional air quality plans, and thus are not expected to impede attainment or maintenance of ozone and carbon monoxide standards in the Bay Area. Current BAAQMD guidance does not include numerical thresholds of significance for construction. Proposed BAAQMD guidance, however, includes numerical thresholds of significance based on average daily and annual construction emissions.

Table 4.4-4, below, shows average daily emissions in pounds per day (averaged over the assumed 2-year construction period) and maximum annual emissions (over a 12-month period) for all proposed BAAQMD construction mass emission thresholds. Construction emissions do not exceed the proposed BAAQMD mass emission thresholds.

However, based on both current and proposed BAAQMD guidelines, feasible control measures for construction emission of dust are required during construction activities. Implementation of appropriate construction controls would result in air pollutants and emissions that would reduce the potential impacts during construction process activities. Therefore, construction dust has the potential for creating a nuisance at nearby properties, resulting in a ***potentially significant*** impact without mitigation.

Table 4.4-4
Construction Dust Emissions

	ROG	NO_X	PM_{10}	$PM_{2.5}$
Average Daily Construction Emissions (lbs/day)	8.96	46.88	8.34	3.65
Proposed BAAQMD Mass Emission Threshold (lbs/day)	54.0	54.00	82.0	54.0
Maximum Annual Construction Emissions (tons/year)	1.26	6.95	1.79	0.65
Proposed BAAQMD Mass Emission Threshold (tons/year)	10	10	15	10

Source: URBEMIS-2007 (See Appendix E1).

Mitigation Measure(s)

The project was assumed to be built in a single phase, 24-month period; however, the mitigation measure below would reduce the impacts for any future phasing of construction as well. As outlined in the *BAAQMD CEQA Guidelines*, implementation of the following mitigation measure would reduce any impacts related to construction dust emissions to a *less-than-significant* level. The proposed BAAQMD guidelines revise the mitigation measures identified currently. Therefore, as a conservative approach, the City has combined both the current and proposed BAAQMD recommended mitigation measures. In addition, because emissions will not exceed the proposed thresholds, only BAAQMD Basic Construction Mitigation Measures are required.

4.4-1 *Consistent with guidance from the BAAQMD, and prior to issuance of any grading permit(s), the applicant shall submit construction contract documents, for review and approval by the City Engineer to ensure incorporation of Best Management Practices. The mitigation measures shall include, but are not limited to, the following:*

- *Water all active construction areas at least twice daily and more often during windy periods; active areas adjacent to existing land uses shall be kept damp at all times, or shall be treated with non-toxic stabilizers or dust palliatives;*
- *All haul trucks transporting soil, sand, or other loose material off-site shall be covered.*
- *Pave, apply water three times daily, or apply non-toxic soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites;*

- *All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.*
- *All vehicle speeds on unpaved roads shall be limited to 15 mph.*
- *All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible.*
- *Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.*
- *Enclose, cover, water twice daily, or apply non-toxic soil binders to exposed stockpiles (dirt, sand, etc.);*
- *Install wheel washers for all exiting trucks, or wash off the tires or tracks of all trucks and equipment leaving the site, when required to remove dirt;*
- *Suspend excavation and grading activity when large visible dust plumes caused by the wind extend beyond the site boundaries into residential areas;*
- *Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.*
- *All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.*
- *Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.*
- *Install sandbags or other erosion control measures to prevent silt runoff to public roadways; and*
- *Replant vegetation in disturbed areas as quickly as possible.*

4.4-2 Impacts related to increased construction Toxic Air Contaminants (TACs), which includes Diesel Particulate Matter (DPM).

In 1998, the CARB identified particulate matter from diesel-fueled engines as a TAC. The CARB has completed a risk management process that identified potential cancer risks for a range of activities using diesel-fueled engines.[5] High volume freeways, stationary diesel engines and facilities attracting heavy and constant diesel vehicle traffic (distribution centers, truckstops) were identified as having the highest associated risk.

Health risks from TACs are a function of both concentration and duration of exposure. Unlike the above types of sources, construction diesel emissions are temporary, affecting an area for a period of days or perhaps weeks. Additionally, construction-related sources are mobile and transient in nature, and the bulk of the emission occurs within the project site at a substantial distance from nearby receptors.

Total diesel particulate emissions were estimated for construction using the URBEMIS-2007 emission program and assuming a worst-case single phase construction period of 24 months. URBEMIS 2007 utilizes the concept of "time slices" to account for periods where differing activities may overlap and have additive emissions. The maximum DPM emission for each time slice was multiplied by the number of days for each type of activity, allowing a calculation of the total on-site DPM emissions over the 24-month construction period.

Risks were calculated using a method recommended by the Office of Environmental Health Hazard Assessment (OEHHA). Risks were conservatively adjusted to an assumed exposure of 9 years, even though the emission rates reflect a two-year construction period. Please refer to the technical appendix (Appendix E1) for additional detail on calculations and assumptions used.

The maximum off-site calculated risk is 3.04 in one million (outside the project boundary). The BAAQMD significance threshold for TAC cancer risk is 10 in one million. Therefore, construction-related diesel particulate impacts would be ***less-than-significant***.

Mitigation Measure(s)
None required.

It should be noted that the equipment idling restrictions and equipment maintenance requirements contained in Mitigation Measure 4.4-1 would reduce diesel particulate health impacts during construction.

4.4-3 Impacts related to increased TAC emissions during proposed project operations.

Gasoline Station TAC Emissions

The project site plan shows a gasoline fueling facility within the commercial center. Gasoline fueling facilities are a source of gasoline vapors that would include Toxic Air Contaminants (TACs), primarily benzene. Gasoline vapors are released during the filling of both the stationary underground storage tanks and the transfer from those underground tanks to individual vehicles.

Small amounts of gasoline vapor (a reactive organic gas) escape to the atmosphere at filling stations due to loading losses, breathing losses, refueling losses and spillage. The rate of emission, for stations meeting current CARB Phase II Enhanced Vapor Recovery (EVR) regulations is 0.389 pounds per thousand gallons.[6] For a station with an annual

throughput of 1 million gallons, the resulting emissions would be about 1.0 pounds per day. Actual throughput would be limited by BAAQMD permit requirements and the results of the health risk assessment that the District would perform as part of the permitting process.

The BAAQMD has stringent requirements for the control of gasoline vapor emissions from gasoline dispensing facilities that require all new facilities to install and maintain CARB Certified Vapor Recovery Systems. Primary applicable BAAQMD regulations are Regulation 8, Rule 7, "Gasoline Dispensing Facilities" and Regulation 2, Rule 2, New Source Review." As a source of TACs, a gasoline filling station is subject to the BAAQMD's toxic risk screening and risk management procedures.
The CARB has developed recommended setbacks between new sensitive receptors and various TAC sources.[7] The recommended setback for new sensitive receptors from a typical gas station is 50 feet. For large gas stations (defined as a facility with a throughput of 3.6 million gallons per year) the recommended setback is 300 feet. As shown in the site plan for the proposed project, new sensitive receptors would be located approximately 750 feet away from the gasoline station, or over twice the recommended setback allowance; therefore, direct risks associated with the proposed gasoline station would not result.

A screening risk assessment has been conducted utilizing the procedures and emission factors defined in *California Air Pollution Control Officers Association's (CAPCOA) "Hot Spots" Program Gasoline Service Station Industry-wide Risk Assessment Guidelines*.[8] Using aerial photographs of the project environs, the distance between the center of the proposed gasoline facility and the nearest existing residence was determined to be approximately 260 feet.

The CAPCOA procedures provide a very conservative estimate of cancer risk per million gallons of gasoline pumped based on distance from the facility based on the SCREEN-3 dispersion model. The CAPCOA document estimates the resulting risk of cancer (per million gallons pumped) as 3.46 in one million at a distance of 260 feet. The CAPCOA emission assumptions do not reflect current EVR requirements, and therefore over-predict emissions and concentrations. The CAPCOA guidance document assumes an overall 90 percent control efficiency, while Phase II EVR regulations require at least 95 percent control efficiency, so that actual emissions would be at least 50 percent lower than that assumed by the CAPCOA guidance document. This conservative analysis indicates that a gasoline station at the proposed location could obtain a permit from the BAAQMD (under current rules and regulations).

The BAAQMD regulates TAC risk from gasoline dispensing facilities by limiting the throughput, based on their own air quality modeling and risk assessment. The throughput limit will be established at a level that will ensure that cancer and non-cancer risks are below the significance thresholds (cancer risk of less than 10 in one million).

Delivery Truck TAC Emissions

The ISCST-3 air dispersion model was utilized to estimate risks from on-site diesel truck exhausts. The model predicted concentrations of diesel particulate for a grid of receptors located within the residential area adjacent to the proposed shopping center. The modeling assumptions and procedures are described in Appendix E1.

Diesel particulate emissions from the project were estimated based on the following worst-case assumptions:

- Truck Refrigerator Units, which operate while truck engines are shut down, would operate for 1-hour on site;
- Each delivery would result in 5 minutes of truck idling while maneuvering; and
- All trucks would enter at the northeast corner of the site and then drive along the back side of the buildings, closest to adjacent new residences.

Based on the maximum concentration of 0.01264 micrograms per cubic meter, the maximum calculated risk of cancer is 5.23 in one million. This is well below the BAAQMD's significance threshold of 10 in one million. Please refer to the technical appendix (Appendix E1) for additional detail on calculations and assumptions used.

The above calculations are based on the ISCST-3 results assuming that diesel particulate emissions on the site would continue at the same levels for 70 years. Diesel particulate emissions from diesel trucks can be expected to decline in the future due to state-wide programs to reduce diesel exhaust health risks.

Conclusion

BAAQMD regulations and procedures are already established and enforced as part of the air quality permit review process, ensuring that any potential impacts due to emission of hazardous or toxic air contaminants from the gasoline dispensing facility would be less-than-significant. Diesel particulate emissions from diesel trucks can be expected to decline in the future due to state-wide programs to reduce diesel exhaust health risks, and even under current conditions the calculated risk is well below the adopted significance threshold.

The sensitive receptor location that would experience the maximum exposure to gasoline emissions is not the same location as would experience the maximum exposure to diesel truck emissions; therefore, the maximum calculated risks cannot be simply added together. However, even if the maximum risks are added together, the combined risk estimate would be 8.69 in one million (3.46 + 5.23 = 8.69), which is below the 10 in one million threshold of significance. Therefore, impacts related to operational TAC emissions from delivery trucks and gasoline stations would be ***less-than-significant***.

Mitigation Measure(s)
None required.

4.4-4 Impacts related to effects of increased traffic and carbon monoxide concentrations.

On the local scale, the proposed project would change traffic on the local street network, changing carbon monoxide levels along roadways used by project traffic. The primary source of carbon monoxide in the Bay Area is automobiles. Concentrations of this gas are highest near intersections of major roads.

Table 4.4-5 shows the results of the CALINE-4 analysis for the peak 1-hour and 8-hour traffic periods in PPM. The 1-hour values are to be compared to the federal 1-hour standard of 35 PPM and the State standard of 20 PPM. The 8-hour values in Table 4.4-5 are to be compared to the State and federal standard of 9 PPM.

Table 4.4-5
Worst Case Carbon Monoxide Concentrations Near Selected Intersections

Intersection	Existing (2008)		Existing + Background (2008)		Existing + Background + Project (2008)		Cumulative + Project (2030)	
	1-Hr	8-Hr	1-Hr	8-Hr	1-Hr	8-Hr	1-Hr	8-Hr
Laurel Road/ Empire Avenue	5.4	3.1	5.7	3.4	5.9	3.5	4.4	2.4
Laurel Road/ O'Hara Avenue	4.8	2.7	5.2	3.0	5.7	3.4	4.2	2.3
Laurel Road/ Main Street	4.9	2.8	5.0	2.8	5.4	3.1	4.2	2.3
Main Street/ Cypress Road	4.9	2.8	5.7	3.3	7.0	4.2	4.4	2.4
E. Cypress Road/Sellers Avenue	4.4	2.4	5.1	3.0	5.7	3.3	4.1	2.2
Main Street/ O'Hara Avenue	5.2	3.0	5.7	3.3	5.8	3.4	4.0	2.1
Most Stringent Standard	20.0	9.0	20.0	9.0	20.0	9.0	20.0	9.0

Note: All concentrations are in parts per million (PPM).

Source: Don Ballanti, March 2010.

Table 4.4-5 shows that existing predicted concentrations near the intersections meet the 1-hour and 8-hour standards. Traffic from the proposed project would increase concentrations by up to 1.3 PPM, but concentrations would remain well below the State and federal standards. Concentrations with project and cumulative traffic growth in 2030 would also not exceed the State or federal ambient air quality standards.

Because project traffic would not cause any new violations of the 8-hour standards for carbon monoxide, nor contribute substantially to an existing or projected violation,

project impacts on local carbon monoxide concentrations are considered to be ***less-than-significant***.

Mitigation Measure(s)
None required.

4.4-5 Impacts related to regional air pollutant emissions as a result of the proposed project.

Vehicle trips generated by the project would result in air pollutant emissions affecting the entire San Francisco Bay Air Basin. Regional vehicle emissions associated with the project have been calculated using the URBEMIS-2007 emission model.

Land use projects also generate area source emissions. The URBEMIS-2007 program quantifies five types of area source emissions: natural gas combustion, hearth emissions, landscape equipment, architectural coatings and consumer products. Some of these area sources vary seasonally. The URBEMIS-2007 program was used to quantify emissions separately for summer and winter. Summertime emissions were utilized for reactive organic gases (ROG) and oxides of nitrogen (NO_X), as both are ozone precursors (ozone is a summer time pollutant). Winter emissions were utilized for PM_{10} when emissions of this pollutant are at a maximum, primarily due to hearth emissions.

The incremental daily emission increase associated with project area source emissions is identified in Table 4.4-6 for reactive organic gases and oxides of nitrogen (two precursors of ozone) PM_{10} and $PM_{2.5}$.

Table 4.4-6
Project Regional Emissions

ROG		NO_X		PM_{10}		$PM_{2.5}$	
Daily Average (Lbs/day)	**Annual (Tons)**	**Daily Average (Lbs/day)**	**Annual (Tons)**	**Daily Average (Lbs/day)**	**Annual (Tons)**	**Daily Average (Lbs/day)**	**Annual (Tons)**
Project Operational Emissions							
132.87	27.98	124.30	26.09	260.30	40.80	86.39	9.31
Current BAAQMD Quantitative Threshold of Significance							
80.0	15.0	80.0	15.0	80.0	15.0	-	-
Proposed BAAQMD Quantitative Threshold of Significance							
54.0	10.0	54.0	10.0	82.0	15.0	54.0	10.0

Source: Don Ballanti, March 2010.

The current BAAQMD threshold of significance for ozone precursors and PM_{10} is 80 pounds per day. Proposed BAAQMD thresholds of significance are also shown. Project emissions shown in Table 4.4-6 would exceed current and proposed thresholds of

significance for all four pollutants; therefore, the proposed project would have a ***significant*** effect on regional air quality.

Mitigation Measure(s)

Based on current BAAQMD Guidance (*BAAQMD CEQA Guidelines*, Tables 15 and 16), the project's location and expert experience with other projects similar in nature, the air quality consultant retained for preparation of this analysis estimates that the following mitigation measures have the potential to reduce project-related regional emissions by five to 10 percent. Even with a reduction of this magnitude, project emissions would remain well above the current and proposed BAAQMD significance thresholds of significance. Project regional air quality impacts and cumulative impacts would remain *significant and unavoidable.*

4.4-5 *Consistent with guidance from the BAAQMD, prior to final map approval, the applicant shall show on the plans incorporation of mitigation measures to reduce the impact to the highest degree feasible. The plans shall be reviewed and approved by the City Engineer to ensure proper incorporation of mitigation measures. The mitigation measures shall include, but are not limited to, the following:*

- *Provide bicycle lanes, sidewalks and/or paths, connecting project residences to adjacent schools, parks, the nearest transit stop and nearby commercial areas.*
- *Provide secure and conveniently placed bicycle parking at parks and other facilities.*
- *Implement feasible travel demand management (TDM) measures for a project of this type. This would include coordination with regional ride-sharing organization and, provision of transit information.*
- *Only natural gas fireplaces, pellet stoves or EPA-Certified wood-burning fireplaces or stoves should be permitted. Conventional open-hearth fireplaces should not be permitted. EPA-Certified fireplaces and fireplace inserts are 75 percent effective in reducing emissions from this source.*
- *Install exterior outlets in the front and rear of each home to promote use of electric lawn and garden equipment for landscaping.*
- *Construct transit amenities such as bus turnouts/bus bulbs, benches, shelters, etc. in coordination with Tri-Delta Transit.*
- *Provide direct, safe, attractive pedestrian access from project land uses to transit stops and adjacent development.*
- *Include shade trees near buildings to shield them from the sun's rays and reduce local air temperature and cooling energy demand.*
- *Electrify service equipment where feasible.*

- *Install energy-efficient appliances, such as water heaters, refrigerators, furnaces and boiler units that meet or exceed Title 24 requirements.*
- *Install automatic lighting on/off controls and energy-efficient lighting.*
- *Landscape trees should have low ozone-forming potential.*
- *Landscape with drought-resistant species, using groundcover rather than pavement where feasible.*
- *Provide information to homebuyers about available local electric lawn and garden equipment exchange program.*

The commercial portion of the project shall be required to apply Transportation Systems Management (TSM) measures to reduce trips. Appropriate strategies would be:

- *Provide physical improvements, such as sidewalk improvements, landscaping and bicycle parking that would act as incentives for pedestrian and bicycle modes of travel.*
- *Connect site with a regional bikeway/pedestrian trail system.*
- *Implement feasible travel demand management (TDM) measures for a project of this type. This would include coordination with regional ridesharing organizations and transit incentives program.*
- *Provide secure and conveniently located bicycle parking for workers and patrons.*

In addition to the above list of required mitigation measures, the City will ask the developer to consider implementing the following optional measures to further reduce emissions, or to participate in their implementation as part of possible future regional efforts. Notwithstanding the conclusion that this impact remains significant and unavoidable, it is infeasible, impractical, or unreasonable to impose these measures on this particular project in light of its size, location or other considerations. The City recognizes that future Title 24 or other state-adopted regulations to achieve energy conservation or reduce emissions may make such measures mandatory; in fact, the state amended the California Green Building Standards Codes (Title 24, Part 11) in January 2010 to mandate a number of measures that will reduce energy consumption and emissions.

- *Participate in a satellite tele-commute center in the vicinity.*
- *Support a ride-matching program.*
- *Participate in a shuttle service to major destinations such as the nearest BART or eBART station.*
- *Require the use of CARB-certified or electric landscaping equipment where feasible.*

- *Install reflective (or high albedo) and emissive roofs and light colored construction materials.*
- *Install solar panels on roofs of commercial buildings.*
- *Install central water heating systems to serve multi-tenant commercial space.*
- *Provide transit information kiosks.*
- *Support a guaranteed ride home program (employers provide emergency transportation for employees who carpool).*
- *Provide showers and lockers for employees bicycling or walking to work.*
- *Provide electric vehicle charging facilities.*
- *Provide preferential parking for Low Emission Vehicles.*
- *Provide electrical hookups in commercial areas for delivery vehicles that need to cool their loads.*

Cumulative Impacts and Mitigation Measures

The following discussion of impacts is based on the implementation of the proposed project in combination with other proposed and pending projects in the region.

4.4-6 Impacts related to the cumulative effects of the proposed project on air quality.

The cumulative air quality impacts of development projects are primarily related to automobile traffic and areas sources of pollutants such as fuel combustion for heating, maintenance equipment emissions, certain consumer products, evaporation of solvents, etc.

Emissions from development projects have several cumulative impacts. Growth in emissions would delay attainment of the ambient air quality standards for which the region is in non-attainment (ozone, particulate matter), contribute to visibility reduction and contribute to mobile-source toxic air contaminant concentrations.

