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ORANGE COUNTY GATEWAY PROJECT

Orange County, California

12-ORA-0-PLCN/09-IA-0801L

FINAL ENVIRONMENTAL IMPACT STATEMENT

Volume I

Prepared by the:

United States Department of Transportation,
Federal Highway Administration
California Division
and the
California Department of Transportation, District 12
and the
City of Placentia

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Orange County Gateway Project within the Cities of Placentia and Anaheim and unincorporated Orange County to provide grade separation alternatives along the Burlington Northern Santa Fe railroad tracks from west of Bradford Avenue to west of Imperial Highway (State Route 90).

FINAL ENVIRONMENTAL IMPACT STATEMENT

Submitted Pursuant to: (Federal) 42 USC 4332(2)(C) and 49 USC 303

UNITED STATES DEPARTMENT OF TRANSPORTATION
Federal Highway Administration, and
THE STATE OF CALIFORNIA
Department of Transportation, and
THE CITY OF PLACENTIA

May 28, 2009
Date of Concurrence

Troy Butzlaff
City Administrator
City of Placentia (CEQA Lead Agency)

5-29-09
Date of Concurrence

NEPA Review
Cindy Quon
Director, District 12
California Department of Transportation

6/30/09
Date

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Abstract: The proposed action is an improvement to the Orangethorpe railroad corridor and consists of grade separation alternatives of several major crossings over an approximately 8-kilometer (5-mile) long segment in the Cities of Placentia and Anaheim and unincorporated Orange County from west of Bradford Avenue to west of Imperial Highway (State Route 90). Alternatives being considered include the No Build and three Build Alternatives, including two railroad lowering alternatives and one standard grade separation alternative. Potential project benefits include traffic congestion relief, improved traffic circulation, improved vehicle and pedestrian safety, and reduced train whistle noise. Adverse project impacts include those related to property acquisitions, residential and commercial relocations, temporary impacts to circulation and access during construction, visual impacts associated with new structures, and increased surface transportation noise.

SUMMARY

SUMMARY

PROPOSED PROJECT

Project Description Summary

The proposed Orange County Gateway (OCG) project is located in northeastern Orange County, along Orangethorpe Avenue and Crowther Avenue, between State Route 57 (SR-57) and State Route 90 (SR-90) (also known as Imperial Highway). The project limits are located within the Cities of Placentia and Anaheim and unincorporated Orange County.

The purpose of the proposed OCG project is to improve the economic vitality of the surrounding community by improving the projected future vehicle level of service (LOS) and reducing the amount of congestion and delay on the project area roadway network for residents, employees, and visitors to area businesses; increase the efficiency of moving people and goods by rail (freight and passengers) and cars and trucks in the OCG project area; increase public safety by eliminating at-grade rail/local street crossings; reduce operational train noise and whistles; reduce emergency vehicle response times; and reduce air pollution from idling vehicles on local streets at rail crossings. The proposed project is subject to federal, as well as City of Placentia and State, environmental review requirements because the City proposes the use of federal funds from the Federal Highway Administration (FHWA) and/or the project requires a FHWA approval action. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). The City is the project proponent and the lead agency under CEQA. Because of FHWA funding and/or approval, the FHWA is lead agency under NEPA, with the California Department of Transportation (Caltrans) acting as its liaison and providing oversight for the NEPA process. Some impacts determined to be significant under CEQA may not lead to a determination of significance under NEPA.

Three Build Alternatives and a No Build Alternative, Alternative A, were evaluated in detail in a Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR), upon which this Final EIS is based. Alternative B consists of railroad lowering from west of Bradford Avenue to west of Imperial Highway/SR-90. This alternative provides for a railroad trench that would begin its descent at Bradford Avenue and proceed east down at the maximum grade of 1 percent to a full trench depth of 12.2 meters (m) (40 feet [ft]) near Kraemer Boulevard. Proceeding to the east, the trench would remain 10.7 to 12.2 m (35 to 40 ft) deep until just west of Kellogg Drive, where it would begin its ascent at 1 percent grade to join the existing at-grade rail line at Imperial Highway. The 12.2 m (40 ft) depth would allow the trench to pass below the existing drainage structures that cross the alignment.

The proposed trench would be 17.2 m (56.5 ft) wide and consist of the two existing railroad tracks, the existing Burlington Northern Santa Fe (BNSF) right-of-way, and a 3.1 m (10 ft) wide access road for maintenance and emergency use. Access points into the trench are located at each end as the tracks enter and exit the trench, as well as two additional access points into the trench at Lakeview Avenue and Jefferson Street. The trench would be within the existing BNSF right-of-way except for

the 1,737.36 m (5,700 ft) long stretch of the corridor along Crowther Avenue, where it would be shifted to the south. The following eight existing arterial roads that intersect with the BNSF railroad tracks are proposed for grade separation under Alternative B: Kraemer Boulevard, Orangethorpe Avenue, Tustin Avenue/Rose Drive, Jefferson Street, Van Buren Street, Richfield Road, Lakeview Avenue, and Kellogg Drive. Bradford Avenue would remain at-grade. The estimated cost of Alternative B is $850 million.

Alternative C consists of railroad lowering from west of Bradford Avenue to west of Kellogg Drive. This alternative combines a partial trench with standard grade separations to accommodate an emergency bypass route for the railroad utilizing the existing tracks. The proposed trench and the at-grade railroad right-of-way would be 17.2 m wide (56.5 ft wide) and would consist of the two existing railroad tracks, the existing BNSF right-of-way, and a 3.1 m wide (10 ft wide) access road for maintenance and emergency use. Access points into the trench are located at each end as the tracks enter and exit the trench, as well as two access points into the trench at Lakeview Avenue and Jefferson Street. Like Alternative B, the rail trench would begin its descent at Bradford Avenue and proceed east down at the maximum grade of 1 percent to a full trench depth of 12.2 m (40 ft) near Kraemer Boulevard. The trench would remain 10.7 to 12.2 m (35 to 40 ft) deep until its ascent at 1 percent grade to join the existing at-grade rail line west of Kellogg Drive. Similar to Alternative B, under Alternative C, the following seven existing arterial roads that intersect with the BNSF railroad tracks are proposed for grade separation: Kraemer Boulevard, Orangethorpe Avenue, Tustin Avenue/Rose Drive, Jefferson Street, Van Buren Street, Richfield Road, and Lakeview Avenue. Unlike Alternative B, Kellogg Drive would remain an at-grade crossing. Bradford Avenue would also remain at-grade. The estimated cost of Alternative C is $639 million.

Alternative D is a standard grade separation that involves two railroad undercrossings and six railroad overcrossings between Kraemer Boulevard and Kellogg Drive. Kraemer Boulevard and Kellogg Drive are proposed as undercrossings to the BNSF railroad. Each undercrossing and overcrossing requires right-of-way acquisition of property to allow access to the crossings from the frontage roads (Crowther Avenue and Orangethorpe Boulevard). The proposed at-grade railroad right-of-way would be 17.2 m wide (56.5 ft wide) and would consist of the two existing railroad tracks, the existing BNSF right-of-way, and a 3.1 m wide (10 ft wide) access road. The current cost for all eight grade separations under Alternative D is estimated to be approximately $433 million. The estimated cost for the four major grade separations in Alternative D is $252 million. The major grade separations are the four crossings with the highest surface traffic volumes and were defined as "major" in the development of the construction staging plans to reflect the high traffic volumes at those locations. The estimated cost for the four minor grade separations in Alternative D is $181 million.

For additional discussion regarding the proposed project, refer to Sections 1.0 (Purpose and Need for the Project) and 2.0 (Project Alternatives).

The City of Placentia distributed the Draft EIS/EIR for the OCG project for public and agency review and comment on June 27, 2008. The comment period ended on August 11, 2008. Appendix K of this EIS provides the comments received on the Draft EIS/EIR and the responses to those comments.

At its meeting on September 4, 2007, the City of Placentia City Council identified Alternative D, Standard Grade Separation, as the locally preferred alternative for the OCG project. The agenda

report documenting this City Council action is provided in Appendix B-5, Additional Consultation Records.

With regard to NEPA, FHWA has prepared this Final EIS for the OCG project. FHWA has identified Alternative D as the federally preferred alternative. The Final EIS will be available for public review for 30 days. Following that public review period, FHWA may select an alternative and set forth its approval in a Record of Decision (23 CFR 771.127) along with a summary of the adverse impacts of the project, and avoidance, minimization, and mitigation measures incorporated into the selected project.

As noted above, FHWA has identified Alternative D as the federally preferred alternative. In consideration of the identification of the federally preferred alternative for the OCG project, three broad categories of criteria were analyzed based on the detailed project-related and environmental information considered by the City of Placentia in its November 17, 2008, certification of the final EIR for the project. Those primary criteria were the project objectives, the analysis of reasonable and practicable alternatives, and environmental impacts. The performance of each of the OCG Build Alternatives was analyzed and compared based on these criteria. Based on that analysis, Alternative D has been identified as the federally preferred alternative, as follows:

- Alternative D meets the identified project purpose to alleviate current and potential environmental impacts and hazards associated with traffic congestion at the existing at-grade crossings on the project segment of the BNSF.
- Alternative D represents a reasonable and practicable approach for meeting the project purpose and need, within available financial constraints. At this time, funding is programmed for the four major crossings in Alternative D; that funding would be insufficient to construct either Alternative B or C. In addition, existing programmed funds cannot be stockpiled for future expenditures on Alternatives B or C because most of the committed funding have sunset periods and it is unlikely that full funding would be available to construct Alternatives B and C for within those sunset periods and into the foreseeable future.
- Although Alternative D will result in unavoidable adverse visual and short-term air quality impacts and potentially contribute to cumulative adverse impacts related to property acquisition (community impacts), short-term air quality, and noise, those adverse impacts are substantially outweighed by the benefits of Alternative D. Specifically, the benefits of Alternative D, as a result of meeting the defined objectives for the OCG project, include reduction in traffic delays and mobility improvement, public safety improvement, elimination of train whistle noise, improved flood control with greater capacity, reduction in air quality emissions, and reduction in energy use when compared to the future No Build Alternatives conditions.

Background on the City of Placentia and the OnTrac Joint Powers Authority

Over the last several years, the City of Placentia has been pursuing a range of grade separation and safety projects along the BNSF railroad tracks through the City. The intent of these projects, including the proposed OCG project, is to reduce delays for vehicle traffic (including public safety vehicles) crossing the currently at-grade railroad tracks to improve vehicle and pedestrian safety at railroad grade crossings and reduce train horn noise in the City.

As an incorporated City, Placentia has been actively pursuing financial resources to fund these projects and has proceeded with a number of projects using local, State, and federal funds. In 2000, recognizing that the need for improvements across the BNSF tracks extended to other jurisdictions, the City and the Placentia Redevelopment Agency formed a joint powers authority (JPA) known as the Orange North American Trade Rail Corridor (OnTrac Authority). The OnTrac Authority was to be the implementing agency to provide a single-purpose agency to focus on the railroad mitigation projects. Originally, OnTrac had a five-member Board of Directors (effective January 2005) and met monthly.

OnTrac's structure was modeled closely after the Alameda Corridor Transportation Authority (ACTA) and the Alameda Corridor East Construction Authority (ACE). OnTrac was recognized at both the State and federal levels as the primary agencies working to fund and construct a series of highway/rail grade separation projects on the Alameda Corridor East, which is comprised of the Union Pacific (UP) and BNSF railroad transcontinental mainlines through Los Angeles, Orange, Riverside, and San Bernardino Counties.

The City of Placentia and the Placentia Redevelopment Agency were the only members of OnTrac, with members of the Placentia City Council and Redevelopment Agency Board of Directors acting as the Board for the OnTrac Authority. Efforts were made to encourage other cities along the BNSF tracks through north Orange County to join the OnTrac Authority as potential projects were identified and pursued in those cities. OnTrac and the City of Placentia pursued and received funding for several projects and continued to pursue funding opportunities for the range of projects proposed along the BNSF railroad tracks.

On August 1, 2006, the City Council of the City of Placentia and the Board of Directors of the Placentia Redevelopment Agency each unanimously approved the dissolution of the OnTrac Joint Powers Authority. The dissolution became effective August 31, 2006. The City of Placentia will continue to serve as the CEQA Lead Agency for the proposed OCG project and will direct future actions taken in furtherance of the project.

Agency Actions

The Lead Agencies for this environmental analysis are the Federal Highway Administration (FHWA) for the National Environmental Policy Act (NEPA) EIS and the City of Placentia for the California Environmental Quality Act (CEQA) EIR. The California Department of Transportation (Caltrans) District 12 is the local reviewing agency for NEPA, on behalf of the FHWA. The City of Placentia is also overseeing and coordinating the planning and preliminary engineering of the proposed OCG project.

After the completion of the CEQA and NEPA environmental documentation by the City of Placentia and FHWA, respectively, the implementation of the preferred project will be undertaken by the Orange County Transportation Authority (OCTA). The OCTA will be the implementing agency responsible for the final design, right-of-way acquisition, and construction of the preferred alternative. The OCTA is committed to implementing the avoidance, minimization, and mitigation measures for the preferred alternative, as listed in Tables S-1 and S-2, in Section 3.0, and in Appendix F, the Environmental Commitments Record (ECR). To provide a smooth transition from the City as the environmental local lead agency to the OCTA as the agency responsible for implementing the final

design, right-of-way acquisition, and construction of the preferred alternative, including implementation and documentation of the measures in the ECR, the OCTA and City will execute a cooperative agreement that will specifically require the OCTA to implement, and document the implementation of, the project mitigation measures identified in the ECR as part of the project cost.

PURPOSE AND NEED FOR THE PROJECT

The purpose of the OCG project is to eliminate the current and potential environmental impacts and hazards posed by the existing at-grade rail crossings at several intersections within the Orangethorpe Corridor. At the same time, the project seeks to accomplish the following objectives:

- Improve the economic vitality of the surrounding community by improving the projected future LOS and reducing the amount of congestion and delay on the project area roadway network for residents, employees, and visitors to area businesses
- Increase the efficiency of moving people and goods by rail (freight and MetroLink), cars, and trucks in the OCG project area
- Increase public safety by eliminating at-grade rail/local street crossings
- Reduce operational train noise and whistles
- Reduce emergency vehicle response times
- Reduce air pollution from idling vehicles on local streets at rail crossings

The BNSF railroad line is a transcontinental mainline and one of the highest volume lines in the country. Trains are typically over 2.4 kilometers (km) (1.5 miles [mi]) in length, resulting in substantial driver delay and congestion at the eight intersecting arterial streets within the OCG project area. The surrounding community would benefit from the OCG Build Alternatives because they would alleviate congestion, remove the potential for accidents, and maintain ready access to retail centers, neighborhoods, parks, schools, and churches located along or accessed via the approximately 8.1 km (5 mi) length of the rail corridor. Rail movement in this corridor would be enhanced by allowing trains to maintain existing speeds along the project segment of the BNSF and not slow down for at-grade crossings. In addition, it would eliminate the potential for track closures and delays caused by automobile or truck accidents on the track crossings.

Currently, approximately 70 freight trains per day use the project segment of the BNSF. Areas in the vicinity of the existing arterial at-grade crossings currently experience considerable problems including surface traffic delays, potential for vehicle-train accidents, train operational noise and whistles, air pollution from idling vehicles, and emergency response vehicle delays. The number of daily freight trains on this segment of the BNSF is forecast to increase to 130 trains in 2030, due to growth in international trade. The 2030 forecasted volume of freight trains equates to one train on the project segment of the BNSF, blocking intersections, approximately every 10 minutes, 24 hours a day. Further, surface traffic volumes are also forecasted to increase by 2030. If no grade separation improvements are implemented, rail crossing gates would block intersections approximately 40 to 50 percent of the time during the peak hours of the morning commute in 2030 (*Traffic Impact Analysis,* LSA Associates, Inc., 2006).

The proposed grade separations under the OCG Build Alternatives would increase the ability to efficiently move people and goods in and through the OCG study area. International and domestic products moving by rail over the corridor would have more predictable delivery dates by removing the vehicular conflict points that now exist at the eight at-grade crossings. The same is true for passengers using the rail corridor via Amtrak and MetroLink services. Passenger trains would be able to maintain more predictable schedules by removing at-grade crossings along the project segment of the BNSF.

The grade separations would increase public safety by removing the risk associated with increased volumes of freight and passenger trains and vehicles at the at-grade crossings. Grade separations are a proven long-term safety enhancement.

Train noise would also be reduced through construction of grade separations. Locomotive engineers would no longer need to sound the train horns as now required by federal law. Train horn noise has become a major community issue in the OCG project area, and the grade separations would provide permanent mitigation by removing the need to sound train horns at the crossings in the OCG study area.

The existing BNSF right-of-way on the project segment currently accommodates the existing two railroad tracks and supporting maintenance and operations facilities. The existing BNSF right-of-way is wide enough to accommodate additional improvements in this corridor in the future, if BNSF should elect to pursue them. Right-of-way for existing rail facilities is limited. Alternatives B and C, which include construction of a trench, would be constructed within the existing BNSF right-of-way. When construction of Alternatives B and C is complete, the existing BNSF right-of-way would still be available to BNSF for future improvements. Alternative D, which assumes standard grade separations, would not require the permanent use or acquisition of existing BNSF right-of-way. As a result, the existing BNSF right-of-way would be preserved under all three proposed OCG Build Alternatives. The BNSF provided a letter dated October 30, 2006, to the City of Placentia which stated "BNSF request that all build alternatives protect the existing BNSF right-of-way. The existing BNSF right-of-way is reserved for future rail improvements and rail expansions within the rail corridor." A copy of the letter is provided in Appendix B, Coordination and Consultation. No information on possible BNSF facility or service improvements in this corridor is known at this time. In the future, should BNSF pursue additional improvements in this corridor, the BNSF existing right-of-way would be available for those improvements. The proposed OCG Build Alternatives do not assume any improvements to the BNSF facilities or services in this corridor. No BNSF facility or service improvements are evaluated in this Draft EIS/EIR. Any future BNSF improvements would serve different needs. Therefore, the proposed OCG project and any future BNSF improvements in this corridor would serve independent utility and would not be dependent on each other.

ANTICIPATED PERMITS AND APPROVALS REQUIRED

Utilities/Emergency Services

- Grading permits from the County of Orange and Cities of Anaheim and Placentia
- Facility relocation permits

Traffic

- Detour plans under all Build Alternatives are to be submitted to and approved by the affected cities

Cultural Resources

- Section 106
- Cultural Resources Late Discovery Plan

Hydrology and Floodplains

- Encroachment permit from the Orange County Property Permits Section (Alternatives B and C)

Water Quality and Storm Water Runoff

- Municipal National Pollution Discharge Elimination System (NPDES) Permit
- State General Construction Activity NPDES Permit

Hazardous Waste/Materials

- Emergency response and evacuation plan to be reviewed and approved by the appropriate authorities prior to implementation
- Health and Safety Plan
- Excavation Monitoring Plan

Energy

- Construction efficiency plan to be reviewed and approved by the City of Placentia

Biological and Water Resources

- United States Army Corps of Engineers (USACE) 404 permit (federal Clean Water Act)
- Regional Water Quality Control Board (RWQCB) 401 permit (Water quality certification)
- California Department of Fish and Game (CDFG) 1602 permit (Streambed Alteration Agreement)

Railroad Approvals

Agencies doing work with railroads must obtain the railroad's approval for any project through execution of a Construction and Maintenance Agreement. It is the Memorandum of Understanding

(MOU) for a given specific project. The California Public Utilities Commission (CPUC) must approve each specific project. The CPUC requires the applicant/lead agency to submit proof of the Construction and Maintenance Agreement with the railroad before the CPUC will take action. The parties to the MOU for the OCG crossings of the BNSF are expected to include the BNSF, OCTA, and City of Placentia.

UNRESOLVED ISSUES AND AREAS OF CONTROVERSY

There are no unresolved issues or areas of controversy related to environmental issues under NEPA regarding the proposed OCG project known at this time.

A lawsuit challenging the City's certification of the Final EIR was filed, specifically challenging the selection of Alternative D as the locally preferred alternative. A stay in the proceedings was issued on March 23, 2009, because the court determined that the parties are engaged in good faith settlement discussions.

The four major grade separations in Alternative D are programmed and financially constrained in the *Regional Transportation Improvement Program* as shown in the project listings in Appendix H. However, the four minor grade separations are not currently financially constrained, which is an outstanding issue related to those grade separations. The City is continuing to work with the OCTA to identify and program funding for the right-of-way acquisition, final design, and construction of the four minor grade separations.

PROJECT EFFECTS AND AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES

Tables S-1, S-2, and S-3 summarize the potential environmental effects, both beneficial and adverse, anticipated for each alternative of the proposed OCG project, organized by environmental parameter and alternative for permanent, short-term, and other project effects, respectively. Avoidance, minimization, and mitigation measures are identified to avoid and minimize adverse environmental impacts. These topics are fully discussed in Chapters 3.0, 4.0, and 5.0 and in the technical analyses that are included in the appendices to this document, or under separate cover and available for review at the City of Placentia.

The avoidance, minimization, and mitigation measures in Tables S-1, S-2, and S-3 apply to the OCG Build Alternatives, including Alternative D, the preferred project, unless otherwise noted.

Under NEPA, significance is used to determine whether an EIS, or some lower level of documentation, will be required for a proposed project. Some impacts determined to be significant under CEQA may not be of sufficient magnitude to be determined significant under NEPA. Under NEPA, once a decision to prepare an EIS is made, it is the magnitude of the impact that is evaluated, and no judgment of its significance is deemed important for the EIS. NEPA does not require that a Findings of Significance be stated in the Draft EIS/EIR; however, such a determination is required by CEQA. Therefore, Tables S-1, S-2, and S-3 discuss the significance of impacts according to CEQA for the OCG project.

As shown on Table S-2, and as described in Section 3.1.3, Section 4(f) Properties, and in Appendix D, Resources Evaluated Relative to the Requirements of Section 4(f), the OCG Build Alternatives will not use any Section 4(f) properties. That analysis, which specifically evaluated the potential for the OCG Build Alternatives to use the Parque de los Niños, a public park owned and operated by the City of Placentia, determined that Alternatives B, C, and D would not result in the use of this Section 4(f) property. No comments related to this park or the potential for effects on this park under Section 4(f) were received from the public or agencies during the public review period (from June 27 to August 11, 2008) for the Draft EIS/EIR. All comments received on the Draft EIS/EIR are provided in Appendix K, Responses to Comments. Based on the analysis provided in Section 3.1.3 and in Appendix D, and that no comments were received regarding this park during the public review period for the Draft EIS/EIR, it was determined that the OCG project would not result in the use of resources protected by Section 4(f).

Table S-1: Summary of Long-Term Permanent Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
3.1 Land Use Existing and Future Land Uses	No adverse impact to existing and future land uses	Consistent with General Plan Land Uses	Consistent with General Plan Land Uses	Consistent with General Plan Land Uses	**LU-1** The OCTA Project Manager will coordinate with the Cities of Placentia and Anaheim and the County of Orange to amend the applicable General Plan Land Use designations so that the parcels acquired permanently for the selected Orange County Gateway (OCG) project are consistent with the transportation uses under that preferred project. (Applies to Alternatives B, C, and D.)
3.1 Public Services—Transit	No beneficial effect for transit services	Beneficial long-term effect on transit from improved traffic flow	Beneficial long-term effect on transit from improved traffic flow	Beneficial long-term effect on transit from improved traffic flow	None required.
3.1 Public Services—Schools	Schools: Potential for frequency of train noise to increase	Beneficial effect on schools because railroad lowering would reduce some train noise	Beneficial effect on schools because railroad lowering would reduce some train noise	No effect	None required.
3.1 Public Services—Libraries	No impact	No impact	No impact	No impact	None required.
3.1 Consistency with Land Use Policies	Not consistent	Consistent	Consistent	Consistent	None required.
Section 4(f) Resources	No impact	No impact	No impact	No impact	None required.
3.2 Growth	No impact	No impact	No impact	No impact	None required.
3.3 Farmlands/ Agricultural Lands	No impact	No impact	No impact	No impact	None required.
3.4 Community Impacts—Property Acquisition	No right-of-way acquisition No partial acquisitions	Right-of-way acquisition Full parcel acquisitions: 16 (5 residential, 11 nonresidential) Partial acquisitions: 44;	Right-of-way acquisition Full parcel acquisitions: 19 (5 residential, 14 nonresidential) Partial acquisitions: 61;	Right-of-way acquisition Full parcel acquisitions: 75 (32 residential, 43 nonresidential) Partial acquisitions: 34;	**CI-2** The OCTA Project Engineer will coordinate with the affected property owners and industrial land uses subject to partial acquisitions (including parking) to determine if the uses on those parcels can be reconfigured on site in such a manner as to remain in operation. If a commercial or industrial partial acquisition cannot be reconfigured to allow for continued operation on the remainder parcel, the OCTA

Table S-1: Summary of Long-Term Permanent Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
		(188,726 square feet)	(197,893 square feet)	(493,926 square feet)	Project Engineer will coordinate and cooperate with the affected property owners in relocating the affected land use to land designated for the given land use, preferably within the boundaries of the study area cities. (Applies to Alternatives B, C, and D.) **CI-3** The OCTA Project Engineer will coordinate with the affected property owners whose parking areas are subject to parking acquisitions to determine whether replacement parking can be provided on-site or in the immediate vicinity. (Applies to Alternatives B, C, and D.) **CI-4** The acquisition and relocation program would be conducted by the OCTA Right-of-Way Agents in accordance with the provision of federal Public Law (PL) 91-646 and the Uniform Relocation Assistance and Real Property Acquisitions Policies Act (Uniform Act) of 1970 as amended (and as amended by PL100-17, 1987) and as adopted by the California Department of Transportation. The Uniform Act mandates that certain relocation services and payments be made available to eligible residents, businesses, and nonprofit organizations displaced by its projects. The Uniform Act provides for uniform and equitable treatment by federal or federally assisted programs of persons displaced from their homes, businesses, or farms and establishes uniform and equitable land acquisition policies. (Applies to Alternatives B, C, and D.) **CI-5** Where acquisition and relocation are unavoidable, the OCTA Right-of-Way Agents

Table S-1: Summary of Long-Term Permanent Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					will follow the provisions of the Uniform Act and the 1987 Amendments as implemented by the Uniform Relocation Assistance and Real Property Acquisition Regulations for Federal and Federally Assisted Programs adopted by the Department of Transportation (March 2, 1989). An independent appraisal of the affected property would be obtained, and the OCTA Right-of-Way Agents would offer the full amount as determined by the appraisal. Relocation resources will be available to all residential and business relocatees without discrimination. (Applies to Alternatives B, C, and D.) **CI-6** The Uniform Act requires that comparable, decent, safe, and sanitary replacement housing that is within a person's financial means be made available before that person may be displaced. In the event that such replacement housing is not available to "re-house" persons displaced by the project within statutory limits for replacement housing payments, the OCTA Right-of-Way Agents may provide Last Resort Housing in a number of prescribed ways. Last Resort Housing would be provided in the event that comparable housing for displaced residents is not available. Last Resort Housing can include increased housing payments or the construction of new housing, depending on the specific circumstances associated with the housing needs for an individual project. (Applies to Alternatives B, C, and D.)
3.4 Community Impacts—Community Character and Cohesion	No benefit to the community	Beneficial effects: reduced travel delays, better access for the	Beneficial effects: reduced travel delays, better access for the	Beneficial effects: reduced travel delays, better access for the	None required.

Table S-1: Summary of Long-Term Permanent Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
		community, and reduced train whistle noise	community, and reduced train whistle noise	community, and reduced train whistle noise	
	No impact to community character and cohesion	No impact to community character and cohesion	No impact to community character and cohesion	No impact to community character and cohesion	None required.
3.4 Environmental Justice	No impacts	Potential adverse impacts on environmental justice (EJ) populations as a result of property acquisition	Potential adverse impacts on EJ populations as a result of property acquisition	Potential adverse impacts on EJ populations as a result of property acquisition	Property acquisition and relocation as described in Mitigation Measures CI-4, CI-6, and CI-7 above. (Applies to Alternatives B, C, and D.)
	No benefit to the community	Beneficial effects: reduced travel delays, better access for the community, and reduced train whistle noise	Beneficial effects: reduced travel delays, better access for the community, and reduced train whistle noise	Beneficial effects: reduced travel delays, better access for the community, and reduced train whistle noise	None required.
3.5 Utility/Emergency Services	Delays to emergency services	Beneficial effect to emergency services due to reduced traffic delays	Beneficial effect to emergency services due to reduced traffic delays	Beneficial effect to emergency services due to reduced traffic delays	None required.
	No impact to utilities	No impact to utilities	No impact to utilities	No impact to utilities	None required.
3.6 Traffic/ Transportation/ Pedestrian and Bicycle Facilities	Adverse impact	Beneficial effect of elimination of vehicle delays due to train crossings	Beneficial effect of elimination of vehicle delays due to train crossings	Beneficial effect of elimination of vehicle delays due to train crossings	None required.

Table S-1: Summary of Long-Term Permanent Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
	No impact	No impact	No impact	Potential for permanent traffic delay/ unsatisfactory level of service (LOS) at Richfield Road/ Orangethorpe Avenue	**TRA-1** Prior to approval of the Plans, Specifications and Estimates (PS&E) for the preferred project, the OCTA Project Engineer will design the ramp/intersection at Richfield Road/Orangethorpe Avenue with the geometrics presented below. These plans will be submitted to and approved by the City of Placentia prior to implementation. (Applies to Alternative D.) **Movement** / **Richfield/ Orangethorpe (south side)** Northbound Left 0 Northbound Through 0 Northbound Right 0 Southbound Left 1 Southbound Through 0 Southbound Right 1 Eastbound Left 1 Eastbound Through 2 Eastbound Right 0 Westbound Left 0 Westbound Through 3 Westbound Right 0
	No impact	Beneficial effect of removing at-grade conflicts	Beneficial effect of removing at-grade conflicts	Beneficial effect of removing at-grade conflicts	None required.
3.7 Visual/Aesthetics	No impact	Beneficial changes in views along the alignment	Beneficial changes in views along the alignment Adverse visual impact of one overcrossing structure	Beneficial changes in views along the alignment Adverse visual impact of six overcrossing structures	**V-2 Landscape Plan.** The OCTA Project Engineer will incorporate a landscape plan into the final design of the preferred project prior to the issuance of a grading permit. This plan will be designed to effectively buffer sensitive permanent viewers from the visual impacts of the project and would identify all opportunities to use areas within the project limits for revegetation

Table S-1: Summary of Long-Term Permanent Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					and/or landscaping. This plan will include landscapes of graded areas with plant species consistent with adjacent vegetation and the use of mature plants to effectively screen new project structures (e.g., bridges and retaining walls). This plan will incorporate all applicable procedures and requirements as detailed in the California Department of Transportation (Caltrans) Highway Design Manual, Section 902.3—Planting Guidelines. This plan will include performance criteria (plant coverage/density, plant types, etc.) that must be met to ensure that revegetation of affected areas will be consistent with the existing natural landscape and/or local jurisdiction landscape policies. (Applies to Alternatives B, C, and D.) **V-3 Hardscape Plan.** The OCTA Project Engineer will incorporate a hardscape plan to implement attractive walls, fencing, sidewalks, and other visually pleasing hardscape into the final design of the preferred project prior to issuance of a grading permit. (Applies to Alternatives B, C, and D.) **V-4 Architectural Detail and Aesthetic Treatments.** The OCTA Project Engineer will incorporate special architectural detail and aesthetic treatments into the final design, as feasible, to reduce the potential visual intrusiveness of all bridge structures and retaining walls and the proposed sound wall along the north side of Orangethorpe Avenue, east of Lakeview Avenue. The architectural detail and

Table S-1: Summary of Long-Term Permanent Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					aesthetic treatments may include the use of natural appearing stone, or brick, specially themed mosaics inlayed within the retaining walls, small planting areas incorporated into the walls to allow for vegetation to cascade down the walls of the structures, bridge design utilizing natural colors and aesthetic details, etc. Specific architectural detail and aesthetic treatments will be determined during final design prior to issuance of a grading permit. (Applies to Alternatives B, C, and D.) **V-5 Taller Walls.** The OCTA Project Engineer will ensure that the final design for the preferred project shows the existing walls at Parque de los Niños and along the eastern residential portion of the project study area will be made as tall as allowed by City of Placentia Code to provide a higher visual barrier between the passing trains and sensitive viewers. (Applies to Alternatives C and D.)
3.8 Cultural Resources	No impact	No adverse impact to historic properties	No adverse impact to historic properties	No adverse impact to historic properties	None required.
3.9 Hydrology and Floodplains	No impact	Adverse impact on hydrology and flood control facilities	Adverse impact on hydrology and flood control facilities	Adverse impact on hydrology and flood control facilities	**HY-1** The reconstructed flood control facilities along the alignments of Alternatives B and C will be designed to their ultimate size to safely convey the 100-year flood in accordance with Orange County Flood Control District (OCFCD) requirements. This measure will assure that the constructed facilities maintain the existing capacity of the flood control system. (Applies to Alternatives B and C; does not apply to Alternative D, the preferred project.)

Table S-1: Summary of Long-Term Permanent Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					HY-2 A local storm drain line will be constructed along Orangethorpe Avenue from Lakeview Avenue to Richfield Channel to divert local storm drain flows at Lakeview Avenue, Fee Ana Street, and Richfield Road. This line will be designed in accordance with appropriate agency standards. This measure will assure that the constructed facilities maintain the existing capacity of the flood control system. (Applies to Alternatives B and C; does not apply to Alternative D, the preferred project.) **HY-3** A local storm drain line will be constructed along Orangethorpe Avenue from Kellogg Drive to Atwood Channel to divert local storm drain flows at the west intersection of Kellogg Drive and Orangethorpe Avenue. This line will be designed in accordance with appropriate agency standards. This measure will assure that the constructed facilities maintain the existing capacity of the flood control system. (Applies to Alternatives B and C; does not apply to Alternative D, the preferred project.) **HY-4** Any street crossings of the rail corridor will be designed to contain the appropriate storm runoff between curbs and/or right-of-way in accordance with appropriate agency standards. This measure will assure that the constructed facilities maintain the existing capacity of the flood control system. (Applies to Alternatives B and C; does not apply to Alternative D, the preferred project.) **HY-5** Where feasible, permeable paving materials will be used in hardscape areas to

Table S-1: Summary of Long-Term Permanent Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					maximize infiltration. The project will be designed to retain and percolate site runoff to the extent practical. (Applies to Alternatives B and C; does not apply to Alternative D, the preferred project.) **HY-6** Clarification of ownership, maintenance, and operation of the reconstructed flood control facilities (Kraemer Storm Drain, Carbon Canyon Channel, Richfield Channel, Atwood Channel, and East Richfield Channel) spanning the railroad trench will be determined by negotiation and stipulated by agreement between OCFCD and the appropriate local agency/agencies. The agreement must be executed and accepted prior to issuance of an encroachment permit from the Orange County Property Permits Section. (Applies to Alternatives B and C; does not apply to Alternative D, the preferred project.) **HY-7** The proposed groundwater management system for Alternatives B and C will consist of the following two components: **Component 1.** The first component will be the provision of a slurry wall with tiebacks to prevent groundwater seepage and pressures in order to accommodate hydrostatic pressures up to 4.6 meters (15 feet) above the proposed top of the rail. The subsoil near the trench alignment consists of lenticular deposits of sands and gravels along the finer materials. There is no continuous aquitard within a reasonable depth of the base of the proposed trench. A slurry wall with tiebacks is proposed to limit seepage quantities and to

Table S-1: Summary of Long-Term Permanent Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					preclude heave at the base of the trench. **Component 2.** The second component will be a continuous blanket subdrain system consisting of a granular layer and appropriate geotextile and perforated collection pipes at the base of the trench to control localized seepage and excess moisture. This system, in combination with the slurry wall, will be designed to accommodate seepage and pressures for hydrostatic heads up to 4.6 meters (15 feet) above the top of the rail. This groundwater will be intercepted by a 1.2-meter (4-foot)-wide by 2-meter (6.5-foot)-high reinforced concrete box (RCB) that will be located below the trench and which will be continuous along the alignment. The size of the RCB will allow access for cleaning and maintenance of the subdrain collector pipes. Drainage inlets along the trench wall will drain surface waters (storm and non-storm water flows) via connector pipes into this box culvert. The box structure will convey flows to a sump near Carbon Canyon Channel where a pump station will be located on the south side of the trench and the east side of the channel. The water will be pumped into the channel with appropriate provisions to satisfy National Pollutant Discharge Elimination System (NPDES) requirements. Emergency generators will be provided to assure backup power. This measure will assure that the constructed facilities do not alter or interfere with existing groundwater recharge facilities, production,

Table S-1: Summary of Long-Term Permanent Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					and quality, and maintain structural integrity in proximity to those facilities. Future agreements and/or transfers of responsibility for operation and maintenance of the dewatering system may be implemented between the City of Placentia and local water agencies. (Applies to Alternatives B and C; does not apply to Alternative D, the preferred project.) **HY-8** An impermeable ground cover will be constructed at the bottom of the trench. This measure will assure that the constructed facilities do not alter or interfere with existing groundwater recharge facilities, production, and quality, and maintain structural integrity in proximity to those facilities. (Applies to Alternatives B and C; does not apply to Alternative D, the preferred project.) **HY-9** During final design, the OCTA Project Engineer will design the realigned segment of the Kraemer Boulevard Storm Drain within the project limits to its ultimate size to safely convey 100-year flood volumes in accordance with Orange County Flood Control District (OCFCD) requirements. (Applies to Alternative D only.) **HY-10** During final design, the OCTA Project Engineer will design the modified local storm drain systems within the project limits at Lakeview Avenue, Fee Ana Street, and Richfield Road to conform to the appropriate grade separations. These systems will be designed in accordance with appropriate agency standards. (Applies to Alternative D only.)

Table S-1: Summary of Long-Term Permanent Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					HY-11 During final design, the OCTA Project Engineer will design the reconstructed and lowered Kellogg Drive Storm Drain within the project limits along Orangethorpe Avenue and Kellogg Drive to divert flows to the Santa Ana River to the south. This drain will be designed in accordance with appropriate agency standards. (Applies to Alternative D only.) **HY-12** The OCTA Project Engineer will coordinate with the Orange County Water District (OCWD) during final design of the preferred project to ensure that issues related to groundwater levels, flows, minimizing pumping, recharge consistent with any permits issued by the Regional Water Quality Control Board (RWQCB), and the project permit needs are addressed for both construction and long-term operations. Refer also to measures WQ-3 and WQ-5. (Applies to Alternatives B, C, and D.) **HY-13** The OCTA Project Manager and OCTA Resident Engineer will invite the OCWD to participate in preconstruction meetings prior to initiation of construction in the vicinity of Anaheim Lake and Lakeview Avenue, specifically to address issues related to groundwater levels, flows, minimizing pumping, recharge consistent with any permits issued by the RWQCB and other permit requirements. (Applies to Alternatives B, C, and D.) **HY-14** If Alternative B or C is selected for implementation, the final design will not use any tiebacks into OCFCD right-of-way.

Table S-1: Summary of Long-Term Permanent Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					FP-1 Prior to issuance of a construction permit, a detailed floodplain analysis will be prepared by the OCTA Project Engineer to establish flow paths and depths, and ponding limits and depths within the floodplain in the area potentially affected by the implementation of the proposed OCG project. The analysis will consider the selected Build Alternative and the construction activities and logistics associated with that alternative. The results of that analysis will be used to guide project construction phasing, location and alignment of facilities and materials, and provision of appropriate flow paths and routing for runoff events. (Applies to Alternatives B and C; does not apply to Alternative D, the preferred project.) **FP-2** Prior to issuance of a grading permit, the OCTA Project Engineer will file the Conditional Letter of Map Revision (CLOMR) with Federal Emergency Management Agency (FEMA). If required, the OCTA Project Engineer will file a Letter of Map Revision (LOMR) with FEMA prior to operation of the project. This measure will result in the documentation of any alterations to the floodplain in the area as a result of the project. (Applies to Alternatives B and C; does not apply to Alternative D, the preferred project.) **FP-3** A parapet wall will be constructed to wrap around all sides of the trench, including the street bridge crossings, to prevent surface runoff from entering the trench. The height of the wall will be coordinated with the results of the floodplain analysis so that it provides maximum protection

Table S-1: Summary of Long-Term Permanent Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
	No change in flood conditions	Beneficial effect in relieving flood conditions	Beneficial effect in relieving flood conditions	Beneficial effect in relieving flood conditions	to the proposed trench without exacerbating the existing flooding conditions. The height of the wall will be in accordance with appropriate agency requirements, and the details will be determined prior to final design. (Applies to Alternatives B and C; does not apply to Alternative D, the preferred project.)
3.10 Water Quality and Storm Water Runoff	No impact	Potential for adverse water quality and storm water runoff impacts during operations	Potential for adverse water quality and storm water runoff impacts during operations	Potential for adverse water quality and storm water runoff impacts during operations	**WQ-2** Prior to the start of construction, the OCTA Resident Engineer will require the construction contractor to provide evidence that the construction contractor has developed a Storm Water Pollution Prevention Plan (SWPPP) and has filed a Notice of Intent (NOI) to comply with the State General Construction Activity National Pollutant Discharge Elimination System (NPDES) Permit to the State Water Resources Control Board (SWRCB). The SWPPP will address runoff within the project excavation and in project-related areas adjacent to the railroad. (Applies to Alternatives B, C, and D.) **WQ-3** The OCTA Resident Engineer will require the construction contractor to collect and treat storm water and nonstorm water flows collected in the subdrain system prior to discharge to meet NPDES Permit discharge requirements during project operation. Treatment best management practices (BMPs) to address project storm water runoff may include but are not limited to biofiltration strips and swales, media or sand filters, or small detention basins. A treatment facility will be located near the

Table S-1: Summary of Long-Term Permanent Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					intersection of the railroad alignment and Carbon Canyon Channel. This facility will be designed to handle volumes equivalent to storm water flows associated with the 100-year design storm. Refer also to measures HY-12 and WQ-5. (Applies to Alternatives B, C, and D.) **WQ-5** The OCTA Project Engineer will prepare a Water Quality Management Plan (WQMP) for the preferred project in conformance with the requirements of Section 7, "New Development/ Significant Redevelopment," of the Orange County Drainage Area Management Plan (DAMP). The DAMP implements the requirements of the *Waste Discharge Requirements for the County of Orange, Orange County Flood Control District and The Incorporated Cities of Orange County within the Santa Ana Region Areawide Urban Storm Water Runoff, Orange County* (Order No R-92002-0010, NPDES No. CAS618030) (County of Orange MS4 Permit). The WQMP for the preferred project will be consistent with the DAMP. The preferred project is categorized as a priority project in the DAMP, and the WQMP will include provisions for the Site Design, Source Control, and Treatment Control best management practices (BMPs) that target pollutants of concern to reduce impacts to water quality to the maximum extent practicable. The WQMP will be reviewed and approved by the applicable local jurisdictions prior to issuances of grading permits. The OCTA Project Engineer will provide a plan, as an attachment to the WQMP, to ensure ongoing maintenance for permanent BMPs during operation of the

Table S-1: Summary of Long-Term Permanent Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					preferred project. This will include the OCTA Resident Engineer's signed statement accepting responsibility for all structural and treatment control BMP maintenance. The DAMP requirements for treatment will be met. Refer also to measures WQ-3 and HY-12. (Applies to Alternatives B, C, and D.)
3.11 Geology/Soils/ Seismic/Paleontology/ Topography	No impact	Potential for indirect seismic and liquefaction impacts	Potential for indirect seismic and liquefaction impacts	Potential for indirect seismic and liquefaction impacts	**GS-1** The OCTA Project Engineer will conduct additional comprehensive geotechnical evaluation, including site-specific subsurface exploration and laboratory testing, during final engineering design and prior to construction of the project improvements. The purpose of this comprehensive subsurface evaluation is to assess the subsurface conditions beneath the proposed construction and provide specific data on potential geotechnical hazards and constraints, as well as information pertaining to the engineering characteristics of the soils underlying the alignment. From these data, specific recommendations for grading/earthwork, slope stability, surface and subsurface drainage, dewatering, structure foundations, seismicity, and other geotechnical design considerations will be provided. The final geotechnical evaluation will be reviewed and incorporated into the final construction plans by the OCTA Project Engineer prior to issuance of a grading permit. Mitigation Measures GS-2 through GS-14, below, will be incorporated into the final geotechnical evaluation prepared under Mitigation Measure GS-1, as appropriate based on the findings of the detailed geotechnical analysis conducted during final design. (Applies to Alternatives B, C, and D.)