Because ozone, particulate matter, and some constituents of ROG that are also TACs have been shown to be correlated with adverse heath effects, cumulative emissions increases in the region would have potential cumulative health effects. Studies have shown that children who participated in several sports and lived in communities with high ozone levels were more likely to develop asthma than the same active children living in areas with less ozone pollution. Other studies have found a positive association between some volatile organic compounds and symptoms in asthmatic children. A large body of evidence has shown significant associations between measured levels of particulate matter outdoors and worsening of both asthma symptoms and acute and chronic bronchitis. However, to predict the increases in severity of disease, hospital visits or deaths from respiratory diseases such as asthma, bronchitis or lung cancer is impossible because:

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

In recognition of the incremental health effects associated with these pollutants, air quality management districts have established thresholds for each pollutant that indicate the limits of acceptability in terms of effect on health. In addition, as presented in Impact Statement 4.4-5, the proposed project would exceed the BAAQMD significance thresholds even with the implementation of feasible mitigation measures. According to BAAQMD significance criteria, any proposed project that would individually have a significant air quality impact would also be considered to have a significant cumulative air quality impact. Therefore, based on the BAAQMD cumulative impact threshold, this project would have a ***significant*** contribution to cumulative air quality impacts.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the magnitude of the cumulative project-related regional emissions by 10 to 20 percent. Even with this reduction, project emissions would individually exceed the current and proposed BAAQMD significance thresholds and contribute to the cumulative non-attainment condition. Therefore, the impacts would remain *significant and unavoidable*.

4.4-6 Implement Mitigation Measure 4.4-5.

4.4-7 Cumulative impacts related to GHGs.

As described above in the Existing Environmental Setting section, increases in GHG emissions in the State and City could contribute to increases in global average temperatures and climate change. Climate change in turn could lead to sea level rise and other changes in environmental conditions.

The recently adopted amendments to the CEQA Guidelines include revisions to the Environmental Checklist that incorporates a new subdivision to address project-generated GHG emissions and contribution to climate change. The revisions include a new subdivision to assist lead agencies in determining the significance of project related GHG emissions as follows:

- Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; and
- Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs.

Although OPR had provided guidance, the current *BAAQMD CEQA Guidelines* do not provide any significance thresholds for GHG emissions. In November 2009, the BAAQMD circulated an updated draft guidance document which is to be considered for

adoption in June 2010. Proposed new significance thresholds include quantitative thresholds of significance for GHG emissions. The proposed updated guidance provides that a development project, other than a stationary source, would have significant cumulative impact unless:

- The project can be shown to be in compliance with a qualified Climate Action Plan;
- Project emissions of CO_2 equivalent GHGs (CO_2e) are less than 1100 metric tons per year; or
- Project emissions of CO_2 equivalent GHGs are less than 4.6 metric tons per year per service population (residents plus employees).

The service population for the project is 2,467, so the effective threshold of significance for the project would be 11,348 metric tons per year. Table 4.4-7 shows estimated GHG emissions. The methodology and assumptions used in calculating GHG emissions are described in Appendix E1.

Table 4.4-7
Annual GHG Emissions (Unmitigated) CO_2 Equivalent

Source	GHG Emissions (metric tons)
Direct Mobile Sources	19,103.42
Direct Area Sources[1]	3,380.86
Electrical Demand	1,184.41
Water Conveyance	41.01
Wastewater Treatment	70.71
Total	**24,410.42**
BAAQMD Significance Threshold (4.6 MT/year per service population)	11,348.00

[1] The operational emissions estimates do not reflect statewide green building standards (CALGREEN) that will go into effect on January 1, 2011.

Source: Don Ballanti, March 2010.

The 2020 GHG emissions limit for California, as adopted by CARB in December of 2007, is approximately 427 Million Metric Tons of CO2-equivalent ($MMTCO_2$-eq). The proposed project's annual contribution would be no more than 0.0057% of this total 2020 emissions limit.

The State of California Attorney General's Office has compiled a list of greenhouse gas reduction measures that could be applied to a diverse range of projects.[9] The proposed project would meet the intent of many of the greenhouse gas reduction measures identified by the Attorney General's Office:

(1) The mixed-use nature of the project provides opportunity for shortened vehicle trips and/or diversion of driving trips to pedestrian or bicycle modes of travel and on-site recreation opportunities for residents. The EIR traffic study estimated that approximately 22 percent of total trips generated for the on-site shopping center come from project residents. The majority of non-commute residential trips generated are for school drop-off/pick-up. Of the remaining non-commute trips, approximately 2/3 goes to the on-site shopping center, which equates to approximately 20 percent of the total trips.

(2) As new construction, the development within the project would be required to meet California Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24, Part 6, of the California Code of Regulations), helping to reduce future energy demand as well as reduce the project's contribution to cumulative regional GHG emissions. Examples of Title 24, Part 6 measures to reduce GHG emissions include, but are not limited to, the following:

a. Proper insulation standards;
b. Implementation of efficient Heating, Ventilation, and Air Conditioning units and features;
c. Adhering to recommended and required lighting practices for residential and non-residential buildings; and/or
d. Water heating requirements.

(3) The introduction of landscaping throughout the proposed project, the onsite park and storm water storage pond would act to reduce greenhouse gas emissions, regulate outdoor temperatures and aid in carbon sequestration; [10] and

(4) The air quality mitigation requirements of Mitigation Measure 4.4-5 would act to reduce GHG emissions as well as criteria pollutants. These mitigation measures are anticipated to result in a 5-10 percent reduction in emissions from vehicle use and energy consumption, which are the primary sources of greenhouse gases associated with the project.

The project's incremental increases in GHG emissions associated with traffic increases, direct and indirect energy use (electrical demand and embedded electrical demand from water conveyance and wastewater treatment) would contribute to regional and global increases in GHG emissions and associated climate change effects. Based on exceedance of the BAAQMD proposed threshold of significance, the project would make a ***cumulatively considerable*** contribution to GHG impacts.

Mitigation Measure(s)

The proposed BAAQMD guidelines (*BAAQMD CEQA Guidelines*, December 2009) include more than 50 mitigation measures for GHG emissions; however, the majority of these measures are plan-level (for inclusion in general plans, specific plans, etc.) not project-level. The air quality mitigation requirements of Mitigation Measure 4.4-5 would

act to reduce GHG emissions as well as criteria pollutants. As identified above under Impact 4.4-5, given the location and nature of the project these mitigation measures are anticipated to result in a five to 10 percent reduction in emissions from vehicle use and energy consumption, which are the primary sources of GHGs associated with the project. Even with a reduction of this magnitude, project GHG emissions would remain well above the BAAQMD significance thresholds of significance. Therefore, project GHG impacts would remain *cumulatively considerable.*

4.4-7 Implement Mitigation Measure 4.4-5.

Endnotes

[1]Don Ballanti, *Air Quality Impact Analysis for the Proposed Emerson Ranch Project*, February 2010.
[2]BAAQMD, *BAAQMD CEQA Guidelines*, Revised December 1999.
[3]BAAQMD, *Draft CEQA Air Quality Guidelines*, December 2009.
[4]California Environmental Protection Agency Climate Action Team, *Climate Action Team Report to Governor Schwarzenegger and the Legislation*, March 2006.
[5]California Air Resources Board, *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*, October 2000.
[6]California Air Pollution Control Officers Association (CAPCOA), *Gasoline Service Station Industry-wide Risk Assessment Guidelines*, December 1997.
[7]California Air Resources Board, *Air Quality and Land Use Handbook: A Community Health Perspective*, April 2005
[8]California Air Pollution Control Officers Association (CAPCOA), *Gasoline Service Station Industry-wide Risk Assessment Guidelines*, December 1997.
[9]State of California, Department of Justice, *"The California Environmental Quality Act: Addressing Global Warming Impacts at the Local Agency Level."* Updated 12/09/08.
[10]Carbon sequestration is the capture and long-term storage of carbon dioxide before it is emitted into the atmosphere.

4.6 RECIRCULATED HAZARDS CHAPTER

4.6 HAZARDS

INTRODUCTION

The Hazards chapter of the EIR describes existing and potentially occurring hazards and hazardous materials on the proposed project site. The chapter discusses potential impacts posed by these hazards to the environment, as well as to workers, visitors, and residents within and adjacent to the project site. More specifically, the chapter describes potential effects on human health that could result from soil or groundwater contamination stemming from past uses of the site, or from exposure to hazardous materials used in adjacent agricultural operations. The Hazards section is based on the *City of Oakley General Plan*,[1] the *City of Oakley General Plan Draft Environmental Impact Report*,[2] the *Phase 1 Environmental Site Assessment, Emerson and Burroughs Properties*,[3] the *Environmental Site Assessment Emerson Update*,[4] and the *Clarification Regarding Environmental Site Assessment Update Findings*.[5]

EXISTING ENVIRONMENTAL SETTING

The proposed project site (See Figure 3-1, Regional Location Map, and Figure 3-2, Project Location Map, in Chapter 3 of the Draft EIR) is situated north of Cypress Road, and directly east of the approved and the developed Cypress Grove project, Delta Vista Middle School, and Iron House Elementary School. Land uses to the south of the proposed project include agricultural land and rural single-family residences. Additionally, land uses to the southeast of the proposed project include a gasoline service station (Blue Star Gas Mart), a trucking company, and a welding shop. The project area is bounded by the Gilbert property to the east. The project is bounded on the north by the Contra Costa Water District Canal (CCWD/USBR Canal), which separates the project site from the open space acreage to the north. The open space acreage is currently owned by the State of California. As part of previous agreements with the City, the 55-acre portion of land immediately to the north of the CCWD/USBR canal and the project site at the end of Sellers Avenue will be conveyed to the City of Oakley for future use as a community park.

A Phase I Environmental Site Assessment (Phase I) was performed by ENGEO Inc. in 1999 for the 1,100-acre Emerson and Burroughs Properties. Additionally, ENGEO Inc. conducted a supplemental site reconnaissance visit on June 17, 2004 as part of an update to the Phase I, focusing on the 140-acre Emerson property. The supplemental site visit confirmed that the conditions on the property were still consistent with the 1999 findings.

According to the assessment update issued for this project, two single-family residences and a barn structure currently exist on the property. The majority of the parcel consists of undeveloped pastures, and a private water supply well and septic system are on-site to service the current residents.

Historical and Aerial Photographic Site Features

Aerial photographs of the project site area were reviewed as part of the Phase I. The photographs spanned the years of 1939 to 2000 and were reviewed in stereo, when available, to analyze three-dimensional features.

The review of aerial photographs and available historical records found that the subject property has remained relatively unchanged from at least 1953 to the present with the exception of minor site improvements. The 1999 site reconnaissance and records research did not find any documentation or physical evidence of soil or groundwater impairments associated with the use of the property, with the exception of surface soil impacts related to aboveground petroleum product storage tanks on the dairy property to the north of the proposed project site.

Potential On-Site Hazards

The Phase I includes the results of a search of electronically compiled federal, State, County, and City databases. The database search includes regulatory agency lists of known or potential hazardous waste sites, landfills, hazardous waste generators, and disposal facilities, in addition to sites under investigation. The information provided in this Draft EIR was obtained from publicly available sources. The proposed project site was not identified during the regulatory database search.

Nitrate Impacts

Given the past and present dairy activities to the north of the proposed project site, the possibility exists that site soils and groundwater may exhibit elevated nitrate levels.

Asbestos-Containing Building Materials

For buildings constructed prior to 1980, the Code of Federal Regulations (29 CFR 1926.1101) states that all thermal system insulation (boiler insulation, pipe lagging, and related materials) and surface materials must be designated as "presumed asbestos-containing material" (PACM) unless proven otherwise through sampling in accordance with the standards of the Asbestos Hazard Emergency Response Act.

An asbestos survey was not conducted as part of the Phase I. Given the age of the structures, the possibility exists that asbestos-containing materials may have been used in construction of on-site structures.

Lead-Based Paint

In 1978, the Consumer Product Safety Commission banned the use of lead as an additive to paint. Currently, the U.S. EPA and the U.S. Department of Housing and Urban Development are proposing additional lead-based paint regulations. Based on the age of the buildings on the project site, lead-based paint may be present. If lead-based paint is still bonded to the building materials, the paint's removal is not required prior to demolition. If lead-based paint is peeling,

flaking or blistering, any paint should be removed prior to demolition. Such paint may become separated from the building components during demolition activities; and must be managed and disposed of as a separate waste stream. Any debris or soil containing lead paint or coating must be disposed at landfills that are permitted to accept the waste being distributed.

Natural Gas Wells

The Phase I Environmental Assessment determined that operational gas wells do not exist on-site. However, a dry test well was drilled on the project site in 1964 and was subsequently abandoned. The test well was identified as *Occidental Petroleum, Oakley Unit One, Well No.2*. At the time of abandonment, the well was abandoned in accordance with regulations in effect at that time. However, according to Ms. Pam Ceccarelli with the Division of Oil, Gas and Geothermal Resources (DOGGR), the test well does not meet the current abandonment standards.

Potential Off-Site Hazards

The Phase I also addresses the potential for hazards and the presence of hazardous materials in the vicinity of the project site. The Phase I includes a database search of regulatory agency lists of known or potential hazardous waste sites, landfills, hazardous waste generators, and disposal facilities in addition to sites under investigation. The information provided in this Draft EIR was obtained from publicly available sources.

Hazardous Substance and/or Petroleum Products

Tetra Tech EM, Inc. conducted an agency file review with the Division of Oil, Gas, and Geothermal Resources (DOGGR) for the purpose of ascertaining information related to gas wells on the neighboring Burroughs property.[6] One abandoned well was identified as Tract 5 5-5, and is located in the central portion of the Burroughs property. According to DOGGR records, the well was installed in November 1964 and was abandoned prior to 1985. The total depth of the well is 7,700 feet below ground surface level. According to the *Report of Well Plugging and Abandonment* from DOGGR, the well was properly closed and abandoned on March 18, 2004.

Lowney and Associates conducted a review of DOGGR files to evaluate the status and location of abandoned gas wells on the neighboring Gilbert Property site.[7] Based on the records reviewed, natural gas production well Tract 8 8-3 was drilled to a depth of approximately 7,700 feet in the north-central area of the Gilbert site in 1964. This well was abandoned in 1978 under a permit obtained from the DOGGR. In 1964, gas well Tract 8 8-1 was drilled in the northeast area of the site to a depth of approximately 8,328 feet. This well was abandoned in 1966 under a permit obtained from the DOGGR.

The Contra Costa County hazardous materials list includes one “orphan” facility: Blue Star Gas at 1541 East Cypress Road southeast of the Emerson property, directly south of the Burroughs property to the east, which was identified in the site visit conducted by Lowney Associates. The Blue Star Gas facility is listed in the LUST database, though additional information was not supplied. The Phase I analysis conducted by Tetra Tech EM, Inc. for the Burroughs property

notes that the Blue Star Gas facility is also identified as an Hazardous Waste Generator and an Hazardous Materials Management Plan site.

Contra Costa County Hazardous Site List

An inactive Contra Costa County Public Works facility underground storage tank (UST) is included on the Contra Costa County Site List. The UST is listed as being located at Cypress Road and Sellers Avenue in Oakley. The UST is listed as inactive by September 1994. The database report radius map shows the facility as being located on the Gilbert property. However, during a site visit by Lowney Associates, on-site features that were indicative of a former public works facility were not observed in the area indicated by the radius map. The Phase I for the Emerson property did not locate any indication that this UST is located on the Emerson property. Therefore, the reported UST appears to have been located off-site.

Pesticides

The Emerson Dairy property is located north of the project site across the existing Contra Costa Canal system and the Cypress Grove Levee that protects the project site. The Emerson Dairy property includes an existing pesticide shed that does not affect the project site.

The Removal Action Work Plan (RAW), prepared by TRC for the Baldocchi property (to the south of the proposed project), was reviewed. Appendix B of the Baldocchi RAW indicates that the 95-percent statistical upper confidence interval (UCI) for cumulative DDT/DDD/DDE (total DDT) in the "field area" of the property is 0.6284 mg/k. The 95-percent statistical limit for total DDT within the "barn area" of the Baldocchi property is 1.454 mg/k. Both are below the residential California Human Health Screening Level (CHHSL) for total DDT (1.6 mg/k). Removal action at the Baldocchi property is only proposed for isolated areas within the "barn area" and one hot spot located within "field A." The Department of Toxic Substances Control (DTSC) has not required remediation at the Baldocchi property to address off-site impacts, including aerial deposition due to "drift," or impacts to surface water or groundwater. DTSC has assessed the potential for pesticide-impacted soils to migrate from the Baldocchi property over to the Emerson project site, with a determination that under normal stormwater runoff conditions (i.e., sheetflow from precipitation events), the potential is "very low." The reported statistical 95-percent upper confidence interval for total DDT (0.6284 mg/kg for the "field area") at the Baldocchi property did not exceed the Environmental Screening Level for leachability (1,100 mg/kg). In addition, Section 3.0 of the Baldocchi RAW indicates that leaching of the pesticides has not occurred and would therefore not result in off-site impacts to the Emerson project site.

Furthermore, the DTSC Case Officer for the Baldocchi Property, Mr. Xavier Bryan, was contacted to address whether or not DTSC agreed that the soils at the Baldocchi Property would not be an issue for stormwater runoff related to the proposed project. Mr. Bryant responded as follows: "*DTSC agrees that the potential for migration of pesticide-impacted soil from the Baldocchi Property (6390 Sellers Avenue, Oakley) to the Emerson Property is low and should not be a concern under normal storm water runoff conditions.*"

In addition, review of aerial photography dated 1939 through 1998 indicates the agricultural use south of the project site is consistent with the neighboring Baldocchi Property. ENGEO Inc. has conducted more than 100 agrichemical impact assessments in eastern Contra Costa County, which included the recovery and analysis of more than 2,000 soil samples. The range of cumulative organochlorine pesticide concentrations for these studies ranged from below detection limits to less than 10 mg/kg, well below the applicable ESL for leachability (1,100 mg/kg). Pesticides used on the parcels south of the project site are anticipated to be similar to those used on the Baldocchi property. Residual pesticides within soil at the properties south of the project site would not be expected to impact stormwater draining to the proposed detention basin.

The environmental site assessments performed for the ±140 acre project site (included as Appendices G and H to the Draft EIR) found no evidence of row crop or orchards at the project site. According to the former property owner, Mr. Stan Emerson, the agricultural use was limited to dry crops (clover, corn, alfalfa and grasses), with the exception of a small orchard in the northwest area (pre-1950s) and irrigated safflower (1990s).[8] With regard to the past dry farming, Section 2.3.2 of the most recent DTSC guidance document states the following:[9]

> *"Properties that clearly qualify as dry-land farming do not need further investigation for pesticides or metals."*

With regard to the historical small orchard in the northwest area, the orchard is visible on a 1939 aerial photograph, but is not present on 1949 and later photographs.[10] The DTSC guidance document states the following:

> *"A review of 35 proposed school sites along with the historical background of OCP [Organochlorine Pesticide] use in California indicates that sites with agricultural usage ending prior to 1950 do not need to be evaluated for OCPs."*

With regard to the 1990s Safflower cultivation, persistent OCPs were banned during the 1970s and early 1980s; therefore, OCPs would not be expected to be an environmental concern.

Aboveground and Underground Storage Tanks (ASTs/USTs)

According to long time tenant Cristobal Vargas, ASTs, concrete vaults or waste oil tanks were formerly located on a property north of the canal, but were removed some years after dairy operations ceased.

The analysis of aerial photographs of the proposed project sites also indicates that there was a water tower on the proposed project site constructed prior to 1957. However, the aerial photographs show that the water tower and surrounding buildings were demolished prior to 1990.

Transformers Off-Site

Electrical transformers are devices used to transfer electricity from one circuit to another, usually through a change in voltage, current, phase, or other electric characteristic. Several pole-mounted

transformers were observed on other sites around the periphery of the project site during the site inspection. Spills, staining, or leaks were not observed on or around the transformers. Based on the good condition of the equipment, the transformers are not expected to represent a significant environmental concern.

Typically, transformers are a health concern if they were installed prior to the late 1970s because they utilized Polychlorinated Biphenyls (PCBs). Transformers that contain 50 to 500 parts per million (ppm) PCBs are classified as PCB-contaminated. The management of potential PCB-containing transformers is the responsibility of the local utility or the transformer owner. Actual material samples need to be collected to determine if transformers are PCB-containing.

Natural Gas Pipelines

The environmental assessment performed by Tetra Tech EM Inc. for the nearby Burroughs property indicates that an active natural gas pipeline and a buried phone line run along the south edge of East Cypress Road.

Natural Gas Wells

Although operational natural gas wells are not located on the Emerson project site, natural gas production wells are located adjacent to the project site. Two abandoned natural gas wells exist on the neighboring Gilbert site directly to the east of the proposed project, and one additional abandoned well exists on the Burroughs property, which is located to the east of the Gilbert property. Two natural gas wells are located approximately 0.25 miles south of East Cypress Road between Franklin Road and Knightsen Avenue. An additional well is located approximately 0.125 miles south of the Burroughs property between Knightsen and Broadway Lane.