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Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					GS-2 The OCTA Project Engineer and OCTA Resident Engineer will ensure that all construction will meet or exceed the Uniform Building Code, Caltrans, or American Association of State Highway and Transportation Officials (AASHTO) requirements. (Applies to Alternatives B, C, and D.) **GS-3** The OCTA Project Engineer and OCTA Resident Engineer will ensure that slopes, where present, are a minimum of 2:1 or flatter, and slope stability will be evaluated on an individual basis. (Applies to Alternatives B, C, and D.) **GS-5** During final design, the OCTA Project Engineer and OCTA Resident Engineer will determine areas of shallow groundwater and compressible soils including the thickness of the compressible soils and compressibility properties. Typical mitigation measures for compressible soils will be incorporated in the preferred project as appropriate. These measures may include preloading and surcharge with or without the use of wick drains, removal and replacement of compressible soils, and/or supporting the structures on deep foundations/piles. (Applies to Alternatives B, C, and D.) **GS-6** The OCTA Project Engineer and OCTA Resident Engineer will evaluate the areal extent and thickness of expansive soils during final design. Typical mitigation measures for expansive soils include removal of the expansive material, treatment with lime, and/or supporting the structures on deep foundations and will be incorporated in the preferred project as

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Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					appropriate. (Applies to Alternatives B, C, and D.) **GS-7** The OCTA Project Engineer and OCTA Resident Engineer will ensure that the preferred project is designed and built to resist strong ground motion for the maximum acceleration of 0.5 g to 0.6 g. Higher design accelerations may be used based on the risk assessment. (Applies to Alternatives B, C, and D.) **GS-8** The OCTA Project Engineer and OCTA Resident Engineer will ensure that all structures are designed and built according to the most current adopted Uniform Building Code (UBC), Caltrans, railroad, and AASHTO seismic design standards. (Applies to Alternatives B, C, and D.) **GS-9** The OCTA Project Engineer and OCTA Resident Engineer will ensure that all walls are designed for the appropriate soil, water, surcharge, and seismic lateral pressures. (Applies to Alternatives B, C, and D.) **GS-10** The OCTA Project Manager will coordinate with the Burlington Northern Santa Fe (BNSF) and passenger rail operators to ensure the appropriate implementation of their existing safety protocols for operations after a seismic event. Existing BNSF and other applicable emergency procedures are in place for responding to earthquakes. Following an earthquake, tracks, bridges, and other structural components will be inspected for any structural problems, and service resumed as soon as it is safe to do so. (Applies to Alternatives B, C, and D.)

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Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					GS-11 If the OCTA Project Engineer determines that the potential for liquefaction below the design water table is substantial based on the findings of the geotechnical evaluation during final design, mitigation will be required. These measures may include densification by installation of stone columns, vibroflotation, dynamic compaction, compaction grouting, remedial grading, ground modification, and/or construction of pile foundations supported in dense soils below the liquefiable zone. (Applies to Alternatives B, C, and D.) **GS-12** If slopes are present, the OCTA Resident Engineer will reduce soil erosion by proper landscaping and planting or paving of the slopes and use of nonerodible cohesive soils on the surface of the slopes. (Applies to Alternatives B, C, and D.) **GS-14** The OCTA Project Engineer and OCTA Resident Engineer will require sulfate resistant concrete and metal protection for underground structures in areas where corrosive groundwater or soil could otherwise cause structures to deteriorate. (Applies to Alternatives B, C, and D.)
3.12 Hazardous Waste/Materials	On- or off-site spills or leaks (via groundwater flows) could potentially occur with or without the project	Potential for adverse hazardous waste/materials impacts during operations	Potential for adverse hazardous waste/materials impacts during operations	Potential for adverse hazardous waste/materials impacts during operations	**HW-1** The OCTA Project Manager will prepare an emergency response and evacuation plan that provides procedures for containing a hazardous waste/material spill within the trench and for evacuating personnel from the trench. The plan will be reviewed and approved by OCFA, BNSF, Federal Rail Administration (FRA), and other appropriate authorities prior to implementation. (Applies to Alternatives B, C, and D.)

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Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					HW-2 During final design, comprehensive soil and groundwater sampling analyses for pH, total recoverable petroleum hydrocarbons (TRPHs), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, or heavy metals will be conducted consistent with the recommendations in the *Hazardous Materials Site Investigation Report* (AES, January 2006) to determine if soils or groundwater that would be disturbed/removed as part of the project test above published threshold levels. Any contaminated soils or groundwater will be handled, transported, and disposed of in accordance with applicable local, State, and federal regulations. (Applies to Alternatives B, C, and D.) **HW-5** The OCTA Project Engineer will require the construction contractor to evaluate the hazardous materials used in construction and maintenance of the project prior to use for their level of hazard. Manufacturer's directions and warnings will be followed during use. Recommended appropriate safety equipment will be used for each material. Hazardous materials used during construction will be transported in accordance with applicable local, State, and federal regulations. (Applies to Alternatives B, C, and D.) **HW-6** During final design, the OCTA Project Engineer will conduct asbestos-containing materials (ACM) and lead-based paint (LBP) surveys of all structures to be renovated or demolished as part of the preferred project. Any

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Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					abatement or removal of ACM or LBP will be performed in accordance with applicable local, State, and federal regulations including regulations set forth in the South Coast Air Quality Management District (SCAQMD) Rule 1403. (Applies to Alternatives B, C, and D.) **HW-8** Prior to construction, the OCTA Project Engineer will verify the actual locations of oil wells on properties to be acquired for the preferred project. California Division of Oil, Gas and Geothermal Resources (DOGGR) records will be reviewed in order to assess the current status of the oil wells to be impacted by the preferred project. The final disposition of each impacted well will satisfy the regulatory requirements of DOGGR. (Applies to Alternatives B, C, and D.)
3.13 Air Quality	No substantial adverse impact related to criteria pollutants, sensitive receptors, and odors	No adverse impact related to criteria pollutants, sensitive receptors, and odors	No adverse impact related to criteria pollutants, sensitive receptors, and odors	No adverse impact related to criteria pollutants, sensitive receptors, and odors	None required.
	Increase in vehicle emissions	Beneficial effect in reduced vehicle emissions compared to the No Build Alternative	Beneficial effect in reduced vehicle emissions compared to the No Build Alternative	No change in vehicle emissions from the No Build Alternative	None required.
	No impact to the Air Quality Management Plan (AQMP)	No impact to the AQMP	No impact to the AQMP	No impact to the AQMP	None required

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Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
3.14 Noise and Vibration	Noise impact	Adverse surface transportation noise impact during operations	Adverse surface transportation noise impact during operations	Adverse surface transportation noise impact during operations	**NOI-1** Prior to completion of the preferred project, the OCTA Resident Engineer will ensure that noise barriers are installed in accordance with the length, height, location, and cost considerations identified in Section 3.14 of the Draft EIS/EIR. If it is determined through further noise studies that conditions have substantially changed, the installation of noise barriers may not be required. (Applies to Alternatives B, C and D.)
	No impact	Beneficial effect in reduction in train whistle noise	Beneficial effect in reduction in train whistle noise	Beneficial effect in reduction in train whistle noise	None required.
	No impact	Potential for reflective noise impacts associated with bridges and overcrossings	Potential for reflective noise impacts associated with bridges and overcrossings	Potential for reflective noise impacts associated with bridges overcrossings, and/ or undercrossings	**NOI-2** Within one year of the completion of construction and the initiation of full rail and street operations at each intersection near residential or other noise-sensitive land uses, the OCTA Project Manager will conduct measurements of existing noise levels in those areas to assess whether the hard surfaces on the structures are potentially resulting in reflective noise impacts in noise-sensitive areas. In the event that the noise measurements indicate that the noise levels are affected by reflective noise, the OCTA Project Manager will identify and evaluate the feasibility and reasonableness of potential mitigation for those impacts. Those measures may include the installation of sound-absorbing materials on the hard surfaces and/or modifications to existing sound walls. (Applies to Alternatives B, C, and D.)
	No impact related to groundborne noise, vibration, or	No impact related to groundborne noise, vibration, or	No impact related to groundborne noise, vibration, or	No impact related to groundborne noise, vibration, or	None required.

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Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
	aviation plans and operations	aviation plans and operations	aviation plans and operations	aviation plans and operations	
3.15 Energy	No impact	No adverse impact, however, mitigation to promote energy efficiency during operation	No adverse impact, however, mitigation to promote energy efficiency during operation	No adverse impact, however, mitigation to promote energy efficiency during operation	**E-1** Prior to issuance of a grading permit, the OCTA Project Engineer will prepare an area lighting plan to identify lighting fixtures that are energy efficient and to identify placement of individual lighting fixtures used for undercrossings that will provide safety lights for pedestrians and motorists. The area lighting plan will incorporate relevant City, County, State, and federal energy code requirements and will be reviewed and approved by the Public Works Departments for each local jurisdiction in the project area. (Applies to Alternatives B, C, and D.)
	No reduction in fuel consumption	Cumulative fuel consumption of vehicles will be reduced, a beneficial effect	Cumulative fuel consumption of vehicles will be reduced, a beneficial effect	Cumulative fuel consumption of vehicles will be reduced, a beneficial effect	None required.
3.16 Natural Communities and Plant Species	No impact	No impact	No impact	No impact	None required.
3.17 Wetlands and Other Waters of the United States	No impact	Adverse impact to jurisdictional waters	Adverse impact to jurisdictional waters	Adverse impact to jurisdictional waters	**BIO-1** The OCTA Project Engineer and OCTA Resident Engineer will provide the following: • On-site enhancement of existing jurisdictional waters, and/or • Off-site enhancement of existing jurisdictional waters, or creation of jurisdiction waters through the purchase of suitable habitat or participation in an existing mitigation bank (i.e., the Santa Ana River Arundo Eradication Program), and/or

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Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					• On-site treatment of flows from developed surfaces prior to such flows entering waters of the United States (e.g., mechanical filters, bioswales, or other similar postconstruction best management practices). (Applies to Alternatives B, C, and D.) The final mitigation for project effects on jurisdictional waters, as developed during the United States Army Corps of Engineers (USACE) permit process, will conform with USACE and EPA regulations, 33 CFR Parts 325 and 332, and 40 CFR Part 230, respectively, entitled "Compensatory Mitigation for Losses of Aquatic Resources: Final Rule." 404 Nationwide or General Permit (United States Army Corps of Engineers) Regional Water Quality Control Board 401 Certification California Department of Fish and Game Streambed Alteration Agreement Mitigation Measures HY-1 through HY-6, FP-1, and WQ-1 through WQ-5 would also minimize impacts to waters (Alternatives B, C, and D).
3.18 Animal Species	No impact	No impact	No impact	No impact	None required.
3.19 Threatened and Endangered Species	No impact	No impact	No impact	No impact	None required.
3.20 Invasive Species	No impact	Potential for invasive species impact	Potential for invasive species impact	Potential for invasive species impact	**IS-1** In compliance with Executive Order 13112 on Invasive Species, the OCTA Project Engineer and OCTA Resident Engineer will ensure that the landscaping included in the preferred project will

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Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					not use species listed as noxious weeds by the California Department of Food and Agriculture (CDFA). In areas of particular sensitivity, extra precautions will be taken if invasive species are found in or adjacent to the OCG project construction areas. These include the inspection and cleaning of construction equipment and eradication strategies to be implemented should an invasion occur. (Applies to Alternatives B, C, and D.) **IS-2** The OCTA Resident Engineer will ensure that bared soil will be landscaped with CDFA recommended seed mix from locally adopted species to preclude the invasion of noxious weeds in the biological study area (BSA). For widespread native herbaceous species that are more likely to be genetically homogeneous, site specificity is a less important consideration within the BSA, as the one area of native vegetation is dominated by fiddleneck and jimson weed, which are widespread and common, and seed from commercial sources may be used. (Applies to Alternatives B, C, and D.)

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
3.1 Land Use Existing and Future Land Uses	No adverse impact to existing and General Plan land uses	No adverse impact to existing and General Plan land uses	No adverse impact to existing and General Plan land uses	No adverse impact to existing and General Plan land uses	None required.
3.1 Public Services—Transit	No impact	Temporary traffic delays	Temporary traffic delays	Temporary traffic delays	Refer to Mitigation Measure TRA-4 under 3.6, Traffic below.
3.1 Public Services—Libraries	No impact	Temporary traffic delays	Temporary traffic delays	Temporary traffic delays	Refer to Mitigation Measure TRA-4 under 3.6, Traffic below.
3.1 Public Services—Solid Waste	No solid waste impact	Potential adverse impact on landfills due to disposal of excess fill during construction	Potential adverse impact on landfills due to disposal of excess fill during construction	Potential adverse impact on landfills due to disposal of excess fill during construction	**LU-2** The OCTA Resident Engineer will require the construction contractors to comply with State and local waste reduction and recycling regulations to reduce the amount of construction-generated waste going to a landfill. (Applies to Alternatives B, C, and D.) **LU-3** The OCTA Resident Engineer will require the construction contractors to ensure that all waste haulers use existing designated local haul routes to potential destinations such as the Olinda Alpha Landfill in the City of Brea, Frank R. Bowerman Landfill in Irvine, or other environmentally cleared sites. Potential truck haul routes for excavated material and demolition and construction debris have been identified by Integrated Waste Management Department of Orange County along Imperial Highway, Lakeview Avenue, and Kraemer Boulevard south to State Route 91 (SR-91). (Applies to Alternatives B, C, and D.)
3.1 Consistency with Land Use Policies	No impact	No impact	No impact	No impact	None required.

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
3.1 Section 4(f) Resources	No impact	Temporary adverse dust impact to one park	Temporary adverse dust impact to one park	Temporary adverse dust impact to one park	**REC-1** The City of Placentia Public Works Department will increase the frequency of swimming pool cleaning/maintenance at Parque de los Niños as necessary during construction activities adjacent to park. (Applies to Alternatives B, C, and D.)
3.2 Growth	No impact	No impact	No impact	No impact	None required.
3.3 Farmlands/ Agricultural Lands	No impact	No impact	No impact	No impact	None required.
3.4 Community Impacts—Property Acquisition	No impact No impact	Temporary construction easements: 73 (73,786 square feet) Temporary neighborhood and business disruptions	Temporary construction easements: 61 (50,711 square feet) Temporary neighborhood and business disruptions	Temporary construction easement: 1 (13,151 square feet) Temporary neighborhood and business disruptions	**CI-1** To mitigate construction-related business disruption impacts, the OCTA Resident Engineer will require the construction contractor to provide appropriate signage to direct patrons to alternate routes to businesses; to develop and implement traffic management plans to maintain access to businesses; to develop and implement a business outreach program to inform local merchants of construction schedules that may affect their establishments; and to provide a project office hotline to answer questions from property owners, businesses, and visitors to the area related to the project. (Applies to Alternatives B, C, and D.) **CI-2** The OCTA Project Engineer will coordinate with the affected property owners and industrial land uses subject to partial acquisitions (including parking) to determine if the uses on those parcels can be reconfigured on site in such a manner as to remain in operation. If a commercial or industrial partial acquisition cannot be reconfigured to allow for continued operation on the remainder parcel, the OCTA Project Engineer will coordinate and cooperate with the affected property owners in relocating the affected land use to land designated for the

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					given land use, preferably within the boundaries of the study area cities. (Applies to Alternatives B, C, and D.) **CI-3** The OCTA Project Engineer will coordinate with the affected property owners whose parking areas are subject to parking acquisitions to determine whether replacement parking can be provided on-site or in the immediate vicinity. (Applies to Alternatives B, C, and D.) **CI-4** The acquisition and relocation program would be conducted by the OCTA Right-of-Way Agents in accordance with the provision of federal Public Law (PL) 91-646 and the Uniform Relocation Assistance and Real Property Acquisitions Policies Act (Uniform Act) of 1970 as amended (and as amended by PL100-17, 1987) and as adopted by the California Department of Transportation. The Uniform Act mandates that certain relocation services and payments be made available to eligible residents, businesses, and nonprofit organizations displaced by its projects. The Uniform Act provides for uniform and equitable treatment by federal or federally assisted programs of persons displaced from their homes, businesses, or farms and establishes uniform and equitable land acquisition policies. (Applies to Alternatives B, C, and D.) **CI-5** Where acquisition and relocation are unavoidable, the OCTA Right-of-Way Agents will follow the provisions of the Uniform Act and the 1987 Amendments as implemented by the Uniform Relocation Assistance and Real Property

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					Acquisition Regulations for Federal and Federally Assisted Programs adopted by the Department of Transportation (March 2, 1989). An independent appraisal of the affected property would be obtained, and the OCTA Right-of-Way Agents would offer the full amount as determined by the appraisal. Relocation resources will be available to all residential and business relocatees without discrimination. (Applies to Alternatives B, C, and D.) **CI-6** The Uniform Act requires that comparable, decent, safe, and sanitary replacement housing that is within a person's financial means be made available before that person may be displaced. In the event that such replacement housing is not available to "re-house" persons displaced by the project within statutory limits for replacement housing payments, the OCTA Right-of-Way Agents may provide Last Resort Housing in a number of prescribed ways. Last Resort Housing would be provided in the event that comparable housing for displaced residents is not available. Last Resort Housing can include increased housing payments or the construction of new housing, depending on the specific circumstances associated with the housing needs for an individual project. (Applies to Alternatives B, C, and D.)
3.4 Environmental Justice	No disproportion-ate impacts	No disproportionate impacts	No disproportionate impacts	No disproportionate impacts	None required.
3.5 Utilities/Emergency Services	No impacts	Temporary construction-related impacts for 38 months	Temporary construction-related impacts for 38 months	Temporary construction-related impacts over 13 years as	**PSU-1** The OCTA Project Engineer will require the construction contractor to provide and post public notices regarding work to be done on a particular segment two weeks prior to

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
		Potential adverse impact to fire and emergency services related to access to and egress from the trench	Potential adverse impact to fire and emergency services related to access to and egress from the trench	each grade separation is constructed	construction, and to provide traffic routing signs to route vehicular and bicycle traffic through segments under construction and to suggest possible alternate routes. The OCTA Project Engineer will require the construction contractor to maximize construction vehicle access to construction sites during off-peak traffic hours and to direct construction vehicle access around residential areas. (Applies to Alternatives B, C, and D.) **PSU-2** Prior to issuance of a grading permit, a Construction Safety Program will be prepared by the OCTA Project Manager and OCTA Project Engineer and approved by Orange County Fire Authority (OCFA) and the Cities of Placentia and Anaheim Police Departments to identify appropriate construction practices that are necessary to minimize the potential disruption to emergency service providers during construction of off-site roadway improvements. The plan will incorporate the following elements: **PSU-2a** The OCTA Resident Engineer will require the construction contractor to provide full access to all areas in the project area for emergency responses. An emergency north-south access corridor will be created to be open at all times during construction. Prior to construction activities, the OCTA Resident Engineer will require the construction contractor to prepare a detour plan for the selected project which will be reviewed and approved by the fire protection providers for the area. The plan will also provide access to

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					the railroad right-of-way in order that rail passengers and workers may be reached in case of an accident. (Applies to Alternatives B, C, and D.) **PSU-2b** During final design, the OCTA Project Engineer will ensure that the final construction specifications for the preferred alternative include built-in fire facilities such as hydrants at the surface and standpipes within the corridor as necessary to meet emergency needs. (Applies to Alternatives B, C, and D.) **PSU-2c** Emergency lighting will be implemented to ensure access and egress of rail passengers and to enable firefighter and emergency worker access. (Applies to Alternatives B, C, and D.) **PSU-2d** The OCTA Project Manager and OCTA Project Engineer, under the guidance of OCFA and State regulations, will prepare a management plan to handle spilled hazardous materials. (Applies to Alternatives B, C, and D.) **PSU-2e** The OCTA Project Manager and OCTA Resident Engineer, the Cities of Placentia and Anaheim Police and Fire Departments, the OCFA, and the Orange County Sheriff will coordinate reliable communication lines to rail dispatch centers in order to stop rail traffic through the corridor or communicate any other emergency needs. (Applies to Alternatives B, C, and D.)

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					PSU-2f Equipment, such as hazardous material monitoring devices and firefighting foam, will be added by the OCTA Project Manager and OCTA Resident Engineer, as required by OCFA, to caches of equipment in the trench areas. (Applies to Alternatives B and C; does not apply to Alternative D, the preferred project.) **PSU-2g** Any on-site fire services staff that may be required as determined by OCFA to ensure compliance and fire prevention during construction will be hired by the OCTA Project Manager and OCTA Resident Engineer . (Applies to Alternatives B, C, and D.) **PSU-2h** The OCTA Resident Engineer will require the construction contractor to provide the applicable fire/police and sheriff departments with accurate and timely information regarding any impediments to north–south travel along any road affected by project construction. (Applies to Alternatives B, C, and D.)
		Potential adverse impact to utility infrastructure	Potential adverse impact to utility infrastructure	Potential adverse impact to utility infrastructure	**PSU-3** The OCTA Project Manager and OCTA Resident Engineer will ensure that any public utility that is acquired as part of right-of-way acquisition for the preferred project will be relocated, replaced, or protected in place. Prior to construction, the OCTA Resident Engineer will require the construction contractor to ensure that all underground and aboveground utilities within the construction zone are relocated, replaced, or protected in place. The relocation will be coordinated with the utility service providers and

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					is not anticipated to involve an interruption in service. Aboveground utilities will be located or screened in a manner that minimizes their visibility by the public. (Applies to Alternatives B, C, and D.) **PSU-4** During final design, the OCTA Project Engineer will coordinate with Metropolitan Water District of Southern California (Metropolitan) and Orange County Sanitation Districts (OCSD) for advanced water and sewer utility relocation. The work may include the design for relocation of the following major Metropolitan and OCSD utility crossings: Metropolitan: 2.1-meter (m) (84-inch [in]) Feeder Line at Station 137+70 Metropolitan: 1.5 m (60 in) Feeder Line at Jefferson Metropolitan: 2 m (78 in) Feeder Line at Richfield OCSD: Sewer Siphon at Carbon Canyon Channel OCSD: Sewer Siphon at Tustin/Rose OCSD: Sewer in Orangethorpe Avenue (Applies to Alternatives B, C, and D.) **PSU-5** The OCTA Resident Engineer will require the construction contractor to provide temporary bypasses or supplemental supplies, as determined by affected water suppliers, as needed, to minimize service disruption and maintain fire protection capabilities. (Applies to Alternatives B, C, and D.)

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
3.6 Traffic/ Transportation/ Pedestrian and Bicycle Facilities	Traffic delay/ unsatisfactory LOS	Temporary adverse impacts to traffic flow attributed to construction and staging	Temporary adverse impacts to traffic flow attributed to construction and staging	Temporary adverse impacts to traffic flow attributed to construction and staging	**TRA-2** Prior to approval of the Plans, Specifications and Estimates (PS&E) for the selected Orange County Gateway (OCG) Build Alternative, a detailed construction phasing and detour plan will be submitted to and approved by the Cities of Placentia and Anaheim. This phased construction and detour plan will allow for the construction of local circulation through the project area during construction of the project. The plan must also consider public transit and PYLUSD routes and schedules and the access needs of emergency service providers and of agencies to public facilities in the immediate project vicinity. The plan must also include provision of access to adjoining properties. The detour plan will be presented in a format consistent with all applicable local, State, and federal guidelines and will consider signing, staging, delineation, traffic control, and the route selection analysis presented in this section. All construction activity will be performed in accordance with the construction phasing plan and the route detour plans approved by the Cities of Placentia and Anaheim. (Applies to Alternatives B, C, and D.) **TRA-3** During construction, existing roads may be narrowed to one lane in each direction on Orangethorpe Avenue, Crowther Avenue, Kraemer Boulevard, Tustin Avenue-Rose Drive, and Lakeview Avenue, depending on the construction phasing for the preferred project. Depending on the time of day and traffic volumes along these corridors, it is possible that emergency vehicles could experience some delays. Therefore, the OCTA Resident Engineer

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					will require that the construction contractor provide adequate shoulder widths at all times along these corridors to accommodate emergency vehicles required to bypass a congested travel lane. (Applies to Alternatives B, C, and D.) **TRA-4** Prior to construction of Alternatives B, C, and D, the construction phasing and detour traffic management plans will be reviewed with the PYLUSD, emergency service providers, the Cities of Placentia and Anaheim, and the OCTA Bus Operations Division. The PYLUSD, emergency service providers, the Cities of Placentia and Anaheim, and the OCTA Bus Operations Division will be notified prior to the initiation of construction and prior to the initiation of lane closures and detours. (Applies to Alternatives B, C, and D.)
3.7 Visual/ Aesthetics	No impact	Temporary adverse visual impacts during construction and staging	Temporary adverse visual impacts during construction and staging	Temporary adverse visual impacts during construction and staging	**V-1 Construction Activity.** Prior to the issuance of a grading permit, the OCTA Project Engineer will ensure that the following measures are included in the construction designs: • A chain-link fence with opaque screening material will surround all staging areas and, where feasible, active construction areas. • All lighting used during construction will be cast toward the construction activity and avoid spillover onto sensitive viewer groups (e.g., residents and motorists). (Applies to Alternatives B, C, and D.)

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
3.8 Cultural Resources	No impact	No impact to historic properties	No impact to historic properties	No impact to historic properties	None required.
	No impact	Potential temporary adverse impact to cultural resources	Potential temporary adverse impact to cultural resources	Potential temporary adverse impact to cultural resources	Compliance with the Cultural Resources Late Discovery Plan (Appendix G) will avoid potential adverse effects to any resources eligible for the National Register of Historic Places discovered during construction. (Applies to Alternatives B, C, and D.)
	No impact	Potential adverse impact to human remains	Potential adverse impact to human remains	Potential adverse impact to human remains	Compliance with State Health and Safety Code Section 7050.5 on human remains. (Applies to Alternatives B, C, and D.)
3.9 Hydrology and Floodplains	No impact	No impact	No impact	No impact	None required.
3.10 Water Quality and Storm Water Runoff	No impact	Potential adverse water quality and storm water runoff impacts during construction	Potential adverse water quality and storm water runoff impacts during construction	Potential adverse water quality and storm water runoff impacts during construction	**WQ-1** The OCTA Resident Engineer will require the construction contractor to prepare and implement a construction management plan to minimize construction activities during wet months. The intent is to minimize potential increases in erosion and sedimentation/siltation. (Applies to Alternatives B, C, and D.) **WQ-2** Prior to the start of construction, the OCTA Resident Engineer will require evidence that the construction contractor has developed a Storm Water Pollution Prevention Plan (SWPPP) and has filed a Notice of Intent (NOI) to comply with the State General Construction Activity National Pollutant Discharge Elimination System (NPDES) Permit to the State Water Resources Control Board (SWRCB). The SWPPP will address runoff within the project excavation and in project-related areas adjacent to the railroad. (Applies to Alternatives B, C, and D.)

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					WQ-3 The OCTA Resident Engineer will require the construction contractor to collect and treat storm water and nonstorm water flows collected in the subdrain system prior to discharge to meet NPDES Permit discharge requirements during project operation. Treatment best management practices (BMPs) to address project storm water runoff may include but are not limited to biofiltration strips and swales, media or sand filters, or small detention basins. A treatment facility will be located near the intersection of the railroad alignment and Carbon Canyon Channel. This facility will be designed to handle volumes equivalent to storm water flows associated with the 100-year design storm. Refer also to measures HY-12 and WQ-5. (Applies to Alternatives B, C, and D.) **WQ-4** Prior to the start of construction, the OCTA Resident Engineer will require the construction contractor to provide evidence that the construction contractor has filed an NOI to dewater groundwater to the Regional Water Quality Control Board (RWQCB). The OCTA Resident Engineer will require the construction contractor to comply with the State General permit or individual permit requirements as determined by the RWQCB. (Applies to Alternatives B, C, and D.) **WQ-5** The OCTA Project Engineer will prepare a Water Quality Management Plan (WQMP) for the preferred project in conformance with the requirements of Section 7, "New Development/ Significant Redevelopment," of the Orange County Drainage Area Management Plan

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					(DAMP). The DAMP implements the requirements of the *Waste Discharge Requirements for the County of Orange, Orange County Flood Control District and The Incorporated Cities of Orange County within the Santa Ana Region Areawide Urban Storm Water Runoff, Orange County* (Order No R-92002-0010, NPDES No. CAS618030) (County of Orange MS4 Permit). The WQMP for the preferred project will be consistent with the DAMP.The preferred project is categorized as a priority project in the DAMP, and the WQMP will include provisions for the Site Design, Source Control, and Treatment Control best management practices (BMPs) that target pollutants of concern to reduce impacts to water quality to the maximum extent practicable. The WQMP will be reviewed and approved by the applicable local jurisdictions prior to issuances of grading permits. The OCTA Project Engineer will provide a plan, as an attachment to the WQMP, to ensure ongoing maintenance for permanent BMPs during operation of the preferred project. This will include the OCTA Resident Engineer's signed statement accepting responsibility for all structural and treatment control BMP maintenance. The DAMP requirements for treatment will be met. Refer also to measures WQ-3 and HY-12. (Applies to Alternatives B, C, and D.)

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
3.11 Geology/Soils/ Seismic/Paleontology/ Topography	No impact	Potential impacts related to temporary excavation	Potential impacts related to temporary excavation	Potential impacts related to temporary excavation	**GS-4** The OCTA Resident Engineer will require the construction contractor to properly slope or shore all temporary excavations. (Applies to Alternatives B, C, and D.)
	No impact	Potential for soil transport during construction	Potential for soil transport during construction	Potential for soil transport during construction	**GS-13** The OCTA Resident Engineer will require the construction contractor to obtain appropriate City and County permits required for all soil transport to and/or from the project construction area. (Applies to Alternatives B, C, and D.)
	No impact	Potential adverse impact to paleontological resources during construction	Potential adverse impact to paleontological resources during construction	Potential adverse impact to paleontological resources during construction	**GS-15** Prior to project grading, the OCTA Project Manager and OCTA Resident Engineer will ensure that a County certified paleontologist is retained to observe grading activities and salvage and catalog fossils as necessary. The paleontologist will be present at the pregrading conference, and will establish procedures for temporarily halting or redirecting work to permit sampling, identification, and evaluation of the fossils. If major paleontological resources that require long-term halting or redirecting of grading are discovered, the paleontologist will report such findings immediately to the OCTA Project Manager and OCTA Resident Engineer . (Applies to Alternatives B, C, and D.)
3.12 Hazardous Waste/Materials	On- or off-site spills or leaks (via groundwater flows) could potentially occur with or without the project	Potential for adverse hazardous waste/materials impacts during construction	Potential for adverse hazardous waste/materials impacts during construction	Potential for adverse hazardous waste/materials impacts during construction	**HW-1** The OCTA Project Manager will prepare an emergency response and evacuation plan that provides procedures for containing a hazardous waste/material spill within the trench and for evacuating personnel from the trench. The plan will be reviewed and approved by OCFA, BNSF, Federal Rail Administration (FRA), and other appropriate authorities prior to implementation. (Applies to Alternatives B, C, and D.)

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					HW-2 During final design, comprehensive soil and groundwater sampling analyses for pH, total recoverable petroleum hydrocarbons (TRPHs), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, or heavy metals will be conducted consistent with the recommendations in the *Hazardous Materials Site Investigation Report* (AES, January 2006) to determine if soils or groundwater that would be disturbed/removed as part of the project test above published threshold levels. Any contaminated soils or groundwater will be handled, transported, and disposed of in accordance with applicable local, State, and federal regulations. (Applies to Alternatives B, C, and D.) **HW-3** The OCTA Project Manager will require the construction contractor to prepare a health and safety plan to guide all construction activities. A certified industrial hygienist will prepare the plan based on evaluations of the proposed construction activities and the potential hazards identified in the comprehensive testing conducted as described in Mitigation Measures HW-2 and HW-6. The plan will contain specific procedures for encountering both expected and unexpected contaminants. The plan will prescribe safe work practices, contaminant monitoring, personal protective equipment, emergency response procedures, and safety training requirements for the protection of construction workers and third parties. The health and safety plan will meet the requirements of applicable local, State, and federal regulations. (Applies to

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					Alternatives B, C, and D.) **HW-4** The OCTA Project Engineer will develop an excavation monitoring plan during final design and will require the construction contractor to implement that plan during the construction phase of the preferred project. The plan will address observation, field screening, sampling, and handling methods to be employed to verify that disturbed/removed soils are identified, segregated and disposed of in accordance with pertinent local, State, and federal regulations. Documentation to satisfy federal, State and local agency requirements will be identified and maintained to ensure that proper procedures for soil disposal are followed. (Applies to Alternatives B, C, and D.) **HW-5** The OCTA Project Engineer will require the construction contractor to evaluate the hazardous materials used in construction and maintenance of the project prior to use for their level of hazard. Manufacturer's directions and warnings will be followed during use. Recommended appropriate safety equipment will be used for each material. Hazardous materials used during construction will be transported in accordance with applicable local, State, and federal regulations. (Applies to Alternatives B, C, and D.) **HW-6** During final design, the OCTA Project Engineer will conduct asbestos-containing materials (ACM) and lead-based paint (LBP) surveys of all structures to be renovated or demolished as part of the preferred project. Any

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					abatement or removal of ACM or LBP will be performed in accordance with applicable local, State, and federal regulations including regulations set forth in the South Coast Air Quality Management District (SCAQMD) Rule 1403. (Applies to Alternatives B, C, and D.) **HW-7** The OCTA Resident Engineer will require the construction contractor to provide all employees working in areas potentially containing hydrogen sulfide (H_2S) with appropriate training in dealing with the hazards created by subsurface gas including safety precautions and emergency procedures. Gas sensors will be used where practicable to detect the presence of H_2S, and measurements taken by these sensors will be monitored before and during construction. If determined to be appropriate and necessary, a gas collection and/or ventilation system will be installed to prevent the buildup of hazardous gas concentrations and to reduce H_2S emissions to acceptable levels. All pertinent local, State, and federal emergency preparedness and occupational safety procedures will be followed. (Applies to Alternatives B, C, and D.) **HW-8** Prior to construction, the OCTA Project Engineer will verify the actual locations of oil wells on properties to be acquired for the preferred project. California Division of Oil, Gas and Geothermal Resources (DOGGR) records will be reviewed in order to assess the current status of the oil wells to be impacted by the project. The final disposition of each impacted well will satisfy the regulatory requirements of DOGGR. (Applies to Alternatives B, C, and D.)

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
3.13 Air Quality	Increase in vehicular emissions due to increased congestion and delay at the at-grade railroad crossings	Temporary adverse impact during construction	Temporary adverse impact during construction	Temporary adverse impact during construction	**AQ-1** The OCTA Resident Engineer will require the construction contractor to implement dust control measures during construction. Applicable dust suppression techniques from Rule 403 are summarized below. Additional dust suppression measures in the SCAQMD *CEQA Air Quality Handbook* are included as part of the mitigation for the preferred project. Implementation of these dust suppression techniques can reduce the fugitive dust generation (and thus the PM_{10} component). Compliance with these rules during construction of the preferred project will reduce impacts on nearby sensitive receptors. Compliance with this measure during construction will be verified by the OCTA Resident Engineer. (Applies to Alternatives B, C, and D.) Applicable Rule 403 Measures: • Apply nontoxic chemical soil stabilizers according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for 10 days or more). • Water active sites at least twice daily. (Locations where grading is to occur will be thoroughly watered prior to earthmoving.) • All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least 0.6 meter (m) (2 feet [ft]) of freeboard in accordance with the requirements of California Vehicle Code (CVC) Section 23114 (freeboard means vertical space between the top of the load and top of the trailer).

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					• Pave construction access roads at least 30.5 m (100 ft) onto the site from main road. • Traffic speeds on all unpaved roads will be reduced to 24 kilometers per hour (kph) (15 miles per hour [mph]) or less. Additional SCAQMD *CEQA Air Quality Handbook* Dust Measures: • Revegetate disturbed areas as quickly as possible. • All excavating and grading operations will be suspended when wind speeds (as instantaneous gusts) exceed 40 kph (25 mph). • All streets will be swept once per day if visible soil materials are carried to adjacent streets (recommend water sweepers with reclaimed water). • Install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash trucks and any equipment leaving the site each trip. **AQ-2** The construction contractor will select construction equipment based on low emission factors and high energy efficiency. The OCTA Project Engineer will ensure that construction grading plans include a statement that all construction equipment will be tuned and maintained in accordance with the manufacturer's specifications, to perform at California Air Resources Board and/or United States Environmental Protection Agency (EPA) certification, where applicable, levels and to perform at verified standards applicable to retrofit

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					technologies. The OCTA Resident Engineer will ensure that construction equipment is periodically inspected to ensure that the equipment is properly maintained and tuned, and that unnecessary idling is avoided. The OCTA Resident Engineer will require the project contractor to prohibit any tampering with engines and to commit to continuing adherence to the manufacturer's recommendations. Where practicable, the OCTA Resident Engineer will encourage the contractor to lease newer equipment with Tier 2 or newer engines and to use EPA-registered particulate traps and other appropriate controls as suitable to reduce diesel particulate and other emissions. (Applies to Alternatives B, C, and D.) **AQ-3** The OCTA Resident Engineer will require the construction contractor to use electric or diesel-powered equipment in lieu of gasoline-powered engines where feasible. (Applies to Alternatives B, C, and D.) **AQ-4** The OCTA Project Engineer will ensure that construction grading plans include a statement that work crews will shut off equipment when not in use. (Applies to Alternatives B, C, and D.) **AQ-5** The OCTA Resident Engineer will require the construction contractor to time construction activities so as to not interfere with peak-hour traffic and minimize obstruction of through traffic lanes adjacent to the site; if necessary, a flagperson will be retained to maintain safety adjacent to existing roadways. (Applies to

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					Alternatives B, C, and D.) **AQ-6** The OCTA Resident Engineer will require the construction contractor to support and encourage ridesharing and transit incentives for the construction crews. (Applies to Alternatives B, C, and D.) **AQ-7** The OCTA Resident Engineer will require the construction to retain dust generated by the construction activities and kept to a minimum by following the dust control measures listed below. These measures will be listed by the OCTA Project Engineer on the construction drawings and in the construction specifications. (Applies to Alternatives B, C, and D.) a. During clearing, grading, earthmoving, excavation, or transportation of cut or fill materials, water trucks or sprinkler systems will be used to prevent dust from leaving the site and to create a crust after each day's activities cease. b. During construction, water trucks or sprinkler systems will be used to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this would include wetting down such areas in the late morning and after work is completed for the day and whenever wind exceeds 24 kph (15 mph). c. Immediately after clearing, grading, earthmoving, or excavation is completed, the entire area of disturbed soil will be treated until the area is paved or otherwise developed

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					so that dust generation will not occur. d. Soil stockpiled for more than two days will be covered, kept moist, or treated with soil binders to prevent dust generation. e. Trucks transporting soil, sand, cut or fill materials, and/or construction debris to or from the site will be tarped from the point of origin. **AQ-8** Prior to any construction activities, the OCTA Resident Engineer will require the construction contractor to identify sensitive receptors (children, elderly, infirm) in the immediate vicinity of the construction limits and identify construction equipment placement and staging areas that will minimize exposure of those populations to construction emissions. The OCTA Resident Engineer will work with the contractor and adjacent property owners to ensure that dust and other construction emissions are minimized. During design and construction, standard specifications and project special provisions will be developed and used by the OCTA Project Engineer, its design consultants, and its construction management and inspection teams to acknowledge and enforce minimization of dust and other construction emissions. These minimization measures may include locating equipment away from building fresh air intakes and away from residential uses, or the provision of air conditioning in residential uses or temporary relocations for residents substantially adversely affected by construction emissions. For example, equipment exhausts will be directed away from building fresh air intakes and away from residential uses.