Monitoring Well

Based on information received from the owner of the neighboring Gilbert property, an on-site monitoring well was installed by the Department of Water Resources to evaluate ground water for nitrates. Regulatory agency staff was not able to locate files for the on-site well.

REGULATORY CONTEXT

The term hazardous substance refers to both hazardous materials and hazardous wastes. A material is defined as hazardous if it appears on a list of hazardous materials prepared by a federal, state or local regulatory agency or if the site has characteristics defined as hazardous by such an agency.

The California Environmental Protection Agency, Department of Toxic Substances Control (CAL-EPA, DTSC) defines hazardous waste, as found in the California Health and Safety Code Section 25141(b), as follows:

> […] its quantity, concentration, or physical, chemical, or infections characteristics: (1) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness; (2) pose a substantial present or potential hazard to human health or the environment, due to factors including, but not limited to, carcinogenicity, acute toxicity, chronic toxicity, bioaccumulative properties, or persistence in the environment, when improperly treated, stored, transported, or disposed of, or otherwise managed.

Many agencies regulate hazardous substances. The following discussion contains a summary review of regulatory controls pertaining to hazardous substances, including federal, State, and local laws and ordinances.

Federal Regulations

Federal agencies that regulate hazardous materials include the Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), the Department of Transportation (DOT), and the National Institute of Health (NIH). The following federal laws and guidelines govern hazardous materials:

- Federal Water Pollution Control;
- Clean Air Act;
- Occupational Safety and Health Act;
- Federal Insecticide, Fungicide, and Rodenticide Act;
- Comprehensive Environmental Response, Compensation, and Liability Act;
- Guidelines for Carcinogens and Biohazards;
- Superfund Amendments and Reauthorization Act Title III;
- Resource Conservation and Recovery Act;
- Safe Drinking Water Act; and
- Toxic Substances Control Act.

Prior to August 1992, the principal agency at the federal level regulating the generation, transport and disposal of hazardous waste was the EPA under the authority of the Resource Conservation and Recovery Act (RCRA). As of August 1, 1992, however, the California Department of Toxic Substance Control (DTSC) was authorized to implement the State's hazardous waste management program for the EPA. The federal EPA continues to regulate hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA).

State Regulations

The California Environmental Protection Agency (Cal-EPA) and the State Water Resources Control Board establish rules governing the use of hazardous materials and the management of hazardous waste. Applicable State and local laws include the following:

- Public Safety/Fire Regulations/Building Codes;
- Hazardous Waste Control Law;

- Hazardous Substances Information and Training Act;
- Air Toxics Hot Spots and Emissions Inventory Law;
- Underground Storage of Hazardous Substances Act; and
- Porter-Cologne Water Quality Control Act.

Within Cal-EPA, DTSC has primary regulatory responsibility, with delegation of enforcement to local jurisdictions that enter into agreements with the State agency, for the management of hazardous materials and the generation, transport, and disposal of hazardous waste under the authority of the Hazardous Waste Control Law (HWCL). The Division of Oil, Gas & Geothermal Resources (DOGGR) oversees the drilling, operation, maintenance, and plugging and abandonment of oil, natural gas, and geothermal wells.

Local Regulations

The following are the local government environmental goals and policies relevant to the CEQA review process.

City of Oakley General Plan

The following are applicable goals and policies from the Oakley 2020 General Plan Health and Safety Element:

Hazardous Materials

Goal 8.3 Provide protection from hazards associated with the use, transport, treatment, and disposal of hazardous substances.

Policy 8.3.1 Hazardous waste releases from both private companies and public agencies shall be identified and eliminated.

Policy 8.3.2 Storage of hazardous materials and wastes shall be strictly regulated.

Policy 8.3.3 Secondary contaminant and periodic examination shall be required for all storage of toxic materials.

IMPACTS AND MITIGATION MEASURES

Standards of Significance

In accordance with CEQA, the effects of a project are evaluated to determine if they would result in a significant adverse impact on the environment. An EIR is required to focus on these effects and offer mitigation measures to reduce or avoid any significant impacts that are identified. The criteria, or standards, used to determine the significance of impacts may vary depending on the

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

- Create potential health risks due to siting of urban uses over oil and gas fields or wells;
- Create a hazard to the public or the environment due to agriculture-related pesticide contamination;
- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school; be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- Expose people or structures to the risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Method of Analysis

Site conditions and impact assessments for this chapter are based on the Phase I and the update to the Phase I that were prepared for the proposed project site.

ENGEO Inc. completed the Phase I update on June 2004. The update included a supplemental site reconnaissance on June 17, 2004, as well as a review of applicable records and other off-site sources. ENGEO Inc. prepared a clarification regarding environmental site assessment update findings on July 5, 2007. In addition, ENGEO Inc. prepared further research in response to comments received on the original Draft EIR.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on the implementation of the proposed project.

4.6-1 Presence of pesticide and/or herbicide residues on the project site.

As noted above, pesticides/herbicides were used on areas to the north and south of the proposed project site. However, according to DTSC and ENGEO Inc., any remaining off-site contaminated soil has not migrated to the project site. In addition, residual pesticides within soil at the properties south of the project site would not be expected to impact stormwater draining to the proposed detention basin.

With regard to "pesticide drift" from neighboring properties, years of studies in East Contra Costa County have found that properties neighboring agricultural sites typically do not exhibit elevated levels of pesticides. ENGEO Inc. determined that neither DTSC nor Contra Costa County Health Department currently requires sampling to address "pesticide drift." Because the statistical OCP levels at the Baldocchi property are already below residential criteria, pesticide concentrations at the project site, if any, would be at significantly reduced concentrations in comparison to the in-situ soil samples at the Baldocchi property.

In addition, site reconnaissance was performed on the proposed project site, and the Phase I concludes that, although pesticide and herbicide residues are present on-site, the contaminants are below Environmental Screening Level (ESL) standards for residential uses. Therefore, because the contaminant levels were found to be within allowable levels for residential development, the presence of pesticides and herbicides on the proposed project area would have a ***less-than-significant*** impact.

Mitigation Measure(s)
None required.

4.6-2 Impacts related to the off-site pipeline.

A natural gas pipeline owned and operated by PG&E is located south of the site running along the south edge of East Cypress Road. The pipeline operates as a gathering line and serves natural gas production wells in the area. Development of the proposed project would construct residential structures within 200 feet of the pipeline. The pipeline also runs along East Cypress Road at a similar distance from existing housing in the Cypress Grove development located immediately west of the project site.

The California Department of Oil, Gas, and Geothermal Resources (DOGGR) oversees such pipelines. DOGGR regulations classify oil and gas pipelines located within 300 feet of any public recreational area or a building intended for human occupancy as an "environmentally sensitive pipeline" (14 C.C.R. 1760(d)(1)). DOGGR requires the operator of an environmentally sensitive pipeline to prepare a "pipeline management plan" (14 C.C.R. 1774(i)), and thereafter to periodically test the pipeline to confirm the mechanical integrity (14 C.C.R. 1774(j)). According to 14 C.C.R. 1744(j), any pipeline that fails the periodic integrity test must be either repaired or taken out of service.

Although pipelines do not exist on the project site, construction-related activities such as heavy equipment operation adjacent to the project site could damage the pipelines and result in the release of natural gas, exposing workers or nearby existing residents to the dangers associated with such a release. Such an occurrence might happen during construction of off-site improvements within the right-of-way of East Cypress Road required by the City as part of developing the project, or in the future from other work by either the City or third parties in the vicinity of the pipeline. Exposure to this hazardous material, although unlikely, would result in a ***potentially significant*** impact.

Mitigation Measure(s)
Implementation of the following mitigation measures would mitigate potential impacts to a *less-than-significant* level.

4.6-2(a) *Prior to approval of Improvement Plans, the construction contractor, the developer, a representative from the local PG&E land office, and a representative from the City's Engineering Department shall meet on the project site and prepare site-specific safety guidelines for construction in the field to the satisfaction of the City Engineer. The safety guidelines shall be noted on the improvement plans and be included in all construction contracts involving the project site (e.g., contact Underground Service Alert (USA)).*

4.6-2(b) *In addition to the requirements that may be imposed pursuant to Mitigation Measure 4.6-2(a), construction in the vicinity of the pipeline shall comply with all applicable regulations and procedures regarding identification and protection of underground pipelines and utilities.*

4.6-2(c) *Prior to beginning any construction activity within the right-of-way of East Cypress Road, the applicant shall route a copy of the improvement plans to the local PG&E land office for review and comment to ensure the utilization of proper construction methods near the pipeline.*

4.6-2(d) *DOGGR has jurisdiction over pipeline safety and implementation of the pipeline management plan requirements and procedures. Following approval of a final map allowing housing within 300 feet of the pipeline, the City shall notify DOGGR and the pipeline owner and request confirmation that a pipeline management plan for the pipeline will either be revised if already existing (to recognize the Cypress Grove development), or shall be prepared if not yet existing, in anticipation of construction of housing in this location. The City also shall request notification whether the pipeline passed the most recent integrity test or failed and then either was repaired or has been taken out of service, all pursuant to State regulations.*

4.6-3 Impacts involving possible oil spillage from past uses of nearby properties.

The Phase I update and follow-up site visit performed by ENGEO Inc. did not find obvious indications of soil impacts associated with petroleum product storage on-site. However, some soil discoloration was noted at the eastern side of the shed located on the site to the north. The cause of the discoloration is unknown, but this discoloration is possibly a result of past oil spills in the oil house.

According to the 2007 memorandum from ENGEO Inc. that seeks to clarify the findings of the Phase I update, recognized environmental conditions do not exist on the proposed 140-acre project site. Although the Phase I update references soil discoloration, as well as

underground petroleum storage tanks located off-site, these environmental concerns are not located on-site; therefore, impacts related to possible oil spillage from past uses on the project site would be ***less-than-significant***.

Mitigation Measure(s)
None required.

4.6.4 Impacts related to the presence of asbestos and lead particles on the project site.

The Phase I for the proposed project area found several structures on the site, including a barn, shed, and a single-family residence. A review of aerial photographs show that a number of these structures were constructed prior to the mid 1970's, and could contain asbestos containing materials (ACMs) in the structures. The building materials associated with asbestos include, but are not limited to, resilient floor coverings, drywall joint compounds, acoustic ceiling tiles, piping insulation, electrical insulation, and fireproofing materials.

In addition, lead-based paints could be present in the existing structures. Typically, exposure to lead from older vintage paint is possible when the paint is in poor condition or is being removed. In construction settings, workers could be exposed to airborne lead during renovation, maintenance or demolition work. Lead-based paints were phased out of production in the early 1970s. The on-site buildings were constructed prior to the ban on lead-based paints and, therefore, may contain these materials.

Long-term exposure to friable asbestos and lead particles could prove hazardous. Prior to construction, the structures would be removed from the site. During the demolition activities, workers would be potentially exposed to hazardous levels of asbestos and lead particles. Therefore, the introduction of people to the site as a result of the development of the proposed project and the exposure of these people to asbestos and lead materials on the project site would be considered a ***potentially significant*** impact.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce potential impacts to a *less-than-significant* level.

4.6-4 *Prior to issuance of a demolition permit by the City for any on-site structures, the project proponent shall provide a site assessment that determines whether any structures to be demolished contain asbestos and/or lead paint. If structures do not contain asbestos or lead-based paint, further mitigation is not required. If any structures contain asbestos, the application for the demolition permit shall include an asbestos abatement plan consistent with local, state, and federal standards, subject to approval by the City Engineer. If lead-based paint is found, all loose and peeling paint shall be removed and disposed of by a licensed and certified lead paint removal contractor, in accordance with local, state, and federal regulations. The demolition contractor shall be*

informed that all paint on the buildings shall be considered as containing lead. The contractor shall take appropriate precautions to protect his/her workers, the surrounding community, and to dispose of construction waste containing lead paint in accordance with local, state, and federal regulations subject to approval of the City Engineer.

4.6-5 Exposure of residents to safety hazards due to the construction of additional residences near the Contra Costa Canal and the stormwater detention pond.

Development of the proposed project would position additional residents near the Contra Costa Canal. Residents could be attracted to the canal, and access to the canal could present a drowning hazard. The canal is bordered, in some places, with public trails along the tops of levees. However, a six-foot fence exists along the Canal within the Contra Costa Canal District's right-of-way and two fences exist along the northern boundary of the Cypress Grove development. The proposed project would continue these fences to prohibit access to the Contra Costa Canal. Therefore, construction of new residences near the Contra Costa Canal would not be considered a substantial adverse impact. In addition, it should be noted that the Contra Costa Canal is currently planned to be placed underground in a pipe, which would eliminate any drowning hazards.

The proposed project would include the construction of a stormwater detention basin in the central portion of the project site. In addition to playing a key role in the stormwater management strategy for the project site, the detention basin would serve as a visual and recreational amenity. The normal water surface elevation of the pond is two feet, and the maximum allowable water surface elevation is six feet. The likelihood exists that, because the water surface elevation of the basin would exceed the normal surface elevation of two feet during storm events, the potential public safety impacts related to the design of the detention basin would be ***potentially significant***.

Mitigation Measure(s)
Implementation of the following mitigation measure would mitigate potential impacts related to the public safety effects of the proposed detention basin to a *less-than-significant* level.

4.6-5 *The project applicant/engineer shall submit a safety program for the proposed detention basin for the review and approval of the City Engineer prior to the approval of the improvement plans. The safety program shall address the public safety concerns associated with the development of the basins including but not limited to bank stabilization and restricting public access to the basin. Safety features are expected to be similar to those used in Cypress Grove (e.g., rip-rap along the edge of the pond, plantings, shallow sloped rims, etc.).*

4.6-6 Exposure of proposed residences to wildland fires.

Although the urbanized areas of the City of Oakley are in areas of low wildfire hazard, wildfire is a serious hazard in undeveloped areas and on large lots with extensive areas of unirrigated vegetation because natural vegetation and dry-farmed grain areas are extremely flammable during the late summer and early fall.

The City of Oakley is within the boundaries of critical Fire Weather Class 3, which correlates to 9.5 or more days per year of moderate, high, and extreme fire hazard. Grassland fires are easily ignited, particularly in dry seasons. Although the development would decrease the amount of vegetation in the area and all new residences are required to include a fire sprinkler system pursuant to the City's Fire Sprinkler Ordinance (22-06), the project would also place structures and residents in close proximity with remaining vegetation, resulting in a ***potentially significant*** impact regarding to the increased risk of wildland fires.

Mitigation Measure(s)
Implementation of Mitigation Measures 4.11-4(a) and 4.11-4(b) in Chapter 4.13, Public Services and Facilities, of the Draft EIR would reduce the magnitude of impacts related to wildland fires. Implementation of the following mitigation measures would further reduce impacts related to wildland fires to a *less-than-significant* level.

4.6-6(a) *When residential structures are developed, an approved fire apparatus access shall be provided to within 150 feet of all portions of the first floor as measured by an approved route around the exterior of the building.*

4.6-6(b) *The East Contra Costa Fire Prevention Department shall, as necessary, ensure the installation of radio repeater towers within the proposed project area. The location and design of any radio repeater towers shall be subject to the review and approval of the City Engineer and Community Development Department.*

4.6-6(c) *Development of the site should be carried out in accordance with East Contra Costa Fire Prevention Department rules and regulations and the Uniform Building Code regulations adopted by the East Contra Costa Fire Prevention Department.*

4.6-6(d) *Prior to approval of design review for residential structures, the applicant shall show that all roofs shall be Class A type.*

4.6-7 Impacts related to the underground storage tanks at the Blue Star Gas station southeast of the project site.

The Phase I prepared by Lowney and Associates for the neighboring Gilbert property site identified the Blue Star Gas station at 1431 East Cypress Road southeast of the proposed project area as a site of environmental concern. The Blue Star Gas station is listed in the

Leaking Underground Storage Tank (LUST) database for having a leaking underground fuel tank.

Based on the Phase I prepared by Lowney and Associates, groundwater flows in the area are believed to be to the north/northeast from the Blue Star Gas station, through the Gilbert property and into the Contra Costa Canal. As a result, the report notes that the leak at the Blue Star Gas site could have impacted the groundwater beneath the neighboring property area and suggests additional review to evaluate potential impacts.

In June 2005, Tetra Tech EM, Inc. performed a Phase I for the Burroughs property, which is located to the east of the proposed project site. The Blue Star Gas station is located due south of the neighboring Burroughs property. The Tetra Tech EM, Inc. Phase I addressed the concerns regarding the leak at the Blue Star Gas station. To investigate the impacts that the leak could have on the Burroughs property, Tetra Tech EM, Inc. performed a limited soil sampling of the project site just north of the Blue Star Gas station. Both soil and groundwater samples were analyzed for pollutants. The results of the tests were below laboratory reporting limits. The tests were conducted on the Burroughs property in close proximity to the Blue Star Gas station and were determined to be within acceptable levels. The Emerson property, which is located to the west of the Burroughs testing site, is even further removed from the USTs and would, therefore, be expected to have lower levels of pollutants than the Burroughs site. Therefore, because the contaminant levels were found to be within allowable levels for residential development, the presence of contaminated soil and groundwater in the project area from the leaking underground fuel tank at the Blue Star Gas Station would have a ***less-than-significant*** impact.

Mitigation Measure(s)
None required.

4.6-8 Potential hazards associated with the future gas station on the project site.

The proposed project includes the construction of a gas station located in the southern portion of the proposed commercial site, adjacent to the proposed entrance off Cypress Road. Common hazardous substances associated with gas stations include toxic air contaminants (TACs), such as the fuel oxygenate Methyl Tertiary Butyl Ether (MTBE). MTBE is a clear, colorless, low-viscosity, flammable liquid with a distinctive, ether-like odor. The principal use of MTBE is as an additive to automotive fuels.

The State of California has concluded that MTBE is not a human carcinogen and does not cause birth defects or infertility. In addition, in 1995, the World Health Organization concluded that it is "unlikely that MTBE alone induces adverse acute health effects in the general population under common exposure conditions."[11]

In 1998 the International Association of Research on Cancer (IARC), which is a part of the World Health Organization, classified MTBE in category 3. The scale is from 1 to 4. A substance in Group 3 is "not classifiable as to its carcinogenicity to humans." This

means that there is not sufficient data to claim a possible cancer risk to man from exposure to MTBE.[12]

However, the possibility exists that MTBE could cause other adverse health effects on humans. Drinking water containing small quantities of MTBE does not cause any adverse health effects. In any case, should MTBE reach drinking water, MTBE would attract public attention to a gasoline leak or spill because, like all ethers, MTBE has a strong taste and odor, and is detectable at very low levels of concentration. In view of this, the U.S. EPA has recommended an MTBE concentration in drinking water within the range of 20 to 40 ppb or below. These quantities are 20,000 to 100,000 times lower than the lowest concentration that has caused observable health effects in animals, thus ensuring not only consumer acceptance, but also an exceptionally large margin of safety from any possible toxic effects.

Although unlikely, the possibility exists that MTBE could cause adverse health effects on humans primarily related to groundwater contamination. The proposed gas station would comply with all federal, State, and local regulations regarding leaks or spills, which would ensure that any potential hazards associated with the station would not have adverse impacts to human health.

With the acquisition of necessary permits and compliance with federal, State, and local regulations, hazardous materials impacts from future planned land uses would be ***less-than-significant***.

Mitigation Measure(s)
None required.

4.6-9 Impacts related to the abandoned natural gas test well on-site.

The Phase I Environmental Assessment determined that operational gas wells do not exist on-site. However, a dry test well was drilled on the project site in 1964 and was subsequently abandoned. The test well was identified as *Occidental Petroleum, Oakley Unit One, Well No.2*. At the time of abandonment, the well was abandoned in accordance with regulations in effect at that time. However, according to Ms. Pam Ceccarelli with the Division of Oil, Gas and Geothermal Resources (DOGGR), the test well does not meet the current abandonment standards. Specifically, a base of freshwater (BFW) plug is not located inside the 10.75-inch casing of the test well and the surface plug is 10 feet deep. Current abandonment standards requires a BFW plug 50 feet below to 50 feet above the BFW and a 25 foot surface plug with the wellhead cut off at least five feet below grade.