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
3.14 Noise and Vibration	No impact	Potential noise impacts during construction	Potential noise impacts during construction	Potential noise impacts during construction	**NOI-3** The OCTA Resident Engineer will require the construction contractor to comply with the following measures to reduce potential construction noise impacts. These measures will also be included on the construction drawings as construction notes (applies to Alternatives B, C, and D): • Portable equipment should be located as far as possible from noise-sensitive land uses as feasible. • Construction vehicle staging areas and equipment maintenance areas should be located as far as possible from sensitive receptor locations.
3.15 Energy	No impact	No adverse impact, however, mitigation to promote energy efficiency during construction	No adverse impact, however, mitigation to promote energy efficiency during construction	No adverse impact, however, mitigation to promote energy efficiency during construction	**E-2** Prior to the issuance of a grading permit, the OCTA Project Engineer will prepare a construction efficiency plan, which may include the following: • Select disposal sites as close as practicable to the OCG project area to minimize haul distances and excavation-related fuel consumption • Reuse existing rail, steel, and lumber wherever possible, such as for falsework, shoring, and other applications during the construction process • Recycle asphalt taken up from roadways, if practicable and cost-effective • Maintain construction equipment in good working order • Schedule construction operations to result in the most efficient use of construction

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					equipment possible The construction efficiency plan will incorporate relevant City, County, State, and federal energy requirements and will be reviewed and approved by the Public Works Departments for each of the local jurisdictions that are within the project area. (Applies to Alternatives B, C, and D.)
3.16 Natural Communities and Plant Species	No impact	Potential indirect adverse impact to nesting birds during construction	Potential indirect adverse impact to nesting birds during construction	Potential indirect adverse impact to nesting birds during construction	**NC-1** The OCTA Project Engineer will require all project specifications to limit the clearing and grubbing of vegetation from the project area within the breeding season (January 1 through August 31). If it is determined that the removal of vegetation from the project area during the breeding season must occur, a qualified biological monitor must perform presence/absence surveys prior to the commencement of clearing activities. In addition, a biological monitor must be present to monitor all vegetation removal activities. (Applies to Alternatives B, C, and D.)
3.17 Wetlands and Other Waters of the United States	No impact	No impact	No impact	No impact	None required.
3.18 Animal Species	No impact	Potential indirect adverse impact on nesting birds during construction	Potential indirect adverse impact on nesting birds during construction	Potential indirect adverse impact on nesting birds during construction	Refer to Mitigation Measure NC-1 in 3.16, Natural Communities and Plant Species above.
3.19 Threatened and Endangered Species	No impact	No adverse impact	No adverse impact	No adverse impact	None required.
3.20 Invasive Species	No impact	Potential for invasive species impact	Potential for invasive species impact	Potential for invasive species impact	**IS-1** In compliance with Executive Order 13112 on Invasive Species, the OCTA Project Engineer and OCTA Resident Engineer will ensure that the landscaping included in the preferred project will not use species listed as noxious weeds by the

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					California Department of Food and Agriculture (CDFA). In areas of particular sensitivity, extra precautions will be taken if invasive species are found in or adjacent to the OCG project construction areas. These include the inspection and cleaning of construction equipment and eradication strategies to be implemented should an invasion occur. (Applies to Alternatives B, C, and D.) **IS-2** The OCTA Resident Engineer will ensure that bared soil will be landscaped with CDFA recommended seed mix from locally adopted species to preclude the invasion of noxious weeds in the biological study area (BSA). For widespread native herbaceous species that are more likely to be genetically homogeneous, site specificity is a less important consideration within the BSA, as the one area of native vegetation is dominated by fiddleneck and jimson weed, which are widespread and common, and seed from commercial sources may be used. (Applies to Alternatives B, C, and D.) **IS-3** The OCTA Resident Engineer will ensure that seed purity is certified by planting seed labeled under the California Food and Agricultural Code or that has been tested within a year by a seed laboratory certified by the Association of Official Seed Analysts or by a seed technologist certified by the Society of Commercial Seed Technologists. (Applies to Alternatives B, C, and D.) **IS-4** The OCTA Resident Engineer will require the construction contractor to clean construction

Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
					equipment of mud or other debris that may contain invasive plants and/or seeds and inspected to reduce the potential of spreading noxious weeds, before mobilizing to arrive at the construction site and before leaving the construction site. (Applies to Alternatives B, C, and D.) **IS-5** The OCTA Resident Engineer will require the construction contractor to cover trucks with loads carrying vegetation, and to dispose of vegetative materials removed from the OCG project disturbance in accordance with all applicable laws and regulations. (Applies to Alternatives B, C, and D.)

Table S-3: Summary of Other Potential Impacts and Avoidance, Minimization, and Mitigation Measures

Impact Category	Effects by Alternatives				Avoidance, Minimization, and Mitigation Measures
	No Build	B	C	D	
3.21 Relationship Between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity	No impact	The long-term benefits to the community (through transportation improvements) outweigh the short-term adverse environmental impacts	The long-term benefits to the community (through transportation improvements) outweigh the short-term adverse environmental impacts	The long-term benefits to the community (through transportation improvements) outweigh the short-term adverse environmental impacts	None required.
3.22 Irreversible and Irretrievable Commitments of Resources That Would Be Involved in the Proposed Action	No impact	16 full acquisitions and 44 partial acquisitions	19 full acquisitions and 61 partial acquisitions	75 full acquisitions and 34 partial acquisitions	Refer to measures for community impacts, Section 3.4.
3.23 Unavoidable Adverse Impacts	No unavoidable adverse impacts beyond those currently experienced (noise, traffic, etc.)	No unavoidable adverse impacts	Unavoidable adverse visual impacts	Unavoidable adverse visual impacts	Refer to measures for visual impacts, Section 3.7.

GENERAL INFORMATION ABOUT THIS FINAL ENVIRONMENTAL IMPACT STATEMENT FOR THE ORANGE COUNTY GATEWAY PROJECT

The Orange County Gateway (OCG) project proposes the implementation of a comprehensive grade separation program for either seven or eight (depending on the alternative) existing at-grade railroad crossings along an approximately 8 kilometer (km) (5 mile [mi]) long segment of the Burlington Northern Santa Fe railroad in the Cities of Placentia and Anaheim and unincorporated Orange County. The City of Placentia is the local lead agency for the project under the California Environmental Quality Act (CEQA). The Federal Highway Administration (FHWA) is the lead agency for the project under the National Environmental Policy Act (NEPA).

The City of Placentia, in consultation with FHWA, prepared a joint NEPA/CEQA Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the project. The City distributed the Draft EIS/EIR for the OCG project for public and agency review and comment on June 27, 2008. The comment period ended on August 11, 2008. Appendix K of this EIS provides the comments received on the Draft EIS/EIR and the responses to those comments.

At its meeting on September 4, 2007, the Placentia City Council identified Alternative D, Standard Grade Separation, as the locally preferred alternative for the OCG project.

With regard to NEPA, FHWA prepared this Final EIS for the OCG project, which will be available for public review for 30 days. Following that public review period, FHWA may select an alternative and set forth its approval in a Record of Decision along with a summary of the adverse project impacts, and avoidance, minimization, and mitigation measures incorporated into the preferred alternative.

This Final EIS for the OCG project consists of the following:

- Volumes I, II, and III of the Draft EIS/EIR, which have been updated to show changes made in response to substantive comments received on the Draft EIS/EIR and to reflect identification of the preferred alternative for the OCG project. The changes made to the Draft EIS/EIR during the preparation of the Final EIS are shown in margin lines throughout the document.
- Volume IV contains the Responses to Comments Report and provides the written comments received on the Draft EIS/EIR and the responses to those comments.

Each volume of this Final EIS contains a cover sheet indicating the volume number, this introduction sheet, and the complete Table of Contents, which indicates to the reader which volume contains which sections of the Final EIS.

For individuals with sensory disabilities, this document can be made available in Braille, large print, on audiocassette, or on compact disk (CD). To obtain a copy in one of these alternate formats, please call or write to Michael McConaha, Senior Administrative Analyst, City of Placentia, 401 East Chapman Avenue, Placentia, CA 92870; phone: (714) 993-8245; fax: (714) 961-0283; or email at ocgateway-eis/eir@placentia.org.

TABLE OF CONTENTS

The Final EIS is provided in four separately bound volumes as noted in this Table of Contents.

THIS VOLUME IS VOLUME I

VOLUME I

COVER SHEET
GENERAL INFORMATION ABOUT THIS DOCUMENT 1

SUMMARY S-1
PROPOSED PROJECT S-1
PURPOSE AND NEED FOR THE PROJECT S-5
ANTICIPATED PERMITS AND APPROVALS REQUIRED S-6
UNRESOLVED ISSUES AND AREAS OF CONTROVERSY S-8
PROJECT EFFECTS AND AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES S-8

TABLE OF CONTENTS i
LIST OF ACRONYMS x

1.0 PURPOSE OF AND NEED FOR PROJECT 1-1
1.1 INTRODUCTION 1-1
1.2 PROJECT PURPOSE 1-3
1.3 PROJECT NEED 1-4
1.4 PROJECT BACKGROUND 1-10

2.0 PROJECT ALTERNATIVES 2-1
2.1 ALTERNATIVE DEVELOPMENT PROCESS 2-1
2.2 PROJECT ALTERNATIVES 2-8
2.3 ANTICIPATED PERMITS AND APPROVALS REQUIRED 2-36
2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER DISCUSSION PRIOR TO THE DRAFT EIS/EIR 2-37
2.5 UNRESOLVED ISSUES AND AREAS OF CONTROVERSY 2-39
2.6 AFTER PUBLIC CIRCULATION AND SELECTION OF THE PROJECT 2-39

3.0 AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND AVOIDANCE, MINIMIZATION AND/OR MITIGATION MEASURES 3.0-1
HUMAN ENVIRONMENT
3.1 LAND USE 3.1-1
3.2 GROWTH 3.2-1
3.3 FARMLANDS/AGRICULTURAL LANDS 3.3-1
3.4 COMMUNITY IMPACTS 3.4-1

3.5 UTILITIES/EMERGENCY SERVICES 3.5-1
3.6 TRAFFIC, TRANSPORTATION, PEDESTRIAN AND BICYCLE FACILITIES 3.6-1

VOLUME II

3.7 VISUAL/AESTHETICS 3.7-1
3.8 CULTURAL RESOURCES 3.8-1
PHYSICAL ENVIRONMENT
3.9 HYDROLOGY AND FLOODPLAINS 3.9-1
3.10 WATER QUALITY AND STORM WATER RUNOFF 3.10-1
3.11 GEOLOGY/SOILS/SEISMIC/PALEONTOLOGY/TOPOGRAPHY 3.11-1
3.12 HAZARDOUS WASTE/MATERIALS 3.12-1
3.13 AIR QUALITY 3.13-1
3.14 NOISE AND VIBRATION 3.14-1
3.15 ENERGY 3.15-1
BIOLOGICAL ENVIRONMENT
3.16 NATURAL COMMUNITIES AND PLANT SPECIES 3.16-1
3.17 WETLANDS AND OTHER WATERS OF THE UNITED STATES 3.17-1
3.18 ANIMAL SPECIES 3.18-1
3.19 THREATENED AND ENDANGERED SPECIES 3.19-1
3.20 INVASIVE SPECIES 3.20-1
3.21 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY 3.21-1
3.22 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES THAT WOULD BE INVOLVED IN THE PROPOSED ACTION 3.22-1
3.23 UNAVOIDABLE ADVERSE IMPACTS 3.23-1

4.0 CUMULATIVE IMPACTS 4-1
4.1 INTRODUCTION 4-1
4.2 METHODOLOGY 4-1
4.3 IMPACTS 4-5

5.0 CALIFORNIA ENVIRONMENTAL QUALITY ACT EVALUATION 5-1

6.0 SUMMARY OF PUBLIC INVOLVEMENT PROCESS/CONSULTATION/TRIBAL COORDINATION 6-1
6.1 PUBLIC INVOLVEMENT 6-1
6.2 RESPONSES TO THE NOTICE OF PREPARATION 6-4
6.3 SUMMARY OF COMMENTS IN RESPONSE TO THE NOTICE OF PREPARATION 6-5
6.4 PUBLIC SCOPING MEETING JANUARY 22, 2002 6-12
6.5 PUBLIC SCOPING MEETING JANUARY 24, 2002 6-13
6.6 RESPONSES TO THE NOTICE OF INTENT 6-14
6.7 SUMMARY OF COMMENTS IN RESPONSE TO THE NOTICE OF INTENT 6-14
6.8 CONCLUSIONS 6-15
6.9 TRIBAL COORDINATION 6-16

7.0 ENVIRONMENTAL COMMITMENTS RECORD 7-1
7.1 INTRODUCTION 7-1

8.0 LIST OF PREPARERS 8-1
8.1 PUBLIC AGENCIES 8-1
8.2 CONSULTANT TEAM 8-2

9.0 DISTRIBUTION LIST 9-1
9.1 AGENCIES WHO RECEIVED THE DRAFT EIS/EIR 9-1
FEDERAL AGENCIES 9-2
STATE AGENCIES 9-2
REGIONAL, COUNTY, AND CITY AGENCIES 9-3
SCHOOL DISTRICTS, OTHER SPECIAL DISTRICTS AND UTILITIES 9-4
9.2 PROPERTY OWNERS AND TENANTS WHO RECEIVED THE PUBLIC NOTICE .. 9-5
CITY OF PLACENTIA ADDRESSES WITHIN 300-FOOT RADIUS OF THE PROJECT 9-6
CITY OF PLACENTIA ADDRESSES - LIST 2 9-19
CITY OF ANAHEIM ADDRESSES WITHIN 300-FOOT RADIUS OF THE PROJECT 9-32

10.0 REFERENCES 10-1

11.0 INDEX 11-1

VOLUME III

APPENDICES

A: CONCEPTUAL ENGINEERING PLANS
B: COORDINATION AND CONSULTATION
C: TITLE VI POLICY STATEMENT
D: RESOURCES EVALUATED RELATIVE TO THE REQUIREMENTS OF SECTION 4(F)
E: EXISTING UTILITY DATA
F: SUMMARY OF THE CITY OF PLACENTIA RELOCATION ASSISTANCE PROGRAM
G: CULTURAL RESOURCES LATE DISCOVERY PLAN
H: PROJECT LISTINGS IN THE 2008 RTP, 2008 RTIP, AND OCTA-ORANGE COUNTY-COUNTYWIDE GRADE SEPARATION PROGRAM - TABLE 3
I: STATE HISTORIC PRESERVATION OFFICER CORRESPONDENCE
J: TRAFFIC TECHNICAL MEMORANDUMS

VOLUME IV

APPENDICES

K: RESPONSES TO COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT/ENVIRONMENTAL IMPACT REPORT

TECHNICAL STUDIES

The following reports were prepared for the OCG project and were used in the development of this Final EIS. These reports are available for review, pursuant to Title 14 California Code of Regulations 151501 (14 CCR 15501) and Title 40, Code of Federal Regulations 1502.21 (14 CFR 1502.21), at the City of Placentia, 401 East Chapman Avenue, Placentia, CA 92870 during regular business hours. Additional reports and studies are referenced throughout this Final EIS and are listed in Section 10.0 (References). Prefaces provided at the beginning of those reports identify specific changes by reference to those reports.

Air Quality Analysis (LSA Associates, Inc., June 2009)
Community Impact Assessment (LSA Associates, Inc., October 2007)
Draft Relocation Impact Report (LSA Associates, Inc., May 2006)
Drainage Management Study (Boyle Engineering Corporation, January 2006)
Final Relocation Impact Report (LSA Associates, Inc., January 2009)
Findings of No Adverse Effect (LSA Associates, Inc., June 2005)
Geotechnical and Seismicity Evaluation (Group Delta Consultants, Inc., December 2003)
Hazardous Materials/Site Investigation Report (Advanced Earth Science, Inc., January 2006)
Historic Property Survey Report (LSA Associates, Inc., November 2004)
Natural Environmental Study (LSA Associates, Inc., January 2006)
Noise and Vibration Analysis (LSA Associates, Inc., October 2007)
Traffic Impact Analysis (LSA Associates, Inc., October 2007)
Visual Impact Assessment (LSA Associates, Inc., January 2006)

The following additional reports were prepared for the proposed OCG project:

Preliminary Engineering Report for the Orange County Gateway Railroad Grade Separation Project (KFM Engineering, Inc., 2004).
Preliminary Engineering Report for the Orange County Gateway Railroad Grade Separation Project: Attachment 1 Alternative B Concept Plans (KFM Engineering, Inc., 2004).
Preliminary Engineering Report for the Orange County Gateway Railroad Grade Separation Project: Attachment 2 Alternative C Concept Plans (KFM Engineering, Inc., 2004).
Preliminary Engineering Report for the Orange County Gateway Railroad Grade Separation Project: Attachment 3 Alternative D Concept Plans (KFM Engineering, Inc., 2004).
Value Analysis Report for the Orange County Gateway Railroad Grade Separation Project (Parsons Transportation Group, August 15, 2003).
Initial Financial Plan for the Proposed Orange County Gateway Project (City of Placentia, 2006).
Initial Project Management Plan for the Proposed Orange County Gateway Project (City of Placentia, 2006).

FIGURES AND TABLES

FIGURES

Figure 1-1: Project Location 1-2
Figure 1-2: Alameda Corridor Rail Container Distribution Percentages 1-7
Figure 2-1: Project Location 2-2
Figure 3.1-1: General Plan Land Uses 3.1-3
Figure 3.1-2: Public Services 3.1-13
Figure 3.1-3: Parque de los Niños 3.1-29
Figure 3.1-4: Parque de los Niños—Alternative B View Simulation 3.1-31
Figure 3.1-5: Parque de los Niños—Alternative C View Simulation 3.1-34
Figure 3.1-6: Parque de los Niños—Alternative D View Simulation 3.1-37
Figure 3,4-1: Cities in the OCG Area 3.4-3
Figure 3.4-2: 2000 Census Tracts 3.4-4
Figure 3.4-3: Aerial Photograph of the Local Area 3.4-6
Figure 3.4-4: Alternative B General Plan Land Uses and Proposed Acquisitions 3.4-42
Figure 3.4-5: Alternative C General Plan Land Uses and Proposed Acquisitions 3.4-59
Figure 3.4-6: Alternative D General Plan Land Uses and Proposed Acquisitions 3.4-77
Figure 3.5-1: Emergency Services 3.5-2
Figure 3.6-1: Orange County Master Plan of Arterial Highways 3.6-2
Figure 3.6-2: Illustrations of Level of Service for Intersections 3.6-5
Figure 3.6-3A: Existing and Alternatives B and C Traffic Analysis Study Area 3.6-7
Figure 3.6-3B: Alternative D Traffic Analysis Study Area 3.6-8
Figure 3.6-4: Existing Condition Transit Routes 3.6-11
Figure 3.6-5: Existing Condition Bicycle Facilities 3.6-12
Figure 3.6-6: Existing Average Daily Traffic Volumes 3.6-13
Figure 3.6-7: Existing Conditions Intersections Operating at LOS E or F 3.6-17
Figure 3.6-8: Alternative A: No Build 2030 Daily Traffic Volumes 3.6-20
Figure 3.6-9: Alternative A: No Build 2030 Intersections Forecast to Operate at LOS E or F .. 3.6-25
Figure 3.6-10: Alternative B: 2030 Daily Traffic Volumes 3.6-26
Figure 3.6-11: Alternative C: 2030 Daily Traffic Volumes 3.6-32
Figure 3.6-12: Alternative D: 2030 Daily Traffic Volumes 3.6-37
Figure 3.6-13: Alternative B: Proposed Construction Staging 3.6-42
Figure 3.6-14: Alternatives B and C: Jefferson Street Closure 3.6-44
Figure 3.6-15: Alternatives B, C, and D: Richfield Road Closure 3.6-45
Figure 3.6-16: Alternatives B, C, and D: Van Buren Street Closure 3.6-46
Figure 3.6-17: Alternatives B and C: Kellogg Drive Closure 3.6-47
Figure 3.6-18: Alternative C: Proposed Construction Staging 3.6-48
Figure 3.6-19: Alternative D: Proposed Construction Staging 3.6-50
Figure 3.6-20: Alternative D: Kraemer Boulevard Closure 3.6-52
Figure 3.6-21: Alternative D: Orangethorpe Avenue Reduced Lanes 3.6-53
Figure 3.6-22: Alternative D: Tustin Avenue-Rose Drive Closure 3.6-54
Figure 3.6-23: Alternative D: Lakeview Avenue Closure 3.6-55
Figure 3.7-1A: Vantage Point Locations 3.7-19

Figure 3.7-1B: Vantage Point Locations 3.7-20
Figure 3.7-1C: Vantage Point Locations 3.7-21
Figure 3.7-1D: Vantage Point Locations 3.7-22
Figure 3.7-1E: Vantage Point Locations 3.7-23
Figure 3.7-2: Vantage Point 1, Alternatives B and C 3.7-24
Figure 3.7-3: Vantage Point 2, Alternatives B and C 3.7-25
Figure 3.7-4: Vantage Point 3, Alternatives B and C 3.7-26
Figure 3.7-5: Vantage Point 5, Alternative C 3.7-27
Figure 3.7-6: Vantage Point 6, Alternative B 3.7-28
Figure 3.7-7: Vantage Point 6, Alternative C 3.7-29
Figure 3.7-8: Vantage Point 7, Alternative B 3.7-30
Figure 3.7-9: Vantage Point 8, Alternative C 3.7-31
Figure 3.7-10: Vantage Point 9, Alternative C 3.7-32
Figure 3.7-11: Vantage Point 1, Alternative D 3.7-33
Figure 3.7-12: Vantage Point 2, Alternative D 3.7-34
Figure 3.7-13: Vantage Point 4, Alternative D 3.7-35
Figure 3.7-14: Vantage Point 5, Alternative D 3.7-36
Figure 3.7-15: Vantage Point 6, Alternative D 3.7-37
Figure 3.8-1: Area of Potential Effects 3.8-5
Figure 3.9-1: Existing Watersheds 3.9-5
Figure 3.9-2: Groundwater Monitoring Wells 3.9-8
Figure 3.9-3A: Projected Future Groundwater Elevations—Scenario 1 ..... 3.9-10
Figure 3.9-3B: Projected Future Groundwater Elevations—Scenario 2 ..... 3.9-11
Figure 3.9-3C: Projected Future Groundwater Elevations—Scenario 3 ..... 3.9-12
Figure 3.9-4: Floodplain Areas 3.9-13
Figure 3.9-5: Floodplain Areas 3.9-14
Figure 3.11-1: Regional Geology 3.11-3
Figure 3.11-2: Regional Fault Map 3.11-5
Figure 3.11-3: Potential Liquefaction Areas and Seismic Hazards Zones 3.11-7
Figure 3.12-1A: Boring Location Map with Summary of Field and Chemical Data 3.12-3
Figure 3.12-1B: Boring Location Map with Summary of Field and Chemical Data 3.12-4
Figure 3.12-1C: Boring Location Map with Summary of Field and Chemical Data 3.12-5
Figure 3.12-1D: Boring Location Map with Summary of Field and Chemical Data 3.12-6
Figure 3.12-2: Potential Sites of Concern Identified in the Phase I Environmental Site Assessment 3.12-11
Figure 3.13-1: SCAQMD Air Quality Monitoring Network within the South Coast Air Basin . 3.13-9
Figure 3.14-1: Noise Impact Criteria for Rail Projects 3.14-5
Figure 3.14-2: Monitored Noise Receptor Locations 3.14-14
Figure 3.14-3A: Modeled Sound Wall and Receptor Locations 3.14-17
Figure 3.14-3B: Modeled Sound Wall and Receptor Locations 3.14-18
Figure 3.14-3C: Modeled Sound Wall and Receptor Locations 3.14-19
Figure 3.14-3D: Modeled Sound Wall and Receptor Locations 3.14-20
Figure 3.14-3E: Modeled Sound Wall and Receptor Locations 3.14-21
Figure 3.14-3F: Modeled Sound Wall and Receptor Locations 3.14-22
Figure 3.14-3G: Modeled Sound Wall and Receptor Locations 3.14-23
Figure 3.14-4: Generalized Ground Surface Vibration Curves 3.14-30
Figure 3.17-1: Potential Wetlands and Other Waters of the United States 3.17-4
Figure 3.17-2: Potential Wetlands and Other Waters of the United States 3.17-5
Figure 3.17-3: Potential Wetlands and Other Waters of the United States 3.17-6

Figure 3.17-4: Potential Wetlands and Other Waters of the United States 3.17-7
Figure 4-1: Cumulative Project Location Map 4-2

TABLES

Table S-1: Summary of Long-Term Permanent Project Effects and Avoidance, Minimization, and Mitigation Measures S-10
Table S-2: Summary of Short-Term Project Effects and Avoidance, Minimization, and Mitigation Measures S-35
Table S-3: Summary of Other Potential Impacts and Avoidance, Minimization, and Mitigation Measures S-61
Table 1-A: FRA Accident Record 1999 to 2006 1-5
Table 2-A: Existing Rail Corridor Right-of-Way Dimensions 2-5
Table 2-B: Existing BNSF Drainage Crossings 2-6
Table 2-C: Existing and Forecasted Traffic Volumes and Delays 2-7
Table 2-D: Summary of Detailed Project Figures 2-9
Table 2-E: Existing and Proposed Drainage Facilities under Alternative B 2-12
Table 2-F: Parcels Impacted by Construction Staging Areas Under Alternatives B and C 2-14
Table 2-G: Summary of Property Acquisitions Under Alternatives B, C, and D 2-18
Table 2-H: Existing and Proposed Drainage Facilities under Alternative C 2-21
Table 2-I: Grade Separation Features under Alternative D 2-27
Table 2-J: Existing and Proposed Drainage Facilities under Alternative D 2-31
Table 3.1-A: Development Projects 3.1-2
Table 3.1-B: OCG Study Area Cities, Regional and State Demographic Summaries 3.1-11
Table 3.1-C: Recreation Resources in the Orange County Gateway Project Vicinity 3.1-15
Table 3.1-D: OCTA Bus Routes and Service Levels in the Study Area 3.1-16
Table 3.1-E: Summary of Property Acquisitions under Alternatives B, C, and D 3.1-17
Table 3.2-A: Population 1980 to 2030 ..... 3.2-3
Table 3.2-B: Population 3.2-3
Table 3.2-C: Employment 3.2-4
Table 3.2-D: Housing 3.2-4
Table 3.2-E: Conformity with Growth Management and Transportation Plans 3.2-5
Table 3.4-A: Work Commute Travel Patterns in Orange County and the OCG Study Area Cities 3.4-17
Table 3.4-B: Median Home Prices 3.4-18
Table 3.4-C: Rental Housing Characteristics in Orange County 3.4-19
Table 3.4-D: Race and Ethnic Composition 3.4-21
Table 3.4-E: OCG Study Area, County and State Demographics 3.4-23
Table 3.4-F: 2000 Income and Poverty for the OCG Study Area Census Tracts and Orange County 3.4-23
Table 3.4-G: Orange County and California Employment (2000) 3.4-24
Table 3.4-H: Community and Neighborhood Characteristics for the Local Area 3.4-25
Table 3.4-I: Community Cohesion Characteristics for the OCG Study Area Census Tracts and Orange County 3.4-27
Table 3.4-J: Full Property Acquisitions under Alternative B 3.4-36
Table 3.4-K: Partial Property Acquisitions and Temporary Construction Easements under Alternative B 3.4-37
Table 3.4-L: Alternative B Estimated Employee Displacement 3.4-51
Table 3.4-M: Property Tax Loss 3.4-52
Table 3.4-N: Full Property Acquisitions under Alternative C 3.4-53

Table 3.4-O: Partial Property Acquisitions and Temporary Construction Easements under Alternative C 3.4-54
Table 3.4-P: Alternative C Estimated Employee Displacement 3.4-67
Table 3.4-Q: Full Property Acquisitions under Alternative D 3.4-68
Table 3.4-R: Partial Property Acquisitions under Alternative D 3.4-73
Table 3.4-S: Temporary Construction Easements under Alternative D 3.4-76
Table 3.4-T: Alternative D Estimated Employee Displacement 3.4-85
Table 3.4-U: Acquisitions, Temporary Construction Easements, and Environmental Justice Populations 3.4-93
Table 3.5-A: Fire Stations Providing Primary Service 3.5-3
Table 3.5-B: Water Pipelines 3.5-6
Table 3.5-C: Metropolitan Pipelines 3.5-7
Table 3.6-A: Description of Level of Service for Arterial Roadways with Signalized Intersections 3.6-3
Table 3.6-B: Existing Intersection Level of Service Summary 3.6-14
Table 3.6-C: 2030 No Build Alternative Daily Volume-to-Capacity Ratios at Rail Crossings . 3.6-19
Table 3.6-D: Year 2030 Intersection Level of Service Summary, Alternative A—No Build ... 3.6-21
Table 3.6-E: Vehicle Delay Due to At-Grade Crossings under Alternative A 3.6-24
Table 3.6-F: Year 2030 Intersection Level of Service Summary, Alternative B 3.6-28
Table 3.6-G: Lakeview Avenue/Orangethorpe Avenue Level of Service Summary 3.6-31
Table 3.6-H: Year 2030 Intersection Level of Service Summary, Alternative C 3.6-34
Table 3.6-I: Year 2030 Intersection Level of Service Summary, Alternative D 3.6-38
Table 3.7-A: Existing and Proposed Visual Quality 3.7-8
Table 3.9-A: Summary of Floodplain Risks and Impacts 3.9-22
Table 3.10-A: Typical Construction BMPs 3.10-4
Table 3.10-B: Priority Project Categories 3.10-6
Table 3.10-C: Routine Nonstructural Source Control BMPs Applicable to the OCG Build Alternatives 3.10-7
Table 3.10-D: Routine Structural Source Control BMPs Applicable to the OCG Build Alternatives 3.10-8
Table 3.10-E: Treatment Control BMP Selection Matrix 3.10-9
Table 3.10-F: Water Quality Sampling for California, USGS 11075610 Santa Ana River above Spreading Diversion below Imperial Highway near Anaheim 3.10-13
Table 3.12-A: Government Databases and Number of Hazardous Substance Sites in the Vicinity of the OCG Project Area 3.12-8
Table 3.12-B: Recorded Hazardous Substance Sites to be Acquired under Alternative B 3.12-14
Table 3.12-C: Impacted Parcels Containing Oil Wells for Alternative B 3.12-15
Table 3.12-D: ACM or LBP Buildings Acquired under Alternative B 3.12-16
Table 3.12-E: Recorded Hazardous Substance Sites to Be Acquired under Alternative C 3.12-17
Table 3.12-F: Impacted Parcels Containing Oil Wells for Alternative C 3.12-18
Table 3.12-G: ACM or LBP Buildings Acquired Under Alternative C 3.12-20
Table 3.12-H: Recorded Hazardous Substance Sites to Be Acquired under Alternative D ... 3.12-22
Table 3.12-I: Impacted Parcels Containing Oil Wells for Alternative D 3.12-23
Table 3.12-J: ACM or LBP Buildings Acquired Under Alternative D 3.12-25
Table 3.13-A: Criteria Pollutants' Attainment Status in the South Coast Air Basin 3.13-8
Table 3.13-B: Ambient Air Quality at the Central Orange County (Anaheim) Air Monitoring Station 3.13-10
Table 3.13-C: Ambient Air Quality at the North Orange County (La Habra) Air Monitoring Station 3.13-11
Table 3.13-D: Emission Standards for Locomotives (g/bhp·hr) 3.13-14

Table 3.13-E: Pollutant Concentrations at Nearby Residences 3.13-15
Table 3.13-F: Projected Year 2030 Daily (No Build) Railroad Crossing Vehicle Delay Idling Emissions, in Pounds Per Day 3.13-15
Table 3.13-G: Projected Year 2030 Annual (No Build) Railroad Crossing Vehicle Delay Idling Emissions in Pounds 3.13-17
Table 3.13-H: Projected Five-Year Period (No Build) Railroad Crossing Vehicle Delay Idling Emissions in Pounds 3.13-17
Table 3.13-I: Vehicular Traffic Intersection CO Concentrations, All Alternatives 3.13-22
Table 3.13-J: Summary for Long-Term Regional Emissions 3.13-28
Table 3.13-K: Peak Day Construction Emissions 3.13-32
Table 3.13-L: Regional Vehicular Emissions during Construction in Year 2010 ..... 3.13-34
Table 3.13-M: Construction Air Quality Impact Summary 3.13-37
Table 3.14-A: Activity Categories and Noise Abatement Criteria 3.14-3
Table 3.14-B: Land Use Categories and Noise Metrics for Rail and Highway Noise Impact Criteria 3.14-6
Table 3.14-C: Groundborne Vibration and Noise Impact Criteria 3.14-6
Table 3.14-D: City of Yorba Linda General Plan Land Use with Noise Standards (dBA CNEL) 3.14-8
Table 3.14-E: City of Yorba Linda Land Use Municipal Code Noise Standards (dBA) 3.14-8
Table 3.14-F: City of Anaheim Exterior Noise Limits 3.14-10
Table 3.14-G: Human Responses to Different Levels of Groundborne Noise and Vibration .. 3.14-12
Table 3.14-H: Existing Noise Level Measurements in dBA 3.14-15
Table 3.14-I: Projected Traffic Noise Levels, L_{eq}, dBA 3.14-25
Table 3.14-J: Vehicular Noise Impact Summary 3.14-28
Table 3.14-K: Train Noise Exposure Summary 3.14-28
Table 3.14-L: Train Vibration Impact Summary 3.14-29
Table 3.14-M: Noise Abatement for Alternative B Predicted Noise Level, L_{eq} (h) and Insertion Loss (I.L., Noise Reduction), dBA for Source 3.14-32
Table 3.14-N: Feasible Sound Walls (Minimum Height for 5 dBA Reduction) for Alternatives B, C, and D 3.14-35
Table 3.14-O: Preliminary Reasonable and Feasible Sound Walls (Maximum Reasonable Height) under Alternatives B, C, and D 3.14-37
Table 3.14-P: Final Reasonable and Feasible Sound Walls (Height Limited by City Ordinance) under Alternatives B, C, and D 3.14-38
Table 3.14-Q: Noise Abatement for Alternative C Predicted Noise Level, L_{eq} (h) and Insertion Loss (I.L., Noise Reduction), dBA for Source 3.14-39
Table 3.14-R: Noise Abatement for Alternative D Predicted Noise Level, L_{eq} (h) and Insertion Loss (I.L., Noise Reduction), dBA for Source 3.14-45
Table 3.14-S: Typical Construction Equipment Noise Levels 3.14-49
Table 3.15-A: Build Alternatives Total Transportation Fuel Consumption in Gallons 3.15-4
Table 3.15-B: Estimated Energy Consumption from Construction Equipment and Vehicles for Alternative B 3.15-5
Table 3.15-C: Estimated Energy Consumption from Construction Equipment and Vehicles for Alternative C 3.15-6
Table 3.15-D: Estimated Energy Consumption from Construction Equipment and Vehicles for Alternative D 3.15-7
Table 3.17-A: Federal and CDFG Jurisdictional Waters 3.17-9
Table 4-A: Cumulative Projects 4-3
Table 7-A: Environmental Commitments Record for Alternative D 7-3

LIST OF ACRONYMS

AAQS	ambient air quality standards
AASHTO	American Association of State Highway and Transportation Officials
AB	Assembly Bill
ac	acre(s)
ac-ft/yr	acre-foot per year
ACE	Alameda Corridor East
ACM	asbestos-containing materials
ACTA	Alameda Corridor Transportation Authority
ADI	Area of Direct Impacts
ADL	aerially-deposited lead
ADT	average daily traffic
AES	Advanced Earth Sciences
AGR	Agricultural
AHERA	Asbestos Hazard Emergency Response Act
AICP	American Institute of Certified Planners
Alt	Alternative
amsl	above mean sea level
ann. arth. avg	annual arithmetic average
AP	Assessor's Parcel
APE	Area of Potential Effects
APN	Assessor's Parcel Number
AQ	air quality
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
ARPA	Archaeological Resources Protection Act
ASR	Archaeological Survey Report
ATSF	Atchinson, Topeka, and Santa Fe
Ave	Avenue
BAS	Bryan A. Stirrat and Associates
Basin	South Coast Air Basin
BAT	Best Available Technology
BCT	Best Conventional Pollutant Control Technology
BIO	biology
BFE(s)	Base Flood Elevation(s)
bgs	below ground surface
Blvd	Boulevard
BMPs	Best Management Practices
BNSF	Burlington Northern Santa Fe Railroad
BSA	biological study area *or* biological survey area
BTEX	benzene, toluene, ethylbenzene, and xylenes

c/o	care of
CA	California
CA FID	California Facility Inventory Database
CAA	federal Clean Air Act
CAAQS	California ambient air quality standards
Caltrans	California Department of Transportation
CATV	Cable access television
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game
CDMG	California Division of Mines and Geology
CDI	Constant & Dicky, Inc.
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Emergency Response, Compensation and Liability Act
CERCLIS	Comprehensive Response, Compensation and Liability System
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CH	City Hall
CHMIRS	California Hazardous Materials Incident Report System
CI	community impacts
CIA	Community Impact Assessment
City	City of Placentia
CIWMB	California Integrated Waste Management Board
CLOMR	Conditional Letter of Map Revision
cm	cubic meter(s)
CMP	Congestion Management Plan
cms	cubic meters per second
CNDDB	California Natural Diversity Data Base
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
Co	company
cont'd	continued
CORRACTS	corrective action
CPT	cone penetration test
CPUC	California Public Utilities Commission
CRLDP	Cultural Resources Late Discovery Plan
CTC	California Transportation Commission
CVC	California Vehicle Code
CWA	Clean Water Act
cy	cubic yard(s)

DAMP	Drainage Area Master Plan
dB	decibel(s)
dBA	A-weighted decibel(s)
Department	California Department of Transportation
DHHS	United States Department of Health and Human Services
DOE	Determination of Eligibility
DOF	Department of Finance
DOGGR	California Division of Oil, Gas and Geothermal Resources
Dr.	Drive
DRIR	Draft Relocation Impact Report
DTSC	California Department of Toxic Substances Control
e/o	east of
E	East
E	eastbound
E	energy
E	estimated
E	existing
ECR	Environmental Commitments Record
EDD	Economic Development Department
EDR	Environmental Data Resources, Inc.
EFZ	Earthquake Fault Zone
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
Elec	electrical
EJ	Environmental Justice
ELY	easterly
EO	Executive Order
ERNS	Emergency Response Action Notification System
ESA	Endangered Species Act
F	Fahrenheit
FAR	floor area ratio
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIA	Federal Insurance Administration
FINDS	Facility Index System
FIRMs	Flood Insurance Rate Maps
FP	floodplains
FR	Federal Register
FRA	Federal Railroad Administration
FS	Fire Station
FTA	Federal Transit Administration
ft	foot, feet

ft-lb	foot per pound
ft^2	square foot, square feet
gal	gallon(s)
g/bhp-hr	grams per brake horsepower-hour
GIS	Geographic Information Systems
GPS	Global Positioning System
GS	geology/soils
GWR	Groundwater
H	height
H_2S	hydrogen sulfide
ha	hectare(s)
HAI	Housing Affordability Index
HAZNET	Hazardous Waste Network
HC	hydrocarbon
HCM	Highway Capacity Manual
HCP	Habitat Conservation Plan
H/M	high or medium removal efficiency
Hp	horsepower
HPG	high pressure gas
HPSR	Historic Property Survey Report
hr	hour
HRER	Historic Resources Evaluation Report
HUD	United States Department of Housing and Development
HVAC	heating, ventilation, and cooling
HW	hazardous waste
HWCL	Hazardous Waste Control Law
HWIS	Hazardous Waste Information System
Hwy	highway
HY	hydrology
Hz	Hertz
I	intactness
I.L.	insertion loss
I-5	Interstate 5
ICU	Intersection Capacity Utilization
IHGS	Impérial Highway Grade Separation
in	inch(es)
IS	invasive species or Initial Study
ISA	Initial Site Assessment
IUR	Inventory Update Rule
IWMD	Integrated Waste Management Department

JPA	Joint Powers Authority
JWA	John Wayne Airport
kg	kilogram(s)
km	kilometer(s)
kph	kilometer(s) per hour
kW	kilowatt(s)
L	liter(s)
L	low removal efficiency
LAEDC	Los Angeles Economic Development Corporation
LBP	lead based paint
lbs	pounds
L_{eq}	equivalent continuous sound level
L_{min}	minimum noise level
L_{max}	maximum noise level
Ln.	Lane
LOMR	Letter of Map Revision
LOS	Level(s) of Service
LOSSAN	Los Angeles San Diego
LU	Land Use
LUSTs	leaking underground storage tanks
m	meter(s)
m^2	square meter(s)
max	maximum
Mb	body-wave magnitude
MBTA	Migratory Bird Treaty Act
MCE	Maximum Credible Earthquake
mcm	million cubic meters
mcy	million cubic yards
MEP	maximum extent practicable
Metropolitan	Metropolitan Water District of Southern California
mg	milligram
mi	mile(s)
ML	local magnitude
MLD	Most Likely Descendant
MMA	Meyer, Mohaddes Associates
MMRP	Mitigation Monitoring and Reporting Program
MND	Mitigated Negative Declaration
MOU	Memorandum of Understanding
MPAH	Master Plan of Arterial Highways
mpg	miles per gallon
mph	miles per hour

MPO	Metropolitan Planning Organization
Ms	surface-wave magnitude
MTBE	methyl tertiary butyl ether
MUN	municipal
Mw	moment magnitude
MWD	Metropolitan Water District of Southern California
MWD	Metropolitan Water District of Orange County
MWDOC	Metropolitan Water District of Orange County

N.	North
N/A	not applicable
N/A	not available
NAAQS	national ambient air quality standards
NAC	Noise Abatement Criteria
NAFTA	North American Free Trade Agreement
NAHC	Native American Heritage Commission
National Register	National Register of Historic Places
NAWQA	National Water Quality Assessment
NB	northbound
NC	natural communities
NCCP	Natural Communities Conservation Plan
NCRS	Natural Resource Conservation Service
NE	not encountered
NEPA	National Environmental Policy Act
NES	Natural Environmental Study
n/f	not feasible
NFA	no further action
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NIFZ	Newport-Inglewood Fault Zone
NLY	northerly
NM	not monitored
No.	number
NOA	naturally occurring asbestos
NOI	noise
NOI	Notice of Intent
NOP	Notice of Preparation
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPL	National Priority List
NRHP	National Register of Historic Places
NWP	Nationwide Permit

O/H	overhead

O'Head	overhead
O_3	ozone
OCFA	Orange County Fire Authority
OCFCD	Orange County Flood Control District
OCG	Orange County Gateway
OCP-2000	Orange County Projections-2000
OCSD	Orange County Sanitation District *or* Orange County Sheriff Department
OCTA	Orange County Transportation Authority
OCTAM	Orange County Traffic Analysis Model
OCWD	Orange County Water District
OHP	Office of Historic Preservation
OHWM	Ordinary High Water Mark
OLI, Inc.	Operation Lifesaver, Incorporated
OMB	White House Office of Management and Budget
OnTrac	Orange-North American Trade Rail Access Corridor Authority
OPA	outside the project area
OPR	Governor's Office of Planning and Research
OSHA	Occupational Safety and Health Administration
P	proposed
PA	Programmatic Agreement
PAC	Presumed Asbestos Containing Materials
PADS	PCB Activity Database System
Pb	lead
PCBs	polychlorinated biphenyls
PCE	perchlorethylene
PDF(s)	Project Design Feature(s)
PDSP	Planning and Development Services
PL	Public Law
PM_{10}	suspended coarse particulate matter ≤ 10 microns in diameter
$PM_{2.5}$	fine particulate matter ≤ 2.5 microns in diameter
P.O.	post office
POAQC	Project(s) of Air Quality Concern
PPC	Phillips Petroleum Company
ppm	parts per million
PPV	peak particle velocity
PRC	Public Resources Code
PRCSEP	Placentia Rail Crossing Safety Enhancement Project
PS&E	Plans, Specifications, & Estimates
PSU	public services and utilities
PUC	Public Utilities Commission
PYLUSD	Placentia-Yorba Linda Unified School District
r/w	right-of-way
r-o-w	right-of-way

RAP	Relocation Assistance Program
RARE	Rare, threatened, or endangered species
RCB	reinforced concrete box
RCP	reinforced concrete pipe
RCP	Regional Comprehensive Plan
RCPG	Regional Comprehensive Plan and Guide
RCRA	Resource Conservation and Recovery Act
RCRIS	Resource Conservation and Recovery Information System
Rd.	Road
RDMD	Resources and Development Management Department
REC	receptor
REC	recreation
REC-1	Contact Water Recreation
REC-2	Non-Contact Water Recreation
RELOOC	Regional Landfill Options for Orange County
ROC	reactive organic compounds
ROD	Record of Decision
RR	railroad right-of-way
RSTP	Regional Surface Transportation Program
RTIP	Regional Transportation Improvement Program
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board, Santa Ana Region
S.	south
s/o	south of
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SARA	Superfund Amendments and Reauthorization Act
SB	southbound
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SCGC	Southern California Gas Company
SCWC	Southern California Water Company
sec	second
sf	square foot, feet
SFR	single-family residential
SHPO	State Historic Preservation Office
SIC	Standard Industrial Classifications
SIP	State Implementation Plan
SLF	Second Lower Feeder
SLY	southerly
So	south
SO_2	sulfur dioxide
SOC	Statement of Overriding Considerations

SOCALGAS	Southern California Gas Copmany
SO_X	sulfur oxides
SPL	State Priority List
SPV	seconds per vehicle
sq	square
SR-22	State Route 22
SR-241	State Route 241
SR-55	State Route 55
SR-57	State Route 57
SR-90	State Route 90, Imperial Highway
SR-91	State Route 91
St.	Street
STA	Station
State SCL	State-equivalent CERCLIS list
Ste	Suite
STIP	State Transportation Improvement Program
SVOCs	semi-volatile organic compounds
SW	sound wall
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TBD	to be determined
TCA	Transportation Corridor Agencies
TCE	trichloroethene
TCE(s)	temporary construction easement(s)
TCRP	Transportation Congestion Relief Program
TCTM	Tri-City Traffic Model
TCWG	Transportation Conformity Working Group
TEA	Transportation Equity Act
TEUs	Twenty-Foot Equivalent Units
TIP	Transportation Improvement Program
TMDLs	Total Maximum Daily Loads
TMP	Transportation Management Plan
TRA	traffic
TRIS	Toxic Chemical Release Inventory System
TRPHs	total recoverable petroleum hydrocarbons
TSDF	Treatment, Storage, or Disposal Facility
TSM	Transportation Systems Management
U/G	underground
U	unity
U	unknown removal efficiency
UBC	Uniform Building Code
UCD	University of California, Davis
Uniform Act	Uniform Relocation Assistance and Real Property Acquisitions Policy Act

UP	Union Pacific
USACE	United States Army Corps of Engineers
USC	United States Code
USD	Unified School District
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geologic Service
UST	underground storage tank
V	visual
V	vividness
V/C	volume to capacity
VdB	velocity in decibels groundbourne vibration
VIA	Visual Impact Assessment
VOCs	volatile organic compounds
VMT	vehicle miles traveled
VPD	vehicles per day
W.	west
WB	westbound
WDRs	Waste Discharge Requirements
WDSE	Waste Discharge System, Enforcement Action
WILD	wildlife habitat
WLY	westerly
WoUS	Waters of the United States
WPCP	Water Pollution Control Plan
WQ	water quality
WQMP(s)	Water Quality Management Plan(s)
Xing	crossing
X-ings	crossings
YLWD	Yorba Linda Water District
$\mu g/m^3$	micrograms per cubic meter

1.0 PURPOSE OF AND NEED FOR PROJECT

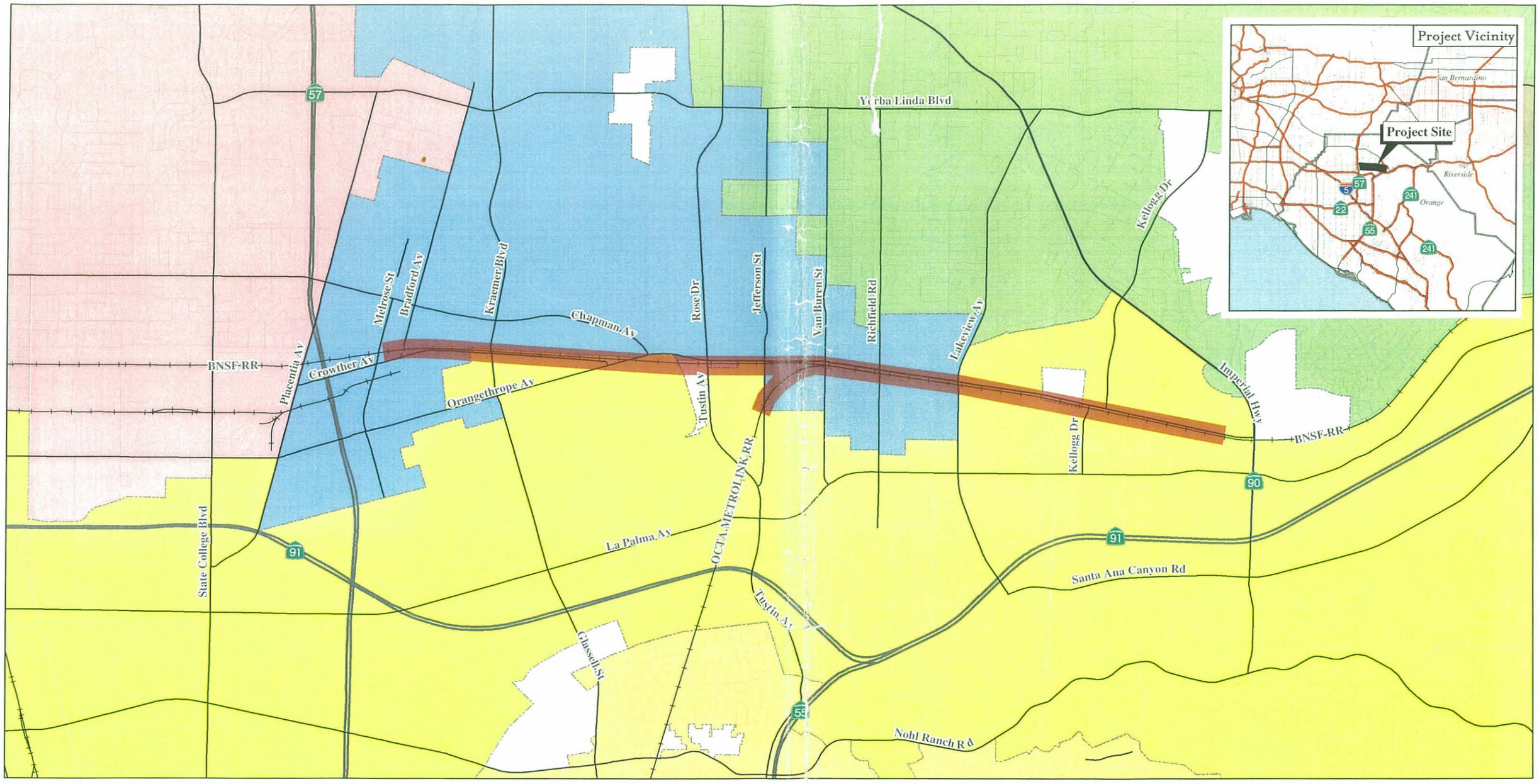
1.0 PURPOSE OF AND NEED FOR PROJECT

1.1 INTRODUCTION

1.1.1 Project History

The Orange County Gateway (OCG) project proposes the implementation of a comprehensive grade separation program for either seven or eight (depending on the alternative) existing at-grade railroad crossings located on an approximately 8 kilometer (km) (5 mile [mi]) long segment of the Orangethorpe Corridor. The Orangethorpe Corridor is the segment of the Burlington Northern Santa Fe (BNSF) railroad in north Orange County that runs generally parallel to Orangethorpe Avenue within the Cities of Placentia and Anaheim and unincorporated Orange County as shown in Figure 1-1. The OCG project would completely separate vehicle and train traffic at these seven or eight (depending on the alternative) locations, replacing existing at-grade crossings on the Orangethorpe Corridor. The project alternatives consist of three Build Alternatives, two involving railroad lowering and one that provides for standard grade separations, and a No Build Alternative. Section 2.0, Project Alternatives, provides a detailed description of the OCG project alternatives and Appendix A includes the OCG project conceptual engineering plans and cross sections. Existing sidewalks and bicycle facilities within existing streets would be maintained for public access during project construction and long-term operation of the OCG project. Two of the Build Alternatives include a greenbelt that would include pedestrian and bicycle facilities as practical. The OCG project would conform with the Americans with Disabilities Act (ADA) of 1990, as appropriate.

The eight OCG grade separations and three other grade separation projects along the BNSF in Orange County are listed in the 2008 *Regional Transportation Plan* (RTP) on page 48 of the Project Listing Report, which is provided in Appendix H. The RTP is a long-range planning document used to identify potential transportation projects anticipated over an approximately 20-year planning period. The eight OCG grade separations are included in the RTP listing as "BNSF railway line (Placentia to Imperial Highway) along Crowther/Orangethorpe. Grade separation corridor improvements at 11 arterial streets including preliminary engineering, program management, project reports, environmental impact report, right-of-way & construction and crossing closure/pedestrian bridge" with the Project ID #ORA000147. This list includes the four major OCG grade separations at Kraemer Boulevard, Orangethorpe Avenue, Tustin Avenue/Rose Drive, and Lakeview Avenue; the four minor OCG grade separations at Jefferson Street, Van Buren Avenue, Richfield Road, and Kellogg Drive; and three other grade separations (at Melrose, Placentia, and Bradford Avenues, which are not part of the OCG project). The 2008 RTP listing shows an estimated project cost of $83,228,000 for the 11 grade separation projects in ORA000147. That cost estimate is not consistent with the more recent and detailed cost estimates for the individual crossings, as explained below.



Legend

Project Area

Railroad

Jurisdiction

County of Orange

City of Anaheim

City of Fullerton

City of Orange

City of Placentia

City of Yorba Linda

N

0 2,750 5,500 FEET

838.2 1,676.4 METERS

SOURCE: TBM (2004)

I:\Otg130\gis\fig1_1.mxd (11/12/07)

FIGURE 1-1

Orange County Gateway

Project Location

The RTP is updated on a four-year planning cycle. When the RTP is updated in 2012, it is anticipated that the construction of two of the crossings, at Bradford and Melrose Avenues, will be completed. As a result, it is expected that the project listing for ORA000147 in the 2012 RTP will be amended to include only the remaining nine crossings (i.e., the eight OCG crossings and the Placentia Avenue crossing). The estimated cost for those nine crossings in the 2012 RTP is anticipated to be on the order of approximately $472 million, which would include the estimated $433 million for the eight OCG grade separations in Alternative D and an estimated $39 million for the Placentia Avenue crossing improvements. For comparison purposes, if the 2012 RTP also included the costs for the Bradford Avenue (approximately $6 million) and Melrose Avenue (approximately $38 million) crossings (to bring the total number of crossings to the original 11 crossings), the estimated cost would be approximately $516 million.

The four major grade separations in Alternative D have been programmed and funding committed for those crossings in the 2008 *Regional Transportation Improvement Program* (RTIP), at a total cost of $252 million. The major grade separations are the four crossings with the highest surface traffic volumes and were defined as "major" in the development of the construction staging plans to reflect the high traffic volumes at those locations. The RTIP reflects committed funding for those four crossings including the use of Proposition 1B Trade Corridor Improvement Funds (TCIF). Additional discussion regarding the funding status for the project is provided later in Section 1.4.5, Funding and Programming.

The project segment of the BNSF passes through or adjacent to parts of the City of Anaheim as well as areas in the City of Placentia. The City of Anaheim has participated in the preliminary planning and environmental analysis of the OCG project alternatives. The City has indicated its support for the project as cited in the letter from the City of Anaheim to the City of Placentia dated April 6, 2007. A copy of that letter is included in Appendix B-5, Additional Consultation Records.

1.2 PROJECT PURPOSE

The purpose of the OCG project is to eliminate the current and potential environmental impacts and hazards posed by the existing at-grade crossings at several intersections on the Orangethorpe Corridor. At the same time, the project seeks to accomplish the following objectives:

- Improve the economic vitality of the surrounding community by improving the projected future vehicle level of service (LOS) and reducing the amount of congestion and delay on the project area roadway network for residents, employees, and visitors to area businesses
- Increase the efficiency of moving people and goods by rail (freight and passengers) and cars and trucks in the OCG project area
- Increase public safety by eliminating at-grade rail/local street crossings
- Reduce operational train noise and whistles
- Reduce emergency vehicle response times
- Reduce air pollution from idling vehicles on local streets at rail crossings

1.3 PROJECT NEED

1.3.1 Growth in Roadway Volumes and Traffic Delays

As stated above, rail volumes on the project segment of the BNSF are expected to increase to 130 freight trains per day by 2030. During that same period, traffic volumes on roadways in the Orangethorpe Corridor area are expected to increase by 25 percent. These two factors will lead to increased delays at the at-grade intersection crossings, as further described in Section 3.6, Traffic, Transportation, Bicycle, and Pedestrian Facilities. Freight trains are the biggest cause of traffic delay due to their long lengths, often 1.6 kilometers (km) (1 mile [mi]) or longer. As discussed above, there are strong indications that train volumes will increase substantially in the Orangethorpe Corridor by 2030. For this EIS, the number of freight trains on the project segment of the BNSF is forecast at 130 trains per day in 2030.

Most freight trains now average 2.4 km (1.5 mi) in length and routinely delay drivers for 5- to 10-minute periods at the crossings. The current daily person-hour delay within the corridor is approximately 1,600 hours per day and costs the region $22,100 per day (*The Traffic Delay Analysis for the Orange County Gateway Project,* Meyer Mohaddes Associates, Inc., January 2001, provided in Appendix B in the *Traffic Impact Analysis*). Annually, this represents more than 400,000 lost person-hours at a cost of more than $5.7 million. By 2030, the daily person-hour delay is expected to increase to approximately 16,000 hours and cost $350,000 per day assuming an estimated 130 freight trains per day. Annually, this would represent more than four million lost person-hours and $93 million in cost. The results are a reasonable indication of traffic delay in 2030.Time delay due to high traffic and train volumes is explained further in the traffic analysis in Section 3.6. Figure 3.6-1 in Section 3.6 shows the forecasted vehicular time delay in 2030.

1.3.2 Public Safety

Records of accidents, including injuries and fatalities, at at-grade rail crossings are compiled by the Federal Railroad Administration (FRA). The 10-year accident record for the eight OCG project at-grade intersections from 1999 to 2006 is summarized in Table 1-A. As shown, every crossing except Richfield Road has experienced at least one FRA-recorded accident since 1983. Of the 6 accidents since 1999, Orangethorpe and Lakeview Avenues each experienced 2 FRA-recorded accidents. These accident reports document only accidents at the actual street/railroad crossings. These records do not reflect accidents where pedestrians are struck on the railroad tracks. The forecasted increase in rail volumes and vehicular traffic described earlier may also result in increases for the potential vehicle-train accidents.

In addition to the need to avoid rail/vehicular traffic accidents, the following evidence supports the need for the OCG project relating to public safety:

- Residents from a wide area of north Orange County commute back and forth across the railroad to reach State Route 55 (SR-55), Interstate 5 (I-5), State Route 91 (SR-91), and State Route 22 (SR-22).
- Approximately 140,000 vehicles travel across these eight rail crossings in the OCG project area daily (OCTA 2003).

Table 1-A: FRA Accident Record 1999 to 2006

Crossing	Dates of Accidents 1999 to 2006	Driver Fatalities/Injuries	Date of Last Previous Accident
Kraemer Boulevard	None	N/A	9/21/97
Orangethorpe Avenue	10/14/04	0/1	9/13/01
	9/13/01	0/0	12/26/97
Tustin Avenue/Rose Drive	None	N/A	7/24/98
Jefferson Street	None	N/A	12/28/98
Van Buren Street	None	N/A	8/13/83
Richfield Road	11/15/05	N/A	None
Lakeview Avenue	6/11/05	0/1	1/9/00
	1/9/00	0/0	1/18/99
Kellogg Drive	3/17/06	0/1	6/6/90
Totals	6	0/3	

Source: FRA Accident Report Forms (1999 to 2006).

- There are more than 300 school bus crossings of the railroad daily in the OCG project area (Placentia Yorba Linda Unified School District [PYLUSD], 2004).
- The long delays associated with freight trains not only contribute to congestion, but also increase the safety problem as more drivers and pedestrians try to go around the gates "to beat" the trains (*Traffic Delay Analysis,* Meyer Mohaddes Associates, September 2002).
- City of Placentia studies indicate that over 25 percent of drivers are rushing closing gates and driving around gates that are fully closed (*Traffic Delay Analysis,* Meyer Mohaddes Associates, September 2002).
- The proposed grade separations associated with the OCG Build Alternatives would dramatically reduce the at-grade crossing vehicle violations, thus reducing vehicle/train accidents (*Traffic Delay Analysis,* Meyer Mohaddes Associates, September 2002).

Nationwide, the FRA has evaluated the number of train accidents in relation to railroad traffic volume. To examine changes in traffic volume, FRA compared the total number of train accidents to train miles which is used to represent rail traffic. Despite an increase in rail traffic, there has been a decrease in train accident rates between 1986 and 1995. A public education campaign conducted by Operation Lifesaver, Inc. (OLI), a national, nonprofit education and awareness program, has played an important role in reducing these accident rates. However, there were still 3,053 motor vehicle-train collisions (highway-rail crossing collisions and casualties at public and private crossings for all

highway users) in 2004, with 358 fatalities and 1,078 injuries throughout the United States.[1] The FRA explains that ". . . the proportional rise in human factor caused accidents, since 1986, now comprise the largest single causal factor for railroad accidents [and] represent a disproportionate number of the most serious accidents." It has been surmised that people tend to become frustrated waiting for trains and are more likely to try to "beat the train." The FRA has concluded that increasing safety through infrastructure investment is a more clear-cut and quantifiable safety objective than the challenge of effectively dealing with human factor issues.

School safety is an important consideration in the Orangethorpe Corridor. Buses operated by the PYLUSD transport children to and from school across the following at-grade railroad crossings intersections along the Orangethorpe Corridor in the project study area: Kraemer Boulevard, Orangethorpe Avenue, Jefferson Street, Van Buren Street, Tustin Avenue/Rose Drive, Richfield Road, Lakeview Avenue, and Kellogg Drive. The total number of daily school bus crossings at these at-grade intersections is more than 300 (PYLUSD 2004). Although individual bus routes may change, it is anticipated that the PYLUSD would continue to use these eight arterials and cross the BNSF tracks to most effectively meet the transportation needs of school age children in the PYLUSD service area.

The proposed OCG Build Alternatives would increase public safety by reducing the risk of accidents at the major railroad crossings in the Orangethorpe Corridor.

1.3.3 Primary Rail Freight Route and Passenger Route

The BNSF railway line through Orange County is one of three main rail freight routes out of the Los Angeles area. International trade cargo comes into and out of the Ports of Los Angeles and Long Beach. The BNSF railway line serves the ports via the Alameda Corridor, a joint use line serving both the Union Pacific (UP) and BNSF railway companies, and connects to the Redondo junction (UP) and Hobart Yards (BNSF) outside downtown Los Angeles. The BNSF line is known as the "San Bernardino Subdivision" and proceeds southeast through Pico Rivera and Santa Fe Springs. The BNSF line then continues through northern Orange County, where the Orangethorpe Corridor is located, the City of Corona, San Bernardino County, and, ultimately, the Gulf states and eastern United States. Figure 1-2 shows the estimated existing daily train volumes on the primary rail facilities in Southern California, reflecting the large volumes of international goods traveling to/from the park and to/from other parts of California and the United States.

The OCG project would allow trains to cross below existing streets (Alternatives B and C) or above and below existing streets (Alternative D), thereby minimizing delays to surface traffic and reducing delays for emergency vehicles. Rail movement in this corridor would be enhanced by allowing trains to maintain existing speeds along the project segment of the BNSF and not slow down for at-grade crossings. In addition, it would eliminate the potential for track closures and delays caused by automobile or truck accidents on the track crossings.

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[1] Source: Federal Railroad Administration, Office of Safety Analysis web site, http://safetydata.fra.gov, September 21, 2005.

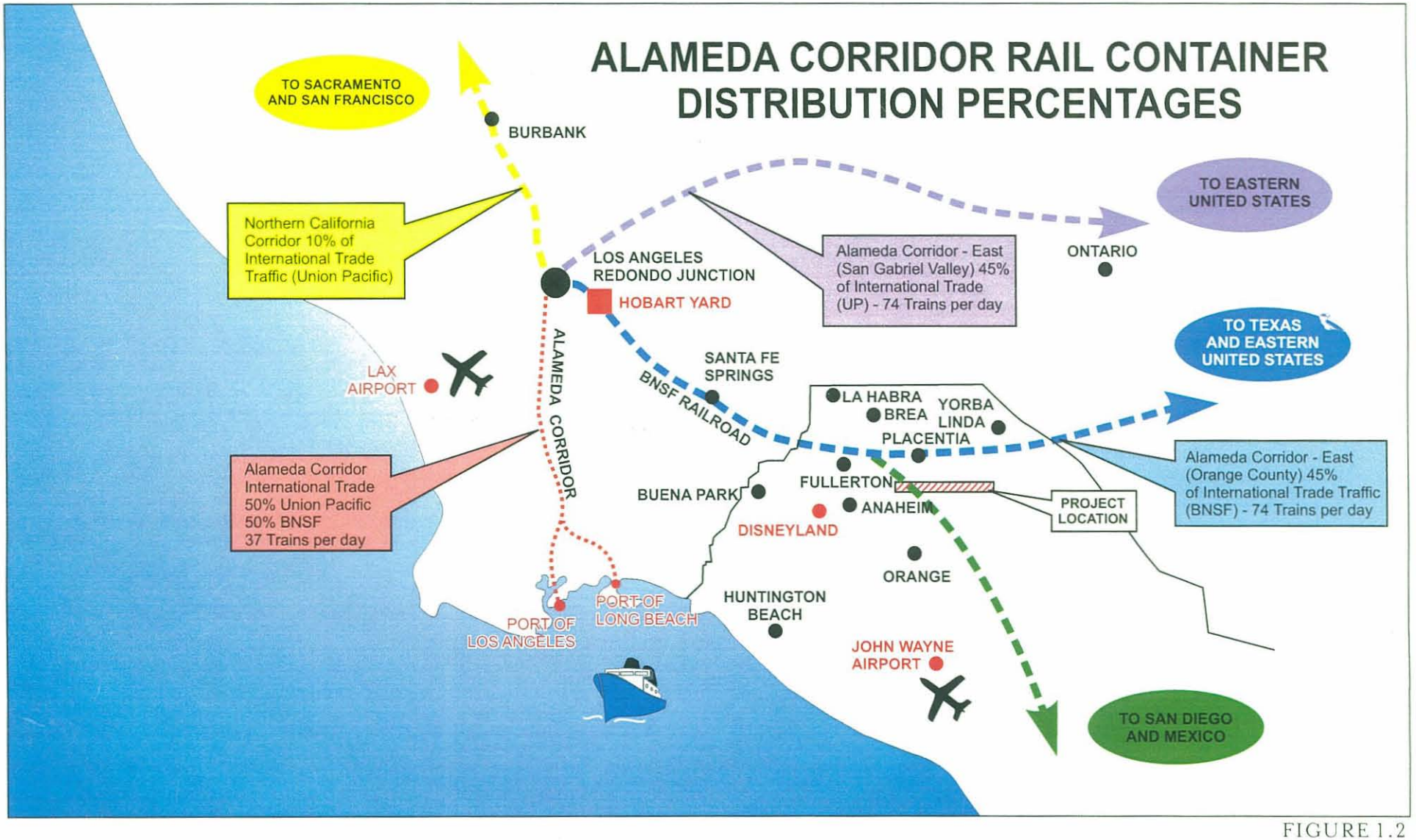


FIGURE 1.2

N

NO SCALE

SOURCE: Trade Impact Study, Los Angeles. Economic Development Corporation, September 2003

I:\OTG130\G\Distribution %.cdr (9/08/06)

This rail corridor is also used for passenger rail service offered by Metrolink and Amtrak.

1.3.4 Growth in Rail Volumes

Because of its linkage to the Ports of Los Angeles and Long Beach, growth in international trade has resulted in and is forecast to continue to result in growth in rail volumes throughout the Alameda Corridor, including the Orangethorpe Corridor. The volume of port cargo has increased substantially over the past five years and is expected to continue its rapid growth. The project segment of the BNSF serves rail traffic to and from Hobart Yard and the Los Angeles Redondo Junction and passenger rail services operated by Amtrak and Metrolink. The number of existing trains per day on the project segment, shown on Figure 1-2, is an estimate because the number of trains varies on any given day of the week, based on the need for goods movement to and from the Ports and other areas. Rail traffic on this segment of the BNSF includes traffic to and from the ports, northern California, southern California, and to the states east, and passenger services on Amtrak and Metrolink.

In terms of the number of trains, forecasts suggest an increase in traffic volumes in the Orangethorpe Corridor from the current volume of approximately 70 freight trains per day to 135 to 150 trains per day by 2030 (*Traffic Impact Analysis,* LSA Associates, Inc., 2006). The estimated existing 70 trains per day used in the *Traffic Impact Analysis* and the 74 trains per day shown on Figure 1-2 are different because they represent slightly different average daily traffic volumes, based on activity along this segment of the BNSF. The existing train volumes equate to one train passing through the Orangethorpe Corridor, blocking existing intersections with surface streets approximately every 10 minutes, 24 hours a day. For this analysis, it was assumed that 130 freight trains per day would use this segment of the BNSF. By 2030, if no grade crossing improvements are implemented, crossing gates will block intersections roughly 40 to 50 percent of the time during the peak hours of the morning commute based on the forecasted 130 trains per day.

Studies by the Southern California Association of Governments (SCAG) and the Assembly Bill 2928 (AB 2928) study adopted in July 2001 by the California Transportation Commission (CTC) reinforce the need for additional railroad capacity within the Orangethorpe Corridor in the future. This trade corridor is a vital economic link connecting the largest port complex in the United States to the rest of the nation.

Over 35 percent of all waterborne container trade in the United States moves through the sister Ports of Long Beach and Los Angeles. In 2000, the twin port complex handled 9.5 million Twenty-Foot Equivalent Units (TEUs) of containerized cargo valued at over approximately $196 billion. Container volumes through the Long Beach and Los Angeles Ports will more than triple by the year 2020 to 36.1 million TEUs (2030 projections were not available). Over 50 percent of the containers are anticipated to be shipped by rail via the Alameda Corridor-East by the BNSF and UP to destinations throughout the United States on the existing rail lines shown earlier in Figure 1-2. The numbers of existing trains per day shown on Figure 1-2 are estimates because the number of trains varies on any given day of the week, based on the need for goods movement to and from the Ports and other areas. The existing railroad network, the rail yards near downtown Los Angeles, and the main lines east of downtown Los Angeles, including the Orangethorpe Corridor, currently do not have the capacity to handle the projected freight volumes at the ports in the future (*OnTrac Trade Impact Study—Los*

Angeles-Inland Empire Railroad Mainline Advanced Planning Study, Los Angeles Economic Development Corporation [LAEDC] 2002).

Passenger train volumes are anticipated to increase in the future due to continuing demand.

1.3.5 Economic Vitality/Quality of Life

The City of Placentia is primarily a residential community, with a population of 46,500 persons (2000 United States Census). Approximately 95 percent of the residents live north of the BNSF railway line, which bisects the City. The area south of the BNSF tracks within the OCG project area is predominately underdeveloped industrial uses, including auto salvage yards. The increased rail traffic on the BNSF projected over the next 25 years, without the proposed grade separations, may reduce property values by five percent or more due to the impact of the railroad noise including train whistles at at-grade crossings and at-grade crossing delays (Kosmont & Associates, Inc. 1999).

The increase in population in the project vicinity over the last several decades and forecasted increases to 2030, as discussed in Section 3.4, Community Impacts, has and will place increased demands on existing infrastructure, particularly roads. Increased traffic in the OCG project area resulting from the regional population increase places substantial demands at the existing at-grade crossings, which create long wait times at intersections. These delays at the at-grade crossings further degrade the quality of life in the Cities of Yorba Linda, Placentia, and Anaheim.

1.3.6 Community Input and Concerns

The City of Placentia has worked extensively with City residents and businesses to address quality of life concerns throughout the City, including environmental issues, for a number of years. The citizens in Placentia have been encouraged by the City's elected officials and staff to provide input on issues they would like to see addressed or modified. A major area of concern cited by City residents has focused for a number of years on train whistle and operational noise and traffic delays in areas in the vicinity of the BNSF tracks. This is an ongoing issue of concern to the citizens as evidenced by the continuing input provided to the City's elected officials and staff. It is estimated that the City receives approximately 20 to 30 comments, concerns, and/or complaints about rail noise and/or traffic delays at rail crossings every week. The proposed grade separation project would result in a substantial reduction in train-related noise and delays, which would be of substantial benefit to area residents and businesses.

1.3.7 Emergency Response

Traffic delays during train crossings are most extensive during peak rail and motor vehicle travel times. However, even during less congested periods, emergency vehicles such as police cars, fire engines, and ambulances are delayed at rail crossings, increasing their response times.

The OCG project would allow trains to cross below existing streets (Alternatives B and C) or above and below existing streets (Alternative D), thereby minimizing delays to surface traffic and reducing delays for emergency vehicles.

1.3.8 Environmental Effects

Continued vehicle congestion and delays at at-grade crossings in the future, as the amount of rail traffic increases, will result in reduced accessibility to businesses and homes, decreased traffic flow, increased traffic accidents, additional travel time, higher fuel consumption, lower air quality, and more noise. As stated above, the southern part of the City of Placentia, south of the BNSF tracks, is an underdeveloped industrial area. Industrial land uses require adequate access for trucks to move goods to and from their facilities and reasonable access to north-south and east-west highway routes. Reduced mobility in the area may influence future development and redevelopment decisions adjacent to the Orangethorpe Corridor.

Idling vehicles use more fuel and produce greater emissions than moving vehicles. Without an OCG Build Alternative, forecast vehicular delays along the Orangethorpe Corridor will add approximately 419 tonne (380 tons) of total emissions by 2030 (*Air Quality Analysis,* LSA Associates, Inc., 2006). The estimate includes an allowance for emission reductions as engine technologies improve. Without an OCG Build Alternative, the noise environment will be worse for area residents due to the increase in train operations in the future.

1.4 PROJECT BACKGROUND

1.4.1 Overview

The Southern California economy is driven by international trade. Cargo arriving on ships from overseas begins its cross-country trip via the Ports of Los Angeles and Long Beach, where each day thousands of cargo containers are transferred from ship to rail. The freight trains then transport the cargo northward through the Alameda Corridor used jointly by the BNSF and UP railroads. The Alameda Corridor includes an approximately 16 km (10 mi) long below grade trench segment in a joint ports and railroad venture to facilitate goods movement from the ports to the respective BNSF and UP rail yards near downtown Los Angeles. Northeast and east of those rail yards, trains travel to the Midwest and East Coast of the United States exclusively on Class 1 main rail lines owned by their respective companies. The BNSF tracks run through the north Orange County area within the Orangethorpe Corridor and the UP railroad runs through the San Gabriel Valley. These two corridors constitute the Alameda Corridor East, as shown earlier on Figure 1-2.

The OCG project limits extend along the existing BNSF alignment, from just west of Bradford Avenue on the west to Imperial Highway on the east in the Cities of Placentia and Anaheim, and unincorporated Orange County. The project area is centered at the junction of the BNSF San Bernardino Subdivision and the BNSF Orange/Olive Subdivision in the Placentia/Anaheim area. In addition to BNSF freight use, these rail subdivisions are used by Amtrak and Metrolink to transport passengers. Because of the existing at-grade crossings within the OCG project area, there are considerable problems such as traffic delays, vehicle-train accidents, train operational noise and whistles, air pollution from idling vehicles, and emergency response vehicle delays. By 2030, with a predicted increase in the number of daily freight trains on the BNSF to 130 daily trains, together with increased vehicular traffic associated with increased area population and jobs, these problems will get worse without a solution (*Traffic Impact Analysis*).

1.4.2 Background on the City of Placentia and the OnTrac Joint Powers Authority

Over the last several years, the City of Placentia has been pursuing a range of grade separation and safety projects along the BNSF railroad tracks through the City. The intent of these projects, including the proposed OCG project, is to reduce delays for vehicle traffic (including public safety vehicles) crossing the currently at grade railroad tracks, to improve vehicle and pedestrian safety at railroad grade crossings, and to reduce train horn noise in the City.

As an incorporated City, Placentia has been actively pursuing financial resources to fund these projects and has proceeded with a number of projects using local, State and federal funds. In 2000, recognizing that the need for improvements across the BNSF tracks extended to other jurisdictions, the City and the Placentia Redevelopment Agency formed the Orange North-American Trade Rail Access Corridor Authority (OnTrac), a joint powers authority (JPA) similar to the Alameda Corridor Transportation Authority (ACTA) to support design and implementation of the OCG project. OnTrac was recognized at both the State and federal levels as the primary agencies working to fund and construct a series of highway/rail grade separation projects on the Alameda Corridor East, which is comprised of the Union Pacific (UP) and BNSF railroad transcontinental mainlines through Los Angeles, Orange, Riverside, and San Bernardino Counties.

The City of Placentia and the Placentia Redevelopment Agency were the only members of OnTrac, with members of the Placentia City Council and Redevelopment Agency Board of Directors acting as the Board for the OnTrac Authority. Efforts were made to encourage other cities along the BNSF tracks through north Orange County to join the OnTrac Authority as potential projects were identified and pursued in those cities. OnTrac and the City of Placentia pursued and received funding for several projects and continued to pursue funding opportunities for the range of projects proposed along the BNSF railroad tracks.

On August 1, 2006, the City Council of the City of Placentia and the Board of Directors of the Placentia Redevelopment Agency each unanimously approved the dissolution of the OnTrac Joint Powers Authority. The dissolution became effective August 31, 2006. The City of Placentia will continue to serve as the CEQA Lead Agency for the proposed OCG project and will direct future actions taken in furtherance of the project.

1.4.3 OCTA Orange County Goods Movement Study

In March 1998, the Orange County Transportation Authority (OCTA) adopted an Orange County Goods Movement Study that examined goods movement mobility and access issues, inventoried truck and rail freight trip patterns, assessed the impacts of the Alameda Corridor project and the North American Free Trade Agreement (NAFTA), and developed a practical plan to improve the system.[1] The study determined that a coordinated effort by private sector interests such as the trucking, railroad, and steamship associations, and agencies concerned with transportation, air quality, safety, law enforcement, and regional customs was necessary to substantially improve goods movement.

[1] OCTA Long-Range Transportation Plan, 2002.

1.4.3.1 Railroad Involvement. Interactions have occurred and continue to occur with BNSF as the railroad operator and principal stakeholder. BNSF has some concerns with the railroad lowering approach but is open to such a project if their technical and operational concerns are addressed.

The City of Placentia had a series of meetings with BNSF during the Project Definition Phase resulting from BNSF comments received January 2, 2002, on the Notice of Preparation (NOP) . These meetings have continued during the *Preliminary Engineering Report* phase.

BNSF would be able to continue operating trains and dispatching passenger trains within the OCG project area if the existing at-grade crossings are not grade separated. However, addressing the potential traffic conflicts and safety issues by grade separating existing at-grade street crossings is generally viewed as beneficial by BNSF.

During the NOP scoping period, BNSF expressed concerns about Alternative B due to the lack of a permanent detour or bypass route in the event of train derailment or any other condition that forces closure of the trench section. Such a bypass track is not included as a design feature of Alternative B. In light of these comments, Alternative C was developed to address the concerns raised by BNSF. Of the alternatives under consideration, BNSF recognizes that Alternative D would provide the least disruption to their operations during construction and poses no challenges with respect to groundwater management, flooding, seismic risk, or other factors that might increase their concerns of possible temporary closures.

It will be necessary to negotiate formal Construction and Maintenance Agreements between BNSF and the involved local agencies if an OCG Build Alternative is selected for implementation.

The existing BNSF right-of-way on the project segment currently accommodates the existing two railroad tracks and supporting maintenance and operations facilities. The existing BNSF right-of-way is wide enough to accommodate additional improvements in this corridor in the future, if BNSF should elect to pursue them. Right-of-way for existing rail facilities is limited. Alternatives B and C, which include construction of a trench, would be constructed within the existing BNSF right-of-way. When construction of Alternatives B and C is complete, the existing BNSF right-of-way would still be available to BNSF for future improvements. Alternative D, which assumes standard grade separations, would not require the permanent use or acquisition of existing BNSF right-of-way. As a result, the existing BNSF right-of-way would be preserved under all three proposed OCG Build Alternatives. The BNSF provided a letter dated October 30, 2006, to the City of Placentia which stated "BNSF request that all build alternatives protect the existing BNSF right-of-way. The existing BNSF right-of-way is reserved for future rail improvements and rail expansions within the rail corridor." A copy of the letter is provided in Appendix B, Coordination and Consultation. No information on possible BNSF facility or service improvements in this corridor is known at this time. In the future, should BNSF pursue additional improvements in this corridor, the BNSF existing right-of-way would be available for those improvements. The proposed OCG Build Alternatives do not assume any improvements to the BNSF facilities or services in this corridor. No BNSF facility or service improvements are evaluated in this EIS. Any future BNSF improvements would serve different needs. Therefore, the proposed OCG project and any future BNSF improvements in this corridor would serve independent utility and would not be dependent on each other.

1.4.4 Other Projects

The following projects are other railroad or road projects in the vicinity or the same location as the OCG project. Environmental studies for these projects have been or are being prepared for these projects by other agencies. Section 4.0, Cumulative Impacts, provides additional information on these related projects.

1.4.4.1 Alameda Corridor and Alameda Corridor East. The Alameda Corridor includes a 16.1 km (10 mi) long below grade trench segment in a joint ports and railroad venture to facilitate goods movement from the Los Angeles and Long Beach ports to the respective BNSF and UP rail yards near downtown Los Angeles. Construction was completed and the project opened in 2002. Northeast and east of the rail yards, trains travel to the Midwest and east coast of the United States exclusively on Class 1 main rail lines owned by their respective companies. The BNSF tracks run through the north Orange County area within the Orangethorpe Corridor, while the UP railroad runs through the San Gabriel Valley. Together, these two corridors are known as the Alameda Corridor East (ACE). The ACE projects would not result in any reduction in train whistle noise or in the provision of any grade separations along the OCG project segment of the BNSF.

1.4.4.2 Placentia Rail Crossing Safety Enhancement Project. The Placentia Rail Crossing Safety Enhancement project (PRCSEP) includes the installation of quad gates, raised medians, presignals, and other crossing enhancements along the BNSF line between Kellogg Drive, California Public Utilities Commission (CPUC) Crossing No. 2B-39.20, and Kraemer Boulevard, CPUC Crossing No. 2B-42.5, a distance of 5.5 km (3.4 mi). The safety enhancements will be made to eight existing at-grade crossings: Kraemer Boulevard, Orangethorpe Avenue, Tustin Avenue/Rose Drive, Jefferson Street, Van Buren Street, Richfield Road, Lakeview Avenue, and Kellogg Drive. The proposed crossing improvements will occur within existing street and railroad rights-of-way. Construction contracts were awarded, construction began in July 2005 and is scheduled to be completed in late 2006. The PRCSEP is part of the Federal Railroad Administration (FRA) Quiet Zone program and would improve existing at-grade rail crossings in the City. It would result in the reduction in train whistle noise at all at-grade crossings in the study area. Further, it should be noted that the use of train whistles is based on the need as identified by the operating engineer and, as a result, train whistles may be used along this part of the BNSF alignment. This project would not result in the provision of grade separations at these or other at-grade crossings along the OCG segment of the BNSF.

1.4.4.3 Melrose Street Grade Separation Project. The City of Placentia constructed a grade separation at the Melrose Street crossing with the existing BNSF rail line. The project was completed and opened to traffic on January 18, 2005. The grade separation project provides for a safe and efficient vehicle undercrossing of the existing BNSF railroad intersection at Melrose Street. The project included the construction of a new undercrossing that lowered Melrose Street at the railroad approximately 7.6 meters (m) (25 feet [ft]) below its former elevation. The new undercrossing required new and rerouted access locations for several businesses within the affected area, a new cul-de-sac at Baker Street, and dead-end alleys south of Santa Fe Avenue. The project also included improvements at the intersection of Crowther Avenue and Sante Fe Avenue. Train whistles are no

longer needed at this grade separation. However, train whistles are still required at the other existing at-grade crossings along the OCG project segment of the BNSF. Further, it should be noted that the use of train whistles is based on the need as identified by the operating engineer and, as a result, train whistles may be used in other areas along the BNSF alignment.

1.4.4.4 Placentia Avenue Grade Separation Project. The City of Placentia, in cooperation with the City of Fullerton, propose to construct a grade separation at the Placentia Avenue crossing of the BNSF railroad. Placentia Avenue would become an underpass for vehicular traffic, improving public safety and traffic flow. The project is "shelf-ready" for construction, with about 80 percent of the needed right-of-way acquired; the final design is about 75 percent complete; and the CPUC Agreement and BNSF Construction and Maintenance Agreement are completed. The project is on hold until further notice, as it was State-funded, and the State has withheld transportation fund allocations since 2002–2003. The project needs about $18 million in funds to be completed. The City of Placentia is actively pursuing funding opportunities for this project. Train whistles would no longer be needed at Placentia Avenue once this approved project is constructed. However, train whistles would still be required at other existing at-grade crossings along the OCG project segment of the BNSF. Further, it should be noted that the use of train whistles is based on the need as identified by the operating engineer and, as a result, train whistles may be used in other areas along the BNSF alignment.

1.4.4.5 State Route 90 Grade Separation. To improve traffic flow and safety associated with this roadway crossing of the BNSF railroad, it is proposed that a grade separation structure be constructed along State Route 90 (SR-90), also referred to as Imperial Highway. The separation would encompass the area along SR-90, between La Palma Avenue to the south and approximately 900 m (0.6 mi) to the northwest of the centerline of Orangethorpe Avenue-Esperanza Road. In addition, the number of lanes on the elevated section of SR-90 would be increased to match the existing number of lanes on SR-90 on either side of the intersection, improving traffic flow through the area. Caltrans is the lead agency for this project, the right-of-way acquisition phase for this project is complete and construction is scheduled for 2007. Train whistles would no longer be needed at Imperial Highway once this planned project is constructed. However, train whistles would still be required at other existing at-grade crossings along the OCG project segment of the BNSF. Further, it should be noted that the use of train whistles is based on the need as identified by the operating engineer and, as a result, train whistles may be used in other areas along the BNSF alignment.