With regard to potential gas production-related impacts, because the test well is not an operational production well, typical equipment and facilities associated with a well site would not have been utilized. Contamination at well sites is typically associated with meter sheds, compressor units and condensate tanks. Because this equipment would not

have been utilized on a test well, surface or subsurface petroleum hydrocarbon or metal impacts associated with the test well are not anticipated.

According to Ms. Ceccarelli, the DOGGR requires a *Construction Site Review* for wells located on a potential construction site. In addition, as part of the *Construction Site Review*, a DOGGR engineer would determine if the well requires re-abandonment to accommodate the proposed project. Therefore, without a Construction Site Review, a ***potentially significan***t impact related to on-site natural gas wells would occur.

Mitigation Measure(s)
Implementation of the following mitigation measures would mitigate potential impacts to a *less-than-significant* level.

4.6-9 *Prior to recordation of the final map, the applicant shall submit proof of a Construction Site Review from the DOGGR, to the City Engineer. The Construction Site Review shall include, but not be limited to, submittal of a construction site plan with the test well located plotted on the plan and required setbacks for review and approval of a DOGGR engineer. In the event re-abandonment is required, prior to issuance of a grading permit, the applicant shall submit proof of abandonment to DOGGR and the City Engineer. The final map shall implement City Code 9.1.1216.i(2) of a ten-foot required setback from the well or any greater setback that the DOGGR may require.*

Cumulative Impacts and Mitigation Measures

The following discussion of impacts is based on the implementation of the proposed project in combination with other proposed and pending projects in the region.

4.6-10 Long-term hazards-related impacts from the proposed project in combination with existing and future developments in the Oakley area.

Impacts associated with hazardous materials are site-specific and generally do not affect or are not affected by cumulative development. Cumulative effects could be of concern if the project was, for example, part of a larger development in which industrial processes that would use hazardous materials were proposed. However, this is not the case with this project, and project-specific impacts were found to be less-than-significant with the implementation of the recommended mitigation measures; therefore, the proposed project's incremental contribution to cumulative hazardous conditions was not found to be significant.

In addition, surrounding development would be subject to the same federal, State, and local hazardous materials management requirements as would the proposed project, which would minimize potential risks associated with increased hazardous materials use in the community, including potential effects, if any, on the proposed project. Therefore,

implementation of the proposed project would have a ***less-than-significant*** cumulative impact associated with hazardous materials use.

Mitigation Measure(s)
None required.

Endnotes

[1] City of Oakley, *Oakley 2020 General Plan*, August 30, 2002.
[2] City of Oakley, *Oakley 2020 General Plan Draft Environmental Impact Report*, September 2002.
[3] ENGEO Inc., *Phase 1 Environmental Site Assessment, Emerson and Burroughs Properties*, August 23, 1999.
[4] ENGEO Inc., *Environmental Site Assessment Update, Southern 140 Acres, Emerson Property*, June 21, 2004.
[5] ENGEO Inc., *Clarification Regarding Environmental Site Assessment Update Findings*, July 5, 2007.
[6] Tetra Tech EM, Inc., *Phase I Environmental Site Assessment and Limited Phase II Environmental Site Assessment,* June 23, 2005.
[7] Lowney Associates, *Phase I Environmental Site Assessment and Limited Soil Quality Evaluation,* September 3, 2004.
[8] Personal communication with Stan Emerson, 1999.
[9] California Department of Toxic Substances Control, *Interim Guidance for Sampling Agricultural Properties (Third Revision),* August 7, 2008.
[10] Historical aerials, 1949 Photograph of Project Site (available at: http://www.historicaerials.com/default.aspx), 1949.
[11] The European Fuel Oxygenates Association, www.efoa.org, September 2004.
[12] Ibid.

5. RECIRCULATED ALTERNATIVES ANALYSIS CHAPTER

5. ALTERNATIVES ANALYSIS

INTRODUCTION

The primary intent of the alternatives analysis in an EIR, as stated in Section 15126.6(a) of the CEQA Guidelines, is to "describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives."

The following are the objectives for the project:

- Implement the City's General Plan goals by providing for residential development for which adequate services can be provided in a timely manner.

- Implement and comply with the previously approved Development Agreement for the Emerson property, which granted to the landowner vested rights to develop the property.

- Develop the Emerson property in accordance with the Dutch Slough Planning Framework and the Memorandums of Understanding and Development Agreements entered into in 2002 and 2003.

- Provide an economically viable commercial center to serve the residents of the Emerson Property project, as well as the residents of Cypress Corridor, and to reduce the need to travel for commercial services.

- Create an inviting village setting comprised of distinct, yet integrated, neighborhoods, with a central park and commercial center, all of which would provide a desirable small town atmosphere and attractive lifestyle choice for residents.

- Facilitate the interaction of neighborhood residents through provision of an attractive park and a network of trails.

- Provide the infrastructure necessary for the delivery of safe and reliable public services including water, sewer, drainage, and roadway infrastructure improvements that enhance the entire Oakley community.

- Provide safe, convenient transportation access for pedestrians, bicyclists, transit riders, and motorists between parks and nearby schools, as well as to existing and future transit corridors, using street designs that balance the needs of pedestrians and motorists.

- Target pedestrian orientation as a key element within the development and facilitate access to potential nearby future transit corridors.

- Create an economically viable project that provides a fair-share contribution of infrastructure on a pro rata basis to the community through the payment of fees and/or reimbursement agreements and/or construction of required capital improvements, while creating revenue through the sale of housing of the types and styles that current and future citizens of Oakley desire.

- Provide a variety of desirable housing types and densities consistent with City policies that meet the housing needs of existing and future Oakley residents. Provide a mix of housing choices and affordability levels interspersed among the neighborhoods so as to create ongoing housing opportunities for local school districts, and/or City health and safety personnel.

- Draw upon the agricultural character of Oakley and the adjacent Delta area in establishing the future character of the development projects within the Oakley area.

- Develop the project areas consistent with land uses and policies defined in the Development Agreement.

- Advance the City's vision for Cypress Corridor by incorporating design principles and including a variety of architectural styles and home sizes that create a neighborhood with attractive land plans and that serve a variety of households.

- Provide access to the Wetlands Restoration Project areas to the north of the proposed project site.

- Provide increased CCWD/USBR Canal safety.

The CEQA Guidelines further state that "[…] the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly." The feasibility of an alternative may be determined based on a variety of factors including, but not limited to, site suitability, economic viability, availability of infrastructure, General Plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and site accessibility and control.

CEQA provides the following guidelines for discussing alternatives to a proposed project:

> - An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives (CEQA Guidelines Section15126.6[a]).

- Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Public Resources Code Section 21002.1), the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly (CEQA Guidelines Section15126.6[b]).

- The range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects. The EIR should briefly describe the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination [. . .] Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts (CEQA Guidelines Section15126.6[c]).

- The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison (CEQA Guidelines Section15126.6[d]).

- The specific alternative of "no project" shall also be evaluated along with its impact. The purpose of describing and analyzing a no project alternative is to allow decisionmakers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project. The no project alternative analysis is not the baseline for determining whether the proposed project's environmental impacts may be significant, unless it is identical to the existing environmental setting analysis which does establish that baseline (CEQA Guidelines Section15126.6[e][1]).

- If the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives (CEQA Guidelines Section15126.6[e][2]).

In addition, Section 15126.6 (d) of the CEQA Guidelines states, "If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed."

Table 5-20, at the end of the chapter, compares the level of significance for the impacts of the proposed project and each of the project alternatives.

SELECTION OF ALTERNATIVES

The requirement that an EIR evaluate alternatives to the proposed project or alternatives to the location of the proposed project is a broad one; the primary intent of the alternatives analysis is to disclose other ways that the objectives of the project could be attained while reducing the magnitude of, or avoiding, the environmental impacts of the proposed project. Alternatives that are included and evaluated in the EIR must be feasible alternatives. However, the Public Resources Code and the CEQA Guidelines require the EIR to "set forth only those alternatives necessary to permit a reasoned choice." The CEQA Guidelines provide a definition for "a range of reasonable alternatives" and thus limit the number and type of alternatives that may need to be evaluated in a given EIR. According to the CEQA Guidelines Section 15126.6[f]:

> The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determined could feasibly attain most of the basic objectives of the project.

First and foremost, alternatives in an EIR must be feasible. In the context of CEQA Public Resources Code Section 21061.1, "feasible" is defined as:

> ...capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors.

Finally, an EIR is not required to analyze alternatives when the effects of the alternative "[…] cannot be reasonably ascertained and whose implementation is remote and speculative."

Alternatives Considered But Dismissed

Off-Site Alternative

One of the requirements of CEQA is the assessment of the comparable environmental impacts of alternative locations for the "project." Only locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR. Although Off-Site locations may exist that would be suitable for the proposed project, these Off-Site locations are not owned or controlled by the applicants. In addition, impacts related to traffic and associated air and noise would remain on any site, although their extent cannot be determined. The Off-Site Alternative is thus dismissed from further analysis.

Alternatives Considered in this EIR

For this EIR, the alternatives considered include the following:

- No Project/No Development Alternative;
- Minimum Density Clustered Development Alternative;
- All Residential Alternative;

- On-Site School Alternative; and
- Apartment and Commercial Alternative.

The evaluation of the above project alternatives discusses the potential to reduce the significant impacts of the proposed project. As shown in Table 5-22 at the end of this chapter, the proposed project would result in less-than-significant impacts with the incorporation of mitigation measures for Land Use and Agricultural Resources; Traffic and Circulation; Hazards; Biological Resources; Geology and Soils; Hydrology, Water Quality, and Water Supply; and Public Services and Utilities. Historical and Cultural Resources impacts, however, would result in a significant and unavoidable impact. Although project-level Noise impacts would be reduced to a less-than-significant level with implementation of mitigation measures, the cumulative noise impact would remain significant and unavoidable. In addition, Air Quality impacts associated with operational project emissions, cumulative contribution to regional emissions, and cumulative contribution to greenhouse gas emissions would be significant and unavoidable.

The abovementioned alternatives were analyzed in detail as part of the traffic analysis. Table 5-1 presents a description of the land use components and the estimated trip generation for each of the alternatives.

Table 5-1
Trip Generation for Project Alternatives

Number of Vehicle Trips							
		AM Peak Hour (8:00-9:00 AM)			PM Peak Hour (5:00-6:00 PM)		
Alternative	**Daily Trips**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Proposed Project (578 homes + 278,046 sq. ft. of commercial)	16,085	378	527	905	848	736	1,584
Minimum Density Clustered Development Alternative (564 homes + 50,000 sq. ft. of commercial)	5,752	123	319	442	382	256	638
All Residential Alternative (585 homes + 278 apartments)	6,114	134	429	563	436	251	687
On-Site School Alternative (522 homes + 278,046 sq. ft. commercial + 580 student elementary school)	16,249	461	573	1,034	849	749	1,598
Apartment and Commercial Alternative (578 homes + 280 apartments + 122,967 sq. ft. of commercial)	12,536	281	536	817	745	564	1,309

It should be noted the project applicant is vested with the right to develop the project site consistent with the densities included in the existing General Plan, Memoranda of Understanding, and Development Agreement.

No Project/No Development Alternative

Section 15126.6(e)(1) of the State CEQA Guidelines requires that a "no project alternative" be evaluated in comparison to the proposed project. Because the proposed project is not a revision of an existing land use or regulatory plan or policy, the No Project Alternative in this case is an alternative under which the project would not be developed. This non-development alternative is characterized primarily by the benefits of continued open space in the project area. While this alternative would not meet project objectives, CEQA requires that the no project/no development alternative be addressed.

Land Use and Agricultural Resources

Under the No Project/No Development Alternative, the project site would remain an undeveloped area of the City of Oakley; therefore, impacts related to consumption of use of raw land would be eliminated. Any compatibility issues between the existing on-site use (dry grazing) and the surrounding existing/future uses (residential) would remain. However, the land use designations for the project site would remain Single Family Medium, Single Family High, Multi-Family High, and Commercial. These land use designations, which are included in the City of Oakley General Plan 2020 Land Use Diagram (Figure 2-2 of the General Plan) are inconsistent with current land uses, which include open space and light agriculture. In addition, the zoning designation of Heavy Agriculture would remain inconsistent with the General Plan designation. Therefore, the No Project/No Development Alternative would have more impacts related to consistency with the current General Plan than the proposed project.

The project area is currently open land being utilized for agricultural purposes. Under the No Project/No Development Alternative, the project site would remain an undeveloped area of the City of Oakley, and the impacts related to the loss of existing agricultural resources would be eliminated. Under this alternative, the land use impacts would be greater than under the proposed project, but impacts to agricultural resources would be fewer. Therefore, overall impacts to Land Use and Agricultural Resources would be fewer, as compared to the proposed project.

Traffic and Circulation

The No Project/No Development Alternative would not cause a traffic increase in the surrounding areas because homes would not be constructed under this alternative. Therefore, unlike the proposed project, the No Project/No Development Alternative would not have impacts to traffic and thus would have fewer impacts than the proposed project. However, it is important to note that all of the intersections impacted by the proposed project already have planned improvements (i.e., traffic signals). These improvements would mitigate the poor operations that are already forecast to occur with or without the proposed project. As a result, there are not any planned roadway improvements or mitigations that would be eliminated under the No Project/No Development Alternative.

Air Quality

The proposed project would create air quality impacts from both the construction of homes and commercial and the additional vehicles from residents of the project. Under the No Project/No Development Alternative, homes and commercial associated with buildout of the Emerson Property project would not be constructed; therefore, construction-related air quality impacts would not occur. In addition, the number of vehicles would not increase. While the existing air quality impacts associated with agricultural operations would remain, this alternative would have fewer impacts than the proposed project.

Noise

The proposed project would cause an increase in noise levels due to construction of homes and commercial and intersection traffic. The noise impacts would not exist under the No Project/No Development Alternative. Therefore, this alternative would maintain ambient noise levels at their present level and result in fewer impacts when compared to the proposed project.

Hazards

Under the No Project/No Development Alternative, the use of the project site would not change. The project area has been used for grazing and light agricultural use for decades; however, the related pesticide levels were determined to be less-than-significant. The abandoned test well on-site does not meet the current Division of Oil, Gas and Geothermal Resources (DOGGR) abandonment standards, and would remain as such. In addition, the on-site structures that would remain on-site potentially contain asbestos containing materials and lead-based paint. However, few sensitive receptors exist in the project area that would be exposed to existing or potential hazardous materials, such as existing natural gas test wells and pipelines. Therefore, compared to the proposed project, the No Project/No Development Alternative would have fewer impacts relating to on-site hazards than the proposed project.

Biological Resources

The No Project/No Development Alternative would not result in development of the project site and would thus not disturb the existing biological resources other than existing agricultural operations. The No Project/No Development Alternative would, therefore, have fewer impacts than the proposed project.

Geology and Soils

The existing geological and soil conditions under the No Project/No Development Alternative would not change. Because this alternative would not result in any construction on the site, impacts related to geology would not occur. Therefore, the alternative would result in fewer impacts than the proposed project.

Historical and Cultural Resources

The No Project/No Development Alternative would cause fewer impacts to cultural resources than the proposed project because the cultural resources would not be disturbed by construction activities. In addition, the No Project/No Development Alternative would not necessitate the relocation of the historic Iron House School. Therefore, although cultural resources could be disturbed by the grazing activities, impacts to historical and cultural resources would be reduced compared to the proposed project.

Hydrology, Water Supply and Water Quality

The No Project/No Development Alternative would not result in construction that could change the existing drainage pattern for the project area. The No Project/No Development Alternative would not generate urban runoff from impervious surfaces such as roadways and rooftops that would affect water quality in the area; however, the proposed project would include the construction of additional infrastructure, such as the on-site detention basin, to control runoff from the proposed project site. In addition, this alternative would not include the addition of any new construction and would not result impacts in regard to increased demand on existing water supplies. Therefore, the No Project/No Development Alternative would result in fewer impacts on hydrology and water quality than the proposed project.

Public Services and Utilities

The No Project/No Development Alternative would not result in the construction of new homes that would require additional public services and utilities in the project area. It should be noted, however, that the elimination of the proposed project would likely result in a reduction in the likelihood that the trails along the CCWD/USBR canal and the park facilities north of the canal would be constructed. Therefore, overall this alternative would not impact existing public services and utilities, as compared to the proposed project; however, future park amenities could be reduced.

Minimum Density Clustered Development Alternative

The Minimum Density Clustered Development Alternative would reduce the total number of units on the proposed project site to 564 total units, the lowest density allowable by the General Plan designation for the proposed project site. The commercial land uses would be reduced to 5.7 acres, in conformance with the existing General Plan designation. In addition, the park uses would remain the same under this alternative. However, the residences would be clustered into denser groupings, creating additional open space and greenbelt areas.

Land Use and Agricultural Resources

The Minimum Density Clustered Development Alternative would include the development of approximately 564 units and 5.7 acres of commercial space on land that is currently zoned for Commercial, Single Family Medium Density, Single Family High Density, and Multi-Family High Density uses. The Minimum Density Clustered Development Alternative would create

more open space on the proposed project site by clustering the development into higher density areas. Therefore, the land uses would be consistent with the existing General Plan designations.

The Minimum Density Clustered Development Alternative would result in fewer compatibility issues with surrounding land uses because of the additional buffer that would be possible. Thus, as with the proposed project, the Minimum Density Clustered Development Alternative would have a less-than-significant impact with regard to land use compatibility. The Minimum Density Clustered Development Alternative would not reduce the loss of agricultural land. However, this alternative would not require a General Plan Amendment to redesignate a portion of the southeast corner of the site for commercial uses. Therefore, the Minimum Density Clustered Development Alternative would be considered to have reduced impacts as compared to those associated with the proposed project.

Traffic and Circulation

The Minimum Density Clustered Development Alternative would include the development of fewer residences than the proposed project. In addition, the commercial portion of the proposed project would be reduced from 23.74 acres to 5.7 acres – a reduction of 76 percent. Assuming that the commercial area is developed at a similar floor to area ratio as the proposed project, the Minimum Density Clustered Development Alternative would result in approximately 10,333 fewer trips than the proposed project (See Table 5-1). Thus, the Minimum Density Clustered Development Alternative would result in the generation of fewer total daily vehicle trips and would result in fewer impacts to the project site and surrounding area, as compared to the proposed project. In addition, the smaller commercial area would provide fewer services for project residents, resulting in more and longer trips to off-site commercial areas. However, although the Minimum Density Clustered Development Alternative would result in fewer trips and a reduction of delay at the Laurel Road and Empire Avenue intersection during the cumulative scenario, the LOS at study intersections would remain equal to the proposed project (See Table 5-2). Therefore, overall, the same impacts would occur but at a reduced magnitude.

Air Quality

Construction impacts of this alternative would be substantially less than for the proposed project, but would still require similar construction mitigation measures to reduce all impacts to a less-than-significant level. The Minimum Density Clustered Development Alternative would generate less truck trips, but may still include a gasoline station; thus the alternative would have equal TAC emissions associated with the gasoline station, but lower operational TAC impacts given the reduced truck trips. The proposed project resulted in less-than-significant carbon monoxide impacts, and the Minimum Density Clustered Development results in 10,333 fewer trips than the proposed project. Therefore, impacts related to carbon monoxide would be substantially less than for the proposed project and less-than-significant.

Table 5-2
Minimum Density Clustered Development Alternative
(564 homes + 50,000 sq. ft. of commercial)
Comparison to Project for Impacted Intersections

	Intersection	Control	Peak Hour	Proposed Project		Minimum Density Alternative	
				Measure (sec/veh)	LOS	Measure (sec/veh)	LOS
Baseline Plus Project Conditions							
6	MAIN STREET (SR-4) AT ROSE AVENUE	Stop Sign	AM	>50 sec	F	>50 sec	F
			PM	>50 sec	F	>50 sec	F
23	LAUREL DRIVE AT ROSE AVENUE	Stop Sign	AM	>50 sec	F	>50 sec	F
			PM	>50 sec	F	>50 sec	F
27	MAIN STREET (SR-4) AT BROWNSTONE ROAD	Stop Sign	AM	>50 sec	F	>50 sec	F
			PM	>50 sec	F	>50 sec	F
28	MAIN STREET (SR-4) AT DELTA ROAD	Stop Sign	AM	>50 sec	F	>50 sec	F
			PM	>50 sec	F	>50 sec	F
Cumulative Plus Project Conditions							
21	LAUREL ROAD AT EMPIRE AVENUE	Traffic Signal	AM	23.5 sec	C	23.3 sec	C
			PM	76.1 sec	E	68.1 sec	E

In addition, the smaller commercial area would reduce the benefit of on-site services for project residents, possibly causing higher per capita emissions from more and longer trips. However, as shown in Table 5-3, below, regional emissions would be less than for the proposed project, but would still exceed existing (PM_{10}) and proposed (ROG, PM_{10}, and $PM_{2.5}$) BAAQMD thresholds of significance and would, therefore, have a significant and cumulative impact on regional air quality. It should be noted that even with implementation of applicable mitigation measures, the Minimum Density Clustered Development Alternative would exceed the existing (PM_{10}) and proposed (ROG and PM_{10} only - $PM_{2.5}$ would be reduced to below thresholds with mitigation) BAAQMD thresholds of significance; thus, the impact would remain significant and unavoidable. In addition, as shown in Table 5-4, greenhouse gas (GHG) emissions would be substantially lower than the proposed project and below the BAAQMD proposed threshold of significance. As a result, the Minimum Density Clustered Development Alternative would not result in a cumulatively considerable contribution to GHG Emissions. Therefore, the Minimum Density Clustered Development Alternative would have fewer impacts compared to the proposed project.