1.4.4.6 Bradford Avenue Closure and Pedestrian Overcrossing. This project proposed closing Bradford Avenue at the BNSF railroad crossing after completing the Melrose Street Grade Separation project. This street closure was completed in mid-2005. This project also includes a pedestrian overhead bridge structure across the BNSF tracks. Construction of the pedestrian bridge will begin in early 2007 and will be completed in late 2007. Train whistles are no longer needed at the location where Bradford Street crosses the BNSF because this at-grade crossing has been closed to surface traffic. However, train whistles are still required at other existing at-grade crossings along the OCG project segment of the BNSF. Further, it should be noted that the use of train whistles is based on the need as identified by the operating engineer and, as a result, train whistles may be used in other areas along the BNSF alignment.

1.4.5 Funding and Programming

The OCTA *Long-Range Transportation Plan, New Directions* (July 24, 2006) identifies the OCG project as necessary to improve goods movement consistent with existing demand and projected freight growth. OCTA has determined that as rail traffic increases, it will become important to prioritize grade crossing improvements at the 64 Orange County at-grade crossings to ensure that funds are utilized in the areas of greatest need.

The State of California, the OCTA, and the City of Placentia have already provided approximately $40 million in initial funding, for the preliminary engineering and environmental document, to advance the OCG project to a construction-ready status.

The construction will cost between $324 million and $566 million, depending on the OCG Build Alternative. A total of $250 million was requested during the 2003 congressional TEA-21 reauthorization process.

Under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), $125 million has been earmarked for the four-county Alameda Corridor East program.[1] By regional agreement, these funds will be divided evenly among Orange, Los Angeles, San Bernardino, and Riverside Counties. A total of $31.25 million is provided for the OCG project.

BNSF's financial participation will depend on the type of funding used for the individual grade separations. If a grade separation is funded solely with State and local funds, BNSF's share would be 10 percent of the project costs. However, if a grade separation includes federal funding participation, BNSF's obligation would be reduced to 5 percent of the theoretical "touchdown to touchdown" project costs.

The eight OCG grade separations and three other grade separation projects along the BNSF in Orange County are listed in the 2008 RTP on page 48 of the Project Listing Report, which is provided in Appendix H. The RTP is a long-range planning document used to identify potential transportation projects anticipated over an approximately 20-year planning period. The eight OCG grade separations are included in the RTP listing as "BNSF railway line (Placentia to Imperial Highway) along Crowther/Orangethorpe. Grade separation corridor improvements at 11 arterial streets including preliminary engineering, program management, project reports, environmental impact report, right-of-way & construction and crossing closure/pedestrian bridge" with the Project ID #ORA000147. This list includes the four major OCG grade separations at Kraemer Boulevard, Orangethorpe Avenue, Tustin Avenue/Rose Drive, and Lakeview Avenue; the four minor OCG grade separations at Jefferson Street, Van Buren Avenue, Richfield Road, and Kellogg Drive; and three other grade separations (at Melrose, Placentia, and Bradford Avenues, which are not part of the OCG project). The 2008 RTP listing shows an estimated project cost of $83,228,000 for the 11 grade separation projects in ORA000147. That cost estimate is not consistent with the more recent and detailed cost estimates for the individual crossings, as explained below.

[1] Public Law 109-59, Section 1301, Projects of National and Regional Significance, Subsection (m), Project No. 9.

The RTP is updated on a four-year planning cycle. When the RTP is updated in 2012, it is anticipated that the construction of two of the crossings, at Bradford and Melrose Avenues, will be completed. As a result, it is expected that the project listing for ORA000147 in the 2012 RTP will be amended to include only the remaining nine crossings (i.e., the eight OCG crossings and the Placentia Avenue crossing). The estimated cost for those nine crossings in the 2012 RTP is anticipated to be on the order of approximately $472 million, which would include the estimated $433 million for the eight OCG grade separations in Alternative D and an estimated $39 million for the Placentia Avenue crossing improvements. For comparison purposes, if the 2012 RTP also included the costs for the Bradford Avenue (approximately $6 million) and Melrose Avenue (approximately $38 million) crossings (to bring the total number of crossings to the original 11 crossings), the estimated cost would be approximately $516 million.

The four major grade separations in Alternative D have been programmed and funding committed for those crossings in the 2008 RTIP, at a total cost of $252 million. The RTIP reflects committed funding for those four crossings including the use of Proposition 1B TCIF.

The four major OCG grade separations are currently shown in the 2008 RTIP as the following:

- ORA020826 Tustin Avenue/Rose Drive
- ORA020825 Lakeview Avenue
- ORA020824 Orangethorpe Avenue
- ORA020823 Kraemer Boulevard

The project sheets for these four projects are provided in Appendix H. The 2008 RTIP was found to be conforming by FHWA/FTA on June 5, 2008. The OCTA-Orange County-Countywide Grade Separation Program (Table 3) provided in Appendix H shows the committed funds for the four major crossings, which are consistent with the costs shown in the project sheets for the RTIP amendment.

The RTIP does not include the four minor crossings because they do not have committed funding at this time.

If FHWA selects an alternative and sets forth its approval of the project in a Record of Decision (ROD), that ROD can only include those project components that are financially constrained. As discussed above, there is available and committed funding for the four major OCG crossings but not the four minor crossings at this time. If FHWA proceeds with a ROD for the project, that ROD will address only the four major crossings that are currently funded. FHWA could consider a federal environmental action on the four minor crossings in the future as funding becomes available and is committed for those four crossings.

1.4.6 U.S. Economic Interest

The Orangethorpe Corridor handles freight destined to every state in the United States. For example, approximately 60 percent of the imported goods consumed in the Chicago area flows through the Ports of Long Beach and Los Angeles and along the main railroad lines serving these ports. Therefore, the proposed OCG project is of national significance because it would facilitate the movement of international and domestic cargo throughout the nation (LAEDC 2002).

2.0 PROJECT ALTERNATIVES

2.0 PROJECT ALTERNATIVES

2.1 ALTERNATIVE DEVELOPMENT PROCESS

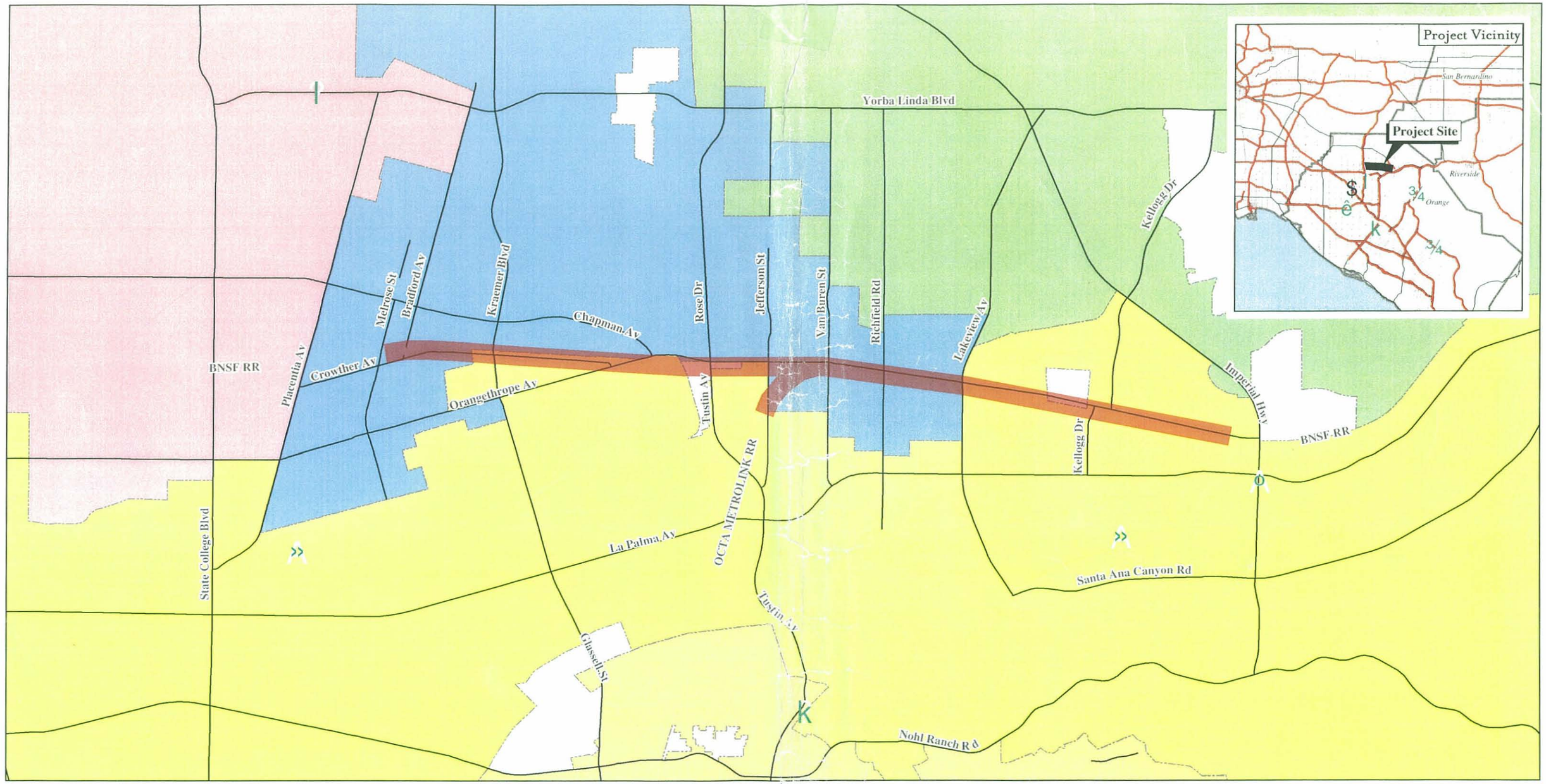
The Orangethorpe Corridor is part of the Burlington Northern Santa Fe (BNSF) railroad line, one of three main rail freight routes out of the Los Angeles area. The Orangethorpe Corridor refers to the segment of the BNSF railroad in north Orange County, named after Orangethorpe Avenue, which parallels much of this approximately eight kilometer (km) (five mile [mi]) long segment of the BNSF railroad, as shown on Figure 2-1. The railroad line runs east-west within the Orange County Gateway (OCG) project area, through the Cities of Placentia and Anaheim and unincorporated Orange County, as shown in Figure 2-1. It is crossed by commuters wishing to access State Route 91 (SR-91) and State Route 57 (SR-57), major east-west and north-south transportation facilities. The OCG project proposes grade separation of existing arterial roads along the BNSF railroad from approximately Bradford Street on the west to Imperial Highway on the east, as shown on Figure 2-1. Eight existing arterial roads that intersect with the BNSF railroad tracks are proposed for grade separation under Alternatives B and D: Kraemer Boulevard, Orangethorpe Avenue, Tustin Avenue/Rose Drive, Jefferson Street, Van Buren Street, Richfield Road, Lakeview Avenue, and Kellogg Drive. The project area for the OCG project extends along the existing BNSF rail facility from approximately Bradford Street to Imperial Highway. Under Alternative C, Kellogg Drive would remain an at-grade crossing.

To achieve the project purpose and need while avoiding or minimizing environmental impacts, the City of Placentia developed three build alternatives. Each Build Alternative preserves the existing BNSF right-of-way, which would allow BNSF to implement facility and/or service improvements in the future without requiring modifications to the proposed OCG Build Alternatives. No BNSF facility or service improvements are evaluated in this Environmental Impact Statement (EIS).

The project segment of the BNSF passes through or adjacent to parts of the City of Anaheim as well as areas in the City of Placentia. The City of Anaheim has participated in the preliminary planning and environmental analysis of the OCG project alternatives. The City has indicated its support for the project as cited in the letter from the City of Anaheim to the City of Placentia dated April 6, 2007. A copy of that letter is included in Appendix B-5, Additional Consultation Records. The City of Placentia anticipates entering into an agreement with the City of Anaheim regarding the implementation of the project.

2.1.1 Existing Local Streets Crossing the BNSF

The OCG project addresses either seven or eight existing at-grade crossings along the BNSF (depending on the alternative). These are, from west to east: Kraemer Boulevard, Orangethorpe Avenue, Tustin Avenue/Rose Drive, Jefferson Street, Van Buren Street, Richfield Road, Lakeview Avenue, and Kellogg Drive. As discussed in detail in Section 1.4.1, Related Projects, the other four existing at-grade crossings (Placentia Avenue, Melrose Street, Bradford Avenue, and Imperial



SOURCE: TBM (2004)

I:\Otg130\gis\otg130_project_EIS_1.mxd (9/21/2007)

FIGURE 2-1

Orange County Gateway
Project Location

Highway) on this segment of the BNSF are either planned for closure or for construction as standard grade separations under separate approved and in progress projects.

The existing at-grade crossings proposed for grade separation under the proposed OCG project are described briefly below.

2.1.1.1 Kraemer Boulevard. This is a four-lane roadway which is designated as a Major Arterial Highway on the Orange County Master Plan of Arterial Highways (MPAH). Kraemer Boulevard provides regional access among the Cities of Yorba Linda, Placentia, and Anaheim. At the BNSF railroad crossing, the railroad right-of-way and the southern segment of Kraemer Boulevard are within the City of Anaheim. The Crowther Avenue intersection and the northern segment of Kraemer Boulevard are within the City of Placentia. The estimated daily traffic volume on Kraemer Boulevard at the BNSF crossing in 2000 was 22,300 vehicles.

2.1.1.2 Orangethorpe Avenue. This is a four-lane roadway that crosses the BNSF railroad on a diagonal. It is a Major Arterial Highway on the MPAH that provides regional access among the Cities of Buena Park, Fullerton, Anaheim, Placentia, and Yorba Linda. At the BNSF railroad crossing, the railroad right-of-way and the southern segment of Orangethorpe Avenue are within the City of Anaheim. The northern segment of Orangethorpe Avenue is within the City of Placentia. Just east of the railroad crossing is a T-intersection of four-lane Chapman Avenue and Orangethorpe Boulevard. The estimated daily traffic volume on Orangethorpe Avenue at the BNSF crossing in 2000 was 16,000 vehicles.

2.1.1.3 Tustin Avenue/Rose Drive. This is a four-lane roadway which is designated as a Major Arterial Highway on the MPAH. It provides regional access among the Cities of Brea, Yorba Linda, Placentia, and Anaheim. At the BNSF railroad crossing, the railroad right-of-way and the southern segment of Tustin Avenue are in unincorporated Orange County. The Orangethorpe Avenue intersection and the northern Rose Drive on Tustin Avenue/Rose Drive at the BNSF crossing are within the City of Placentia. The estimated daily traffic volume on Tustin Avenue/Rose Drive at the BNSF crossing in 2000 was 24,600 vehicles.

2.1.1.4 Jefferson Street. This is a four-lane roadway north of the BNSF railroad tracks and a two-lane roadway south of the railroad tracks. It is a Secondary Arterial Highway on the MPAH that provides local access within the Cities of Placentia and Anaheim. At the BNSF railroad crossing, the railroad right-of-way and the southwestern quadrant of this intersection are within the City of Anaheim. The railroad right-of-way and the remaining three quadrants to the north and southeast are within the City of Placentia. The estimated daily traffic volume on Jefferson Street at the BNSF crossing in 2000 was 6,300 vehicles.

2.1.1.5 Van Buren Street. This is a two-lane roadway and is not designated on the MPAH. All four quadrants of the intersection at the BNSF railroad crossing are within the City of Placentia. The estimated daily traffic volume on Van Buren Street at the BNSF crossing in 2000 was 6,100 vehicles.

2.1.1.6 Richfield Road. This is a four-lane roadway and is designated as a Secondary Arterial Highway on the MPAH. It provides regional access within the Cities of Yorba Linda, Placentia, and Anaheim. At the BNSF railroad crossing, all four quadrants are within the City of Placentia. The estimated daily traffic volume on Richfield Road at the BNSF crossing in 2000 was 7,500 vehicles.

2.1.1.7 Lakeview Avenue. This is a four-lane roadway and is designated as a Secondary Arterial Highway on the MPAH. It provides regional access within the Cities of Yorba Linda, Placentia, and Anaheim. The west side of Lakeview Avenue is within the City of Placentia and the east side is within the City of Anaheim. The estimated daily traffic volume on Lakeview Avenue at the BNSF crossing in 2000 was 18,200 vehicles.

2.1.1.8 Kellogg Drive. This is a four-lane roadway that has a railroad crossing and T-intersection from the south to Orangethorpe Avenue. Approximately 152 m (500 ft) to the east, Kellogg Drive has a T-intersection from the north to Orangethorpe Avenue. It is a Secondary Arterial Highway on the MPAH that provides local access within the Cities of Yorba Linda, Placentia, and Anaheim. The estimated daily traffic volume on Kellogg Drive at the BNSF crossing in 2000 was 7,000 vehicles.

Each of these grade crossings currently consists of standard crossing gates, signals, and signing which protect the crossings from motorists as they approach the crossings.

2.1.2 Existing BNSF Railroad Facilities

Approximately 50 percent of the freight off-loaded at the Ports of Los Angeles and Long Beach crosses the country by rail. Freight trains transport the cargo northward from the ports, through the Alameda Corridor, a 32 km (20 mi) long rail cargo expressway (completed/operational in 2002) used jointly by the BNSF and the Union Pacific Railroad (UP). The Alameda Corridor was a joint ports and railroad venture to facilitate goods movement from the ports to the respective BNSF and UP rail yards near downtown Los Angeles. Sixteen km (10 mi) of the Alameda Corridor are lowered below grade to carry freight trains in an open trench. To the northwest and east of the rail yards, trains travel to the midwest and east coast of the United States exclusively on rail lines owned by their respective companies. The Alameda Corridor and the BNSF tracks run through the north Orange County area within the Orangethorpe Corridor, while the UP railroad runs through the San Gabriel Valley via the northern leg of the Alameda Corridor East (ACE). The Alameda Corridor and the BNSF and UP systems in Southern California were shown earlier on Figure 1-2.

The OCG project segment of the existing BNSF rail corridor consists of two railroad tracks within right of way owned by BNSF. BNSF operates freight trains along this corridor. Approximately 70 daily freight trains currently operate on the project segment of the BNSF. Amtrak and Metrolink passenger trains also utilize the corridor under license agreements with the BNSF. The dimensions of the existing rail corridor right-of-way within the OCG project area are summarized on Table 2-A. As shown, the existing railroad right-of-way width within the OCG project area varies a bit, but is predominantly approximately 30.5 m (100 ft) wide.

Table 2-A: Existing Rail Corridor Right-of-Way Dimensions

Limits	Corridor Right-of-Way Width
State Route 57 to 213.4 meters (m) (700 feet [ft]) east of State Route 57	18.3 m (60 ft)
213.4 m (700 ft) east of State Route 57 to 182.9 m (600 ft) east of Bradford Avenue	30.5 m (100 ft)
182.9 m (600 ft) east of Bradford Avenue to 365.8 m (1,200 ft) east of Bradford Avenue	18.3 to 30.5 m (60 to 100 ft)
365.8 m (1,200 ft) east of Bradford Avenue to 518.2 m (1,700 ft) west of Orangethorpe Avenue	18.3 m (60 ft)
518.2 m (1,700 ft) west of Orangethorpe Avenue to Orangethorpe Avenue	30.5 m (100 ft)
Orangethorpe Avenue to Rose Drive	45.7 m (150 ft)
Rose Drive to 243.8 m (800 ft) east of Rose Drive	36.6 m (120 ft)
243.8 m (800 ft) east of Rose Drive to Lakeview Avenue	30.5 m (100 ft)
Lakeview Avenue to 304.8 m (1,000 ft) east of Lakeview Avenue	27.4 m (90 ft)
304.8 m (1,000 ft) east of Lakeview Avenue to 426.7 m (1,400 ft) east of Lakeview Avenue	22.9 m (75 ft)
426.7 m (1,400 ft) east of Lakeview Avenue to Kellogg Drive	25.3 m (83 ft)
Kellogg Drive to Imperial Highway (SR-90)	22.3 m (73 ft)

Source: *Preliminary Engineering Report* (KFM Engineering 2004).

This segment of the BNSF railroad corridor is one of the major freight lines to and from the ports of Los Angeles and Long Beach through Southern California as shown earlier on Figure 1-2. The BNSF's San Bernardino Subdivision is the railroad's main transcontinental line from Hobart Yard, serving the Ports of Long Beach and Los Angeles, and points east. There are currently a total of approximately 70 trains per day operating on the BNSF railroad line through northern Orange County, composed of freight trains with mostly intermodal units (i.e., containers or trailer units). In addition, passenger trains, including transcontinental Amtrak trains and Metrolink commuter trains, use the project segment of the BNSF.

The Orange-Olive Subdivision, approximately at the middle of the OCG project segment, provides for connections to the San Diego Subdivision to the south and the San Bernardino Subdivision to the east. A few freight trains operate on the Orange-Olive Subdivision, with principal use being Metrolink connections between San Bernardino/Riverside and mid- and southern Orange County.

BNSF dispatches trains on the San Bernardino Subdivision from its facilities in San Bernardino. Metrolink dispatches trains on the Orange-Olive Subdivision from its facilities in Los Angeles.

2.1.3 Existing Drainage Crossings

There are five existing drainage crossings within the project study area. Table 2-B describes the existing drainage crossings and their locations. Additional discussion of the proposed changes to these drainage crossings can be found later in the description of the proposed Alternatives.

Table 2-B: Existing BNSF Drainage Crossings

Facility	Location	Description of Existing Facility
Kraemer Boulevard Storm Drain	Kraemer Boulevard	78" reinforced concrete pipe
Carbon Canyon Channel	304.8 m (1,000 ft) west of Orangethorpe Avenue	Concrete trapezoidal open channel; 21-foot base width, 10-foot depth; also includes wooden structures associated with the BNSF railroad bridges over the facilities
Richfield Channel	182.9 m (600 ft) west of Jefferson Street	Concrete rectangular open channel; 60-foot width; 10 foot depth; also includes wooden structures associated with the BNSF railroad bridges over the facilities
Atwood Channel	426.7 m (1,400 ft) east of Lakeview Avenue	Double 9' x 8' reinforced box culvert
East Richfield Channel	West of Imperial Terrace Lane	Concrete rectangular open channel; reinforced concrete box; 20 feet width; 6.5-foot depth

Source: *Preliminary Engineering Report* (KFM Engineering 2004) and *Drainage Management Study* (Boyle Engineering 2006).

2.1.4 Future BNSF Facilities

To accommodate the forecasted future growth in rail traffic, BNSF has initiated construction of a third track within its right-of-way between the Hobart Railyard near downtown Los Angeles to Fullerton. A three-track alignment currently exists within the BNSF railroad right-of-way east of Weir Canyon Road/Yorba Linda Boulevard in Yorba Linda moving to the east. The OCG project limits are between these two areas, and the OCG project would accommodate future BNSF efforts to meet future rail growth needs by avoiding impacts to the existing BNSF right-of-way, which would allow BNSF to implement facility and/or service improvements in the future without requiring modifications to the proposed OCG Build Alternatives. The BNSF provided a letter dated October 30, 2006, to the City of Placentia which stated "BNSF request that all build alternatives protect the existing BNSF right-of-way. The existing BNSF right-of-way is reserved for future rail improvements and rail expansions within the rail corridor." A copy of the letter is provided in Appendix B, Coordination and Consultation. No BNSF facility or service improvements are evaluated in this EIS.

The Southern California Association of Governments (SCAG) has conducted goods movement studies and has concluded that truck traffic substantially congests regional freeways and such congestion will get much worse in coming decades. Therefore, it is considered desirable to attempt to retain as much transcontinental freight as possible on trains through the SCAG region. Train volumes

on the existing rail corridors will increase substantially in the future, with the train volume on the BNSF's San Bernardino Subdivision in the project area expected to increase to 130 daily freight trains by 2030. Adding more trains and adding track capacity within the existing railroad rights-of-way may accommodate this increased railroad volume. However, such railroad capacity improvements will not address increasing congestion of local street at-grade railroad crossings.

2.1.5 Forecasted Surface Traffic Volumes and Related Traffic Delays at Railroad Crossings

Within the OCG study area, eight at-grade street crossings will remain at-grade following completion of the other approved and in progress grade separation projects (i.e., undercrossings at Placentia Avenue and Melrose Street, closure of Bradford Avenue, and overcrossing at Imperial Highway). The estimated 2000 and 2020 daily traffic volumes and vehicle hours of delay at these eight crossings of the BNSF are summarized in Table 2-C.

Table 2-C: Existing and Forecasted Traffic Volumes and Delays

	Traffic Volumes at the BNSF Crossing		Traffic Delays (vehicle hrs/day)	
Crossing	2000	2020	2000	2020
Kraemer Boulevard	22,300	40,300	27	152
Orangethorpe Avenue	15,900	28,800	21	119
Tustin Avenue/Rose Drive	24,600	44,500	33	184
Jefferson Street	6,300	11,400	6	36
Van Buren Avenue	6,100	11,000	7	38
Richfield Road	7,500	13,600	9	48
Lakeview Avenue	18,200	32,900	31	172
Kellogg Drive	7,000	12,600	6	36
Totals	**107,900**	**195,100**	**140**	**785**

Source: *Preliminary Engineering Report* (KFM Engineering 2004).

As shown, the daily traffic volumes across the combined eight at-grade crossings is estimated to increase nearly 81 percent by 2020. Combined with the estimated increase in freight trains to 130 daily trains, the daily vehicle hours of delay at these crossings is estimated to increase over 460 percent by 2030. This equates to a train every 10 minutes 24 hours a day and blocked intersections roughly 40 to 50 percent of the time during peak commute hours.

2.1.6 Agency Actions

The Lead Agencies for this environmental analysis are the Federal Highway Administration (FHWA) for the National Environmental Policy Act (NEPA) Environmental Impact Statement (EIS) and the City of Placentia for the California Environmental Quality Act (CEQA) Environmental Impact Report (EIR). The California Department of Transportation (Caltrans) District 12 is the local reviewing agency for NEPA, on behalf of the FHWA.

2.1.7 Background on the Development of Project Alternatives

In the mid-1990s, the City of Placentia worked with the BNSF to identify potential alternatives for grade separating arterial crossings in the City from the BNSF tracks. Based on that coordination and conceptual level engineering, three build alternatives were developed. An extensive scoping/public information process was conducted for the proposed project by the City of Placentia, Caltrans, and FHWA in 2001 and 2002, as documented in the *Scoping Summary Report* (LSA Associates, Inc., April 2002). The three build alternatives presented were very similar to the alternatives evaluated in this EIS. The original alternatives were modified slightly over time to reflect refined engineering and considerations of right-of-way reductions. In addition to the three build alternatives evaluated in this EIS, as described below in Section 2.2, Project Alternatives, other build alternatives were considered but not advanced for consideration in this EIS, as described later in Section 2.4, Alternatives Considered and Withdrawn.

2.2 PROJECT ALTERNATIVES

Three Build Alternatives (Alternatives B, C, and D) and a No Build (or No Project) Alternative (Alternative A) are being considered and are evaluated in detail in this EIS. Each Build Alternative is designed to achieve the objectives listed in Section 1.0, Purpose and Need, in a different manner. Figures A.1, A.2, and A.3 (Alternative Plan Base Map) illustrating these Build Alternatives are provided in Appendix A, Concept Plans. Figures A.4 through A.10 (Typical Cross Sections) in Appendix A illustrate trench, overhead, and underpass cross sections for Alternatives B, C, and D. The station locations referenced in this section are identified on the base maps (Figures A.1, A.2, and A.3 in Appendix A). In addition, refer to the *Preliminary Engineering Report* (KFM Engineering 2004) for detailed plans, profiles, and cross-sections of these Build Alternatives. The detailed Figures in Appendix A (Figures A.1 to A.10) for Alternatives B, C, and D are summarized in Table 2-D.

The *Preliminary Engineering Report* and other technical studies related to the proposed OCG project and used in the development of the project alternatives and the analysis in this EIS are available for review during regular business hours at the City of Placentia.

At its meeting on September 4, 2007, the City of Placentia City Council identified Alternative D, Standard Grade Separation, as the locally preferred alternative for the OCG project. The agenda report documenting this City Council action is provided in Appendix B-5, Additional Consultation Records. As described later in Section 2.6, After Public Circulation, FHWA made its decision regarding the federally preferred alternative after circulation of the Draft EIS/EIR.

2.2.1 Alternative A: The No Build Alternative

Under the No Build Alternative, there would be no grade separation of the existing BNSF and arterial roadway intersections within the OCG project limits. The existing at-grade crossings of the BNSF tracks at Kraemer Boulevard, Orangethorpe Aveune, Tustin Avenue/Rose Drive, Jefferson Street, Van Buren Street, Richfield Road, Lakeview Avenue, and Kellogg Drive would remain under this alternative. Surface traffic would continue to cross the BNSF tracks at-grade and delays would

Table 2-D: Summary of Detailed Project Figures

Figure Number and Name (Figures are Provided in Appendix A)	Information Provided on Figure
Figure A.1: Alternative B, Alternative Plan Base Map (Sheets 1 to 8)	1. Areas of proposed street improvements 2. Proposed greenbelt areas 3. Proposed road bridges 4. Proposed flood-control improvements 5. Temporary construction easements 6. Proposed right-of-way acquisition 7. Existing railroad tracks 8. Proposed trench walls 9. Proposed railroad tracks and road improvements 10. Local streets 11. Construction staging areas
Figure A.2: Alternative C, Alternative Plan Base Map (Sheets 1 to 7)	1. Areas of proposed street improvements 2. Proposed greenbelt areas 3. Proposed road bridges 4. Proposed flood-control improvements 5. Temporary construction easements 6. Proposed right-of-way acquisition 7. Existing railroad tracks 8. Proposed trench walls 9. Proposed railroad tracks and road improvements 10. Local streets 11. Construction staging areas
Figure A.3: Alternative D, Alternative Plan Base Map (Sheets 1 to 7)	1. Proposed flood-control improvements 2. Proposed road bridges 3. Proposed right-of-way acquisition 4. Existing railroad tracks 5. Proposed road improvements 6. Proposed land striping 7. Local streets
Figure A.4: Typical Cross Sections—Alternative B	Typical railroad cross sections for various locations along the project alignment.
Figure A.5: Typical Cross Sections—Alternative B	Typical railroad cross sections for various locations along the project alignment.
Figure A.6: Typical Cross Sections—Alternative C	Typical railroad cross sections for various locations along the project alignment.
Figure A.7: Typical Cross Sections—Alternative C	Typical railroad cross sections for various locations along the project alignment.
Figure A.8: Typical Cross Sections—Alternative D	Typical railroad cross sections for various locations along the project alignment.
Figure A.9: Typical Cross Sections—Alternative D	Typical railroad cross sections for various locations along the project alignment.
Figure A.10: Typical Cross Sections—Alternative D	Typical railroad cross sections for various locations along the project alignment.
Figure A.11: Emergency Bypass Route	Emergency bypass route on the Olive Subdivision tracks under Alternatives C and D only.

Source: LSA Associates, Inc. (2006).

increase as rail traffic and surface traffic volumes in this area continue to increase.

However, all local and regional roadway and highway improvements in this area which are currently planned, programmed, and/or funded would continue through the appropriate planning and implementation processes. Also, all currently planned railroad improvements to accommodate forecasted growth in rail traffic would continue through independent action of the BNSF railroad and the passenger rail operators. These existing planned and programmed local area transportation improvements were described briefly earlier in Section 1.4.4, Other Projects.

Alternative A would not include any utility relocations, landscaping, sound walls, or other improvements at the eight local street crossings along the project segment of the BNSF railroad.

2.2.2 Alternative B: Railroad Lowering from Bradford Avenue to Imperial Highway

2.2.2.1 Rail Improvements. Alternative B proposes grade separation of the eight project intersections by depressing the rail tracks for the entire length of the OCG segment of the BNSF railroad in a trench and maintaining the local street crossings at grade. The project limits for Alternative B extend from east of Melrose Avenue east to west of Imperial Highway. Construction on the project segments on each end (west of Melrose Street to just east of Bradford Avenue, and just west of Imperial Highway) will be limited to track work to join the existing tracks to the tracks coming out of/going into the trench.

Alternative B provides for a railroad trench that would begin its descent at Bradford Avenue and proceed east down at the maximum grade of 1 percent to a full trench depth of 12.2 m (40 ft) near Kraemer Boulevard. Proceeding to the east, the trench would remain 10.7 to 12.2 m (35 to 40 ft) deep until just west of Kellogg Drive, where it would begin its ascent at 1 percent grade to join the existing at-grade rail line at Imperial Highway. The 12.2 m(40 ft) depth would allow the trench to pass below the existing surface roads along this segment and the existing drainage structures that cross the alignment. Refer to Figure A.1, Sheets 1 to 8, in Appendix A for detailed plans of Alternative B. Refer to Figures A.4 and A.5 in Appendix A for cross sections of various locations along the rail alignment under Alternative B.

The proposed trench would be 17.2 m (56.5 ft) wide and consist of the two existing railroad tracks, the existing BNSF right-of-way, and a 3.1 m (10 ft) wide access road (for maintenance and emergency use). Access points into the trench would be located at each end as the tracks enter and exit the trench, as well as at two additional access points into the trench, at Lakeview Avenue and Jefferson Street. The trench would be within existing BNSF right-of-way except for the 1,737.4 m (5,700 ft) long stretch of the corridor along Crowther Avenue, where it would be shifted to the south. From west to east, Kraemer Boulevard, Orangethorpe Avenue, Rose Drive/Tustin Avenue, Jefferson Street, Van Buren Street, Richfield Road, Lakeview Avenue, and Kellogg Drive would span the trench.

High groundwater is present in the area of Anaheim Lake and the unlined part of Atwood Channel. To prevent groundwater from these areas from seeping into the trench, a slurry wall with tiebacks would be constructed between approximately 182.9 m (600 ft) west of Carbon Canyon Channel to Tustin Avenue/Rose Drive (Station 172+00 to Station 210+00). The remaining segment of the trench

would be constructed of steel sheet piling with tiebacks.

The Olive Subdivision is the existing north-south rail line that connects to the BNSF corridor near Van Buren Street. This line is a single track that primarily serves Metrolink traffic. Existing rail traffic on this line consists of nine Metrolink commuter trains and two freight trains per day. Alternative B calls for lowering a short segment of the Olive Subdivision to join the trench alignment. This would be accomplished by beginning the Olive Subdivision line descent at Jefferson Street, proceeding downward at a grade of 1.25 percent until it joins the in-trench mainline profile approximately 243.8 m (800 ft) west of Richfield Road.

There is one active railroad spur line along the OCG corridor that provides access to Setco Industries (located east of Lakeview Avenue, south of Orangethorpe Avenue). Under Alternative B, this spur line would be lowered and connected to the main trench, and secured stairway access to Setco Industries from the in-trench spur would be provided. The trenched spur segment and the stairway would ensure that the Setco Industries property would continue to have rail access in the future.

The proposed trench alignment is designed to maximize the use of the existing tracks as bypass tracks to limit impacts to railroad operations and reduce the amount of temporary construction necessary for the project. From approximately 121.9 m (400 ft) west of Kraemer Boulevard to approximately 61 m (200 ft) east of Jefferson Street, the existing double tracks would be used as bypass tracks during construction. All bypass track would be removed once the trench is completed and railway traffic is fully operational within the trench section. As a result, over the entire length of the OCG project, approximately 35 percent of the corridor's needed bypass trackage for this alternative is currently in place.

The current cost for Alternative B is estimated to be approximately $850 million. This estimated cost includes flood control improvements, utility relocation improvements, bypass track improvements, trench and track improvements, roadway improvements, right-of-way acquisition, and potential mitigation costs.

2.2.2.2 Major Street Improvements. Street improvements are needed throughout the alignment to allow for construction of the trench and to minimize environmental impacts under Alternative B. The following street improvements are included as part of Alternative B:

- Crowther Avenue would be realigned north of the trench between Cameron Street and Miller Street approximately 1,707 m (5,600 ft). Refer to Figure A.1, Sheet 1, in Appendix A.
- The Cameron Street/Crowther Avenue intersection would be realigned to the west due to vertical grade conflicts with the Crowther bridge over the trench. Refer to Figure A.1, Sheet 1, in Appendix A.
- A frontage road approximately 274 m (900 ft) long would be constructed south of the trench to serve the commercial/industrial properties between Cameron Street and Porter Way. This road would be a westbound one-way road from Cardinal Street to Porter Way approximately 213 m (700 ft) long. Refer to Figure A.1, Sheet 1, in Appendix A.
- Lakeview Avenue would be widened north of Orangethorpe Avenue to accommodate a

proposed dual left-turn movement from southbound Lakeview Avenue to westbound Orangethorpe Avenue. This widening would extend north approximately 183 m (600 ft) to join the existing fully widened section of Lakeview Avenue. Refer to Figure A.2, Sheet 6, in Appendix A.

Existing sidewalks and bicycle facilities on the crossing arterials would be replaced as part of the construction of the crossings over the trench.

2.2.2.3 Drainage Structure Improvements. The existing drainage structures that would cross the proposed trench under Alternative B, from west to east are Kraemer Boulevard Storm Drain (Figure A.1, Sheet 2), Carbon Canyon Channel (Figure A.1, Sheet 3), Richfield Channel (Figure A.1, Sheet 4), and Atwood Channel (Figure A.1, Sheet 6). Under Alternative B, these structures would be reinforced to span the trench as viaducts. In addition, the capacity of these structures would be increased to accommodate the 100-year storm; they are currently sized for the 10-to-25-year storm. It is a requirement of the Orange County Flood Control District (OCFCD) that these flood control facilities be constructed to accommodate the 100-year storm (*Drainage Management Study,* Boyle Engineering 2006).

Several existing drainage structures along the alignment of Alternative B would be improved. Carbon Canyon Channel would be improved to the north with appropriate transition structures to accommodate the realignment of Crowther Avenue. Atwood Channel generally parallels the BNSF right-of-way and would be improved at the Richfield Channel/trench crossing confluence, at the Atwood Channel/Olive Subdivision trench descent, and at the Atwood Channel/trench crossing. The East Richfield Channel (west of Imperial Highway) would be widened. A description of the existing drainage structures and the proposed improvements to these drainage facilities as part of Alternative B across the rail corridor are summarized in Table 2-E.

Table 2-E: Existing and Proposed Drainage Facilities under Alternative B

Facility	Location	Description of Existing Facility	Description of Proposed Facility
Kraemer Boulevard Storm Drain	Kraemer Boulevard	78" reinforced concrete pipe	78" reinforced concrete pipe
Carbon Canyon Channel	304.8 m (1,000 ft) west of Orangethorpe Avenue	Concrete trapezoidal open channel; 21-foot base width, 10-foot depth; also includes wooden structures associated with the BNSF railroad bridges over the facilities	Double 10' x 10' reinforced concrete box culvert
Richfield Channel	182.9 m (600 ft) west of Jefferson Street	Concrete rectangular open channel; 60-foot width; 10 foot depth; also includes wooden structures associated with the BNSF railroad bridges over the facilities	Triple 16' x 11' reinforced concrete box culvert

Facility	Location	Description of Existing Facility	Description of Proposed Facility
Atwood Channel	426.7 m (1,400 ft) east of Lakeview Avenue	Double 9' x 8' reinforced box culvert	Double 11' x 8' reinforced concrete box culvert
East Richfield Channel	West of Imperial Terrace Lane	Concrete rectangular open channel; reinforced concrete box; 20 feet width; 6.5-foot depth	Triple 13' x 7' reinforced concrete box culvert

Source: *Preliminary Engineering Report* (KFM Engineering 2004) and *Drainage Management Study* (Boyle Engineering 2006).

All storm drain facilities that currently cross the BNSF railroad laterally along the proposed trench would be redesigned to join tributary major facilities upstream of and prior to the railroad crossing. Storm drains that would be impacted by the proposed local street improvements under Alternative B would be relocated and upgraded as necessary.

A pump station would be required for Alternative B to remove water that collects in the trench during storms. This pump station would be on the approximately 0.45 hectare (ha) (1.1 acres [ac]) triangular parcel immediately east of Carbon Canyon Channel, south of the trench (Figure A.1, Sheet 3). The pump station facility would include detention and wet wells. Water pumped from the trench facility would be reintroduced into the existing storm drain system (Carbon Canyon Channel) after treatment.

2.2.2.4 Utility Relocations. Prior to construction of the trench, all underground and aboveground utilities within the construction disturbance limits would be relocated, replaced or protected in place, as appropriate, to accommodate construction of Alternative B. The relocations would be coordinated with the utility service providers and are not anticipated to interrupt service. A detailed set of utility plans is included as part of the OCG conceptual plans in the *Preliminary Engineering Report.* Appendix E of this EIS includes a summary of all existing utilities which would potentially be affected by the construction of Alternative B.

2.2.2.5 Aesthetic Improvements. Construction of a trench for the railroad under Alternative B would allow space currently occupied with railroad signals and markings at street intersections to be used for other purposes. Alternative B proposes to create landscape and hardscape areas at all eight intersection crossings along the trenched segment. In addition, a greenbelt would be implemented where feasible along the length of the OCG project area under Alternative B (Figure A.1, Sheets 3 and 4). As practical, the proposed greenbelt and landscaped areas will include pedestrian and bicycle paths.

2.2.2.6 Sound Walls. Sound walls are planned along the alignment for abatement of traffic noise associated with the street improvements proposed as part of Alternative B. Section 3.14 (Noise and Vibration) identifies modeled sound walls on Figure 3.14-3. Preliminary reasonable and feasible sound walls are shown on Table 3.14-N. The preliminary reasonable and feasible sound wall analysis

is based on the Traffic Noise Protocol for New Highway Construction and Reconstruction Projects (Caltrans 1998) as described in detail in Section 3.14, Noise. The final sound wall locations and heights needed under Alternative B would be determined during final design by the City of Placentia in cooperation with affected residents and the appropriate local jurisdictions.

Alternative B would relocate the existing at-grade rail operations to below grade. Therefore, noise related to train movements will be largely contained within the trench. Because there will no longer be at-grade crossings of local streets, no train whistles would be necessary under Alternative B. Therefore, no sound walls are anticipated to be necessary to mitigate rail noise along the alignment of the trench under Alternative B.

2.2.2.7 Construction Staging Areas. Two construction staging areas are proposed under Alternative B. One staging area involves three parcels south of the tracks from east of Jefferson Street to Van Buren Street. The other proposed staging area involves ten parcels on the south side of the tracks between Fee Ana Avenue and Lakeview Avenue. These construction staging areas are shown on Figure A.1, Sheets 4, 5, and 6, in Appendix A. The existing parcels that would be impacted by the proposed staging areas under Alternative B are listed in Table 2-F.

Because the project segment of the BNSF passes through areas in the City of Anaheim, construction staging areas for this alternative will be acquired in the Cities of Placentia and Anaheim. The City of Placentia anticipates entering into an agreement with the City of Anaheim regarding the process for the acquisition of property located within the Anaheim city limits.