Table 5-3
Minimum Density Clustered Development Alternative Regional Emissions Comparison

	ROG		NO_X		PM_{10}		$PM_{2.5}$	
	Daily Average (Lbs/day)	**Annual (Tons)**	**Daily Average (Lbs/day)**	**Annual (Tons)**	**Daily Average (Lbs/day)**	**Annual (Tons)**	**Daily Average (Lbs/day)**	**Annual (Tons)**
Project Operational Emissions	132.87	27.98	124.30	26.09	260.30	40.80	86.39	9.31
Minimum Density Clustered Development Alternative	67.70	15.61	46.51	9.91	126.16	16.76	58.28	4.61
Current BAAQMD Quantitative Threshold of Significance	**80.0**	**15.0**	**80.0**	**15.0**	**80.0**	**15.0**	**-**	**-**
Proposed BAAQMD Quantitative Threshold of Significance	54.0	10.0	54.0	10.0	82.0	15.0	54.0	10.0

Source: Don Ballanti, March 2010.

Table 5-4
Minimum Density Clustered Development Alternative Annual Greenhouse Gas Emissions (Unmitigated) CO_2 Equivalent

Alternative	GHG Emissions (metric tons) [1]
Proposed Project	24,410.42
Minimum Density Clustered Development Alternative	9,695.93
BAAQMD Significance Threshold (4.6 MT/year per service population)	11,348.00

[1] See Appendix E1for details on GHG emissions calculations.

Source: Don Ballanti, March 2010.

Noise

Buildout of the Minimum Density Clustered Development Alternative would result in fewer total residences and a reduced commercial area as compared to the proposed project. Although the Minimum Density Clustered Development Alternative could result in an increase in the housing density associated with the project at some locations, noise associated with traffic and land uses would be expected to slightly decrease due to the decrease in total vehicle trips associated with the project (See Appendix F2 for technical data regarding noise analysis comparison of alternatives). The decrease in overall traffic noise levels expected along the primary roadways

serving the site (i.e., Cypress Road and Sellers Avenue) would not be measurable or perceptible as compared to traffic noise levels anticipated with the proposed project. The relative noise level decrease is calculated to be less than 1 dBA L_{dn} on the primary roadways serving the site and 0 dBA L_{dn} on other area roadways.

Construction noise effects would be less, as well, given the reduced project scope. In addition, impacts to future residential land uses as a result of their proximity to the commercial portion of the proposed project would be lessened through design changes that would allow wider buffer zones between the commercial and residential portions of the proposed project. Therefore, the Minimum Density Clustered Development Alternative would be expected to have fewer impacts than the proposed project with regard to noise. It should be noted that the character of the noise environment would still be anticipated to permanently change from rural to a noise environment represented by a more suburban setting; therefore a significant and unavoidable cumulative impact would still be expected to result.

Hazards

The Minimum Density Clustered Development Alternative would result in the addition of fewer total residents, residences, and commercial area to the Emerson property as compared to the proposed project. Construction related impacts would still occur (e.g., demolition of structures that potentially contain lead-based paint and/or asbestos containing material). However, the Minimum Density Clustered Development Alternative would introduce fewer sensitive receptors in close proximity to existing or potential hazardous materials, such as existing natural gas test wells, pipelines, and potential soil contamination. Therefore, this alternative would have slightly fewer impacts than the proposed project with regard to hazards.

Biological Resources

The Minimum Density Clustered Development Alternative would result in an increase in open space compared to the proposed project. When compared to the proposed project, the addition of open space associated with this alternative would result in fewer detrimental impacts to the Emerson property in regard to biological resources, because sensitive resources, such as special-status species and habitats, could be avoided through clustered site design. However, with any development on the project site, a potential would exist for potential impacts to the special status species identified in the Biological Resources chapter of the EIR. Impacts to protected and heritage trees would be reduced with the added open space. Therefore, the implementation of the Minimum Density Clustered Development Alternative would result in fewer total impacts to biological resources.

Geology and Soils

The geological impacts generated from the development of the project site under the Minimum Density Clustered Development Alternative would be similar to those generated by the proposed project. Although this alternative would result in a decrease in total developed land that would be affected by geological impacts, the residences would still be subject to liquefaction and soil

erosion; therefore, development of this alternative would have similar impacts, as compared to the proposed project.

Historical and Cultural Resources

Although the total acreage developed would be reduced under the Minimum Density Clustered Development Alternative, development would still occur on the project site. However, the clustered development would enable the proposed project to be modified to avoid the relocation of the historic Iron House School, which currently exists on the project site. The avoidance of the Iron House School would reduce the significant and unavoidable impact identified for the proposed project to a less-than-significant level. In addition, because less land would be graded under this alternative, the potential for uncovering currently unknown and undiscovered cultural resources on the project site would be reduced. Therefore, the Minimum Density Clustered Development Alternative would have fewer total impacts regarding historical and cultural resources than the proposed project.

Hydrology, Water Supply and Water Quality

The Minimum Density Clustered Development Alternative would develop fewer residential units and reduced commercial area on the project site compared to the proposed project, and would result in more open land and fewer impervious surfaces such as roadways and hardscaping. The decrease in impervious surfaces associated with residential and commercial development on the site would reduce the potential impacts to the stormwater drainage system and, ultimately, water quality. Additionally, as shown in Table 5-5, this alternative would include the development of fewer residences and commercial square footage than the proposed project, which would result in less demand with regard to water supply. Therefore, impacts would be fewer than the proposed project.

Table 5-5
Minimum Density Clustered Development Alternative Water Demand

Land Use Type	Units/Acres	Water Demand Rate	Estimated Water Demand	
Single Family Homes	564 DU	525 gpd / DU	296,100 gpd	331.9 AFY
Commercial	5.7 acres	2,250 gpd / acre	12,825 gpd	14.4 AFY
Parks	10.13 acres	1,450 gpd / acre	14,689 gpd	16.5 AFY
Total Estimated Water Demand				**362.8 AFY**
Proposed Project Total Estimated Water Demand				**416.2 AFY**

Note: Calculations based on Senate Bill 610 Water Supply Assessment, Diablo Water District, June 22, 2007.

Public Services and Utilities

The implementation of the Minimum Density Clustered Development Alternative would result in fewer total residents and commercial square footage than associated with the proposed project. Therefore, this alternative would not create as large of a demand on public services and utilities

as the proposed project (i.e., wastewater treatment [See Table 5-6], solid waste disposal, police services, fire protection services, schools, and parks).

Table 5-6
Estimated Wastewater Generation for the Minimum Density Clustered Development Alternative

Residential	564 Units x 225 Gallons Per Dwelling Unit	126,900 Gallons Per Day
Commercial	5.7 acres x 2,250 Gallons Per Acre	12,825 Gallons per Day
Groundwater Infiltration (High Groundwater)	120 Acres x 300 Gallons Per Day Per Acre	36,000 Gallons Per Day
Total		**175,725 Gallons Per Day (0.18 mgd)**
Proposed Project Total Wastewater Generation		**250,965 Gallons Per Day (0.25 mgd)**

Notes:
1. Figures are based on 225 gallons per residential dwelling unit and 300 gallons per acre infiltration estimates.
2. Average commercial demand of 2,250 gallons per acre is based on Ironhouse Sanitary District standards.

However, the Minimum Density Clustered Development Alternative would result in an increase in open space, which would require increased maintenance. Therefore, overall impacts associated with public services and utilities would be reduced as compared to those associated with the proposed project.

All Residential Alternative

The All Residential Alternative would eliminate the commercial portion of the proposed project, and assumes that the commercial center included in the proposed project would be relocated to the Burroughs property, east of the proposed project site. Under this alternative, the proposed project would include a total of 863 residential units (585 single-family and 278 multi-family), the maximum allowable under the Development Agreement for the proposed project.

Land Use and Agricultural Resources

The All Residential Alternative would include development of the residential portion of the proposed project to the maximum density allowed under the Development Agreement and would, therefore, be consistent with the planned land uses for the proposed project site. The All Residential Alternative would not reduce the loss of agricultural land. However, compatibility issues related to this alternative would be fewer than those related to the proposed project, because this alternative would not include commercial land uses. Therefore, the All Residential Alternative would be considered to have fewer total impacts, as compared to the proposed project.

Traffic and Circulation

Although the All Residential Alternative would eliminate the commercial areas associated with the proposed project, the All Residential Alternative would include the development of more residences than the proposed project. The addition of these residences would be expected to result in a total of approximately 6,114 daily vehicle trips, as opposed to the 16,085 daily trips associated with the proposed project (See Table 5-1). However, although the All Residential Alternative would result in fewer trips and a reduction of delay at the Laurel Road and Empire Avenue intersection during the cumulative scenario, the LOS at study intersections would remain equal to the proposed project (See Table 5-7). Therefore, overall the same impacts would occur, but at a reduced magnitude. It should be noted that all of the intersections impacted by the proposed project already have planned improvements (traffic signals). These improvements would mitigate the poor operations that are already forecast to occur with or without the proposed project.

Table 5-7
All Residential Alternative
(585 homes + 278 apartments)
Comparison to Project for Impacted Intersections

	Intersection	Control	Peak Hour	Proposed Project		All Residential Alternative	
				Measure (sec/veh)	LOS	Measure (sec/veh)	LOS
Baseline Plus Project Conditions							
6	MAIN STREET (SR-4) AT ROSE AVENUE	Stop Sign	AM	>50 sec	F	>50 sec	F
			PM	>50 sec	F	>50 sec	F
23	LAUREL DRIVE AT ROSE AVENUE	Stop Sign	AM	>50 sec	F	>50 sec	F
			PM	>50 sec	F	>50 sec	F
27	MAIN STREET (SR-4) AT BROWNSTONE ROAD	Stop Sign	AM	>50 sec	F	>50 sec	F
			PM	>50 sec	F	>50 sec	F
28	MAIN STREET (SR-4) AT DELTA ROAD	Stop Sign	AM	>50 sec	F	>50 sec	F
			PM	>50 sec	F	>50 sec	F
Cumulative Plus Project Conditions							
21	LAUREL ROAD AT EMPIRE AVENUE	Traffic Signal	AM	23.5 sec	C	23.4 sec	C
			PM	76.1 sec	E	67.9 sec	E

Air Quality

Construction impacts of this alternative would be similar to those for the proposed project, and would require similar construction mitigation measures to reduce all impacts to a less-than-significant level. Because the All Residential Alternative would not include commercial operations, including a gas station, operational TAC impacts would not result. The proposed project would result in less-than-significant carbon monoxide impacts, and the All Residential Alternative results in 9,971 fewer trips than the proposed project. Therefore, impacts related to carbon monoxide would be substantially less than for the proposed project and less-than-significant.

As shown in Table 5-8, regional emissions would be less than for the proposed project, but would still exceed existing (ROG and PM_{10}) and proposed (ROG, NO_X, PM_{10}, and $PM_{2.5}$) BAAQMD thresholds of significance and would therefore have a significant and cumulative impact on regional air quality.

It should be noted that even with implementation of applicable mitigation measures, the All Residential Alternative would exceed the existing (ROG and PM_{10}) and proposed (ROG, PM_{10}, and $PM_{2.5}$ only – mitigation measures would reduce NO_X emissions to below the proposed threshold) BAAQMD thresholds of significance; thus, the impact would remain significant and unavoidable. In addition, as shown in Table 5-9, GHG emissions would be substantially lower, but would still exceed the BAAQMD threshold of significance. However, with implementation of mitigation measures the GHG emissions might be reduced to below the BAAQMD thresholds of significance; thus, might remove the cumulatively considerable contribution identified for the proposed project. Therefore, the All Residential Alternative would result in fewer impacts as compared to the proposed project.

Table 5-8
All Residential Alternative Regional Emissions Comparison

	ROG		**NO_X**		**PM_{10}**		**$PM_{2.5}$**	
	Daily Average (Lbs/day)	**Annual (Tons)**	**Daily Average (Lbs/day)**	**Annual (Tons)**	**Daily Average (Lbs/day)**	**Annual (Tons)**	**Daily Average (Lbs/day)**	**Annual (Tons)**
Project Operational Emissions	132.87	27.98	124.30	26.09	260.30	40.80	86.39	9.31
All Residential Alternative	100.93	23.01	56.19	11.93	161.79	19.51	85.56	5.98
Current BAAQMD Threshold of Significance	**80.0**	**15.0**	**80.0**	**15.0**	**80.0**	**15.0**	**-**	**-**
Proposed BAAQMD Threshold of Significance	54.0	10.0	54.0	10.0	82.0	15.0	54.0	10.0

Source: Don Ballanti, March 2010.

Noise

Buildout of the All Residential Alternative would result in more total residences and fewer total vehicle trips than the proposed project. Similar to the Minimum Density Clustered Development Alternative, traffic noise levels on area roadways would be expected to slightly decrease. The relative noise level decrease is calculated to be less than 1 dBA L_{dn} on Cypress Road and Sellers Avenue and 0 dBA L_{dn} on other area roadways (See Appendix F2 for technical data regarding

noise analysis comparison of alternatives). This relative change would not be measurable or perceptible as compared to traffic noise levels anticipated with the proposed project.

Table 5-9
All Residential Alternative Annual Greenhouse Gas Emissions (Unmitigated) CO_2 Equivalent

Alternative	GHG Emissions (metric tons)[1]
Proposed Project	24,410.42
All Residential Alternative	12,049.20
BAAQMD Significance Threshold (4.6 MT/year per service population)	11,348.00

[1] See Appendix E1for details on GHG emissions calculations.

Source: Don Ballanti, March 2010.

In addition, the All Residential Alternative would result in a decrease in noise associated with on-site commercial uses, such as truck deliveries, loading dock operations, and mechanical equipment (e.g., HVAC units). The All Residential Alternative would locate multi-family residential land uses adjacent to Cypress Road and Sellers Avenue and similar mitigations would be required to provide compatible exterior and interior noise levels. Therefore, the All Residential Alternative would be expected to have fewer impacts than the proposed project with regard to increased noise. It should be noted that the character of the noise environment would still be anticipated to permanently change from rural to a noise environment represented by a more suburban setting; therefore a significant and unavoidable cumulative impact would still be expected to result.

Hazards

The All Residential Alternative would result in the addition of more total residents and residences to the Emerson property than the proposed project. Construction related impacts would still occur (e.g., demolition of structures that potentially contain lead-based paint and/or asbestos containing material) with development of this alternative. However, the All Residential Alternative would introduce more sensitive receptors in close proximity to existing or potential hazardous materials, such as on-site natural gas test well and potential soil contamination. A gasoline station would not be included as part of this alternative and would thus not present any of the potential hazards associated with the gasoline station. It should be noted that the proposed project concluded less-than-significant impacts associated with gasoline station hazards. This alternative would have greater potential impacts than the proposed project in regard to hazards because more residents would potentially be exposed to on-site hazards. However, the impact conclusions for the project in Chapter 4.6 would apply equally to this alternative (less-than-significant).

Biological Resources

The All Residential Alternative would not include the development of commercial uses on the proposed project site, and would instead increase the total number of housing units proposed for the site. Development of the site would still disturb the same area as the proposed project and

potentially impact special-status species and/or habitats on the project site; therefore, the All Residential Alternative would create impacts similar to those associated with the proposed project.

Geology and Soils

The geological impacts generated from the development of the project site under the All Residential Alternative would be similar to those generated by the proposed project. Although the All Residential Alternative would result in an elimination of commercial uses on the project site, the alternative would still include the development of the southeast portion of the project site. The residences associated with the alternative would still be subject to liquefaction and soil erosion; therefore, development of the alternative would have similar impacts, as compared to the proposed project.

Historical and Cultural Resources

The total acreage developed under the All Residential Alternative would be the same as the proposed project and development would still occur on the project site. Therefore, because this alternative would involve grading and earthmoving activities similar to the proposed project and on a similar scale as the proposed project, the total impacts related to this alternative would be the same as those anticipated for the proposed project. It should be noted that because the historic Iron House School building could still be subject to damage or loss under this alternative, a significant and unavoidable impact would remain.

Hydrology, Water Supply, and Water Quality

The All Residential Alternative would eliminate the commercial portion of the proposed project site and increase the total number of residences associated with the project. This alternative would involve the development of the same total area as the proposed project, and impacts related to impervious surfaces and impacts associated with water quality would remain unchanged. Additionally, because residential land uses have a higher demand for water than commercial areas, demand related to water supply would be expected to increase as shown in Table 5-10, under this alternative. According to the Water Supply Assessment (WSA) prepared for the proposed project (Appendix Q of the Draft EIR), the projected water supply surplus for a multiple-dry year event in 2040 would be 477 million gallons (or 1,464 acre-feet). Therefore, although this alternative would result in an increased water supply demand compared to the proposed project, adequate supply exists to serve the alternative (in addition to buildout of the plan area). According to the WSA that was prepared for the proposed project, development of the project site is already included and accounted for in DWD's Urban Water Management Plan, DWD's 1998 Facilities Plan Update, CCWD's 2000 Urban Water Management Plan, and CCWD's 1996 Future Water Supply Study. Therefore, this alternative's demand of 469.9 AFY would be expected to be met by the available water supply. In addition, the same mitigation measures as required for the proposed project, which would contribute to necessary buildout of infrastructure in accordance with DWD, would be required for this alternative. Therefore, while impacts related to water quality and hydrology on the site would remain unchanged, impacts associated with water supply would be expected to increase. However, the increased demand

would result in a less-than-significant impact with implementation of the same mitigation measures as required of the proposed project. Thus, this alternative would result in greater impacts overall, as compared to the proposed project; however, the impact conclusions for the project apply equally to this alternative (less-than-significant).

Table 5-10
All Residential Alternative Water Demand

Land Use Type	Units/Acres	Water Demand Rate	Estimated Water Demand	
Single Family Homes	585 DU	525 gpd / DU	307,125 gpd	344.3 AFY
Multi Family Homes	278 DU	350 gpd /DU	97,300 gpd	109.1 AFY
Parks	10.13 acres	1,450 gpd / acre	14,689 gpd	16.5 AFY
Total Estimated Water Demand				**469.9 AFY**
Proposed Project Total Estimated Water Demand				**416.2 AFY**

Note: Calculations based on Senate Bill 610 Water Supply Assessment, Diablo Water District, June 22, 2007.

Public Services and Utilities

The implementation of the All Residential Alternative would result in an increased number of residents, as compared to the proposed project. Therefore, an increase in population on the project site and, in turn, an increased need for public services and utilities associated with residential units would be expected under this alternative (i.e., solid waste disposal, police services, fire protection services, schools, and parks). Although the need for services would increase, the same mitigation measures required for the proposed project and collection of development fees would mitigate impacts to the above areas (similar to the proposed project). It should be noted that the wastewater generation associated with this alternative would be less than the wastewater generation associated with the proposed project (See Table 5-11). Therefore, although potential impacts from this alternative associated with public services and utilities would initially be somewhat greater, the impacts would be similar with incorporation of the same mitigation measures as the proposed project.

Table 5-11
Estimated Wastewater Generation for the All Residential Alternative

Residential	863 Units x 225 Gallons Per Dwelling Unit	194,175 Gallons Per Day
Groundwater Infiltration (High Groundwater)	120 Acres x 300 Gallons Per Day Per Acre	36,000 Gallons Per Day
Total		**230,175 Gallons Per Day (0.23 mgd)**
Proposed Project Total Wastewater Generation		**250,965 Gallons Per Day (0.25 mgd)**

Notes:
1. Figures are based on 225 gallons per residential dwelling unit and 300 gallons per acre infiltration estimates.
2. Average commercial demand of 2,250 gallons per acre is based on Ironhouse Sanitary District standards.

On-Site School Alternative

The On-Site School Alternative would include an elementary school with play fields and a tot lot on an approximately 10-acre portion of the proposed project site. Under this alternative, the residential component of the proposed project would be reduced from 578 single-family units to 522 single-family units. In addition, under this alternative, the project would include less acreage for parks/open space. In addition, under this alternative, the 23.74-acre commercial component and the approximately six-acre stormwater pond would remain (See Figure 5-1).

Land Use and Agricultural Resources

The On-Site School Alternative would include the development of an elementary school on approximately 10 acres of the project site, which would result in the development of fewer residential units. However, The On-Site School Alternative would not reduce the loss of agricultural land because the entire project site would still be developed with urban uses. In addition, land use compatibility issues related to this alternative would be similar to those associated with the proposed project because, similar to residential uses, the school would be considered a sensitive receptor to the commercial uses that would be located to the southeast. Therefore, the On-Site School Alternative would result in impacts similar to those associated with the proposed project.

Traffic and Circulation

Although the On-Site School Alternative would include the development of fewer residences than the proposed project, the On-Site School Alternative would include increased vehicle trips associated with the elementary school. The On-Site School Alternative would result in 164 more trips than the proposed project, for a total of 16,249 daily trips (See Table 5-1). The traffic analysis provided for this alternative indicates that a large portion of the new elementary school's students would come from the planned homes in the Cypress corridor; therefore, many of the school trips in question would already be using Cypress Road and would not be new trips to the area. In addition, the analysis states that a school would not significantly affect the PM peak hour commute, which is the critical hour in this area.

During the PM peak hour, the On-Site School Alternative would result in 1,598 trips, as compared to the 1,584 trips that would be associated with the proposed project. The traffic analysis concluded that a new elementary school in the project area would not result in a substantial increase in vehicle trips generated during the critical PM peak hour; therefore, although the alternative would result in a reduction of delay at the Laurel Road and Empire Avenue intersection during the cumulative scenario PM peak hour, traffic impacts under this alternative would be expected to be similar to those associated with the proposed project (See Table 5-12).

Figure 5-1
On-Site School Alternative

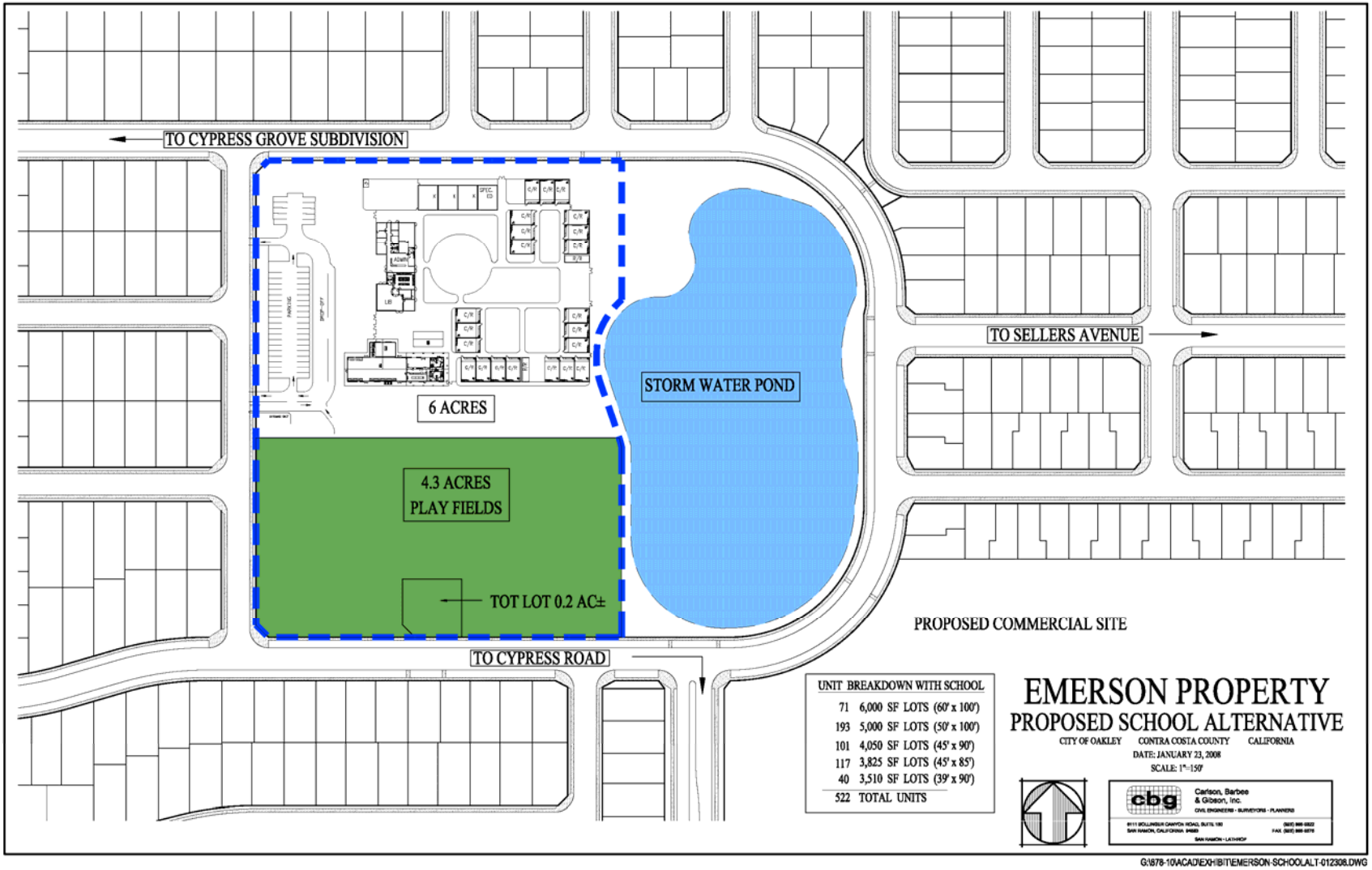


Table 5-12
On-Site School Alternative
(522 homes + 278,000 sq. ft. of commercial + 580 student school)
Comparison to Project for Impacted Intersections

	Intersection	Control	Peak Hour	Proposed Project		On-Site School Alternative	
				Measure (sec/veh)	LOS	Measure (sec/veh)	LOS
Baseline Plus Project Conditions							
6	MAIN STREET (SR-4) AT ROSE AVENUE	Stop Sign	AM	>50 sec	F	>50 sec	F
			PM	>50 sec	F	>50 sec	F
23	LAUREL DRIVE AT ROSE AVENUE	Stop Sign	AM	>50 sec	F	>50 sec	F
			PM	>50 sec	F	>50 sec	F
27	MAIN STREET (SR-4) AT BROWNSTONE ROAD	Stop Sign	AM	>50 sec	F	>50 sec	F
			PM	>50 sec	F	>50 sec	F
28	MAIN STREET (SR-4) AT DELTA ROAD	Stop Sign	AM	>50 sec	F	>50 sec	F
			PM	>50 sec	F	>50 sec	F
Cumulative Plus Project Conditions							
21	LAUREL ROAD AT EMPIRE AVENUE	Traffic Signal	AM	23.5 sec	C	23.6 sec	C
			PM	76.1 sec	E	73.0 sec	E

Air Quality

Construction impacts of this alternative would be similar to those for the proposed project, and would still require similar construction mitigation measures to reduce all impacts to a less-than-significant level. Because this alternative would still include the same commercial development as the proposed project, including the gas station, similar operational TAC impacts to those of the proposed project would result. The On-Site School Alternative would result in 164 more trips than the proposed project; thus, impacts related to carbon monoxide would be slightly greater than for the proposed project. However, given the results of carbon monoxide analysis prepared for the proposed project, even a doubling or tripling of project traffic would not result in a significant impact; thus the slight trip increase associated with the On-Site School Alternative would still remain less-than-significant.

As shown in Table 5-13, regional emissions would be generally equal to the proposed project, and would therefore have a significant and cumulative impact on regional air quality. It should be noted that even with implementation of applicable mitigation measures, the On-Site School Alternative would exceed the existing and proposed BAAQMD thresholds of significance; thus, the impact would remain significant and unavoidable.

As shown in Table 5-14, GHG emissions would be similar to the proposed project and would be considered cumulatively considerable. Therefore, the On-Site School Alternative would result in similar impacts as compared to the proposed project.

Table 5-13
On-Site School Alternative Regional Emissions Comparison

	ROG		NO_X		PM_{10}		$PM_{2.5}$	
	Daily Average (Lbs/day)	**Annual (Tons)**	**Daily Average (Lbs/day)**	**Annual (Tons)**	**Daily Average (Lbs/day)**	**Annual (Tons)**	**Daily Average (Lbs/day)**	**Annual (Tons)**
Project Operational Emissions	132.87	27.98	124.30	26.09	260.30	40.80	86.39	9.31
On-Site School Alternative	135.08	27.82	121.21	25.58	259.67	41.34	82.72	9.26
Current BAAQMD Threshold of Significance	**80.0**	**15.0**	**80.0**	**15.0**	**80.0**	**15.0**	**-**	**-**
Proposed BAAQMD Threshold of Significance	54.0	10.0	54.0	10.0	82.0	15.0	54.0	10.0

Source: Don Ballanti, March 2010.

Table 5-14
On-Site School Alternative Annual Greenhouse Gas Emissions (Unmitigated) CO_2 Equivalent

Alternative	GHG Emissions (metric tons)[1]
Proposed Project	24,410.42
On-Site School Alternative	23,553.93
BAAQMD Significance Threshold (4.6 MT/year per service population)	11,348.00

[1] See Appendix E1for details on GHG emissions calculations.

Source: Don Ballanti, March 2010.

The following discussion is for clarification purposes regarding the emissions comparison in Table 5-13. More specifically, the clarification is intended to describe why daily average ROG emissions are higher for the On-site School Alternative versus the proposed project but annual emissions remain roughly the same. The daily numbers for ROG reported in the table are for summer when vehicles are the dominant source. Because the On-Site School Alternative results in increased traffic, a higher average daily number would result, as the average daily number is greatly influenced by summer emissions, which are dominated by vehicular traffic. The annual numbers are the total for the year averaging both summer and winter. The differences observed in Table 5-13 for $PM_{2.5}$ emissions are explained similarly.

When discussing fugitive dust emissions, PM_{10} and $PM_{2.5}$ are related; however, the important factor in this operational analysis is that unlike PM_{10} emissions, $PM_{2.5}$ is not related to traffic but is generated by residential area sources. The reported numbers for daily average emissions are for winter. $PM_{2.5}$ is almost entirely from non-vehicular residential sources, so the daily emissions in winter go down, because the number of residences is reduced. When the emissions are averaged over the year, annual $PM_{2.5}$ remains roughly the same.

Noise

The On-Site School Alternative would include the development of fewer residences than the proposed project; however, traffic noise levels would still be similar to the proposed project. The relative change in noise levels would be less than 1 dBA L_{dn} (See Appendix F2 for technical data regarding noise analysis comparison of alternatives). This alternative would include increased noise in the vicinity of the elementary school as a result of its operation. The school would be constructed in areas adjacent to proposed residential land uses, and would generate noise when students arrive and depart, as well as when outdoor activity areas are used. Noise would occur in more concentrated periods of time for the school, as compared to a community park, as noise generating activity would occur mainly around arrival, recess, lunch, and leaving school. However, it should be noted that substantial adverse impacts would not occur to residential uses due to noise levels associated with the school because, from a noise perspective elementary schools are compatible with the residential land uses that they serve. The On-Site School Alternative would result in slightly greater noise impacts at residential land uses proposed by the project; however, not to a significant level. It should be noted that the character of the noise environment would still be anticipated to permanently change from rural to a noise environment represented by a more suburban setting; therefore, a significant and unavoidable cumulative impact would still be expected to result.

Hazards

Construction related impacts would still occur (e.g., demolition of structures that potentially contain lead-based paint and/or asbestos containing material) with development of this alternative. The On-Site School Alternative would result in the addition of fewer residents and residences to the Emerson property than the proposed project. However, this alternative would result in the introduction of a school and associated students, which would be considered sensitive receptors, to the project area. These sensitive receptors would potentially be in close proximity to existing or potential hazardous materials, such as on-site natural gas test wells and potential soil contamination. Therefore, this alternative would result in greater impacts in regard to hazards, as compared to the proposed project. However, the impacts would still be able to be reduced to a less-than-significant level with implementation of mitigation measures.

Biological Resources

The On-Site School Alternative would include the development of an elementary school on the project site, and would include a decreased number of residential units on the project site. Development of the project site would still disturb the same area as the proposed project, and

thus potentially impact special-status species and/or habitats on the site; therefore, the On-Site School Alternative would create impacts similar to those associated with the proposed project.

Geology and Soils

The geological impacts generated from the development of the project site under the On-Site School Alternative would be similar to those generated by the proposed project. Although the On-Site School Alternative would result in a decrease in total residential units on the project site, the alternative would still include the development of the entire project site with residential, commercial, and school land uses. The residences, commercial center, and school would still be subject to liquefaction and soil erosion; therefore, development of the alternative would have similar impacts, as compared to the proposed project.

Historical and Cultural Resources

The total acreage developed under the On-Site School Alternative would be the same as the proposed project and development would still occur on the project site. Therefore, because this alternative would involve grading and earthmoving activities similar to the proposed project and on a similar scale as the proposed project, the total impacts related to this alternative would be the same as those anticipated for the proposed project. It should be noted that because the historic Iron House School building could still be subject to damage or loss under this alternative, the significant and unavoidable impact would remain.

Hydrology, Water Supply, and Water Quality

The On-Site School Alternative would include the construction of an elementary school on the project site and would decrease the total number of residential units associated with the project. This alternative would involve the development of the same total area as the proposed project; therefore, impacts related to an increased amount of impervious surfaces, as well as impacts associated with water quality, would remain unchanged. Impacts related to water supply would be expected to decrease slightly, because the number of residences on the project site would decrease under this alternative (See Table 5-15). Therefore, impacts related to hydrology and water quality would be similar to those associated with the proposed project, while a slightly reduced impact to water supply would be expected. Overall, as compared to the proposed project, impacts would be reduced.

Table 5-15
On-Site School Alternative Water Demand

Land Use Type	Units/Acres	Water Demand Rate	Estimated Water Demand	
Single Family Homes	522 DU	525 gpd / DU	274,050 gpd	307.2 AFY
Commercial	23.74 acres	2,250 gpd / acre	53,415 gpd	59.9 AFY
School[1]	6 acres	1,450 gpd / acre	8,700	9.8 AFY
Parks	10.13 acres	1,450 gpd / acre	14,689 gpd	16.5 AFY
Total Estimated Water Demand				**393.4 AFY**
Proposed Project Total Estimated Water Demand				**416.2 AFY**

[1] School demand rate provided by RBF Consulting.

Note: Calculations based on Senate Bill 610 Water Supply Assessment, Diablo Water District, June 22, 2007.

Public Services and Utilities

The implementation of the On-Site School Alternative would result in a decreased number of residents when compared to the proposed project. However, the On-Site School Alternative would include the construction of an elementary school and would introduce students to the project area, potentially creating an increased need for public services and utilities (i.e., solid waste disposal, police services, and fire protection services). Although the need for services would increase, the same mitigation measures required for the proposed project and collection of development fees would mitigate impacts to the above areas (similar to the proposed project). However, under the On-Site School Alternative, impacts related to the provision of adequate school facilities would be fewer because the alternative would provide an elementary school. In addition, as noted in Table 5-16, this alternative would result in similar wastewater demand as the proposed project. Therefore, although potential impacts from this alternative associated with public services and utilities would initially be somewhat greater, the impacts would be similar with incorporation of the same mitigation measures as the proposed project.

Apartment and Commercial Alternative

Under this alternative, the commercial component of the proposed project would be reduced from 23.74 acres to 12.96 acres. The remaining 10.78 acres would include an apartment complex with up to 280 dwelling units, a recreation center, pool, garages, and on-site parking. An additional right-in-right-out restricted access to the Apartment Site from East Cypress Road would be included as part of the Alternative (See Figure 5-2).

This Apartment and Commercial Alternative assumes up to 280 dwelling units instead of 266 dwelling units as seen in Figure 5-2, to be on the conservative side of the analysis. The remainder of the proposed project would not be changed; therefore, under this alternative, the proposed project would include a total of 858 residential units and 122,967 square feet of commercial, including a gas station.

Table 5-16 Estimated Wastewater Generation for the On-Site School Alternative		
Residential	522 Units x 225 Gallons Per Dwelling Unit	117,450 Gallons Per Day
Commercial	23.74 acres x 2,250 Gallons Per Acre	84,915 Gallons per Day
School	580 students x 15 Gallons Per Student	8,744 Gallons per Day
Groundwater Infiltration (High Groundwater)	120 Acres x 300 Gallons Per Day Per Acre	36,000 Gallons Per Day
Total		**247,109 Gallons Per Day (0.25 mgd)**
Proposed Project Total Wastewater Generation		**250,965 Gallons Per Day (0.25 mgd)**

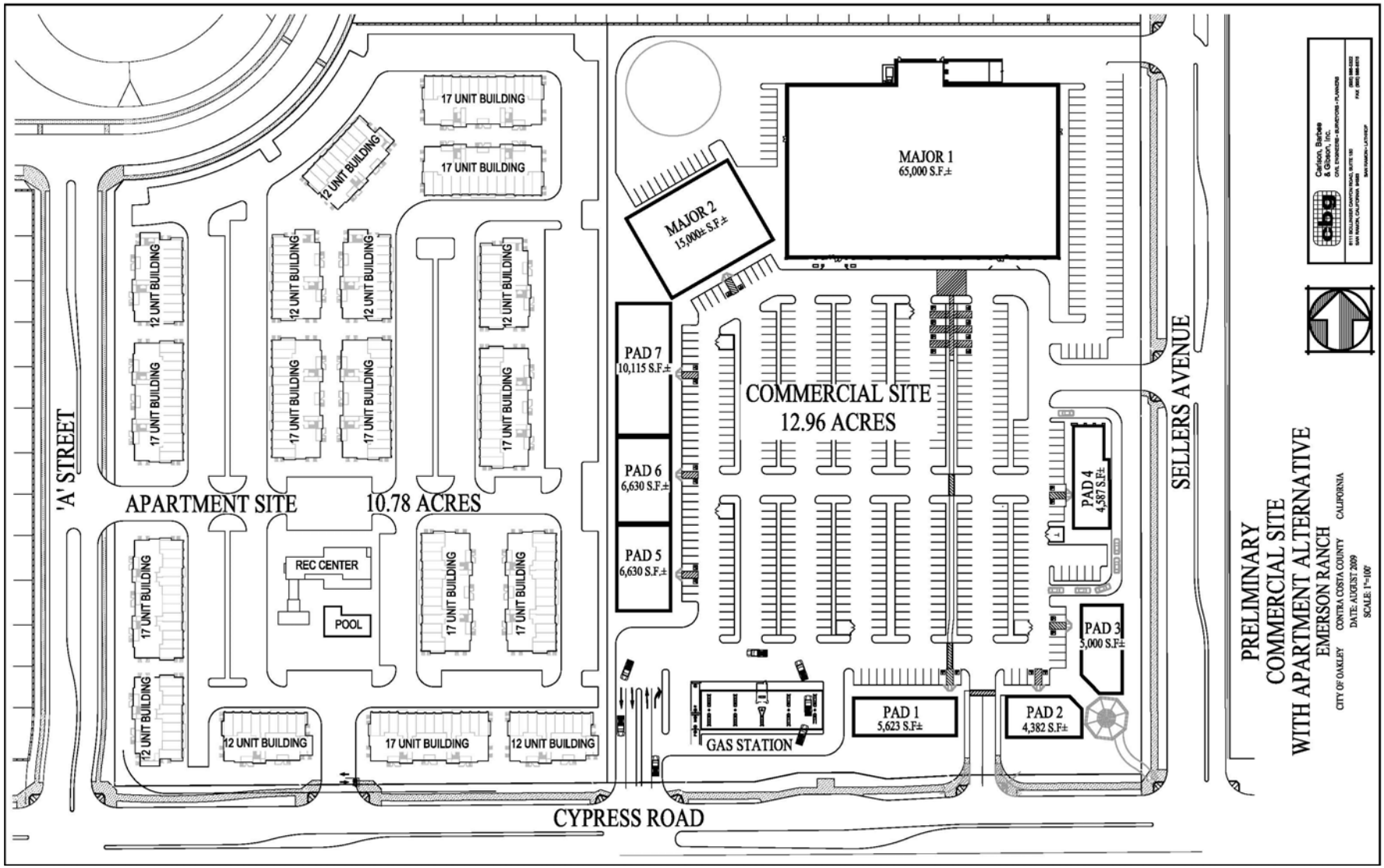
Notes:
1. Figures are based on 225 gallons per residential dwelling unit and 300 gallons per acre infiltration estimates.
2. Average commercial demand of 2,250 gallons per acre is based on Ironhouse Sanitary District standards.