Table 2-F: Parcels Impacted by Construction Staging Areas Under Alternatives B and C

	Assessor's Parcel Number	Location	Parcel Size m^2 (ft^2)	
1	346-162-02	west of Van Buren	18,543	(199,597)
2	346-162-01	west of Van Buren	2,008	(21,616)
3	346-164-25	west of Van Buren	20,903	(225,000)
4	346-241-01	east of Fee Ana	3,008	(32,376)
5	346-241-02	east of Fee Ana	9,699	(104,401)
6	346-331-08	east of Fee Ana	2,799	(30,128)
7	346-331-07	east of Fee Ana	3,152	(33,931)
8	346-331-06	east of Fee Ana	3,299	(35,506)
9	346-331-05	east of Fee Ana	1,941	(20,897)
10	346-331-04	east of Fee Ana	1,644	(17,692)
11	346-331-03	east of Fee Ana	488	(5,257)
12	346-331-02	east of Fee Ana	726	(7,818)
13	346-331-01	east of Fee Ana	1,889	(20,335)

Source: *Preliminary Engineering Report* (KFM Engineering 2004).
m^2 = square meters; ft^2 = square feet

2.2.2.8 Phasing Plan and Detours during Construction. A phased construction and detour program would be implemented to allow for the continuation of local circulation through the OCG project area during the construction of Alternative B. A preliminary detailed phasing plan is available for review in the *Traffic Impact Analysis* (LSA Associates, Inc., 2006). The principal interim features related to detours of both rail and vehicular traffic during construction of Alternative B are described below.

Shoofly Track and Interim Rail Crossing Protection. It is anticipated that railroad trench construction for Alternative B would take approximately 48 months. During that construction period, it will be necessary to provide a detour route, or at-grade "shoofly track," for trains.

From approximately 244 m (800 ft) west of Kraemer Boulevard to 30 m (100 ft) east of Jefferson Street, the alignment is proposed to occupy the southern half of the existing BNSF right-of-way. This would allow for the utilization of the existing tracks as the bypass tracks while the trench is constructed south of the current track alignment. Temporary bypass tracks would be constructed west and east of this reach. All bypass track will be designed to match the current operational speed of 80 kilometers per hour (kph) (50 miles per hour [mph]) for freight and 96 kph (60 mph) for passenger trains on the line.

The connection to the Olive Subdivision during construction will require construction of an interim bridge structure connected to the mainline shoofly track. The bridge would be constructed at-grade, and the trench would be excavated underneath this interim structure. A shoofly track for the Olive Subdivision would also be required generally on the west side of the BNSF right-of-way.

Standard crossing protection devices, with California Public Utilities Commission (CPUC)-approved signage, signals, and gates would be required to protect street crossings over the shoofly tracks.

Traffic Detours and Management. The railroad shoofly track would be in the south part of the Orangethorpe Avenue right-of-way. Therefore, the traffic capacity of Orangethorpe Avenue would be reduced to one lane in each direction during construction of Alternative B.

Restrictions to the capacity of the eight crossing streets would also occur during construction. The Kraemer Boulevard (Figure A.1, Sheet 2), Orangethorpe Avenue (Figure A.1, Sheet 3), Tustin Avenue/Rose Drive (Figure A.1, Sheet 4), and Lakeview Avenue (Figure A.1, Sheet 6) bridge structures would be constructed at-grade with the trench excavated from beneath. Temporary four-lane bypass roads will be constructed around the proposed bridge structures at these four locations.

The surface street crossings at Jefferson Street (Figure A.1, Sheet 4), Van Buren Street (Figure A.1, Sheet 5), Richfield Road (Figure A.1, Sheet 5), and Kellogg Drive (Figure A.1, Sheet 7) are proposed to be closed during trenching, wall placement, and bridge structure construction. The construction will be phased such that no more than two of these locations are closed at the same time.

A preliminary Transportation Management Plan (TMP) is included as Attachment 5 to the *Preliminary Engineering Report.* A final TMP will be prepared as part of final design once the preferred alternative is selected.

2.2.2.9 Excavation and Haul Routes. Approximately 1.6 million cubic meters (mcm) (2.1 million cubic yards [mcy]) of excess excavation material were identified for Alternative B in the *Preliminary Engineering Report* for the OCG project. At this time, it is anticipated that the excavated material would be distributed to one of two previously environmentally cleared sites in Orange County.

The first potential site for the distribution of the excess excavation material is the Olinda Alpha Landfill, which is approximately 8 km (5 mi) northwest (in unincorporated Orange County, within the City of Brea sphere of influence) of the OCG project area. Olinda Alpha Landfill is an existing landfill operated by the County of Orange Integrated Waste Management Department (IWMD). The IWMD is currently considering expansion plans for this landfill as part of the Regional Landfill Options for Orange County (RELOOC) project. An environmental document (Olinda Alpha Landfill Expansion EIR No. 588) is under consideration and is anticipated to be certified in the near future.

The anticipated haul route to Olinda Alpha Landfill from the OCG project area is Orangethorpe Avenue (east) to Lakeview Avenue (north), or directly to Imperial Highway (north) to Valencia Avenue (north) to the entrance to Olinda Alpha Landfill. This route is entirely along designated truck routes through north Orange County.

The second potential site for the distribution of the excess excavation material is Frank R. Bowerman Landfill, which is approximately 32 km (20 mi) southeast (in unincorporated Orange County, within the City of Irvine sphere of influence) of the OCG project area. Frank R. Bowerman Landfill is an existing operational landfill operated by IWMD, which is currently considering expansion plans for this landfill as part of the RELOOC project. An NOP (July 21, 2005) was released for the current environmental document (Frank R. Bowerman Landfill Expansion EIR No. 604) and the EIR is anticipated to be certified in late 2006.

The anticipated haul route to Frank R. Bowerman Landfill from the OCG project area is Orangethorpe Avenue (east) to Lakeview Avenue (south) or to Imperial Highway (south) to State Route 91 (SR-91) (east) to State Route 241 (SR-241) (south) to Irvine Boulevard (west) to Sand Canyon (north) to Portola Parkway (west) to the entrance to Frank R. Bowerman Landfill. This route is entirely along designated truck routes through north and central Orange County.

It is anticipated that some or all of the excess excavated material may be used as daily cover at one or both of these landfills. This would reduce the amount of material that would be landfilled as waste and would provide a benefit to the IWMD by reducing the amount of total daily cover needed at these landfills. The use of this material as daily cover will depend on the needs of the IWMD as the project is constructed and on the specific types of soil excavated from the OCG project area. The potential use of excess excavated material as daily fill at these two landfills will be investigated as part of the final design if an OCG build alternative is selected for implementation.

In addition to use as daily cover at area landfills, there may be potential for excess soil from the OCG project to be used as fill at other construction and development sites. However, it is not possible to

identify those possible sites at this time, as the need for fill material is time-sensitive based on the individual construction schedules for each development. During final design and project excavation, if Alternative B is selected for implementation, consideration of use of excess material as fill for other development projects will be investigated by the City of Placentia.

2.2.2.10 Rail Traffic Emergency Bypass. The existing Olive Subdivision tracks can be used as bypass tracks for existing freight and passenger trains on the OCG segment of the BNSF, in the event that segment is closed temporarily due to an accident or some other emergency. Under Alternative B, the OCG segment will be depressed and it will no longer be possible to use the Olive Subdivision tracks for a bypass in the event of an emergency. Alternative B does not include any bypass or detour tracks in the event the trench section is temporarily closed.

2.2.2.11 Right-of-Way. Right-of-way acquisition would be required as part of Alternative B to accommodate the construction of the trench and associated street improvements. It is estimated that 9.3 ha (23.1 ac) of right-of-way would be permanently acquired for the rail and roadway improvements under Alternative B as shown in Table 2-G. Refer also to Figure A.1 in Appendix A. In addition, subsurface easements would be required to accommodate the tiebacks for the trench. Based on preliminary engineering, both partial and full acquisitions (required for construction staging and the project) would be required to accommodate the street realignments, trench construction, and railroad improvements under Alternative B as shown in Table 2-G. The full right-of-way acquisitions would require the relocation of the existing property owners/tenants on these sites. However, refinements in right-of-way needs could occur during the final design process. The full and partial right-of-way acquisitions and temporary construction easements (TCEs) identified for the proposed OCG Build Alternatives are preliminary based on the 2004 conceptual designs. The actual right-of-way (full and partial) acquisitions and TCEs needed if an OCG Build Alternative is selected would be defined during final design.

Because the project segment of the BNSF passes through areas in the City of Anaheim, right-of-way for this alternative will be acquired in the Cities of Placentia and Anaheim. The City of Placentia anticipates entering into an agreement with the City of Anaheim regarding the process for the acquisition of property located within the Anaheim city limits.

As shown earlier in Table 2-F, property acquisition would be necessary to accommodate the two construction staging areas for the OCG project under Alternative B. At the completion of construction, it is anticipated that these parcels would be resold by the City of Placentia for other uses. If federal funds are used to purchase land used for construction staging and that land is later resold by the City, a refund of the federal funds used for that land acquisition would be required after the sale of the excess property. It is not possible at this time to define what those possible future uses may be. Any future uses on the parcels used temporarily for the construction staging areas would be subject to separate planning and environmental reviews and approvals by the City of Placentia and would be subject to the City's General Plan and Zoning Ordinance.

Table 2-G: Summary of Property Acquisitions Under Alternatives B, C, and D[1]

	Permanent Acquisitions				Temporary Acquisitions	
	Full Parcels		Partial Parcels		Number of Parcels	Size (square feet)
	Number of Parcels	Size (square feet)	Number of Parcels	Size (square feet)		
Alternative B	Total: 16 Residential: 5 Nonresidential: 11	873,222	Total: 44 Residential: 15 Nonresidential: 29	188,726	73	73,786
Alternative C	Total: 19 Residential: 5 Nonresidential: 14	1,301,643	Total: 61 Residential: 19 Nonresidential: 42	167,836	61	50,711
Alternative D	Total: 78 Residential: 32 Nonresidential: 46	2,216,774	Total: 34 Residential: 6 Nonresidential: 28	493,926	1	13,151

Source: *Preliminary Engineering Report* (KFM Engineering, 2004) and LSA Associates, Inc., 2006.

[1] The full and partial right-of-way acquisitions and temporary construction easements (TCEs) identified for the OCG Build Alternatives are preliminary based on the 2004 conceptual design. The actual right-of-way (full and partial acquisitions) and TCEs needed if an OCG Build Alternative is selected for implementation would be defined during final design.

2.2.2.12 Temporary Construction Easements. Temporary construction easements (TCEs) anticipated to be needed during the construction of Alternative B have been identified, although there could be minor refinements to these TCEs during the final design process. These TCEs are described in general as follows:

- South of the proposed trench between Cameron Street and Cardinal Street (Figure A.1, Sheets 1 and 2)
- North of the proposed trench between Bradford Avenue and Orangethorpe Avenue (Figure A.1, Sheets 1, 2, and 3)
- North of Orangethorpe Avenue and east of Jefferson Street at the Olive Subdivision (Figure A.1, Sheet 4)
- At the Van Buren Street/Orangethorpe Avenue intersection (Figure A.1, Sheet 5)
- East and west of Richfield Avenue south of the proposed trench (Figure A.1, Sheet 5)
- At the Lakeview Avenue intersection (Figure A.1, Sheet 6)
- East and west of the southern portion of Kellogg Avenue, south of the proposed trench (Figure A.1, Sheet 7)

At the completion of construction, the areas used as TCEs would be returned to the original property owners.

2.2.2.13 Compliance with the Americans with Disabilities Act. All improvements constructed under Alternative B will comply with the access requirements in the Americans with Disabilities Act (ADA).

2.2.3 Alternative C: Railroad Lowering from Bradford Avenue to West of Kellogg Drive

2.2.3.1 Rail Improvements. Alternative C combines a partial trench with standard grade separations to accommodate an emergency bypass route for the railroad utilizing the existing tracks. Alternative C proposes grade separation of seven of the intersections. The project limits for Alternative C extend from west of Melrose Street east to east of Lakeview Avenue. Construction on the project segments on each end (east of Melrose Street to just east of Bradford Avenue, and east of Lakeview Avenue) will be limited to track work to join the existing tracks to the tracks coming out of/going into the trench.

The proposed trench and the at-grade railroad right-of-way would be 17.2 m wide (56.5 ft wide), consisting of the two existing railroad tracks, the BNSF right-of-way, and a 3.1 m wide (10 ft wide) access road (for maintenance and emergency use). Access points into the trench would be located at each end as the tracks enter and exit the trench, as well as at two additional access points into the trench, at Lakeview Avenue and Jefferson Street. Like Alternative B, the rail trench would begin its descent at Bradford Avenue and proceed east down at the maximum grade of 1 percent to a full trench depth of 12.2 m (40 ft) near Kraemer Boulevard. The trench would remain 10.7 to 12.2 m (35 to 40 ft) deep until its ascent at 1 percent grade to join the existing at-grade rail line west of Kellogg Drive. New bridge structures would be the same as under Alternative B, with the exception of Lakeview Avenue and Kellogg Drive. Under Alternative C, Lakeview Avenue would be constructed as a bridge overcrossing of the railroad corridor. Kellogg Drive would remain as an at-grade crossing. Refer to Figure A.2, Sheets 1 to 7, in Appendix A for detailed plans of Alternative C. Refer to Figures A.6 and A.7 in Appendix A for cross sections of various locations along the rail alignment under Alternative C.

High groundwater is present in the area of Anaheim Lake and the unlined part of Atwood Channel. To prevent groundwater from these areas from seeping into the trench, a slurry wall with tiebacks would be constructed between approximately 182.9 m (600 ft) west of Carbon Canyon Channel to Tustin Avenue/Rose Drive (Station 172+00 to Station 210+00). The remaining segment of the trench would be constructed of steel sheet piling with tiebacks.

The Olive Subdivision would be improved to a two-track configuration at the confluence with the BNSF mainline under Alternative C. The Olive Subdivision branch lines would remain at grade and be constructed above the trench on the south side, crossing Van Buren Street and Richfield Road at grade. Signal crossings would be constructed at these locations for these proposed at-grade crossings. The branch lines would join the mainline just west of Kellogg Drive where the mainline profile daylights out of the trench.

The current cost for Alternative C is estimated to be approximately $639 million. This estimated cost includes the Lakeview Avenue intersection improvements, flood control improvements, utility relocation improvements, bypass track improvements, trench and track improvements, roadway improvements, right-of-way acquisition, and potential mitigation costs.

2.2.3.2 Major Street Improvements. Street improvements are needed throughout the alignment to allow for construction of the trench and to minimize environmental impacts under Alternative C. The following street improvements are included as part of Alternative C:

- Crowther Avenue would be realigned to be north of the trench between Cameron Street and Miller Street approximately 1,707 m (5,600 ft). Refer to Figure A.2, Sheet 1, in Appendix A.
- The Cameron Street/Crowther Avenue intersection would be realigned to the west due to vertical grade conflicts with the Crowther bridge over the trench. Refer to Figure A.2, Sheet 1, in Appendix A.
- A frontage road approximately 274 m (900 ft) long would be constructed south of the trench to serve the commercial/industrial properties between Cameron Street and Porter Way. This road would be a westbound one-way road from Cardinal Street to Porter Way approximately 213 m (700 ft). Refer to Figure A.2, Sheet 1, in Appendix A.
- Improvements would be implemented to accommodate the Lakeview Avenue overcrossing. The Lakeview Avenue intersection would be realigned to the west. A frontage road would be constructed in the southeast quadrant to allow access from the industrial complex in this location. A circulation road would be constructed in the southwest quadrant to connect the frontage road to Lakeview Avenue. Refer to Figure A.2, Sheet 6, in Appendix A.

Existing sidewalks and bicycle facilities on the crossing arterials would be replaced as part of the construction of the crossings over the trench.

2.2.3.3 Drainage Structure Improvements. The existing drainage structures that would cross the proposed trench under Alternative C, from west to east are Kraemer Boulevard Storm Drain, Carbon Canyon Channel, and Richfield Channel. Under Alternative C, these structures would be reinforced to span the trench as viaducts. In addition, the capacity of these structures would be increased to accommodate the 100-year storm; they are currently sized for the 10-to-25-year storm. It is a requirement of the OCFCD that these flood control facilities be constructed to accommodate the 100-year storm (*Drainage Management Study*).

Several drainage channels would be improved under Alternative C. Carbon Canyon Channel (Figure A.2, Sheet 3) would be improved to the north with appropriate transition structures to accommodate the realignment of Crowther Avenue. Atwood Channel (Figure A.2, Sheets 4 and 6) would be improved at the Richfield Channel/trench crossing confluence, Atwood Channel/Lakeview Avenue overcrossing, and at the Atwood Channel/trench crossing. The Atwood Channel reinforced concrete box (RCB) under Lakeview Avenue and an RCB culvert west of Lakeview Avenue and over Atwood Channel would be improved and extended to accommodate the features of the Lakeview Avenue overcrossing. The East Richfield Channel (west of Imperial Highway) would be widened. The existing drainage structures and the proposed improvements to these drainage facilities across the rail corridor under Alternative C are summarized in Table 2-H.

Table 2-H: Existing and Proposed Drainage Facilities under Alternative C

Facility	Location	Description of Existing Facility	Description of Proposed Facility
Kraemer Boulevard Storm Drain	Kraemer Boulevard	78" reinforced concrete pipe	78" reinforced concrete pipe
Carbon Canyon Channel	304.8 m (1,000 ft) west of Orangethorpe Avenue	concrete trapezoidal open channel; 21-foot base width, 10-foot depth; also includes wooden structures associated with the BNSF railroad bridges over the facilities	Double 10' x 10' reinforced concrete box culvert
Richfield Channel	182.9 m (600 ft) west of Jefferson Street	concrete rectangular open channel; 60-foot width; 10-foot depth; also includes wooden structures associated with the BNSF railroad bridges over the facilities	Triple 16' x 11' reinforced concrete box culvert
Atwood Channel	426.7 m (1,400 ft) east of Lakeview Avenue	Double 9' x 8' reinforced box culvert	Double 11' x 8' reinforced concrete box culvert

Source: *Preliminary Engineering Report* (KFM Engineering 2004) and *Drainage Management Study* (Boyle Engineering 2006).

All storm drain facilities that currently cross the BNSF railroad laterally along the proposed trench under Alternative C would be redesigned to join tributary major facilities upstream of and prior to the railroad crossing. Storm drains that would be impacted by the proposed local street improvements under Alternative C would be relocated and upgraded as necessary.

A pump station would be required for Alternative C to remove water that collects in the trench during storms. This pump station would be on the approximately 0.45 ha (1.1 ac) triangular parcel immediately east of Carbon Canyon Channel, south of the trench (Figure A.2, Sheet 3). The pump station facility would include detention and wet wells. Water pumped from the trench facility would be reintroduced into the existing storm drain system (Carbon Canyon Channel) after treatment.

2.2.3.4 Utility Relocations. Prior to construction of the trench, all underground and aboveground utilities within the construction disturbance limits would be relocated, replaced, or protected in place, as appropriate, to accommodate construction of Alternative C. The relocations would be coordinated with the utility service providers and are not anticipated to interrupt service. A detailed set of utility plans is included as part of the OCG concept plans contained in the Preliminary Engineering Report. Appendix E of this EIS includes a summary of all existing utilities which would potentially be affected by the construction of Alternative C.

2.2.3.5 Aesthetic Improvements. Construction of a trench for the railroad under Alternative C would allow space currently occupied with railroad signals and markings at street intersections to be used for other purposes (e.g., landscape and hardscape). Like Alternative B, this alternative proposes to create landscaped areas at all the intersection crossings along the trenched segment. Unlike Alternative B, there would be no landscaped areas at Lakeview Avenue and Kellogg Drive because these intersections would be converted to a railroad overcrossing and remain at grade, respectively. As practical, the proposed greenbelt and landscaped areas will include pedestrian and bicycle paths. In addition, a greenbelt would be implemented where feasible along the length of the OCG project area under Alternative C (Figure A.2, Sheets 1, 3, and 4).

2.2.3.6 Sound Walls. Under Alternative C, the trench would begin its ascent west of Lakeview Avenue and would return to grade west of Kellogg Drive. Sound walls are proposed as part of Alternative C to protect adjacent sensitive receptors from excessive noise where the trains would pass at grade (as in the existing condition) within the project area. Sound walls are planned along the alignment for abatement of traffic noise associated with the street improvements proposed as part of Alternative C. Section 3.14, Noise and Vibration, identifies modeled sound walls on Figure 3.14-3. Preliminary reasonable and feasible sound walls are shown on Table 3.14-N. The preliminary reasonable and feasible sound wall analysis is based on the Traffic Noise Protocol for New Highway Construction and Reconstruction Projects (Caltrans 1998) as described in detail in Section 3.14, Noise. Final sound wall locations and heights needed under Alternative C would be determined during final design by the City of Placentia in cooperation with affected residents and the appropriate local jurisdictions.

Alternative C would relocate the existing at-grade rail operations to below grade. Therefore, noise related to train movements will be largely contained within the trench. Because there will no longer be at-grade crossings of local streets, no train whistles would be necessary after the implementation of the trench under Alternative C. Therefore, no sound walls are anticipated to be necessary to mitigate rail noise along the alignment of the trench under Alternative C.

2.2.3.7 Construction Staging Areas. Two construction staging areas are proposed under Alternative C. They are the same as discussed earlier for Alternative B. One staging area involves three parcels south of the tracks from east of Jefferson Street to Van Buren Street. The other proposed staging area involves 10 parcels on the south side of the tracks between Fee Ana Avenue and Lakeview Avenue. These construction staging areas are shown on Figure A.2, Sheets 4, 5, and 6, in Appendix A. The existing parcels that would be impacted by the proposed construction staging areas under Alternative C were shown earlier in Table 2-F under Alternative B.

Because the project segment of the BNSF passes through areas in the City of Anaheim, construction staging areas for this alternative will be acquired in the Cities of Placentia and Anaheim. The City of Placentia anticipates entering into an agreement with the City of Anaheim regarding the process for the acquisition of property located within the Anaheim city limits.

2.2.3.8 Phasing Plan and Detours during Construction. A phased construction and detour program would be implemented to allow for the continuation of local circulation through the OCG project

area during the construction of Alternative C. A detailed phasing plan is available for review in the *Traffic Impact Analysis*. Similar to Alternative B, the principal interim features for Alternative C related to detours of both rail and vehicular traffic during construction are described below.

Shoofly Track and Interim Rail Crossing Protection. It is anticipated that railroad trench construction for Alternative C would take approximately 36 months. During that construction period, it will be necessary to provide a detour route, or at-grade shoofly track, for trains.

From approximately 244 m (800 ft) west of Kraemer Boulevard to 30 m (100 ft) east of Jefferson Street, the alignment is proposed to occupy the southern half of the existing BNSF right-of-way. This will allow for the utilization of the existing tracks as the bypass tracks while the trench is constructed south of the current track alignment. Temporary bypass tracks will be constructed west and east of this reach. All bypass track will be designed to match the current operational speed of 30 kph (50 mph) for freight and 96 kph (60 mph) for passenger trains on the line.

Standard crossing protection devices, with CPUC-approved signage, signals, and gates would be required to protect street crossings over the shoofly tracks.

Traffic Detours and Management. The railroad shoofly track would be in the south part of the Orangethorpe Avenue right-of-way. Therefore, the traffic capacity of Orangethorpe Avenue would be reduced to one lane in each direction during construction of Alternative C.

Restrictions to the capacity of the eight crossing streets would also occur during construction of Alternative C. The Kraemer Boulevard (Figure A.2, Sheet 2), Orangethorpe Avenue (Figure A.2, Sheet 3), Tustin Avenue/Rose Drive (Figure A.2, Sheet 4), and Lakeview Avenue (Figure A.2, Sheet 6) bridge structures would be constructed at-grade with the trench excavated from beneath. Temporary four-lane bypass roads will be constructed around the proposed bridge structures at these three locations. Lakeview Avenue will be constructed as an overcrossing of the rail line using traditional falsework supports. A temporary four-lane bypass road will also be constructed around the proposed bridge structure for the Lakeview overcrossing improvements.

The surface street crossings at Jefferson Street (Figure A.2, Sheet 4), Van Buren Street (Figure A.2, Sheet 5), and Richfield Road (Figure A.2, Sheet 5) are proposed to be closed during trenching, wall placement, and bridge structure construction of Alternative C. The construction will be phased such that no more than two of these locations are closed at the same time.

A preliminary TMP is included as Attachment 5 to the *Preliminary Engineering Report*. A final TMP will be prepared as part of final design once the preferred alternative is selected.

2.2.3.9 Excavation and Haul Routes. Approximately 1.15 mcm (1.5 mcy) of excess excavation material were identified for Alternative C in the *Preliminary Engineering Report*. At this time, it is

anticipated that the excavated material would be distributed to one of two environmentally cleared sites.

The first potential site for the distribution of the excess excavation material is Olinda Alpha Landfill which is approximately 8 km (5 mi) northwest (in unincorporated Orange County, within the City of Brea sphere of influence) of the OCG project area. Olinda Alpha Landfill is an existing landfill operated by the IWMD. The IWMD is currently considering expansion plans for this landfill as part of the RELOOC project. An environmental document (Olinda Alpha Landfill Expansion EIR No. 588) is under consideration and is anticipated to be certified in the near future.

The anticipated haul route to Olinda Alpha Landfill from the OCG project area is Orangethorpe Avenue (east) to Lakeview Avenue (north), or directly to Imperial Highway (north) to Valencia Avenue (north) to the entrance to Olinda Alpha Landfill. This route is entirely along designated truck routes through north Orange County.

The second potential site for the distribution of the excess excavation material is the Frank R. Bowerman Landfill which is approximately 32 km (20 mi) southeast (in unincorporated Orange County, within the City of Irvine sphere of influence) of the OCG project area. Frank R. Bowerman Landfill is an existing operational landfill operated by IWMD. The IWMD is currently considering expansion plans for this landfill as part of the RELOOC project. An NOP (July 21, 2005) was released for the current environmental document (Frank R. Bowerman Landfill Expansion EIR No. 604) and the Final EIR is anticipated to be certified in late 2006.

The anticipated haul route to Frank R. Bowerman Landfill from the OCG project area is Orangethorpe Avenue (east) to Lakeview Avenue (south), or to Imperial Highway (south), to SR-91 (east), to SR-241 (south), to Irvine Boulevard (west), to Sand Canyon (north), to Portola Parkway (west), to the entrance to the Frank R. Bowerman Landfill. This route is entirely along designated truck routes through north and central Orange County.

In addition to use as daily cover at area landfills, there may be potential for excess soil from the OCG project to be used as fill at other construction and development sites. However, it is not possible to identify those possible sites at this time, as the need for fill material is time-sensitive based on the individual construction schedules for each development. During final design and project excavation, if Alternative C is selected for implementation, consideration of use of excess material as fill for other development projects will be investigated by the City of Placentia.

2.2.3.10 Rail Traffic Emergency Bypass. Under Alternative C, the existing Olive Subdivision track would be used as an emergency bypass route for rail traffic once the OCG project is complete. This route would provide emergency bypass routing for BNSF, Metrolink, and Amtrak around the trench section should the trench segment be closed due to a trench failure, a derailment within the trench, or some other emergency. The rail traffic emergency bypass route would use existing rail rights-of-way and trackage facilities within the Olive Subdivision and then along the Los Angeles San Diego (LOSSAN) corridor until the bypass route joins the mainline near the Fullerton station. No new facilities or track would be necessary for the use of this alignment as an emergency bypass route for Alternative C. Alternative C includes the appropriate modifications to the existing intersections of the Olive Subdivision tracks with the OCB project segment on the BNSF to allow trains to transfer to

the Olive Subdivision tracks in the event the trench segment under Alternative C is temporarily closed due to an accident or other emergency. The alignment of the Olive Subdivision tracks and the emergency bypass route is shown on Figure A.11 in Appendix A. This is the same emergency bypass route that would be used under existing conditions in the event the existing tracks on the OCG segment were temporarily blocked or not functioning due to an accident or some other incident.

2.2.3.11 Right-of-Way. Right-of-way acquisition would be required as part of Alternative C to accommodate the construction of the trench, the Lakeview Avenue overcrossing, and associated street improvements. It is estimated that 13.1 ha (32.4 ac) of right-of-way would be permanently acquired for Alternative C as shown earlier in Table 2-G. Refer also to Figure A.2 in Appendix A. In addition, subsurface easements would be required to accommodate the tiebacks for the trench. Based on preliminary engineering, both partial and full acquisitions would be required to accommodate the street realignments, trench construction, pump stations, and railroad improvements under Alternative C. The full right-of-way acquisitions would require the relocation of the existing property owners/tenants on these sites. However, refinements in right-of-way needs could occur during the final design process. The full and partial right-of-way acquisitions and TCEs identified for the OCG Build Alternatives are preliminary based on the 2004 conceptual design. The actual right-of-way (full and partial acquisitions) and TCEs needed if an OCG Build Alternative is selected for implementation would be defined during final design.

Because the project segment of the BNSF passes through areas in the City of Anaheim, right-of-way for this alternative will be acquired in the Cities of Placentia and Anaheim. The City of Placentia anticipates entering into an agreement with the City of Anaheim regarding the process for the acquisition of property located within the Anaheim city limits.

As shown earlier in Table 2-F, property acquisition would be necessary to accommodate the two construction staging areas for the OCG project under Alternative C. At the completion of construction, it is anticipated that these parcels would be resold by the City of Placentia for other uses. It is not possible at this time to define what those possible future uses may be. Any future uses on the parcels used temporarily for the construction staging areas would be subject to separate planning and environmental reviews and approvals by the City of Placentia and would be subject to the City's General Plan and Zoning Ordinance. If federal funds are used to purchase land used for construction staging and that land is later resold by the City, a refund of the federal funds used for that land acquisition would be required after the sale of the excess property.

2.2.3.12 Temporary Construction Easements. TCEs anticipated to be needed for the construction of Alternative C have been identified, although there may be minor refinements to these TCEs during the final design process. These TCEs are described in general as follows:

- South of the proposed trench between Cameron Street and Cardinal Street (Figure A.2, Sheets 1 and 2)
- North of the proposed trench between Bradford Avenue and Orangethorpe Avenue (Figure A.2, Sheets 2 and 3)

- North of Orangethorpe Avenue and east of Jefferson at the Olive Subdivision (Figure A.2, Sheets 3 and 4)
- At the Lakeview Avenue intersection (Figure A.2, Sheet 6)

At the completion of construction, the areas used as TCEs would be returned to the original property owners.

2.2.3.13 Compliance with the Americans with Disabilities Act. All improvements constructed under Alternative C will comply with the access requirements in the ADA.

2.2.4 Alternative D: Standard Grade Separation

At its meeting on September 4, 2007, the City of Placentia City Council identified Alternative D, Standard Grade Separation, as the locally preferred alternative for the OCG project. The agenda report documenting this City Council action is provided in Appendix B-5, Additional Consultation Records. As described later in Section 2.6, After Public Circulation, FHWA made its decision regarding the federally preferred alternative after circulation of the Draft EIS/EIR.

As discussed later in Section 2.6.2, Final EIS and Identification of the Federally Preferred Alternative, FHWA has identified Alternative D as the federally preferred alternative. Following the public review period for this Final EIS, FHWA may select an alternative and set forth its approval in a Record of Decision (23 CFR 771.127).

2.2.4.1 Rail Improvements. Alternative D proposes construction of two railroad undercrossings and six railroad overcrossings between Kraemer Boulevard and Kellogg Drive for a total of eight grade separation projects along the OCG segment of the BNSF railroad. The project limits for Alternative D extend along the project segment of the BNSF, focused on the eight arterial intersections. The construction under Alternative D would not be continuous along the project segment of the BNSF as it would focus on the intersections proposed for grade separations. Table 2-I summarizes the proposed grade separation features at the eight intersections under Alternative D.

In general, undercrossings impact adjacent properties less because the project limits for an undercrossing, including the areas where the undercrossings join to the existing street, are shorter. This is because the minimum vehicular (for cars and trucks) clearance requirement under a railroad bridge structure is 4.7 m (15.5 ft) and the minimum vertical (for railroad cars) clearance requirement under a road overcrossing is 7 m (23 ft). In addition, the vertical curve design requirements for undercrossings are shorter than the vertical design requirements for crests overcrossings, which allows the road to go down into an undercrossing and back up to the grade of the rest of the road in a shorter distance, which minimizes the potential for access impacts to properties in the area of the intersection crossing.

Table 2-I: Grade Separation Features under Alternative D

Crossing Location	Crossing Type	Number of Bridge Structures[1]	Rail Service During Construction
Major Crossings			
Kraemer Boulevard	Undercrossing	1	Shoofly
Orangethorpe Avenue	Overcrossing	3	No change
Tustin Avenue/Rose Drive	Overcrossing	1	No change
Lakeview Avenue	Overcrossing	6	No change
Minor Crossings			
Jefferson Street	Overcrossing	4	No change
Van Buren Street	Overcrossing	4	No change
Richfield Road	Overcrossing	4	No change
Kellogg Drive	Undercrossing	2	Shoofly

Source: *Preliminary Engineering Report* (KFM Engineering 2004).
1 Bridge structures include structures over roads, the railroad right-of-way, channels, and drainages.

However, although undercrossings can result in fewer impacts on adjacent properties, they can also result in other impacts particularly related to the need to relocate existing infrastructure and utilities. Undercrossings can also be subject to concerns related to subsurface factors such as high groundwater levels. Alternative D proposes a total of eight grade separations, with two proposed as undercrossings (Kraemer Boulevard and Kellogg Drive) and six proposed as overcrossings (Orangethorpe Avenue, Tustin Avenue/Rose Drive, Jefferson Street, Van Buren Street, Richfield Road and Lakeview Avenue). The rationale behind the type of crossing (over or under) proposed at each of these intersections is summarized below.

Existing sidewalks and bicycle facilities on the crossing arterials would be replaced as part of the construction of the overcrossings and undercrossings across the railroad tracks.

Overcrossings at the Tustin Avenue/Rose Drive, Jefferson Street, Van Buren Street, Richfield Road and Lakeview Avenue Crossings. At each of these existing rail/street intersections, there is a major flood control channel (Atwood Channel) which drains from east to west and is located just south of the BNSF railroad tracks. To construct undercrossings at these locations, the roads would have had to not only dip under the tracks but would also have had to dip under Atwood Channel. KFM Engineering prepared vertical designs for undercrossing and overcrossing scenarios at these locations. The result of this design work indicated that the anticipated right-of-way needs were substantially greater for undercrossings than for overcrossings at these five intersections. The project limits for the cross street improvements were also substantially longer to go down and under the tracks and Atwood Channel than they were to go up and over both facilities, resulting in more property access impacts and more full property acquisitions as a result of the undercrossings. In addition, these five intersections are in an area of high groundwater (in some cases at approximately 3.1 m (10 ft) below the ground surface) which would have presented construction and long term maintenance and operations challenges which are not a factor with overcrossings. Therefore, for

these five intersections, the proposed rail crossings are overcrossings to reduce design and acquisition related impacts.

Overcrossing at Orangethorpe Avenue. This crossing is proposed as an overcrossing to facilitate the reestablishment of the Orangethorpe Avenue/Chapman Avenue intersection. It was determined during preliminary design that looping Chapman Avenue under a raised Orangethorpe Avenue and reconnecting the intersection on the south side of Orangethorpe Avenue would result in less property acquisition than an undercrossing. The overcrossing does require a full take of the parcel in the southeast quadrant of the existing Orangethorpe Avenue/Chapman Avenue intersection but a full take would have also been required for an undercrossing due to loss of access to this property. In addition, the Orangethorpe Avenue crossing over the BNSF is in an area of high groundwater which can present construction and long term maintenance and operations challenges which are not factors with an overcrossing. Therefore, for Orangethorpe Avenue intersection, the proposed rail crossing is an overcrossing to reduce design and acquisition related impacts.

Undercrossings at Kraemer Boulevard and Kellogg Drive. These two crossings of the BNSF are on the west (Kraemer Boulevard) and east (Kellogg Drive) ends of the project segment of the BNSF corridor. They are both outside high groundwater zones and are not traversed or impacted by the Atwood Channel. As such, the undercrossing geometrics at these two intersections would result in much less right-of-way acquisition than for overcrossings because the project limits to join the new crossings with the existing roads would be much shorter than would be required for overcrossings. Therefore, for the Kraemer Boulevard and Kellogg Drive intersections, the proposed rail crossings are undercrossings to reduce acquisition related impacts.

Each undercrossing and overcrossing would require right-of-way acquisition to allow access to the crossings from the frontage roads (Crowther Avenue and Orangethorpe Avenue), which are parallel and adjacent to the existing BNSF tracks. The existing at-grade railroad right-of-way would remain at its existing width which would accommodate the two existing railroad tracks, the existing BNSF right-of-way, and a 3.15 m (10 ft) wide access road. Refer to Figure A.3, Sheets 1 to 7, in Appendix A for detailed plans of Alternative D. Refer to Figures A.7, A.8, and A.9 in Appendix A for cross sections of the undercrossings and overcrossings along the rail alignment under Alternative D.

The following streets would be constructed as undercrossings where the road would pass under the BNSF railroad tracks:

- Kraemer Boulevard (Figure A.3, Sheet 2)
- Kellogg Drive (Figure A.3, Sheet 7)

The following streets would be constructed as overcrossings where the road would pass over the BNSF railroad tracks:

- Orangethorpe Avenue (Figure A.3, Sheet 3)
- Tustin Avenue/Rose Drive (Figure A.3, Sheets 4 and 4b)

- Jefferson Street (Figure A.3, Sheets 4 and 4b)
- Van Buren Street (Figure A.3, Sheets 5 and 5b)
- Richfield Road (Figure A.3, Sheets 5 and 5b)
- Lakeview Avenue (Figure A.3, Sheet 6)

The current cost for the eight grade separations under Alternative D is estimated to be approximately $433 million. The estimated cost for the four major grade separations in the preferred alternative is $252 million. The estimated cost for the four minor grade separations in Alternative D is $181 million. Appendix H provides the listings for the four major crossings in the RTIP. This estimated cost includes the individual intersection improvements, flood control improvements, utility relocation improvements, bypass track improvements, track improvements, roadway improvements, right-of-way acquisition and potential mitigation costs, as applicable for each intersection. The implementation of the four minor intersection grade separations would be phased in the future, based on the availability of funding for those crossings.

2.2.4.2 Major Street Improvements. Street improvements are needed throughout the alignment to allow for construction of the overcrossings and undercrossings and to minimize environmental impacts under Alternative D. The following street improvements are included in Alternative D:

- **Kraemer Boulevard Undercrossing.** Crowther Avenue would be split at Kraemer Boulevard. An eastbound and westbound couplet would pass over bridges above Kraemer Boulevard. The middle segment of Crowther Avenue would descend to Kraemer Boulevard and end in a T-intersection. Refer to Figure A.3, Sheet 2, in Appendix A.
- **Orangethorpe Avenue Overcrossing.** The existing intersection of Orangethorpe Avenue and Chapman Avenue would be eliminated and replaced with a bridge separating the two streets, with Chapman Avenue crossing under Orangethorpe Avenue. Chapman Avenue would reconnect with Orangethorpe Avenue via an intersection at Traub Lane. A bridge would be constructed over Carbon Canyon Channel to connect Orangethorpe Avenue with Crowther Avenue. In the same area, Miller Street would cross over Orangethorpe Avenue to connect with Crowther Avenue. Refer to Figure A.3, Sheet 3, in Appendix A.
- **Tustin Avenue/Rose Drive Overcrossing.** A connector road from Rose Drive to Orangethorpe Avenue would be constructed in the northeast quadrant of this overcrossing. This would include direct access from the connector road to the existing adjacent residential neighborhood. Refer to Figure A.3, Sheets 4 and 4b, in Appendix A.
- **Jefferson Street Overcrossing.** A connector road in the southwest quadrant of this intersection for area access would start at the Atwood Channel and connect to Jefferson Street. A connector road in the southeast quadrant would connect properties in this area to Jefferson Street. A connector road in the northwest quadrant would connect Orangethorpe Avenue with Jefferson Street, with a bridge crossing over Richfield Channel. A bridge would be constructed where Jefferson Street would cross over Atwood Channel. Refer to Figure A.3, Sheets 4 and 4b, in Appendix A.

- **Van Buren Street Overcrossing.** Vicente Avenue, Oak Street, and Cherry Street would end in cul-de-sacs at Van Buren Street. Atwood Avenue would not connect directly to Van Buren Street but would connect via a road beginning at a new Van Buren Street intersection south of Orangethorpe Avenue, continuing along the west side of Van Buren and connecting to Van Buren Street. An improved intersection at La Paloma Avenue is proposed south of the new circulation road intersection, with a new industrial property access road on the west side of Van Buren Street. A third connector road would be constructed in the northwest quadrant of the overcrossing that would connect Van Buren Street with Orangethorpe Avenue. Refer to Figure A.3, Sheets 5 and 5b, in Appendix A.
- **Richfield Road Overcrossing.** A bridge would be constructed over Vicente Avenue. A north connector road would connect Richfield Road with Orangethorpe Avenue. A south connector road would connect Nancita Street and pass under Richfield Road to Vincente Avenue. Refer to Figure A.3, Sheets 5 and 5b, in Appendix A.
- **Lakeview Avenue Overcrossing.** The Lakeview Avenue intersection would be realigned to the west. A frontage road would be constructed in the southeast quadrant to allow access from the industrial complex in this location. A road would be constructed in the southwest quadrant to connect the frontage road to Lakeview Avenue. A connector road in the northeast quadrant would connect Lakeview Avenue to Orangethorpe Avenue. Refer to Figure A.3, Sheet 6, in Appendix A.
- **Kellogg Drive Undercrossing.** The southern segment of Kellogg Drive would be realigned to the east and would connect to northern Kellogg Drive. A connector road in the northwest quadrant would connect Marita Lane to Kellogg Drive and to Orangethorpe Avenue. Refer to Figure A.3, Sheet 7, in Appendix A.

2.2.4.3 Drainage Structure Improvements. Under Alternative D, the existing Kraemer Boulevard storm drain would be realigned into a proposed 6.1 m(20 ft) easement along the east side of Kraemer Boulevard from just south of Chapman Avenue to Crowther Avenue (Figure A.3, Sheet 2). The storm drain would continue east of the three Crowther Avenue bridges and through a full parcel acquisition (Assessor's Parcel Number [APN] 340-171-09) at the southeast corner of Crowther Avenue and Kraemer Boulevard. The realignment would continue into Rutherford Street and would require a full parcel acquisition (APN 340-181-03) approximately 152.4 m (500 ft) south of the above full parcel acquisition and then would connect to the existing alignment in Kraemer Boulevard. The Kellogg Drive storm drain would be reconstructed to pass below the street undercrossing and to drain to a new outlet at the Santa Ana River (Figure A.3, Sheet 7). In addition, the capacity of these structures would be increased to accommodate the 100-year storm; they are currently sized for the 10-to-25-year storm. It is a requirement of the OCFCD that these flood control facilities be constructed to accommodate the 100-year storm (*Drainage Management Study*). Storm drains that would be impacted by street improvements would be relocated and upgraded as necessary.