Land Use and Agricultural Resources

The Apartment and Commercial Alternative would reduce commercial uses and increase residential in the form of multi-family housing as compared to the proposed project. The Apartment and Commercial Alternative would increase the overall residential units; however, the alternative would remain under the maximum density allowed under the Development Agreement and would, therefore, be consistent with the planned land uses for the proposed project site. The Apartment and Commercial Alternative would not reduce the loss of agricultural land because the entire project site would still be developed with urban uses and the total loss of agricultural land would remain.

Compatibility issues related to this alternative would be the same as the proposed project because the alternative would include commercial development bordering residential uses. The Oakley General Plan designates five acres for commercial uses on the corner of Cypress Road and Sellers Avenue and designates Multi-Family High to the north and west of the commercial uses. Although the commercial land uses would be above the five acres designated for commercial uses, the Apartment and Commercial Alternative would only require the approval of a General Plan Amendment for additional 7.96 acres instead of 18.75 acres. Therefore, the Apartment and Commercial Alternative would be considered to have fewer total land use planning consistency impacts, as compared to the proposed project.

Figure 5-2
Apartment and Commercial Alternative



Traffic and Circulation

The Apartment and Commercial Alternative would reduce commercial uses and increase residential in the form of multi-family housing as compared to the proposed project. The commercial portion of the proposed project would be reduced from 23.74 acres to 12.96 acres – a reduction of 55 percent. The remaining 10.78 acres would include an apartment complex with up to 280 dwelling units. The Apartment and Commercial Alternative would result in approximately 3,549 fewer total daily vehicle trips than the proposed project and 275 fewer PM peak hour trips (See Table 5-1). However, although the Apartment and Commercial Alternative would result in fewer trips, the LOS at study intersections would remain equal to the LOS at study intersections under the proposed project (See Table 5-17). In addition, because the additional access driveway is restricted to right-in-right-out movements, all project traffic would still use the same access patterns as the proposed project as all inbound left turns would still be made at the main signalized entrances. Therefore, overall the same impacts would occur, but at a reduced magnitude. It should be noted that the smaller commercial area of this alternative would provide fewer services for project residents, resulting in more and longer trips to off-site commercial areas. However, because this alternative provides more commercial space than the Minimum Density Clustered Development Alternative, fewer off-site commercial trips are anticipated compared to the Minimum Density Clustered Development Alternative.

Air Quality

Construction impacts of the Apartment and Commercial Alternative would be similar to those for the proposed project, and would still require similar construction mitigation measures to reduce all impacts to a less-than-significant level. The Apartment and Commercial Alternative would generate less truck trips, but may still include a gasoline station; thus the alternative would have equal TAC emissions associated with the gasoline station, but lower operational TAC impacts given the reduced truck trips. According to the analysis of air quality for the proposed project, the CARB recommends the following minimum separations between gas stations and residences regarding TAC emissions: 50 feet for typical stations and 750 feet for "large" stations (defined as having a throughput of 3.6 million gallons per year) (See page 4.4-20 in Section 1, Chapter 4.4 of the Partially Recirculated Draft EIR). The project applicant does not know if a gas station will be included in future commercial development under this alternative, and this EIR cannot speculate as to its proposed throughput volume.

Table 5-17
Apartment and Commercial Alternative
(578 homes + 280 apartments 123,000 sq. ft. of commercial)
Comparison to Project for Impacted Intersections

	Intersection	Control	Peak Hour	Proposed Project		Apartment and Commercial Alternative	
				Measure (sec/veh)	LOS	Measure (sec/veh)	LOS
Baseline Plus Project Conditions							
6	MAIN STREET (SR-4) AT ROSE AVENUE	Stop Sign	AM	>50 sec	F	>50 sec	F
			PM	>50 sec	F	>50 sec	F
23	LAUREL DRIVE AT ROSE AVENUE	Stop Sign	AM	>50 sec	F	>50 sec	F
			PM	>50 sec	F	>50 sec	F
27	MAIN STREET (SR-4) AT BROWNSTONE ROAD	Stop Sign	AM	>50 sec	F	>50 sec	F
			PM	>50 sec	F	>50 sec	F
28	MAIN STREET (SR-4) AT DELTA ROAD	Stop Sign	AM	>50 sec	F	>50 sec	F
			PM	>50 sec	F	>50 sec	F
Cumulative Plus Project Conditions							
21	LAUREL ROAD AT EMPIRE AVENUE	Traffic Signal	AM	23.5 sec	C	23.4 sec	F
			PM	76.1 sec	E	76.2 sec	E

The plan in Figure 5-2 shows the station approximately 100 feet from the nearest apartment, adequate for a typical gas station but not satisfying the CARB-recommended distance for a large station. The BAAQMD will perform a risk assessment of any future proposed gas station, based on project design and proximity to housing. The BAAQMD permitting process may lead to relocating the station and/or setting a lower cap on maximum throughput to ensure that cancer and non-cancer risks are below adopted significance thresholds. The proposed project would result in less-than-significant carbon monoxide impacts, and the Apartment and Commercial Alternative results in 3,549 fewer trips than the proposed project. Therefore, impacts related to carbon monoxide would be less than the proposed project and less-than-significant.

As shown in Table 5-18, regional emissions would be generally less than for the proposed project, but would still exceed existing (ROG, NO_X, and PM_{10}) and proposed (ROG, NO_X, PM_{10}, and $PM_{2.5}$) BAAQMD thresholds of significance and would therefore have a significant and cumulative impact on regional air quality. It should be noted that even with implementation of applicable mitigation measures, the Apartment and Commercial Alternative would exceed the existing and proposed BAAQMD thresholds of significance; thus, the impact would remain significant and unavoidable.

Table 5-18
Apartment and Commercial Alternative Regional Emissions Comparison

	ROG		NO_X		PM_{10}		$PM_{2.5}$	
	Daily Average (Lbs/day)	**Annual (Tons)**	**Daily Average (Lbs/day)**	**Annual (Tons)**	**Daily Average (Lbs/day)**	**Annual (Tons)**	**Daily Average (Lbs/day)**	**Annual (Tons)**
Project Operational Emissions	132.87	27.98	124.30	26.09	260.30	40.80	86.39	9.31
Apartment and Commercial Alternative	127.74	28.22	91.56	19.38	227.95	31.64	97.90	8.28
Current BAAQMD Threshold of Significance	**80.0**	**15.0**	**80.0**	**15.0**	**80.0**	**15.0**	**-**	**-**
Proposed BAAQMD Threshold of Significance	54.0	10.0	54.0	10.0	82.0	15.0	54.0	10.0

Source: Don Ballanti, March 2010.

The following discussion is for clarification purposes regarding the emissions comparison in Table 5-18. More specifically, the clarification is intended to describe why daily average ROG emissions decrease for the Apartment and Commercial Alternative versus the proposed project but annual emissions increase. The daily numbers for ROG reported in the table are for summer when vehicles are the dominant source. The annual numbers are the total for the year averaging both summer and winter. Because the Apartment and Commercial Alternative increases residential uses, it would have proportionally higher non-vehicular emissions. However, this would only show up in the winter months. Thus, a lower daily average number (in summer, dominated by vehicle emissions) would result while a higher number annually would result, as the annual number is greatly influenced by winter emissions where residential non-vehicular emissions are important. The differences observed in Table 5-18 for $PM_{2.5}$ emissions are explained similarly.

When discussing fugitive dust emissions, PM_{10} and $PM_{2.5}$ are related; however, the important factor in this operational analysis is that unlike PM_{10} emissions, $PM_{2.5}$ is not related to traffic but is generated by residential area sources. The reported numbers for daily average emissions are for winter. Because traffic is less for this alternative, PM_{10} shows a reduction on both a daily and annual basis. $PM_{2.5}$ is almost entirely from non-vehicular residential sources, so the daily emissions in winter go up rather than down, because the number of residences is greater. Just as ROG went up when the higher emissions associated with winter are averaged in, $PM_{2.5}$ goes down when the much lower summer emissions are averaged in.

As shown in Table 5-19, GHG emissions would be substantially lower, but would still exceed the BAAQMD threshold of significance and thus be considered cumulatively considerable. Therefore, the Apartment and Commercial Alternative would result in similar impacts as compared to the proposed project.

Table 5-19
Apartment and Commercial Alternative Annual Greenhouse Gas Emissions (Unmitigated) CO_2 Equivalent

Alternative	GHG Emissions (metric tons) [1]
Proposed Project	24,410.42
Apartment and Commercial Alternative	18,649.62
BAAQMD Significance Threshold (4.6 MT/year per service population)	11,348.00

[1]See Appendix E1for details on GHG emissions calculations.

Source: Don Ballanti, March 2010.

Noise

Buildout of the Apartment and Commercial Alternative would result in more total residences, but the commercial component of the proposed project would be reduced from 23.74 acres to 12.96 acres. This alternative would result in a decrease in total daily vehicle trips, as compared to the proposed project. However, the alternative would result in an increase of up to nine vehicles leaving the site during the am peak hour (as compared to the proposed project). The additional nine vehicles would not measurably increase traffic noise levels along area roadways compared to the noise levels expected as a result of the proposed project (See Appendix F2 for technical data regarding noise analysis comparison of alternatives). The Apartment and Commercial Alternative would result in a slight decrease in noise associated with on-site commercial uses, such as truck deliveries, loading dock operations, and mechanical equipment (e.g., HVAC units), as the overall commercial site would be reduced in scale. However, similar to the proposed project, this alternative would locate noise-sensitive residential land uses adjacent to Cypress Road and the commercial component of the project. Similar mitigations would be required to reduce noise levels from these sources to meet General Plan noise standards and provide compatible exterior and interior noise levels at multi-family units. For this alternative, a soundwall would be needed along the west side of the commercial area, as well as the north side. Overall, the Apartment and Commercial Alternative would be expected to have similar impacts with regard to increased noise as compared to the proposed project. It should be noted that the character of the noise environment would still be anticipated to permanently change from rural to a noise environment represented by a more suburban setting; therefore a significant and unavoidable cumulative impact would still be expected to result.

Hazards

The Apartment and Commercial Alternative would result in the addition of more total residents and residences to the Emerson property and fewer commercial uses than the proposed project. The Apartment and Commercial Alternative would introduce more sensitive receptors in close proximity to existing or potential hazardous materials, such as on-site natural gas test well,

potential soil contamination, and the proposed gasoline station. The Apartment and Commercial Alternative would not increase any hazards beyond those identified for the proposed project; however, the additional sensitive receptors would result in a greater impact related to hazards compared to the proposed project. Similar to the proposed project, all impacts under this alternative would be less-than-significant.

Biological Resources

The Apartment and Commercial Alternative would reduce commercial uses and increase residential uses as compared to the proposed project. Development of the site would disturb the same area as the proposed project and potentially impact special-status species and/or habitats the same as the proposed project; therefore, the Apartment and Commercial Alternative would create impacts similar to those associated with the proposed project.

Geology and Soils

The geological impacts generated from the development of the project site under the Apartment and Commercial Alternative would be similar to those generated by the proposed project. The Apartment and Commercial Alternative would reduce commercial uses and increase residential uses as compared to the proposed project. The residential and commercial development associated with the alternative would still be subject to liquefaction and soil erosion; therefore, development of the alternative would have similar impacts, as compared to the proposed project.

Historical and Cultural Resources

The total acreage developed under the Apartment and Commercial Alternative would be the same as the proposed project and development would still occur on the project site. Therefore, because the alternative would involve grading and earthmoving activities similar to the proposed project and on a similar scale as the proposed project, the total impacts related to the Apartment and Commercial Alternative would be the same as those anticipated for the proposed project with regard to historical and cultural resources. It should be noted that because the historic Iron House School building could still be subject to damage or loss under this alternative, the significant and unavoidable impact would remain.

Hydrology, Water Supply, and Water Quality

The Apartment and Commercial Alternative would reduce the commercial portion of the proposed project site and increase the total number of dwelling units with the development of an apartment complex. The Apartment and Commercial Alternative would involve the development of the same total area as the proposed project, and impacts related to impervious surfaces and water quality would remain unchanged. However, because residential land uses have a higher demand for water than commercial areas, impacts related to water supply would be expected to increase proportional to the number of increased residences on the project site (See Table 5-20). According to the Water Supply Assessment (WSA) prepared for the proposed project (Appendix Q of the Draft EIR), the projected water supply surplus for a multiple-dry year event in 2040 would be 477 million gallons (or 1,464 acre-feet). Therefore, although this alternative would result in an increased water supply demand compared to the proposed project, adequate supply

exists to serve the alternative (in addition to buildout of the plan area. According to the WSA that was prepared for the proposed project, development of the project site is already included and accounted for in DWD's Urban Water Management Plan, DWD's 1998 Facilities Plan Update, CCWD's 2000 Urban Water Management Plan, and CCWD's 1996 Future Water Supply Study. Therefore, this alternative's demand of 466.2 AFY would be expected to be met by the available water supply. In addition, the same mitigation measures as required for the proposed project, which would contribute to necessary buildout of infrastructure in accordance with DWD, would be required for this alternative. Therefore, while impacts related to water quality and hydrology on the site would remain unchanged, impacts associated with water supply would be expected to increase. However, the increased demand would result in a less-than-significant impact with implementation of the same mitigation measures as required of the proposed project. Thus, this alternative would result in greater impacts overall, as compared to the proposed project; however, the impact conclusions for the project apply equally to this alternative (less-than-significant).

Table 5-20
Apartment and Commercial Alternative Water Demand

Land Use Type	Units/Acres	Water Demand Rate	Estimated Water Demand	
Single Family Homes	522 DU	525 gpd / DU	274,050 gpd	307.2 AFY
Multi-Family Homes	280 DU	350 gpd / DU	98,000 gpd	109.8 AFY
Commercial	12.96 acres	2,250 gpd / acre	29,160 gpd	32.7 AFY
Parks	10.13 acres	1,450 gpd / acre	14,689 gpd	16.5 AFY
Total Estimated Water Demand				**466.2 AFY**
Proposed Project Total Estimated Water Demand				**416.2 AFY**

Note: Calculations based on Senate Bill 610 Water Supply Assessment, Diablo Water District, June 22, 2007.

Public Services and Utilities

The Apartment and Commercial Alternative would reduce the commercial portion of the proposed project site and increase the total number of dwelling units with the development of an apartment complex and result in an increased number of residents, as compared to the proposed project. Therefore, an increase in population on the project site would increase the need for public services and utilities (i.e., wastewater treatment [See Table 5-21], solid waste disposal, police services, fire protection services, schools, and parks). Although the need for services would increase, the same mitigation measures required for the proposed project and collection of development fees would mitigate impacts to the above areas (similar to the proposed project). Because the wastewater demand for this alternative is only slightly higher than the proposed project, the mitigation measures in the Draft EIR, which include the fair-share payment towards new wastewater collection facilities, would also reduce this alternative's impacts to a less-than-significant level. Therefore, although potential impacts from this alternative associated with public services and utilities would initially be somewhat greater, the impacts would be similar with incorporation of the same mitigation measures as the proposed project.

Environmentally Superior Alternative

An EIR is required to identify the environmentally superior alternative from among the range of reasonable alternatives that are evaluated. Section 15126(e)(2) of the CEQA Guidelines requires that an environmentally superior alternative be designated and states, "[…] if the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives."

Designating a superior alternative depends in large part on what environmental effects are determined most important. This EIR does not presume to make this determination; rather, the determinations of which impacts are more important, are left to the reader and the decision makers. Finally, it should be noted that the environmental considerations are one portion of the factors that must be considered by the public and the decision makers in deliberations on the proposed project and the alternatives. Other factors of importance include urban design, economics, social factors, and fiscal considerations.

Table 5-21
Estimated Wastewater Generation for the Apartment and Commercial Alternative

Residential (Single Family and Multi-Family)	858 Units x 225 Gallons Per Dwelling Unit	193,050 Gallons Per Day
Commercial	12.96 acres x 2,250 Gallons Per Acre	29,160 Gallons per Day
Groundwater Infiltration (High Groundwater)	120 Acres x 300 Gallons Per Day Per Acre	36,000 Gallons Per Day
Total		**258,210 Gallons Per Day (0.26 mgd)**
Proposed Project Total Wastewater Generation		**250,965 Gallons Per Day (0.25 mgd)**

Notes:
1. Figures are based on 225 gallons per residential dwelling unit and 300 gallons per acre infiltration estimates.
2. Average commercial demand of 2,250 gallons per acre is based on Ironhouse Sanitary District standards.

For this project, the alternative that would result in the greatest reduction in impacts when compared to the proposed project is the No Project/No Development Alternative. However, as noted above, if the environmentally superior alternative is the No Project/No Development Alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives. Therefore, the environmentally superior alternative would result in development of the site under the Minimum Density Clustered Development Alternative. Under the Minimum Density Clustered Development Alternative, impacts to land uses would be reduced because the project site would be developed in conformance with the General Plan designations. In addition, because fewer residents would occupy the area, fewer vehicle trips would be made, thereby reducing traffic, air quality, and noise impacts. It should be noted that although the magnitude of the air quality and noise impacts would be reduced, both would remain significant and unavoidable. In addition, hydrology, water supply, and water quality impacts would be reduced

under the Minimum Density Clustered Development Alternative because fewer impervious surfaces would be created compared to the proposed project, due to the existence of less rooftops. Finally, impacts related to on-site hazards would be reduced because fewer people would be exposed to potential hazards such as potential pesticides and existing natural gas test well, and impacts to cultural resources would be reduced due to being able to avoid the historic Iron House School building in addition to less site pads being graded resulting in the decreased risk of disturbance of cultural resources. Therefore, although impacts related to agricultural resources, biological resources, geology and soils, and public services and utilities would still occur, the Minimum Density Clustered Development Alternative is considered the environmentally superior alternative.

Table 5-22
Comparison of Environmental Impacts from the Proposed Project and Project Alternatives

Resource Area	Proposed Project	No Project/No Development Alternative	Minimum Density Clustered Development Alternative	All Residential Alternative	On-Site School Alternative	Apartment and Commercial Alternative
Land Use and Agricultural Resources	Less-Than-Significant With Mitigation	Fewer	Fewer	Fewer	Equal	Fewer
Traffic and Circulation	Less-Than-Significant With Mitigation	Fewer	Fewer	Fewer	Equal	Fewer
Air Quality	Significant and Unavoidable (Project-level and Cumulative Emissions)	Fewer	Fewer*	Fewer*	Equal*	Equal*
Noise	Significant and Unavoidable (Cumulative Operational Noise)	Fewer	Fewer*	Fewer*	Greater*	Equal*
Hazards	Less-Than-Significant With Mitigation	Fewer	Fewer	Greater	Greater	Greater
Biological Resources	Less-Than-Significant With Mitigation	Fewer	Fewer	Equal	Equal	Equal
Geology and Soils	Less-Than-Significant With Mitigation	Fewer	Equal	Equal	Equal	Equal
Historical and Cultural Resources	Significant and Unavoidable	Fewer	Fewer	Equal*	Equal*	Equal*
Hydrology, Water Quality, and Water Supply	Less-Than-Significant With Mitigation	Fewer	Fewer	Greater	Fewer	Greater
Public Services and Utilities	Less-Than-Significant With Mitigation	Fewer	Fewer	Greater	Equal	Greater

Less Than PP = "Fewer" Equal to PP = "Equal" Greater Than PP = "Greater"

* Significant and unavoidable impact determined for the proposed project would still be expected to occur.