Due to elevation changes for the Kraemer Boulevard and Kellogg Avenue Drive undercrossing, pump stations would be required to pump storm water from the low point of those intersections. The Kraemer Boulevard pump station would be located on APN 340-171-09. The Kellogg Drive pump station would be located within the right-of-way for the undercrossing. The existing drainage structures and proposed improvements to these drainage facilities as part of Alternative D are summarized in Table 2-J.

Table 2-J: Existing and Proposed Drainage Facilities under Alternative D

Facility	Location	Description of Existing Facility	Description of Proposed Facility
Kraemer Boulevard Storm Drain	Kraemer Boulevard	78" RCP	Realign to a 6 m(20 ft) easement along east side of Kraemer Boulevard to southeast corner of Crowther Avenue. Add a pump station at Kraemer Boulevard and Crowther Avenue
Kellogg Storm Drain	East end of study area near Kellogg Drive	51-inch RCP storm drain	Size to accommodate 100-year storm drain during final design

Source: *Preliminary Engineering Report* (KFM Engineering 2004) and *Drainage Management Study,* (Boyle Engineering 2006).

2.2.4.4 Utility Relocations. Prior to construction of each grade separation, all underground and aboveground utilities within the construction disturbance limits would be relocated, replaced, or protected in place, as appropriate, to accommodate construction of Alternative D. The relocations would be coordinated with the utility service providers and are not anticipated to interrupt service. Affected utilities near Kraemer Boulevard would likely be relocated in the proposed 6.1-m (20 ft) storm drain easement described above. A detailed set of utility plans is included as part of the OCG concept plans contained in the *Preliminary Engineering Report*. Appendix E of this EIS includes a summary of all existing utilities which would be affected by the construction of Alternative D.

2.2.4.5 Aesthetic Improvements. Construction of the overcrossings and undercrossings with access ramps from Crowther Avenue and Orangethorpe Avenue would not leave room for aesthetic improvements at these intersections. However, the design of each of the new structures may incorporate aesthetic treatments consistent with Caltrans Design Standards such as artwork and/or landscaping (e.g., within the medians) as part of the final design of each of the new structures.

2.2.4.6 Sound Walls. Under Alternative D, the railroad would remain at grade and the intersecting local streets would cross the railroad tracks via two undercrossings and six overcrossings. Sound walls are proposed as part of Alternative D to protect adjacent sensitive receptors from excessive surface traffic noise associated with the overcrossings. Section 3.14, Noise and Vibration, identifies the modeled sound walls on Figure 3.14-3. Preliminary reasonable and feasible sound walls are shown on Table 3.14-N. The preliminary reasonable and feasible sound wall analysis is based on the Traffic Noise Protocol for New Highway Construction and Reconstruction Projects (Caltrans 1998) as described in detail in Section 3.14, Noise. Final sound wall locations and heights needed under Alternative D would be determined during final design by the City of Placentia, in cooperation with affected residents and the applicable local jurisdictions.

The noise levels related to train operations under Alternative D would be similar to existing conditions because the railroad would remain at grade under this Alternative. However, the rail

operators would no longer need to use horns at the local street crossings which would substantially reduce those noise levels along the BNSF alignment. No sound walls along the rail alignment are currently proposed as part of Alternative D.

2.2.4.7 Construction Staging Areas. Construction staging would occur as each of the grade separation projects is implemented. Staging areas would be designated within the disturbance limits/ footprint area of each of the new structures.

2.2.4.8 Phasing Plan and Detours during Construction. The eight crossings under Alternative D are anticipated to be designed and constructed separately, as funding becomes available for each crossing. It is anticipated that the major crossings listed on Table 2-I would be constructed first, followed by the four minor crossings. The phased construction of the eight crossings could take a number of years to implement. For each crossing, construction will be phased to minimize adverse impacts on local traffic during construction, as described below.

A phased construction and detour program would be implemented to allow for the continuation of local circulation through the OCG project area during the construction of each of the grade separations under Alternative D. A detailed phasing plan is available for review in the *Traffic Impact Analysis*. The principal interim features during construction will vary depending on the individual grade separation project. The following briefly describes interim features for each grade separation under Alternative D:

- Kramer Boulevard Undercrossing (Figure A.3, Sheet 2)
    - Street closure: Kraemer Boulevard will be closed during construction. The draft TMP proposes to detour traffic via Miraloma Avenue, Tustin Avenue/Rose Drive, and Alta Vista Street.
    - Shoofly track: A temporary railroad detour or shoofly track will be required during construction of this undercrossing.
- Orangethorpe Avenue Overcrossing (Figure A.3, Sheet 3)
    - Traffic impedance: Phased construction of bridges for the Orangethorpe Avenue railroad overcrossing and for connection to Crowther Avenue will require closing approximately one-half of the capacity of Orangethorpe Avenue during construction.
- Tustin Avenue/Rose Drive Overcrossing (Figure A.3, Sheets 4 and 4b)
    - Traffic impedance: Phased construction of the overhead bridge for Tustin Avenue/Rose Drive may require restricting the flow of roadway traffic by one-half during construction. It may be possible to construct the connecting roadway from Rose Drive to Orangethorpe Avenue as an early project feature and use that as a partial detour route. However, it would still be necessary to restrict capacity on Tustin Avenue during construction of this grade separation. The draft TMP proposes to detour traffic via Jefferson Street and Alta Vista Street.

- Jefferson Street Overcrossing (Figure A.3, Sheets 4 and 4b)
    - Street closure: Jefferson Street has relatively low traffic volumes and would be closed during construction of this overcrossing. The draft TMP proposes to detour traffic via Tustin Avenue/Rose Drive or Van Buren Street.
- Van Buren Street Overcrossing (Figure A.3, Sheets 5 and 5b)
    - Street closure: Van Buren Street has relatively low traffic volumes and would be closed during construction of this overcrossing. The draft TMP proposes to detour traffic via Miraloma Avenue, Jefferson Street, and Alta Vista Street.
- Richfield Road Overcrossing (Figure A.3, Sheets 5 and 5b)
    - Street closure: Richfield Road has relatively low traffic volumes and would be closed during construction of this overcrossing. The draft TMP proposes to detour traffic via Van Buren Street or Lakeview Avenue and Orchard Drive.
- Lakeview Avenue Overcrossing (Figure A.3, Sheet 6)
    - Traffic impedance: Phased construction of the overhead bridges for Lakeview Avenue and the Atwood Channel may require restricting the flow of roadway traffic by one-half during construction. It may be possible to construct the connecting roadway in the northeast quadrant to connect Orangethorpe Avenue for traffic traveling to and from the north. However, it would still be necessary to restrict capacity on Lakeview Avenue south of Orangethorpe Avenue during phased construction.

      The draft TMP proposes to detour traffic via Miraloma Avenue, Richfield Road, and Buena Vista Avenue.
- Kellogg Drive Undercrossing (Figure A.3, Sheet 7)
    - Street closure: Kellogg Drive has relatively low traffic volumes and would be closed during construction of this overcrossing. The TMP proposes to detour traffic via Miraloma Avenue, Richfield Road, Buena Vista Avenue, and Imperial Highway (State Route 90).
    - Shoofly track: A temporary railroad detour or shoofly track will be required during construction of this undercrossing.

A preliminary TMP is included as Attachment 5 to the *Preliminary Engineering Report*. A final TMP will be prepared as part of final design once the preferred alternative is selected.

2.2.4.9 Excavation and Haul Routes. Substantial excess excavation material is not anticipated to be generated during the construction of Alternative D. At this time, it is anticipated that any excess excavated material generated during the construction of Alternative D would be distributed to one of two environmentally cleared sites.

The first potential site for the distribution of the excess excavation material is Olinda Alpha Landfill which is approximately 8 km (5 mi) northwest (in unincorporated Orange County, within the City of

Brea sphere of influence) of the OCG project area. Olinda Alpha Landfill is an existing operational landfill operated by the IWMD. The IWMD is currently considering expansion plans for this landfill as part of the RELOOC project. An environmental document (Olinda Alpha Landfill Expansion EIR No. 588) is under consideration and is anticipated to be certified in the near future.

The anticipated haul route to Olinda Alpha Landfill from the OCG project area is Orangethorpe Avenue (east) to Lakeview Avenue (north), or directly to Imperial Highway (north) to Valencia Avenue (north) to the entrance to Olinda Alpha Landfill. This route is entirely along designated truck routes through north Orange County.

The second potential site for the distribution of the excess excavation material is the Frank R. Bowerman Landfill which is approximately 32 km (20 mi) southeast (in unincorporated Orange County, within the City of Irvine sphere of influence) of the OCG project area. Frank R. Bowerman Landfill is an existing operational landfill operated by IWMD. The IWMD is currently considering expansion plans for this landfill as part of the RELOOC project. An NOP (July 21, 2005) was released for the current environmental document (Frank R. Bowerman Landfill Expansion EIR No. 604) and the Final EIR is anticipated to be certified in late 2006.

The anticipated haul route to Frank R. Bowerman Landfill from the OCG project area is Orangethorpe Avenue (east) to Lakeview Avenue (south), or to Imperial Highway (south), to SR-91 (east), to SR-241 (south), to Irvine Boulevard (west), to Sand Canyon (north), to Portola Parkway (west), to the entrance to the Frank R. Bowerman Landfill. This route is entirely along designated truck routes through north and central Orange County.

In addition to use as daily cover at area landfills, there may be potential for excess soil from the OCG project to be used as fill at other construction and development sites. It is not anticipated that sufficient volumes of excess material would be generated during construction of any individual intersection under Alternative D. Therefore, it is unlikely this material would have potential for use as fill in other development projects in the area. However, if this material is reused, it is not possible to identify those possible sites at this time, as the need for fill material is time-sensitive based on the individual construction schedules for each development. During final design and project excavation, if Alternative D is selected for implementation, consideration of use of excess material as fill for other development projects will be investigated by the City of Placentia.

2.2.4.10 Rail Traffic Emergency Bypass. Under Alternative D, the existing Olive Subdivision track would continue to be used as an emergency bypass route for rail traffic after the construction of Alternative D is complete. The alignment of the Olive Subdivision tracks and the emergency bypass route is shown on Figure A.11 in Appendix A. This is the same emergency bypass route that would be used under existing conditions in the event the existing tracks on the OCG segment were temporarily blocked or not functioning due to an accident or some other incident. This route would provide emergency bypass routing for BNSF, Metrolink, and Amtrak trains around a segment of the OCG alignment when closed due to a derailment or some other emergency. The rail traffic emergency bypass route would use existing rail rights-of-way and trackage facilities within the Olive Subdivision and then along the LOSSAN corridor until the bypass route joins the mainline near the Fullerton station. No new facilities or track would be necessary for the use of this alignment as an emergency bypass route for Alternative D.

2.2.4.11 Right-of-Way. Right-of-way acquisition would be required as part of Alternative D to accommodate the construction of the standard grade separations and associated street and drainage improvements as shown earlier in Table 2-G. Based on preliminary engineering, the identified areas of right-of-way acquisitions are listed below for each grade separation; however, refinements in right-of-way needs could occur during the final design process. The full and partial right-of-way acquisitions and TCEs identified for the OCG Build Alternatives are preliminary based on the 2004 conceptual design. The actual right-of-way (full and partial acquisitions) and TCEs needed if an OCG Build Alternative is selected for implementation would be defined during final design.

- **Kraemer Boulevard Undercrossing (Figure A.3, Sheet 2).** Three full acquisitions would be required for realignment of the 72-inch storm drain and the pump station. Two partial acquisitions would be needed.
- **Orangethorpe Avenue Overcrossing (Figure A.3, Sheet 3).** Four full acquisitions and one partial acquisition would be required for the connector roads.
- **Tustin Avenue/Rose Drive Overcrossing (Figure A.3, Sheets 4 and 4b).** Two full acquisitions and three partial acquisitions would be needed for the connector roads.
- **Jefferson Street Overcrossing (Figure A.3, Sheets 4 and 4b).** Eight full acquisitions and seven partial acquisitions would be needed for the connector roads.
- **Van Buren Street Overcrossing (Figure A.3, Sheets 5 and 5b).** Sixteen full acquisitions and nine partial acquisitions would be needed for the connector roads and street improvements.
- **Richfield Road Overcrossing (Figure A.3, Sheets 5 and 5b).** Twenty-seven full acquisitions and seven partial acquisitions would be needed for the connector roads.
- **Lakeview Avenue Overcrossing (Figure A.3, Sheet 6).** Ten full acquisitions and four partial acquisitions would be needed for the connector roads and realignment.
- **Kellogg Drive Undercrossing (Figure A.3, Sheet 7).** Eleven full acquisitions and two partial acquisitions would be needed for the connector road and realignment.

Alternative D would require both full and partial right of way acquisitions totaling approximately 24.0 ha (59.4 ac) as shown earlier in Table 2-G. The full right-of-way acquisitions would require the relocation of the existing property owners/tenants from these sites.

Because the project segment of the BNSF passes through areas in the City of Anaheim, right-of-way for this alternative will be acquired in the Cities of Placentia and Anaheim. The City of Placentia anticipates entering into an agreement with the City of Anaheim regarding the process for the acquisition of property located within the Anaheim city limits.

2.2.4.12 Temporary Construction Easements. Alternative D will require the use of TCEs during construction of Kraemer Boulevard undercrossing but will not require TCEs at the other grade separations. It is anticipated that the right-of-way acquired for seven other grade separations will include the area needed to accommodate the intersection improvements and that the construction of

each of those grade separations would take place entirely within that right-of-way. The construction of the Kraemer Boulevard undercrossing will require approximately 1,222 square meters (13,151 square feet) of TCE from an apartment complex on the east side of Kraemer Boulevard north of Crowther Avenue. No structures would be affected by this TCE. At the completion of construction of the Kraemer Boulevard overcrossing, the area used as a TCE would be returned to the original property owner.

2.2.4.13 Compliance with the Americans with Disabilities Act. All improvements constructed under Alternative D will comply with the access requirements in the ADA.

2.3 ANTICIPATED PERMITS AND APPROVALS REQUIRED

Utilities/Emergency Services

- Grading permits from the County of Orange and Cities of Anaheim and Placentia
- Facility relocation permits

Traffic

- Detour plans under all Build Alternatives are to be submitted to and approved by the affected cities

Cultural Resources

- Section 106
- Cultural Resources Late Discovery Plan

Hydrology and Floodplains

- Encroachment permit from the Orange County Property Permits Section (Alternatives B and C)

Water Quality and Storm Water Runoff

- Municipal National Pollution Discharge Elimination System (NPDES) Permit
- State General Construction Activity NPDES Permit

Hazardous Waste/Materials

- Emergency response and evacuation plan to be reviewed and approved by the appropriate authorities prior to implementation

- Health and Safety Plan
- Excavation Monitoring Plan

Energy

- Construction efficiency plan to be reviewed and approved by the City of Placentia

Biological and Water Resources

- United States Army Corps of Engineers (USACE) 404 permit (federal Clean Water Act)
- Regional Water Quality Control Board (RWQCB) 401 permit (Water quality certification)
- California Department of Fish and Game (CDFG) 1602 permit (Streambed Alteration Agreement)

Railroad Approvals

Agencies doing work with railroads must obtain the railroad's approval for any project through execution of a Construction and Maintenance Agreement. It is the Memorandum of Understanding (MOU) for a given specific project. The California Public Utilities Commission (CPUC) must approve each specific project. The CPUC requires the applicant/lead agency to submit proof of the Construction and Maintenance Agreement with the railroad before the CPUC will take action.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER DISCUSSION PRIOR TO THE DRAFT EIS/EIR

The following alternatives were developed from the *Value Analysis Report* (Parsons Transportation Group August 15, 2003), which is part of the Preliminary Engineering Report process. These alternatives are described in detail in the *Preliminary Engineering Report*.

2.4.1 Eliminate Minor Street Crossings for Alternative D

Richfield Road, Kellogg Drive, Jefferson Street, and Van Buren Boulevard have relatively low existing surface traffic volumes crossing the BNSF railroad tracks. Eliminating those streets from the standard grade separation alternative (Alternative D) would save approximately $166 million of the estimated $324 million total cost of that alternative.

This was rejected as a separate project alternative because Alternative D project phasing decisions, at a future time, might accomplish these objectives. Pursuing environmental clearance for all eight standard grade separations under Alternative D was deemed to provide the greatest flexibility and was consistent with the scope of the other OCG Build Alternatives (Alternatives B and C).

2.4.2 Elevated Railroad Structure

This option would elevate the railroad profile from approximately 731 m (2,400 ft) west of Orangethorpe Avenue to 731 m (2,400 ft) east of Lakeview Avenue for an overall length of 4.5 km (2.8 mi). The aerial railroad structure would have a minimal vertical clearance of 4.9 m (16 ft) between the embankments (i.e., support structures). The railroad bridge structure at the embankments would be 19.5 m (64 ft) wide to provide for three BNSF mainline tracks, a maintenance road, and three emergency walkways and would be 12.8 m (42 ft) above grade. The cost estimate for this alternative was $200 million (*Preliminary Engineering Report*). This alternative would meet the project purpose as described in Section 1.2, Project Purpose, and would address the need for the project as described in Section 1.3, Project Need.

The elevated alternative would not reduce train operational noise and could potentially substantially increase train operational noise in the community. Therefore, this alternative would not meet the defined project purpose to reduce train whistle and operational noise in the community. In addition, elevating the tracks above the existing roads would result in a substantial visual change in the community, particularly for residential uses along the alignment. Further, this alternative would not receive community support and would likely be strongly opposed by residents and others in the area. For these reasons, the elevated alternative was not carried forward for evaluation in the EIS.

2.4.3 Narrower Trench

This alternative would be an option applicable to Alternatives B and C. This approach would be to reduce the width of the trench so as to accommodate the existing two tracks and a maintenance road but not a width that would avoid impacts to the existing BNSF right-of-way.

This alternative was rejected because it would not protect the existing BNSF right-of-way in the event that BNSF pursues facility and/or service improvements on this part of its system in the future. Not using the existing BNSF right-of-way for the OCG project would minimize future disruption of the area if the BNSF pursues facility and/or service improvements in the future. Specifically, a narrower trench alternative that is within the BNSF right-of-way would result in additional delay and congestion during construction to widen that narrow trench to accommodate future BNSF facility and/or service improvements.

2.4.4 Other Design Options

The *Value Analysis Report* also briefly assessed additional design options such as lowering the rail less than identified trench depth and raising the crossing arterials to provide sufficient clearance; modifying the grade of the trench; closing crossing arterials at the BNSF or terminating the rail service; and other similar design modifications. These design options were not carried forward as a result of costs, conflicts with BNSF operations, greater impacts to drainage channels and other utilities, or adverse traffic impacts.

2.4.5 Transportation Systems Management (TSM)

The purpose of the proposed OCG project is to eliminate the current and potential hazards posed by the existing at-grade crossings at several intersections with the BNSF railroad line. A separate TSM alternative was not developed because the proposed project does not include the construction of a new transportation facility. Therefore, a TSM alternative is not evaluated in this EIS.

2.5 UNRESOLVED ISSUES AND AREAS OF CONTROVERSY

There are no unresolved issues or areas of controversy related to environmental issues under CEQA and NEPA regarding the proposed OCG project known at this time.

The project is not currently financially constrained, which is an outstanding issue related to the project. Further, it is possible that full funding may not be available for Alternatives B and C at the time construction would be initiated. The City is working with OCTA to identify and program funding for the right-of-way acquisition, final design, and construction of the proposed OCG project.

2.6 AFTER PUBLIC CIRCULATION AND SELECTION OF THE PROJECT

2.6.1 Certification of the Final EIR and Adoption of Alternative D by the City of Placentia

The City of Placentia distributed the Draft EIS/EIR for the OCG project for public and agency review and comment on June 27, 2008. The comment period ended on August 11, 2008. Appendix K of this EIS provides the comments received on the Draft EIS/EIR and the responses to those comments.

Following the completion of the responses to comments, the City of Placentia City Council certified the Final EIR under CEQA for the project at its meeting on November 17, 2008. After consideration of the Draft EIS/EIR, the comments received on the Draft EIS/EIR during the public review period for the Draft EIS/EIR, and the Final EIR, and after certification of the Final EIR, the City Council adopted Alternative D as the preferred OCG project at its meeting on November 17, 2008. The selection of Alternative D was based on its ability to meet the defined project objectives and on the City's finding that benefits of Alternative D outweigh the unavoidable adverse impacts of that Alternative. The City Council adopted Facts and Findings of Facts that identified significant adverse impacts of the OCG project alternatives and provided findings for each of those impacts, adopted a Statement of Overriding Considerations (SOC) for the adverse impacts of the preferred project (Alternative D) that will not be mitigated below a level of significance, adopted the Mitigation Monitoring and Reporting Program for the selected project (Alternative D), and directed staff to file a Notice of Determination (NOD) with the State Clearinghouse (SCH). The NOD was filed with the Clerk of Orange County on November 18, 2008, and at the SCH on November 19, 2008.

2.6.2 Final EIS and Identification of the Federally Preferred Alternative

With regard to NEPA, FHWA has prepared this Final EIS for the OCG project. FHWA has identified Alternative D as the federally preferred alternative. The Final EIS will be available for public review for 30 days. Following that public review period, FHWA may select an alternative and set forth its

approval in a Record of Decision (23 CFR 771.127) along with a summary of the adverse impacts of the project, and avoidance, minimization, and mitigation measures incorporated into the selected alternative.

As noted above, FHWA has identified Alternative D as the federally preferred alternative. In consideration of the identification of the federally preferred alternative for the OCG project, three broad categories of criteria were analyzed based on the detailed project-related and environmental information considered by the City of Placentia in its November 17, 2008, certification of the final EIR for the project. Those primary criteria were the project objectives, the analysis of reasonable and practicable alternatives, and environmental impacts. The performance of each of the OCG Build Alternatives was analyzed and compared based on these criteria. Based on that analysis, Alternative D has been identified as the federally preferred alternative, as follows:

- Alternative D meets the identified project purpose to alleviate current and potential environmental impacts and hazards associated with traffic congestion at the existing at-grade crossings on the project segment of the BNSF.
- Alternative D represents a reasonable and practicable approach for meeting the project purpose and need, within available financial constraints. At this time, funding is programmed for the four major crossings in Alternative D; that funding would be insufficient to construct either Alternative B or C. In addition, existing programmed funds cannot be stockpiled for future expenditures on Alternatives B or C because most of the committed funding have sunset periods and it is unlikely that full funding would be available to construct Alternatives B and C for within those sunset periods and into the foreseeable future.
- Although Alternative D will result in unavoidable adverse visual and short-term air quality impacts and potentially contribute to cumulative adverse impacts related to property acquisition (community impacts), short-term air quality, and noise, those adverse impacts are substantially outweighed by the benefits of Alternative D. Specifically, the benefits of Alternative D, as a result of meeting the defined objectives for the OCG project, include reduction in traffic delays and mobility improvement, public safety improvement, elimination of train whistle noise, improved flood control with greater capacity, reduction in air quality emissions, and reduction in energy use when compared to the future No Build Alternatives conditions.

2.6.3 Implementation

After completion of the CEQA and NEPA environmental documentation by the City of Placentia and FHWA, respectively, implementation of the selected OCG project will be undertaken by the Orange County Transportation Authority (OCTA). The OCTA will be the implementing agency responsible for the final design, right-of-way acquisition, and construction of the selected project.

3.0 AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND AVOIDANCE, MINIMIZATION AND/OR MITIGATION MEASURES

3.0 AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND AVOIDANCE, MINIMIZATION AND/OR MITIGATION MEASURES

Section 3.0 describes the existing affected environment for the areas potentially affected by the proposed Orange County Gateway (OCG) alternatives. The affected environment is the base environmental condition against which potential environmental effects of the alternatives are evaluated in this Environmental Impact Statement (EIS).

The sections in Section 3.0 include the regulatory setting applicable to the environmental topic, the methodology of impact analysis, potential effects, and mitigation measures to avoid or substantially reduce adverse impacts of the alternatives. Photographs, graphic exhibits, and data matrices are included throughout Section 3.0 where applicable to support the impact analyses.

The National Environmental Policy Act (NEPA) uses the terms impact, effect, and consequences synonymously. For an action to affect the environment it must have a causal relationship with the environment. NEPA distinguishes three types of causal effects: direct, indirect, and cumulative. Cumulative effect is defined and the potential for the Orange County Gateway (OCG) Alternatives to contribute to cumulative effects is analyzed in Section 4.0 of this EIS, and direct and indirect effects are defined below and analyzed in Sections 3.1 through 3.23 of this EIS.

- Direct effects are caused by the action and occur at the same time and place (40 Code of Federal Regulations [CFR] 1508.8).
- Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems (40 CFR 1508.8).

As part of the scoping and environmental analysis conducted for the project, the following environmental resources were considered, but no potential for adverse impacts to these resources was identified. Consequently, there is no further discussion regarding these resources in this EIS:

- Coastal Resources, Coastal Barriers, and Coastal Zone Impacts. The project site is approximately 60 kilometers (km) (40 miles [mi]) east of the Pacific Ocean and would, therefore, not have an effect on any coastal resources.
- Fisheries. There are no fisheries in the project vicinity.
- Wild and Scenic Rivers. There are no rivers listed in the National Inventory of Wild and Scenic Rivers located near the project vicinity.

3.1 LAND USE

This section analyzes the effects of the proposed project on existing and future land uses; consistency of the proposed project with approved State, regional, and local plans; and potential project impacts to park and recreation facilities. The analysis in this section includes observations from field visits and aerial photograph mapping; and information from City and County General Plans, relevant State, regional, and local plans, and the *Community Impact Assessment* (LSA Associates, Inc., October 2007).

3.1.1 EXISTING AND FUTURE LAND USES, SOCIO-ECONOMICS, AND PUBLIC SERVICES

3.1.1.1 Existing Land Uses

The segment of the Burlington Northern Santa Fe (BNSF) railroad line that is within the Orange County Gateway (OCG) project limits passes through the Cities of Placentia and Anaheim and portions of unincorporated Orange County. Based on field visits, ground photographs, aerial photographs, and General Plans, existing land uses surrounding the railroad alignment within the project study area are residential, industrial, commercial, public facilities and utilities, transportation, agriculture, undeveloped land, and recreational. The study area is an urban built environment. With the exception of the three following areas, the existing land uses are consistent with the planned land use designations of the General Plans within the project study area:

1. Two triangular-shaped parcels located between Crowther Avenue, Orangethorpe Avenue, and the Carbon Canyon Channel are existing commercial/retail uses, and the planned land use designation for these parcels is medium-low density residential.

2. Four single-family properties are located at the southwest corner of Orangethorpe Avenue and Van Buren Street, where the designated planned land use is general industrial.

3. Three single-family properties and one multifamily property are located at the northeast corner of Orangethorpe Avenue and Van Buren Street, where the designated planned land use is commercial.

Aerial maps of the project study area are provided on Figure 3.8-1 in Section 3.8 (Cultural Resources) and existing view photographs of land uses in the OCG study area are provided in Section 3.7, Visual/Aesthetics.

The study area for assessing the potential impacts of the OCG alternatives related to land use was defined as a band approximately 457 meters (m) (1,500 feet [ft]) wide, centered on the existing BNSF railroad right-of-way. The General Plan land uses in this study area are shown on Figure 3.1-1 (Sheets 1 to 8).

3.1.1.2 Future Land Uses

Future development within the study area in the City of Placentia consists of the two projects identified in Table 3.1-A. Table 3.1-A describes the size, location, and status of these development projects in the OCG project study area in the City of Placentia.

Table 3.1-A: Development Projects

Project Name	Description	Location	Status
Santa Fe Courtyard	54-unit residential development on 1.5 hectares (3.6 acres)	City of Placentia at Bradford Avenue and Santa Fe Avenue	Initial Study/Mitigated Negative Declaration (IS/MND) was approved by the Planning Commission on April 18, 2005, and by the City Council on May 3, 2005. The project is under construction and is expected to be complete in 2007.
ETCO Development	Possible residential	North of Orangethorpe Avenue between Jefferson Street and Van Buren Street	Land was purchased in 2005 by ETCO Development.

Sources: Initial Study/Mitigated Negative Declaration, Santa Fe Courtyard, March 2005; and City of Placentia (2005).

The General Plan land uses within the project study area in the Cities of Yorba Linda, Placentia, and Anaheim and unincorporated Orange County are shown on Figure 3.1-1 (Sheets 1 to 8). A description of the major roads and existing transit services within the project area is provided in Section 3.6, Transportation, Traffic, Bicycle, and Pedestrian Facilities.

3.1.1.3 Socio-economics and Land Use

The study area for this socio-economic discussion refers to the Cities of Placentia, Anaheim, and Yorba Linda or, where specified, the County of Orange.

Housing Prices and Availability. In August 2007, the median single-family home price in the State of California was $465,400, down 1.1 percent from August 2006. In Orange County, the price was $640,000. The median price for a condominium in the State was $397,980 in March 2005. The median home prices in the Cities along the OCG alignment in 2007 were $573,500 for Anaheim, $590,000 for Placentia, and $831,250 for Yorba Linda. These price statistics were derived from all types of home sales, including condominiums, townhomes, and single-family units.[1]

[1] Source: California Association of Realtors (www.car.org), accessed March 2005 and dqnews.com, accessed September 18, 2007.

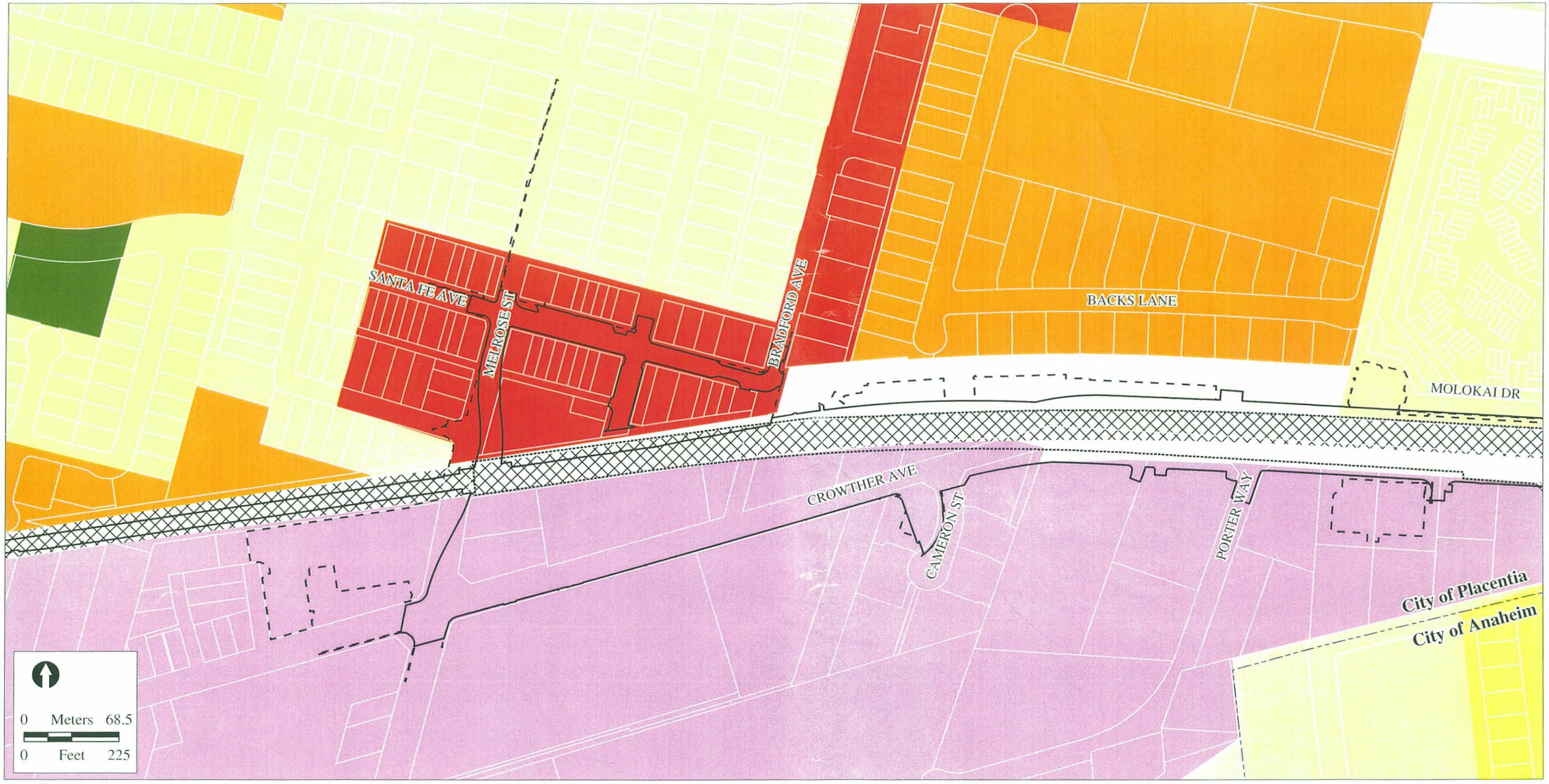


Figure 3.1-1

Alternative B Project Boundary
Alternative C Project Boundary
Alternative D Project Boundary

Low Density Residential
Low-Medium Density Residential
Medium Density Residential
Medium-High Density Residential
High Density Residential

Commercial
General Industrial
Golf Course
Office
Open Space

Planned Community/ Specific Plan
School
Water Uses

Existing Railroad R/W
City Limits

Note: The General Plan Land Use designations shown on this figure represent generalized land use categories. Specific land use categories can be found in the General Plan.

Orange County Gateway

General Plan Land Uses
Sheet 1 of 8

KFM Engineering, 2003.
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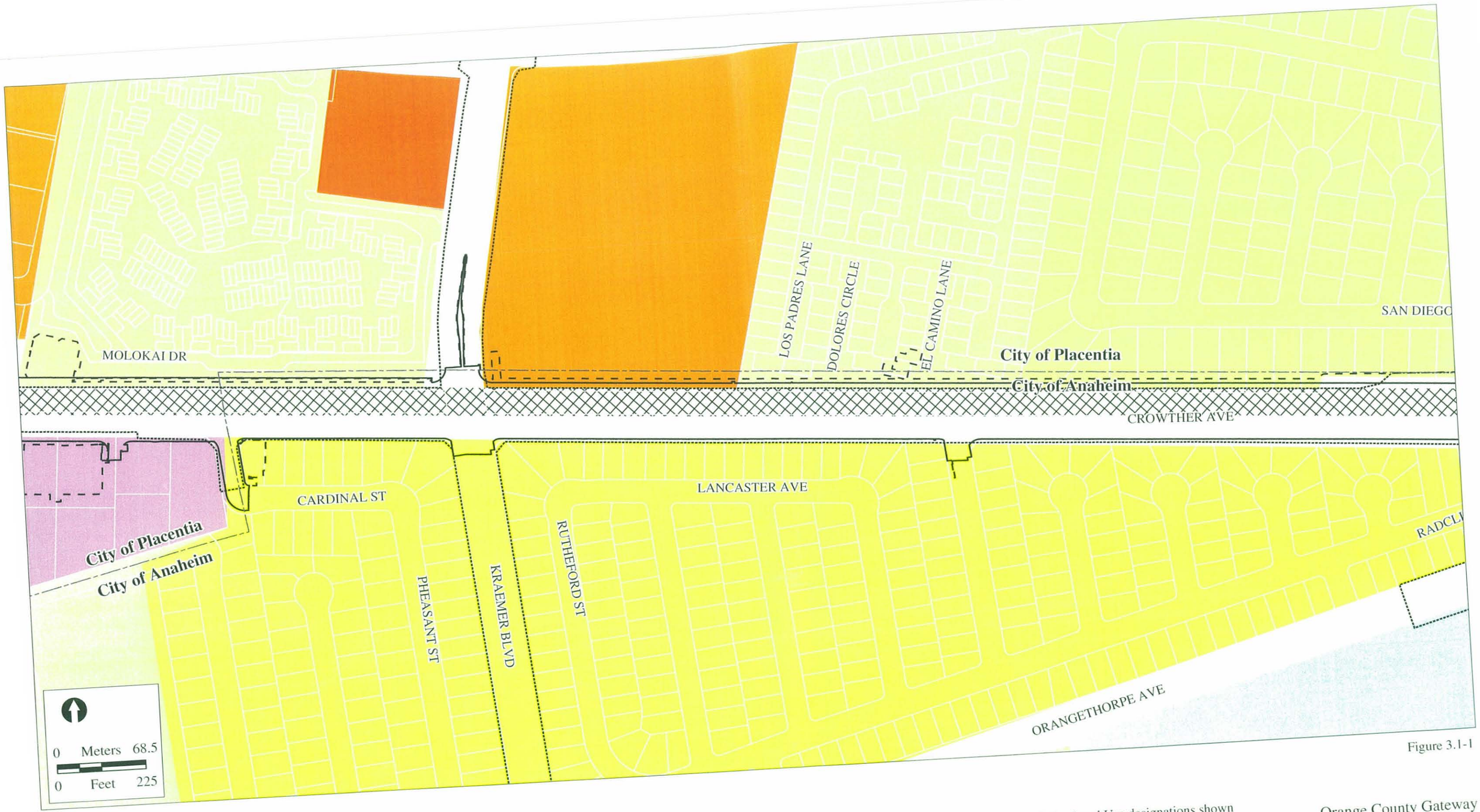


Figure 3.1-1

Orange County Gateway

General Plan Land Uses

Sheet 2 of 8

Note: The General Plan Land Use designations shown on this figure represent generalized land use categories. Specific land use categories can be found in the General Plan.