SECTION II. RESPONSES TO COMMENTS AND REVISIONS TO DRAFT EIR TEXT

2.1 INTRODUCTION AND LIST OF COMMENTERS

2.1 INTRODUCTION AND LIST OF COMMENTERS

Introduction

The Partially Recirculated Draft Environmental Impact Report and Responses to Comments (Partially Recirculated Draft EIR) contains public and agency comments received during the public review period of the Emerson Property Draft EIR. This document has been prepared by the City of Oakley in accordance with the California Environmental Quality Act (CEQA).

Background

A Notice of Preparation (NOP) for the Draft EIR was released May 23, 2007 for a 30-day review period. In addition, a public scoping meeting was held on June 6, 2007. The comments received from the NOP were addressed in the Emerson Property Draft EIR. The Emerson Property Draft EIR is an informational document intended to disclose the environmental consequences of approving and implementing the Emerson Property project. All written comments received during the 45-day public review period are addressed in this Recirculated Draft EIR. The Emerson Property Draft EIR was released for public review from November 19, 2008 to January 5, 2009 and extended to February 4, 2009.

Summary of Text Changes

Chapter 2.2, Section II, Revisions to the Draft EIR text, identifies all changes to the Draft EIR. These changes are in response to comments on the Draft EIR received during the public review period and in response to additional information related to traffic and circulation, air quality, and hazards.

Responses to Comments

Responses to comments received on the Draft EIR during the public review period are presented in Section II, Chapter 2.3. Comments were received during the public comment period solely from written correspondence. Each comment letter received has been numbered at the top and then bracketed to indicate how the letter has been divided into individual comments. Each comment is given a number with the letter number appearing first, followed by the comment number. For example, the first comment in Letter 1 would have the following format: 1-1. In Chapter 2.3, Section II of the Partially Recirculated Draft EIR, the bracketed comment letters precede responses to the comments found in the letters.

List of Commenters

The following is a list of comment letters received identifying the letter number, agency or person submitting the letter, and the page number on which the letter appears.

Letter Page

2.2 REVISIONS TO DRAFT EIR TEXT

2.2 REVISIONS TO THE DRAFT EIR TEXT

INTRODUCTION

Chapter 2.2 presents all of the revisions made to the Draft EIR in response to comments received or clarifications provided by the applicant. New text is double underlined and deleted text is ~~struck through~~. Text changes are presented in the page order in which they appear in the Draft EIR. It should be noted that text revisions to the Traffic and Circulation (Chapter 4.3), Air Quality (Chapter 4.4), Hazards (Chapter 4.6), and Alternatives Analysis (Chapter 5) of the Draft EIR triggered the recirculation of those chapters as found in Section I, Recirculated Chapters. Text revisions in EIR chapters not recirculated are for clarification purposes only and do not alter any of the conclusions contained within the Draft EIR.

TEXT CHANGES

NOTE: New text is double underlined and deleted text is ~~struck through~~

2. EXECUTIVE SUMMARY

Chapter 2, Executive Summary, of the Draft EIR does not include text revisions in response to comments received.

3. PROJECT DESCRIPTION

The following text is hereby added as the fifth paragraph under the Residential and Commercial Development section that begins on page 3-10 of Chapter 3, Project Description, of the Draft EIR:

> In approximately one to two years, the proposed project would construct and complete the first phase(s) of the project, which may or may not include the commercial area. The remainder of the project would be constructed in approximately two to five years. Full buildout of the project depends on market conditions and could be longer than anticipated. Each phase of the project would implement the mitigation measures applicable to that portion of the project.

The Roadway Improvements section that begins on page 3-15 of the Draft EIR is hereby revised as follows:

> *Roadway Improvements*
>
> Consistent with the General Plan, roadway infrastructure would be constructed to meet the needs of new residential neighborhoods and provide access to this

portion of Oakley. Street widths would be designed in accordance with traffic studies completed for the project, as well as with the Oakley 2020 General Plan. The proposed project includes both on-site and off-site roadway improvements.

Cypress Road would be designed to provide an ultimate four-lane divided arterial from Cypress Grove to Sellers Avenue with a landscaped median, as well as landscaping corridors and trails on the north side of the road. The Emerson Property project would complete the northern half of Cypress Road with ~~provide an increment of this improvement by constructing~~ two westbound through lanes ~~with a landscaped median and one new eastbound lane along the entire property frontage~~ from Sellers Avenue to the western boundary of the project.

Sellers Avenue ~~is ultimately designed to be a~~would be constructed as a ~~four~~two-lane divided road from Cypress Road north to the project boundary with the CCWD/USBR R~~r~~ight-of-W~~w~~ay. It should be noted that the ultimate design for Sellers Avenue is a four-lane divided road from Cypress Road to the project boundary with the CCWD/USBR Right-of-Way. ~~The project would include the construction of one southbound lane plus half of the median improvements as a portion of the project.~~

Local streets would be designed and constructed per City of Oakley and Contra Costa County standards.

Other r~~R~~oadway improvements associated with the Emerson Property project ~~would~~ include the following:

- Transition of Sellers Avenue north to the CCWD Canal boundary;
- Modification of existing traffic signal at Sellers Avenue and East Cypress Road and installation of two new traffic signals at the main entrances to the residential area and to the shopping center;
- Right-of-way and easement acquisition on the south side of Cypress Road and along Sellers Avenue south of Cypress Road;
- ~~Removal of structures;~~
- ~~Transition of Cypress Road to the existing two-lane road to the east of Sellers Avenue;~~
- ~~Transition of Sellers Avenue south to the existing two-lane road;~~
- ~~Property dedication and improvement of Sellers Avenue north to the CCWD/USBR right-of-way;~~
- Modification of existing driveways to the adjacent Gilbert property~~ies~~; and
- ~~Overhead and underground utility relocation as needed; and~~
- ~~Modifications of utility services including drainage, irrigation, power, telephone, cable, etc. to adjacent properties.~~

- Modification of existing Cypress Road improvements (adjacent to Cypress Grove development) along western boundary for connection.

Chapter 3, Project Description, of the Draft EIR, is hereby revised to add the following at the top of page 3-16 as a second paragraph under the heading "Storm Drain":

> Because the applicant may develop the project in phases, one or more interim detention/treatment ponds may be proposed to serve early phases until the total area of development and volume of runoff justify the permanent central six-acre drainage facility. The specific sequence of phases is not known at this time, nor the possible location and number of ponds. It also is not known whether the ponds will be supplied with water year-long, or will drain dry after each storm. Each interim pond will be sized and designed in accordance with adopted standards to satisfy the applicable needs at that stage of development and assure adequate capacity for runoff control and water treatment, as well as include safety features comparable to those proposed for the permanent central drainage facility.

Chapter 3, Project Description, of the Draft EIR, is hereby revised to move the levee heading and discussion from the top of page 3-14 to the end of the Infrastructure subsection on page 3-17 of the Draft EIR. In addition, the project description is hereby revised as follows:

> *Levees*
>
> The project site is subject to inundation risks from the Sacramento/San Joaquin Delta, which has a 100-year flood elevation of seven feet above mean sea level (msl). The Cypress Grove project has constructed a levee system along the north and east sides of the property. ~~The existing levee constructed by the Cypress Grove project along Sellers Avenue may be modified with this development to cross Sellers Avenue and connect into the proposed Gilbert levee system, eliminating the requirement for levees along both sides of Sellers Avenue. The levee will be built to an elevation of 10 feet above msl to protect against a flood elevation of seven feet, with an additional three feet of freeboard.~~ A Letter of Map Revision (LOMR) was issued by the Federal Emergency Management Agency (FEMA) for the Cypress Grove levees with an effective date of February 22, 2007 and is on record with the City of Oakley. The remainder of the project perimeter along Cypress Road is higher than 10 feet msl and does not require further flood protection.

The above text change is for clarification purposes only and does not alter any of the conclusions contained within the Draft EIR.

4.2 LAND USE AND AGRICULTURAL RESOURCES

Chapter 4.2, Land Use and Agricultural Resources, of the Draft EIR does not include text revisions in response to comments received.

4.3 TRAFFIC AND CIRCULATION

As discussed in Chapter 1.0, Introduction, of this Partially Recirculated Draft EIR, Chapter 4.3, Traffic and Circulation, is being recirculated. Therefore, Chapter 4.3, Traffic and Circulation, of the Draft EIR is hereby replaced in its entirety by Chapter 4.3, Traffic and Circulation, in Section I of this Partially Recirculated Draft EIR.

4.4 AIR QUALITY

As discussed in Chapter 1.0, Introduction, of this Partially Recirculated Draft EIR, Chapter 4.4, Air Quality, is being recirculated. Therefore, Chapter 4.4, Air Quality, of the Draft EIR is hereby replaced in its entirety by Chapter 4.4, Air Quality, in Section I of this Partially Recirculated Draft EIR.

4.5 NOISE

Chapter 4.5, Noise, of the Draft EIR does not include text revisions in response to comments received.

4.6 HAZARDS

As discussed in Chapter 1.0, Introduction, of this Partially Recirculated Draft EIR, Chapter 4.6, Hazards, is being recirculated. Therefore, Chapter 4.3, Hazards, of the Draft EIR is hereby replaced in its entirety by Chapter 4.6, Hazards, in Section I of this Partially Recirculated Draft EIR.

4.7 BIOLOGICAL RESOURCES

The second paragraph under the "Existing Environmental Setting" section on page 4.7-1 of the Draft EIR is hereby revised as follows:

> The Emerson property is an approximately 140-acre farmed and grazed field. ~~Dutch Slough~~ The Cypress Grove subdivision marks the site's western boundary, while the Contra Costa Canal abuts the northern. The site is predominantly the level plain of a formerly irrigated pasture and has been recently disked for farm uses.

The above text change is for clarification purposes only and does not alter any of the conclusions contained within the Draft EIR.

4.8 GEOLOGY AND SOILS

Impact Statement 4.8-5 on page 4.8-12 of the Draft EIR is hereby removed:

~~**4.8-5 Grading and import of fill.**~~

~~Some parts of the project site would require several feet of fill materials. The placement of fill on the site could increase erosion and the introduction of sediment into the stormwater system. In addition, the transportation of fill to the site would involve a large number of truck trips; these truck trips are further analyzed in the Traffic and Circulation and Air Quality chapters of this EIR. Therefore, the import of fill material would constitute a ***potentially significant*** impact.~~

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

~~*4.8-5 Implement Mitigation Measure 4.8-4.*~~

The proposed project does not include the use of fill material on-site and, therefore, the analysis included in Impact Statement 4.8-5 is no longer required for the project. Potential erosion during grading and construction activities is addressed in Impact Statement 4.8-4 on page 4.8-11 of the Draft EIR. Therefore, the above text change is for clarification purposes only and does not identify any new or significantly worse conclusions contained within the Draft EIR.

4.10 HYDROLOGY, WATER QUALITY, AND WATER SUPPLY

The "Flood Hazards" section on pages 4.10-12 and 4.10-13 of the Draft EIR is hereby revised as follows:

Flood Hazards

The proposed project site is not in a designated floodplain area as mapped by the Federal Emergency Management Agency (FEMA, 2002). The FEMA Flood Insurance Rate Maps (FIRMs) covering the project site (identified by Map Panel ID No.'s 06013C0355F and 06013C0360F) have been recently updated on June 16, 2009.With the exception of the dune areas, the entire site is currently protected from potential flooding by the levees that run along the Contra Costa Canal that border the project site to the north and the northeast. The base flood elevation from Delta flooding is shown by FEMA to be 7.0 feet.

FEMA ~~and CCFCD~~ regulations state that areas lower than the base flood elevation must be protected by levees with a minimum of three feet of freeboard above the base flood elevation. Contra Costa Canal levees currently offer this level of protection.

The above text change is for clarification purposes only and does not alter any of the conclusions contained within the Draft EIR. The new FEMA maps referenced by the insert are included as Appendix S to the Partially Recirculated Draft EIR.

The "Contra Costa County Flood Control and Water Conservation District" section on page 4.10-18 of the Draft EIR is hereby removed:

~~Contra Costa County Flood Control and Water Conservation District~~

~~The design of the drainage system for the Emerson Project area is based on the Contra Costa County Flood Control Standards manual developed by the Contra Costa Water District. The Contra Costa County Flood Control and Water Conservation District standards provide guidance to the development of flood control measures throughout the County, particularly for stormwater drainage and sedimentation issues regarding new development.~~

The above text change is for clarification purposes only and does not alter any of the conclusions contained within the Draft EIR.

The "Hydrologic and Hydraulic Modeling" section on pages 4.10-22 and 4.10-23 of the Draft EIR is hereby revised as follows:

Hydrologic and Hydraulic Modeling

~~The modeling work focused on predicting the operation of the multi-purpose drainage basins when subject to Contra Costa County Flood Control and Water Conservation District (CCCFCWCD) 100-year and 10-year design storms of various durations.~~ Hydrographs for the project area were requested from the Contra Costa County Flood Control District to be applied to the modeling used for developing the required sizing of the on-site lake. Per standard practice in the County, the preliminary lake and pump station designs are based on the runoff hydrographs for the proposed project conditions using CCCFCWCD's Hydro-6 software. A full range of storm durations were modeled, because clarity could not be determined as to which would be the most conservative with regard to sizing the infrastructure needed to regulate water surface elevations in the drainage basins. Storm events with durations of 6, 12, 24 and 96-hours were evaluated. The depth-storage relationship for the drainage ponds was assumed from the drainage pond surface area and surrounding side slopes of 4:1. The depth-storage relation for the drainage ponds is important because the depth-storage relation sets how much runoff can be stored within the given water surface elevation targets. (The depth-storage relationship for preliminary lake configuration is shown on Figure 8 in Appendix P of this Draft EIR.)

The above text change is for clarification purposes only and does not alter any of the conclusions contained within the Draft EIR.

The first paragraph under Impact Statement 4.10-1 on page 4.10-23 of the Draft EIR is hereby revised as follows:

The proposed project area is not within a designated floodplain as mapped by FEMA. The site is currently protected to the north and east by the Contra Costa Canal, which borders the proposed project area. FEMA ~~and CCCFCWCD~~ regulations state that areas of lower elevation must be protected by levees with a minimum of three feet of freeboard above the base flood elevation. Contra Costa Canal levees currently offer this level of protection. However, CCCFCWCD is currently pursuing plans to underground all or part of the Contra Costa Canal in the vicinity of the project. The District has indicated that the material in the levee may be needed as part of the project.

The above text change is for clarification purposes only and does not alter any of the conclusions contained within the Draft EIR.

Mitigation Measure 4.10-2 on pages 4.10-24 and 4.10-25 of the Draft EIR is hereby revised as follows:

4.10-2 *Prior to issuance of building permit, the applicant shall annex into the existing Cypress Grove Community Facilities District (CFD) or create a new CFD to collect funding for the maintenance of the levee system, for review and approval of the Community Development Department. The Community Development Department shall ensure the annexation/creation prior to approval of the first building permit.* ~~*Improvement Plan approval the project engineer shall develop a levee maintenance program. The maintenance program shall be submitted for the review and approval of the City Engineer and include the plan for financing and maintenance of the levee system. The plan shall include the following guidelines:*~~

- ~~*All pertinent agencies that may have jurisdiction over the repair area shall be consulted. These agencies may include (but are not limited to) the California Department of Fish and Game, the U.S. Fish and Wildlife Service, the Army Corps of Engineers, the Regional Water Quality Control Board, and the Contra Costa County Public Works Department, and the Contra Costa County Flood Control District.*~~
- ~~*Both an engineering geologist and a civil engineer shall be consulted on significant embankment repairs.*~~
- ~~*Soil removal and placement shall be limited to the minimum amount needed to achieve bank stabilization.*~~
- ~~*Access roads shall be kept clear of obstructions and maintained in a manner that allows access for maintenance equipment at all times. Access road dimensions and specifications shall conform to guidelines prepared by the City of Oakley.*~~

- ~~*The establishment of woody vegetation (e.g., trees or shrubs) can impair the integrity of the levees. Therefore, regular inspection for, and removal of, woody vegetation shall be required.*~~
- ~~*Tunnels created by ground squirrels and other animals can also compromise the integrity of the levees. Annual inspection of the levees by a competent professional shall be required to assess the need for remedial repairs and animal control measures.*~~
- ~~*Material shall not be placed in a manner that could be eroded by normal or expected high flows.*~~
- ~~*Bank stabilization in excess of 500 feet in length or an average of one cubic yard per running foot must be authorized by the City of Oakley or Contra Costa County Flood Control.*~~
- ~~*The condition of levee embankments and access roads shall be monitored in detail as part of routine monitoring, as well as during post-flood event inspections. During periodic monitoring visits, personnel shall inspect the entire perimeter of the levees around the project and note evidence of erosion or slope failures on both sides of the levee. Embankments shall generally be free of erosion, rills, slumps, and landslides.*~~

The above text change is for clarification purposes only and does not alter any of the conclusions contained within the Draft EIR. The deleted items are included in the City's adopted levee system program and do not need to be repeated as mitigation measures.

The first paragraph underneath the bullet points on page 4.10-28 of the Draft EIR is hereby revised as follows:

> In the event of a 100-year storm, the multi-purpose lake on the proposed project would be able to provide an active storage volume of ~~19.7~~ 21.5 acre-feet above the year-round water surface level. The volume above the water-quality elevation is reserved to accommodate the runoff from large storm events up to and including the CCFCD 100-year design storm. Therefore, the multi-purpose lake on the Emerson site is designed to contain the rainfall associated with the 100-year storm.

The above text change is for clarification purposes only and does not alter any of the conclusions contained within the Draft EIR.

The discussion for Impact 4.10-3 on page 4.10-28 of the Draft EIR is hereby revised as follows:

> Because the applicant may develop the project in phases, one or more interim ponds may be proposed to provide runoff control and water quality treatment for the early phases until the total area of development and volume of runoff justify construction of the permanent central six-acre drainage facility. The specific

sequence of phases or the possible location of ponds or the area each may serve is not known at this time. Each interim pond will be sized and designed in accordance with adopted government standards and the criteria described in this EIR to satisfy the applicable needs at that stage of development and assure adequate capacity for runoff control and water treatment, taking into consideration both project runoff and off-site stormwater entering the property, and whether the pond will be supplied with water year-long or will drain dry after each storm, all subject to the approval of the City Engineer. The same conservation assumptions used in modeling calculations to determine the size and design criteria for the permanent central drainage facility will be applied. Gravity-flow storm drains, pumps and related facilities also will be sized and designed accordingly. The City Engineer will ensure that the stormwater control and treatment system built at each phase is sufficient to function long-term or permanently without the need for future expansion or alteration.

The storm drain system, stormwater pond, and stormwater pump station and outfall designed for the proposed project, and the adopted standards and safeguards that will apply to design of interim ponds and related facilities, would ensure that the change in peak stormwater flows resulting from the proposed project would have a ***less-than-significant*** impact.

The above text change is for clarification purposes only and does not alter any of the conclusions contained within the Draft EIR.

Mitigation Measure 4.10-6 on page 4.10-40 of the Draft EIR is hereby revised as follows:

4.10-6 *Prior to Improvement Plan approval, the project engineer shall develop a storm drain system maintenance program. The maintenance program shall be submitted for the review and approval of the City Engineer and include the plan for financing and maintenance of the water quality detention basin. The maintenance program shall include measures that would ensure that impacts related to the maintenance of the stormwater lake and sedimentation are fully mitigated to the satisfaction of the City Engineer. The plan shall address aquatic vegetation and vector control, pond bank and inlet structure conditions, and pond sediment removal. In addition, the program shall include an organization chart that identifies the parties responsible for design, planning, current development review, clean water program compliance, and maintenance.*

The above text change is for clarification purposes only and does not alter any of the conclusions contained within the Draft EIR.

4.11 PUBLIC SERVICES AND UTILITIES

Chapter 4.11, Public Services and Utilities, of the Draft EIR does not include text revisions in response to comments received.

5. ALTERNATIVES ANALYSIS

As discussed in Chapter 1.0, Introduction, of this Partially Recirculated Draft EIR, Chapter 5, Alternatives Analysis, is being recirculated. Therefore, Chapter 5, Alternatives Analysis, of the Draft EIR is hereby replaced in its entirety by Chapter 5, Alternatives Analysis, in Section I of this Partially Recirculated Draft EIR.

6. STATUTORILY REQUIRED SECTIONS

Chapter 6, Statutorily Required Sections, of the Draft EIR does not include text revisions in response to comments received.