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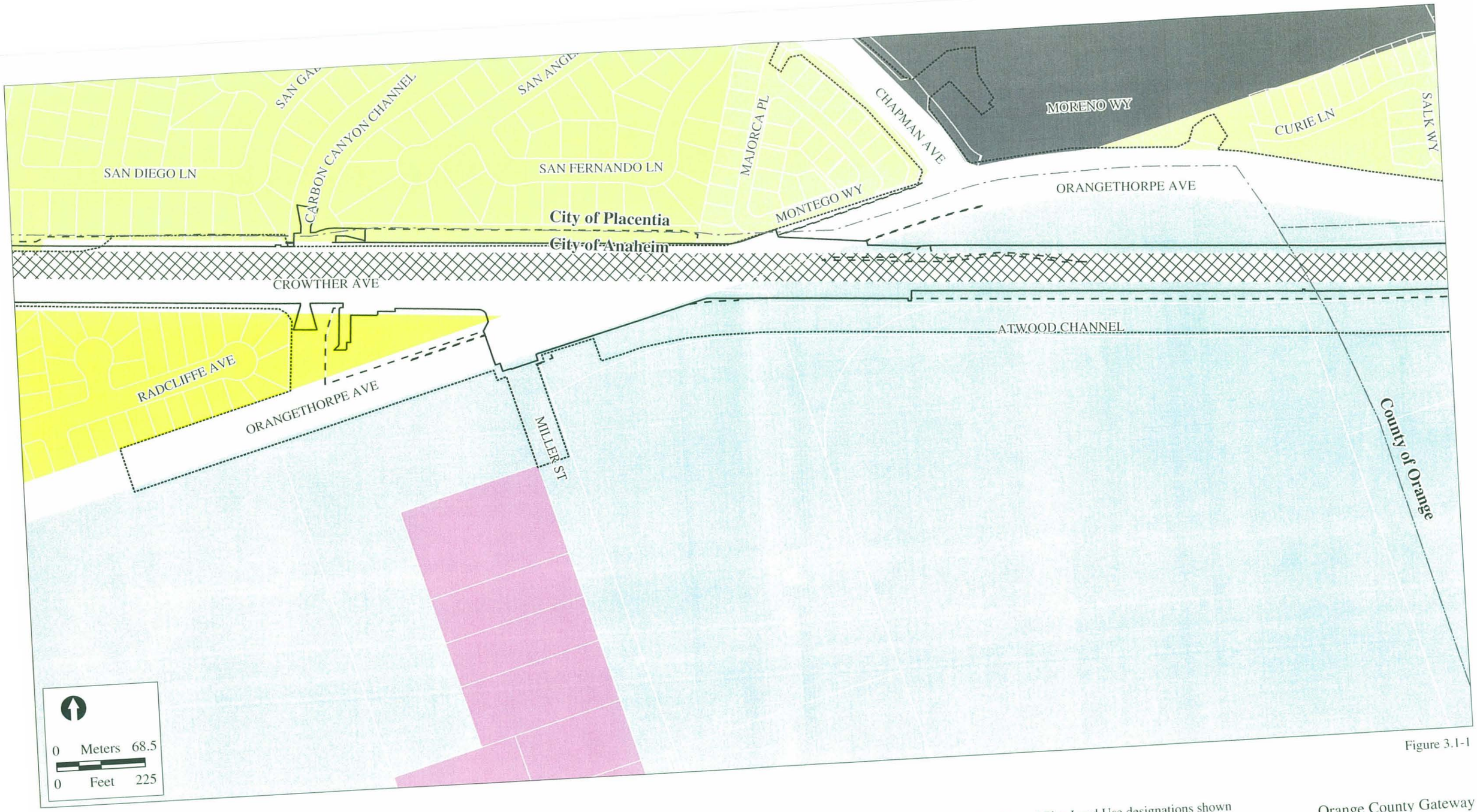


Figure 3.1-1

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Orange County Gateway

General Plan Land Uses

Sheet 3 of 8

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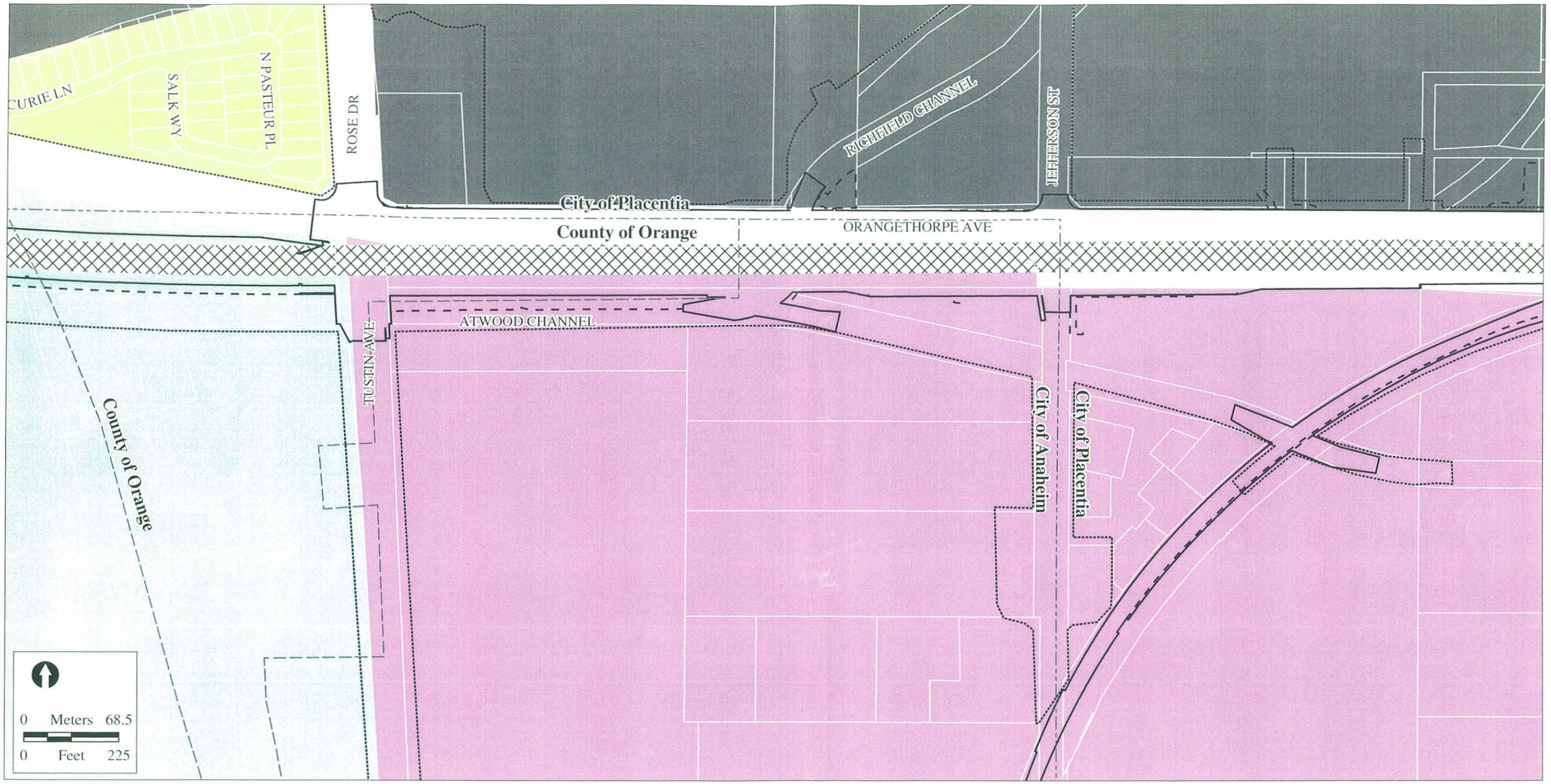


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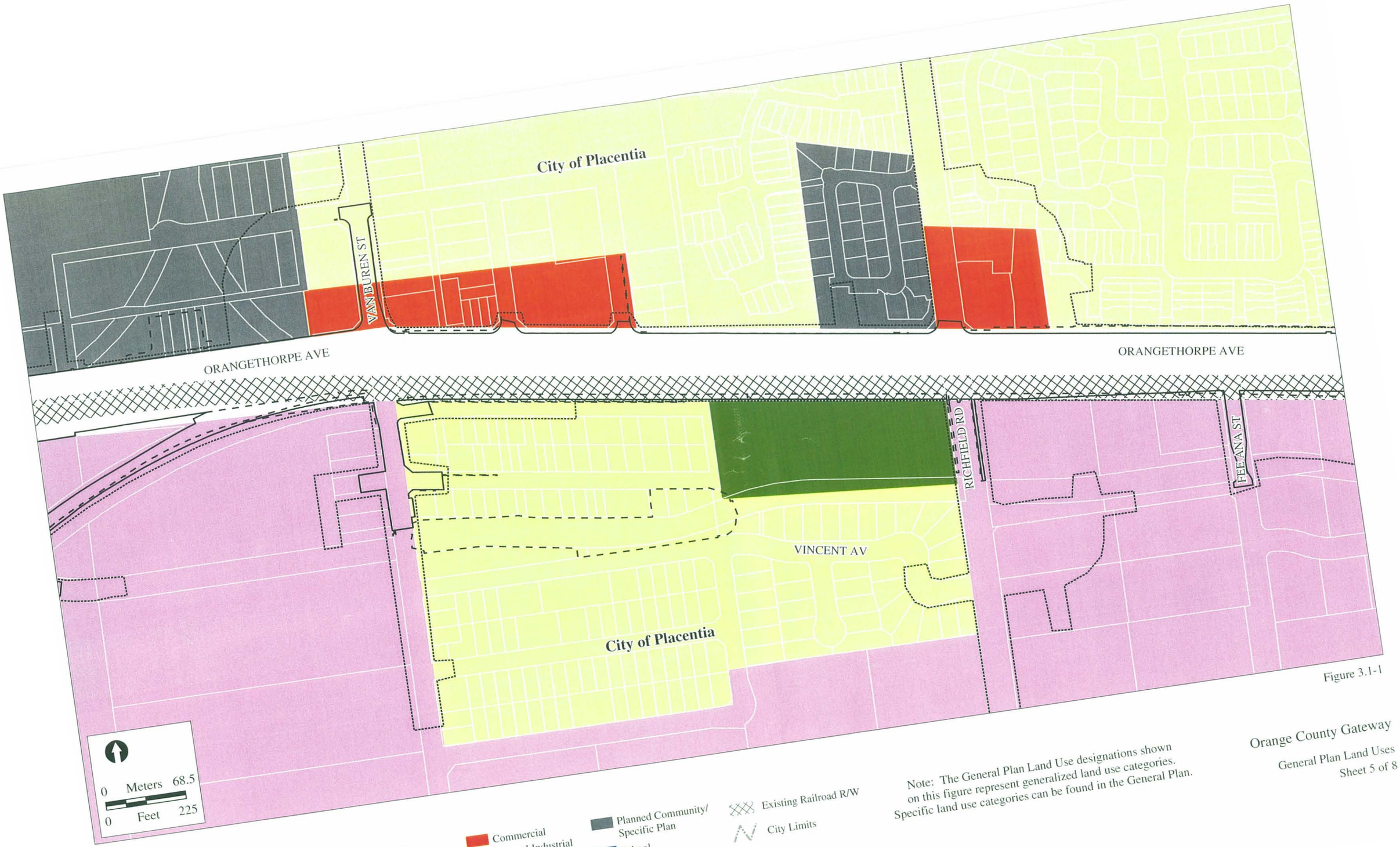
Existing Railroad R/W
City Limits

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Orange County Gateway

General Plan Land Uses
Sheet 4 of 8



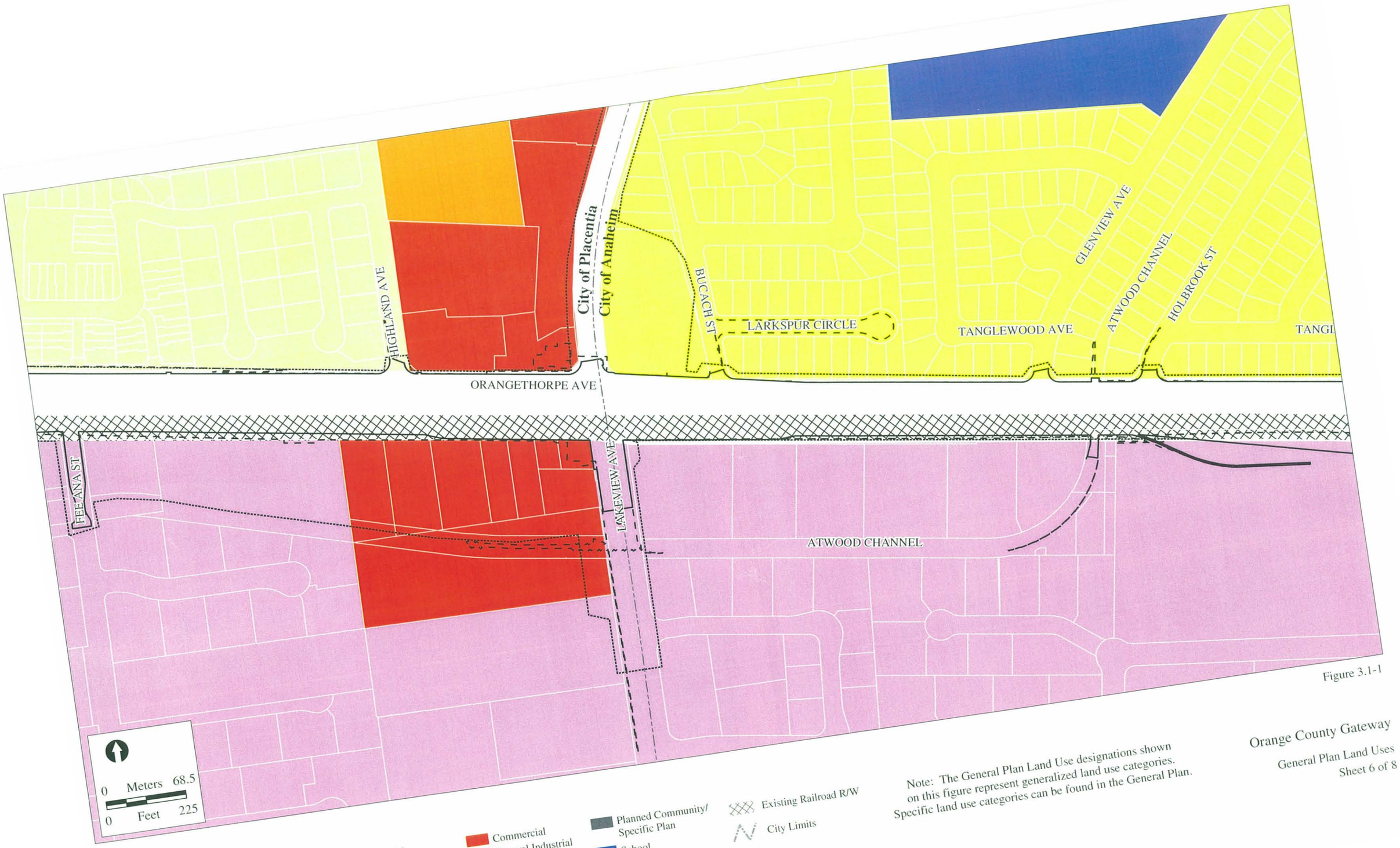
KFM Engineering, 2003.
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Note: The General Plan Land Use designations shown on this figure represent generalized land use categories. Specific land use categories can be found in the General Plan.

Figure 3.1-1

Orange County Gateway

General Plan Land Uses
Sheet 5 of 8



Note: The General Plan Land Use designations shown on this figure represent generalized land use categories. Specific land use categories can be found in the General Plan.

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Figure 3.1-1

Orange County Gateway

General Plan Land Uses
Sheet 6 of 8

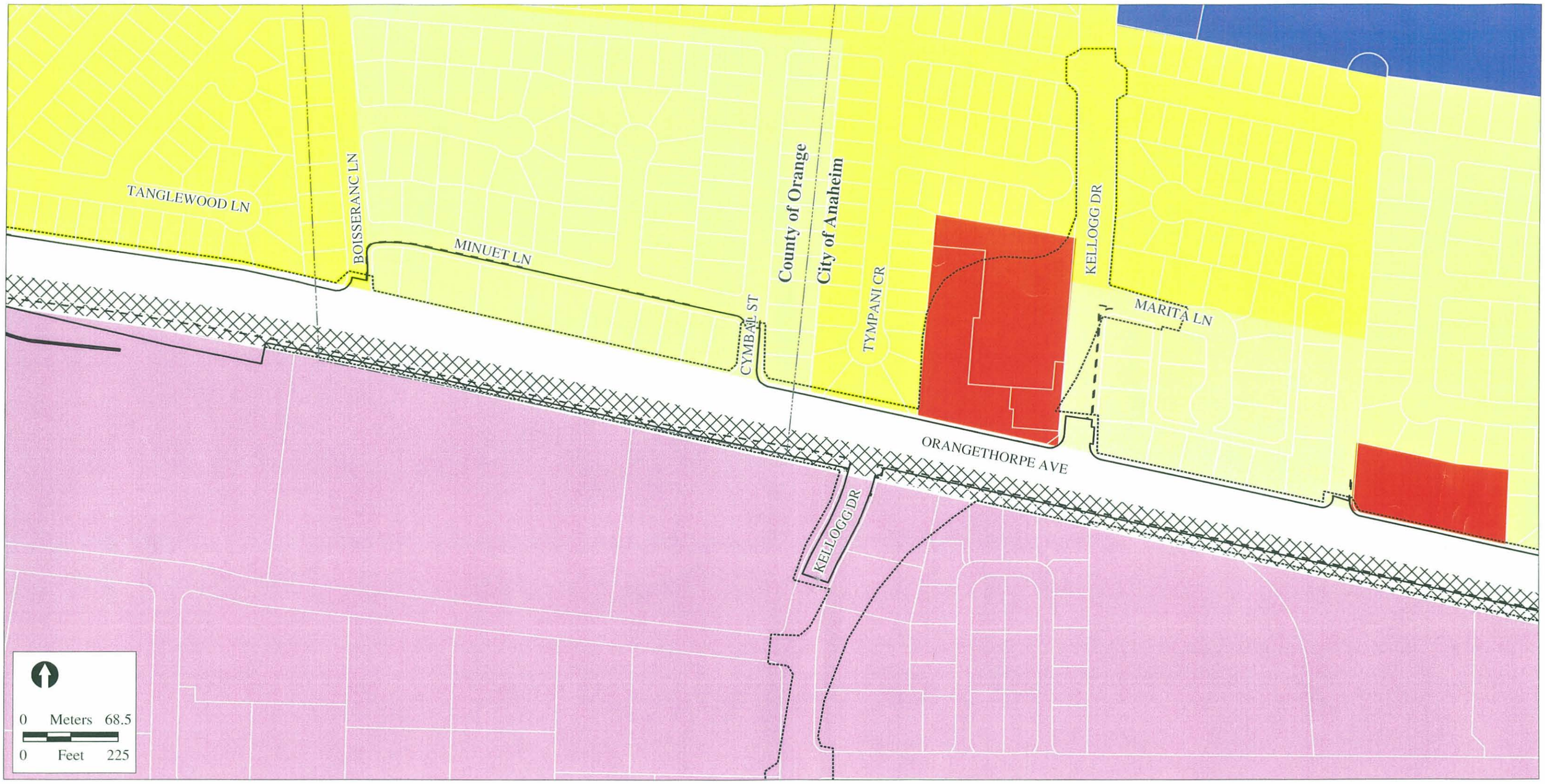


Figure 3.1-1

Alternative B Project Boundary
Alternative C Project Boundary
Alternative D Project Boundary

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Medium Density Residential
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High Density Residential

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General Industrial
Golf Course
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Open Space

Planned Community/ Specific Plan
School
Water Uses

Existing Railroad R/W
City Limits

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Orange County Gateway

General Plan Land Uses
Sheet 7 of 8

KFM Engineering, 2003.
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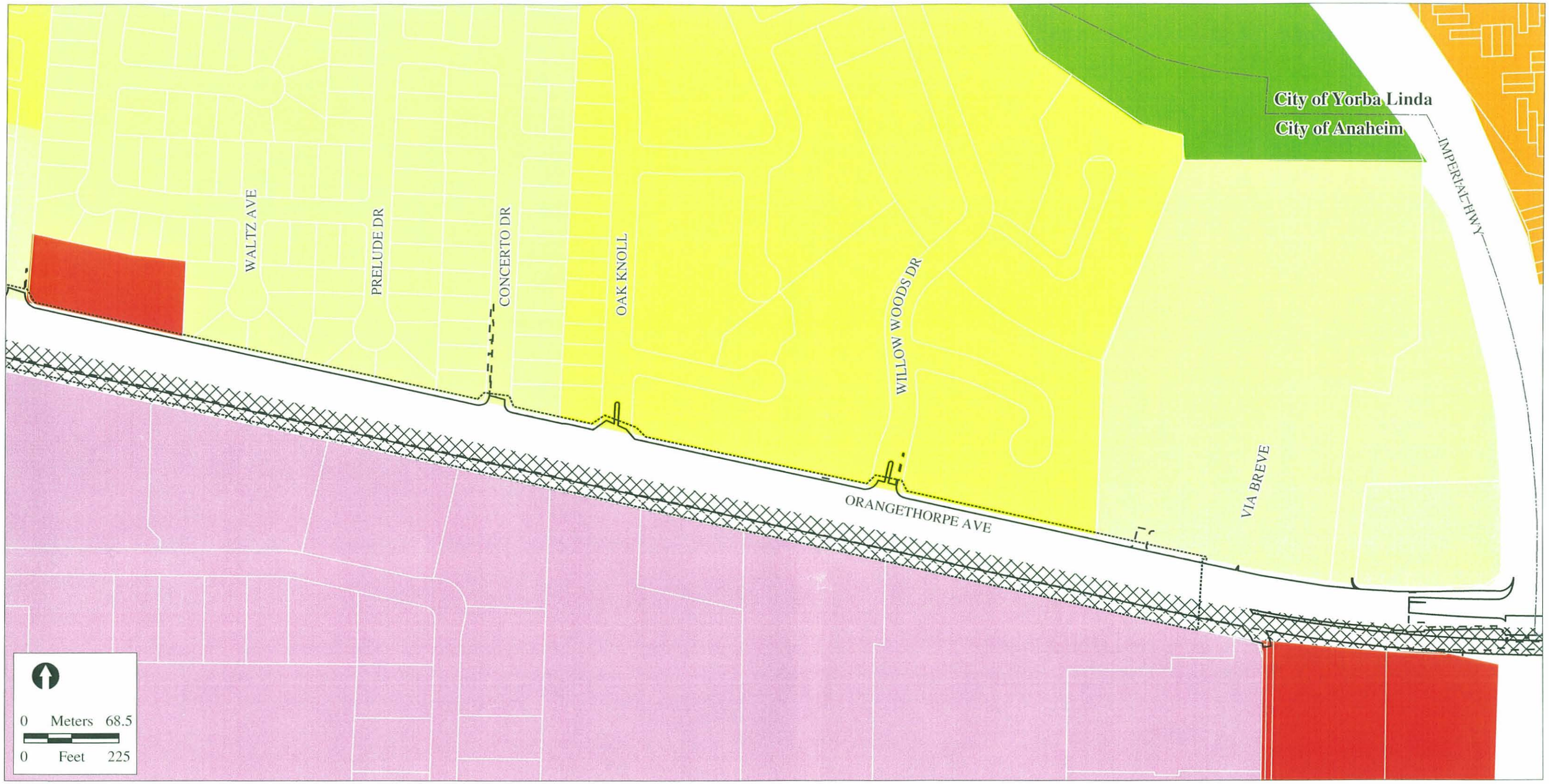


Figure 3.1-1

Alternative B Project Boundary
Alternative C Project Boundary
Alternative D Project Boundary

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Low-Medium Density Residential
Medium Density Residential
Medium-High Density Residential
High Density Residential

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Golf Course
Office
Open Space

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Orange County Gateway

General Plan Land Uses
Sheet 8 of 8

The cost to rent a home in the Cities of Placentia, Anaheim, and Yorba Linda in June 2005 ranged from approximately $675 to more than $1,700 per month depending on square footage, the number of bedrooms, and the location (*Draft Relocation Impact Report* [DRIR], LSA Associates, Inc., 2006).

The number of housing units in Orange County increased by 18 percent, to 9,660 in 2000 from 8,129 housing units in 1990. A total of 98 percent of the housing units (9,297 housing units) were occupied in 2000, including 60 percent (5,804 housing units) by the property owner. The average household size in 2000 dropped to 3.21 from 3.31 in 1990.

In 2000, only 27 percent of Orange County households could afford the median-priced home, down from 37 percent in 1999 and far below the United States average of 53 percent. Orange County's Housing Affordability Index lags behind all of its neighbors except San Diego. In 2000, 41.3 percent of homes sold in Orange County were affordable to a family earning the median income, down from 53.9 percent in 1999.

As shown in Figure 3.1-1 (Sheets 1 to 8), the project study area includes residential land uses. An analysis of socio-economic impacts and residential land use acquisitions under the OCG alternatives is provided later in Section 3.4, Community Impacts.

Employment. Private nonfarm employment in Orange County totaled 1.3 million persons in 2000, an increase of 12 percent from 1990. This employment growth is higher than the Statewide average (9 percent) (United States Census Bureau, www.census.gov/epcd/cbp/map/99data/06/059.txt).

Table 3.1-B provides a snapshot of socio-economic characteristics for the three study area cities, Orange County, and the State as reported in the last United States Censuses. Median household income in Orange County in 1997 was $49,583, about 25 percent above the Statewide average, and the proportion of persons living in poverty (11 percent) in Orange County was lower than the State average.

Table 3.1-B: OCG Study Area Cities, Regional and State Demographic Summaries

Characteristic	Study Area Cities			Regional	State
	Placentia	Anaheim	Yorba Linda	Orange County	California
Median Household Income	$62,803	$47,122	$89,593	$58,820	$47,493
Persons Below Poverty	8.7%	14.1%	3.0%	14.1%	14.2%
Employed	24,586	152,255	31,111	1,338,838	14,718,928

Source: United States Census (2000).

The County's profile of business establishments and employment is presented in Table 3.4-E (in Section 3.4), with comparisons to the State economy. The primary economic sectors in the OCG project area include manufacturing, retail trade, and professional/technical services.

Employment Projections. According to the Southern California Association of Governments (SCAG) *2004 Regional Transportation Plan* (RTP) Growth Forecast, total employment in Orange County is projected to increase to two million jobs between 2000 and 2030. This represents an average annual increase of 13,600 jobs (or 0.9 percent) compared to an annual average increase of 32,500 jobs (or 6.7 percent) during the 1972 to 2000 period.

Orange County is projected to increase its share of services employment over the 2000 to 2030 forecast period. The services sector share of total Orange County employment is projected to increase to 29 percent in 2030, while the manufacturing sector is forecast to decline to 14 percent in 2030. An analysis of potential impacts of the proposed OCG project relating to growth is provided later in Section 3.2, Growth.

3.1.1.4 Public Services

The study area for public services was generally defined as a band approximately 6.5 kilometers (km) (4 miles [mi]) wide, centered on the existing BNSF railroad right-of-way.

Libraries. The Placentia Library District has a branch at 411 E. Chapman Avenue, as seen on Figure 3.1-2, Public Services. The library is open 39 hours per week, five days per week and offers a full range of public library services (e.g., adult and children's programs, literacy programs). The library meets current demands for service in this part of the City.

The City of Anaheim libraries nearest the study area are Sunkist Branch Library at 901 S. Sunkist Street and the Canyon Hills Branch Library at 400 Scout Trail, both over 3 km (2 mi) from the project area. The Canyon Hills Branch Library operates 61 hours per week, six days per week, and the Sunkist Branch Library is open 51 hours per week, six days a week. Both libraries offer children's and adult services and programs, have computer access, and meet current demands for service.

The City of Yorba Linda and the Orange County Public Library system do not have libraries near the OCG study area.

Schools. The Placentia-Yorba Linda Unified School District (PYLUSD) encompasses 116.5 square kilometers (45 square miles), including the OCG project limits, and serves Placentia, Yorba Linda, and parts of Anaheim, Brea, Fullerton, and unincorporated County of Orange territory. The PYLUSD offices are located just north of El Camino Real Continuation High School at 1301 E. Orangethorpe Avenue. El Camino Real Continuation High School is located in the OCG project study area at 1351 E. Orangethorpe Avenue, near Jefferson Street. Glenview Elementary is located at 1775 Glenview and Esperanza High School is located at 1830 N. Kellogg Drive in Anaheim. Valencia High School is located at 27801 North Dianason Drive. These PYLUSD facilities are shown on Figure 3.1-2.

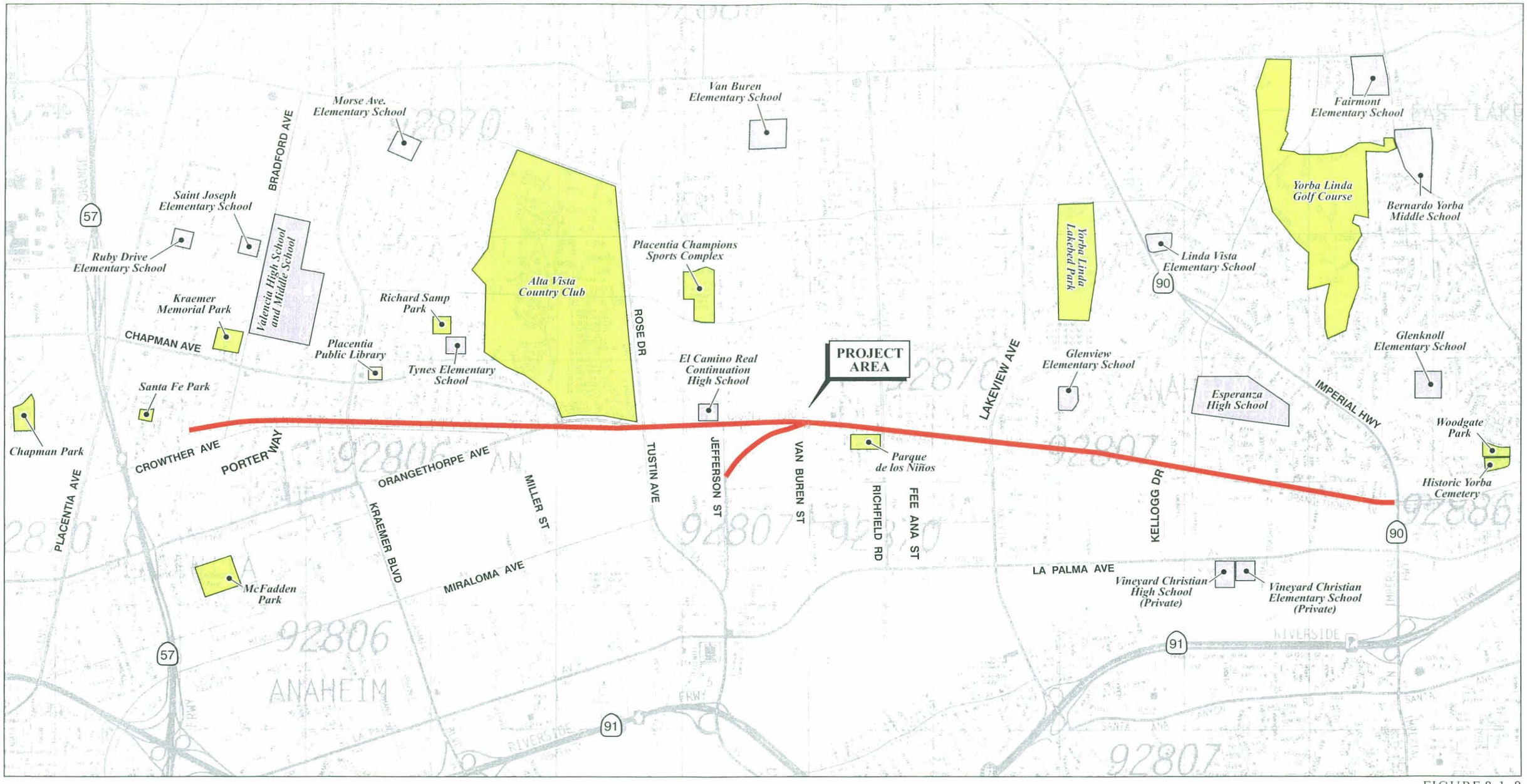


FIGURE 3.1-2

LEGEND

- Project Alignment
- Library
- School
- Park

N

0 1000 2000 FEET

0 304.5 609.6 METERS

SOURCE: THE THOMAS GUIDE, ORANGE COUNTY, 2001.

I:\OTG130\G\Public Services3-1-2.cdr (8/14/06)

Buses operated by the PYLUSD transport students to and from school across the following intersections along the Orangethorpe Corridor within the project area: Kraemer Boulevard, Orangethorpe Avenue, Jefferson Street, Van Buren Street, Richfield Road, Lakeview Avenue, and Kellogg Drive. During school sessions, the existing railroad tracks between Placentia Avenue (west of the OCG project limits) and Kellogg Drive are crossed by PYLUSD school buses approximately 270 times per day (PYLUSD, March 2002).

Private schools located in the OCG project vicinity are also identified on Figure 3.1-2. These schools do not have public recreational resources.

Recreational Resources. Several recreational resources are located in the vicinity of the OCG project alignment as listed below on Table 3.1-C. The schools in the project area typically have play areas or play fields, which are generally available for public use outside school hours. However, the Continuation High School is a closed (locked) campus and, therefore, the basketball courts on the north side of the school building are not available for public use. One park (Parque de Los Niños) is located immediately adjacent to the BNSF railroad right-of-way at 1701 Atwood Avenue near the southwest corner of Orangethorpe and Richfield Road, as shown on Figure 3.1-2. The park has a community center, swimming pool, baseball fields, and basketball courts. The park is not located within the disturbance limits for the OCG alternatives; however, it is immediately adjacent to the existing BNSF railroad right-of-way. An existing 1.8-meter (six-foot)-tall wall separates the park from the railroad. The potential impacts of the OCG alternatives on Parque de los Niños are discussed later in Section 3.1.3, Section 4(f) Resources. None of the remaining parks listed in Table 3.1-C are close enough to the BNSF tracks to be affected by the proposed OCG Alternatives. Therefore, they are not discussed further in this section.

Solid Waste Management. The Integrated Waste Management Department (IWMD) of Orange County owns and operates three active sanitary landfills: Frank R. Bowerman Landfill in Irvine, Prima Deshecha Landfill in San Juan Capistrano, and Olinda Alpha Landfill in Brea. Waste collected in Orange County goes to any one of these landfills; however, solid waste collected in the OCG project vicinity is deposited primarily at the Olinda Alpha Landfill. Solid waste haulers provide solid waste pickup service to the jurisdictions within the project study area. The haulers currently under contract to each city are Anaheim Disposal, Inc., Placentia Disposal, and Yorba Linda Disposal.

Transit. Public bus service is provided throughout the study area by the Orange County Transportation Authority (OCTA). Table 3.1-D lists the OCTA bus routes that operate near the project study area and the frequency of service.

Table 3.1-C: Recreation Resources in the Orange County Gateway Project Vicinity

Resources[1]	Type
Alta Vista Country Club	Golf course/private
Chapman Park	Public park
El Camino Real Continuation High School	Public school
Esperanza High School	Public school
Glen Knoll Drive Elementary School	Public school
Glenview Elementary School	Public school
Historic Yorba Cemetery	Historic site/park
John O. Tynes Elementary School	Public school
Kraemer Memorial Park	Public park
McFadden Park	Public park
Parque De Los Niños	Public park
Placentia Public Library	Public facility
Placentia Champions Sports Complex	Public park
Richard R. Samp Park	Public park
Santa Fe Park	Public park
Woodgate Park	Public park
Yorba Linda Country Club	Golf course/private
Yorba Linda Lake	Private property

Source: Thomas Brothers Guide, 2005.
[1] Listed as they appear, east to west, along the project alignment.

Table 3.1-D: OCTA Bus Routes and Service Levels in the Study Area

Route	Study Area Location	Bus Stop Location	Frequency of Service (in minutes)	
			AM (6:00 a.m.– 9:00 a.m.)	PM (3:00 p.m.– 6:00 p.m.)
24	Chapman Ave.	Stop on Orangethorpe	30	30
30	Orangethorpe Ave.	Stop on Crowther	30	30
38	La Palma Ave.	South of SR-91 and study area; no stops in study area	7	7
53	Placentia Ave.	Northwest of project area on Orangethorpe; no stops in study area	12	20
59	Kraemer Blvd.	Route 59 intersects Crowther and stops at Orangethorpe	20	12
71	Tustin Ave.	Route 71 intersects Orangethorpe; no stops in the study area	30	30
131	Lakeview Ave.	Route 131 intersects and has a stop at Orangethorpe	60	60
167	Miller St.	Route 167 crosses Orangethorpe at Miller and has no stops in the study area	30	30
213	Chapman Ave./ Kraemer Blvd.	Route 213 intersects Orangethorpe and has a stop at Kraemer and Chapman, north of the study area	3 daily trips	3 daily trips
410	Tustin Ave.	Route 410 is south of study area along Miraloma Avenue	3 daily trips	4 daily trips

Source: OCTA (April 22, 2002).

3.1.1.5 Impacts to Existing and Future Land Uses, Socio-economics, and Public Facilities

Permanent Impacts

The potential permanent direct and indirect impacts of the alternatives related to land use, socio-economics, and public facilities are described in the following sections. Impacts common to all three build alternatives are also described in this section. Impacts to parks and public recreation resources are discussed later in Section 3.1.3.4, Impacts to Section 4(f) Resources.

Alternative A. The No Build Alternative would not involve property acquisition or alteration of existing or planned land uses or public facilities. Therefore, permanent direct or indirect impacts to land use, socio-economics, and public facilities are not anticipated under the No Build Alternative.

Alternative B.

Future Land Uses. Alternative B could directly and permanently affect the future land use developments, listed in Table 3.1-A, because several parcels located between Jefferson Street

and Van Buren Street north of Orangethorpe Avenue would be partially acquired for this alternative.

The potential full and partial permanent and temporary acquisitions under Alternative B are summarized in Table 3.1-E. More detailed discussion of the property acquisition under Alternative B is provided later in Section 3.4, Community Impacts.

Table 3.1-E: Summary of Property Acquisitions under Alternatives B, C, and D

	Permanent Acquisitions				Temporary Acquisitions	
	Full Parcels		Partial Parcels			
	Number of Parcels	Size (square feet)	Number of Parcels	Size (square feet)	Number of Parcels	Size (square feet)
Alternative B	Total: 16 Residential: 5 Nonresidential: 11	873,222	Total: 44 Residential: 15 Nonresidential: 29	188,726	73	73,786
Alternative C	Total: 19 Residential: 5 Nonresidential: 14	1,301,643	Total: 61 Residential: 19 Nonresidential: 42	197,893	61	50,711
Alternative D	Total: 78 Residential: 32 Nonresidential: 46	2,216,774	Total: 34 Residential: 6 Nonresidential: 28	493,926	1	13,151

Source: *Preliminary Engineering Report* (KFM Engineering 2004) and LSA Associates, Inc., 2006.

Socio-economics. Alternative B would require the full acquisition of 16 parcels with existing commercial, industrial, and residential land uses. Relocation of the commercial uses would be possible within the study area because other property in this area is underutilized. Six residential properties would be acquired. High housing costs in Orange County may make relocation efforts difficult for displaced residents under Alternative D and could affect the availability of comparable housing for displaced residents in the project area. This would result in a permanent, direct impact related to housing under Alternative D.

Solid Waste Management. The Build Alternatives are not intended to support growth beyond what is already identified in regional forecasts. Further, Alternatives B, C, and D would not specifically accommodate new development beyond what is assumed in the applicable local General Plans. Therefore, Alternative B would not affect the existing or currently planned demand for solid waste services in the OCG study area.

Olinda Alpha Landfill in the City of Brea is the closest facility to the project site and would most likely receive waste generated by the construction and operation of project. Each build alternative would result in some level of construction debris and involve some replacement of existing roadway, which would result in demolition debris. Construction and demolition debris could be recycled as road base material or as fill. In addition, the California Integrated Waste

Management Board (CIWMB) has a program to recycle and reuse construction and demolition debris. A list of businesses in Orange County that offer recycling is found on the CIWMB Web site.

The estimated amount of excess excavated material under Alternative B is 1.6 million cubic meters (mcm) (2.1 million cubic yards [mcy]). Excavated materials could potentially be reused within the OCG project or used in other projects requiring fill throughout the region or as daily cover at the existing Orange County landfills. Therefore, there would not be permanent, direct impacts to solid waste management facilities or waste hauling services as a result of Alternative B.

Schools. Implementation of Alternative B would not result in permanent impacts on school facilities or services because no schools are located within or adjacent to the project disturbance limits. The railroad lowering would attenuate some of the existing train noise in the OCG study area, resulting in a beneficial impact, as described in Section 3.14, Noise and Vibration. Another beneficial effect of Alternative B would be safer and more efficient school bus movements north and south across the railroad as a result of the separation of the road and railroad facilities and movements.

Libraries. For Alternative B, the City of Anaheim indicated that there may be increased use of the Sunkist Hill and Canyon branch libraries due to the improved ease of access across the railroad on Orangethorpe Avenue under Alternative B (Scoping Summary Report, LSA 2002). These libraries, however, are situated southeast and southwest of the project study area, not directly north and south, where traffic flow improvements might be felt. Similarly, although Alternative B would reduce delay and congestion in the area, it is not expected to result in an appreciable increase in the use of the Placentia Public Library in the OCG study area. Additionally, several existing roads provide access to these libraries. The proposed project is not near a Yorba Linda or County of Orange Library facility and is not anticipated to affect library services in those jurisdictions. Therefore, implementation of Alternative B would not create a need to expand library facilities or increase staffing.

Alternative C.

Socio-economics. The anticipated full and partial permanent and temporary property acquisitions under Alternative C are summarized in Table 3.1-E. Alternative C would require acquisition of five residential properties and 14 commercial and industrial properties. It is anticipated that displaced industrial and commercial uses would be relocated in the general area based on current underutilization of some properties in this area. High housing costs in Orange County may make relocation efforts difficult for displaced residents under Alternative C and could affect the availability of comparable housing for displaced residents in the project area. This would result in a permanent, direct adverse impact related to housing under Alternative C.

Solid Waste Management. The potential permanent direct impacts of Alternative C would be similar to the impacts described in the solid waste discussion under Alternative B. The estimated amount of excavated material under Alternative C is 1.15 mcm (1.5 mcy). Excavated materials would potentially be reused within the OCG project or used in other projects requiring fill in the region or as daily cover at the existing Orange County landfills. Therefore, Alternative C would not result in direct, permanent impacts to solid waste management facilities or waste hauling services.

Schools. Implementation of Alternative C would not result in permanent impacts on school facilities or services because no schools are located within or adjacent to the project disturbance limits. The railroad lowering would attenuate some of the existing train noise in the study area, resulting in a beneficial impact, as described in Section 3.14, Noise and Vibration. Another beneficial effect of Alternative C would be safer and more efficient school bus movement north and south across the railroad as a result of the separation of the road and railroad facilities and movements.

Libraries. For Alternative C, the City of Anaheim indicated that there could be increased use of the Sunkist Hill and Canyon branch libraries due to the improved ease of access across the railroad on Orangethorpe Avenue under Alternative C (*Scoping Summary Report,* LSA 2002). These libraries, however, are situated southeast and southwest of the project study area, not directly north and south, where traffic flow improvements might be felt. Similarly, although Alternative C would reduce delay and congestion in the area, it is not expected to result in an appreciable increase in the use of the Placentia Public Library in the OCG study area. Additionally, several existing roads provide access to these libraries. Therefore, implementation of Alternative C is not anticipated to create a need to expand library facilities, increase staffing, or result in a direct impact.

Alternative D.

Future Land Uses. Alternative D would potentially affect the proposed future ETCO development, listed in Table 3.1-A, because land use acquisition is required at Jefferson Street and Van Buren Street to accommodate the overcrossings. The Santa Fe Courtyard project would not be affected by Alternative D.

Socio-economics. The anticipated full and partial permanent and temporary property acquisitions under Alternative D are summarized in Table 3.1-E. Alternative D would require acquisition of 32 residential properties and 43 nonresidential parcels consisting of commercial, open space, and industrial land uses. High housing costs in Orange County may make relocation efforts difficult for displaced residents under Alternative D and could affect the availability of comparable housing for displaced residents in the project area. This would result in a permanent, direct impact related to housing under Alternative D. Relocation of the commercial uses would be possible within the study area because other property in this area is underutilized.

parcels along the railroad are currently underutilized due to hampered access related to the existing at-grade crossings. Although these properties would be used temporarily as construction staging areas, the industrial land use designation for these properties would not change. On completion of the construction of Alternative B, the construction staging area uses would be removed, and industrial land uses would likely reoccupy these properties. Refer to Section 3.4, Community Impacts, for further discussion of temporary impacts related to business and neighborhood disruptions under Alternative B.

Alternative C

Direct temporary construction-related business and neighborhood disruptions would occur during construction of Alternative C. Construction activity could affect any one block for up to three years and two months. Construction staging areas for Alternative C are similar to those described above for Alternative B. Refer to Section 3.4, Community Impacts, for further discussion of temporary impacts related to business and neighborhood disruptions under Alternative C.

Alternative D

Direct temporary construction-related business and neighborhood disruptions would occur during construction of Alternative D. Construction of the grade separations would be phased over a period of approximately 13 years and 6 months. Construction staging areas for Alternative D would be located near each grade separation project and would be determined as property is acquired for each of the crossings and as construction staging is implemented. Temporary indirect construction-related business and neighborhood disruptions would occur with implementation of Alternative D. Refer to Section 3.4, Community Impacts, for further discussion of temporary impacts related to business and neighborhood disruptions under Alternative D.

Temporary Impacts Common to All Build Alternatives

Existing and Future Land Uses. Construction of the Build Alternatives would not result in temporary indirect impacts associated with existing and future land uses.

Libraries. Construction of Alternative B, C, or D could result in temporary indirect impacts to library services. The City of Placentia Library District anticipates that access to its facility (located at 411 E. Chapman Avenue) from south of the railroad tracks would be difficult during construction, requiring patrons to use alternate routes to access library services at this location.

Schools. Construction of the three Build Alternatives would result in temporary construction-related effects (impaired access, noise, dust, etc.) to El Camino Real Continuation High School and the PYLUSD property.

Solid Waste Management. Construction of the three Build Alternatives would not create temporary indirect impacts to sanitary landfill facilities. The Build Alternatives would result in the generation of construction debris and demolition debris, some of which could be recycled as roadway base material or as fill or used as daily fill at landfills.

Transit. Construction of all three Build Alternatives could temporarily indirectly affect transit operations by causing delays due to detours and lane closures at the time of construction.

3.1.1.6 Avoidance, Minimization, and/or Mitigation Measures

LU-1 The OCTA Project Manager will coordinate with the Cities of Placentia and Anaheim and the County of Orange to amend the applicable General Plan Land Use designations so that the parcels acquired permanently for the preferred Orange County Gateway (OCG) project are consistent with the transportation uses under that project.

LU-2 The OCTA Resident Engineer will require the construction contractors to comply with State and local waste reduction and recycling regulations to reduce the amount of construction-generated waste going to a landfill.

LU-3 The OCTA Resident Engineer will require the construction contractors to ensure that all waste haulers use existing designated local haul routes to potential destinations such as the Olinda Alpha Landfill in the City of Brea, Frank R. Bowerman Landfill in Irvine, or other environmentally cleared sites. Potential truck haul routes for excavated material and demolition and construction debris have been identified by Integrated Waste Management Department of Orange County along Imperial Highway, Lakeview Avenue, and Kraemer Boulevard south to State Route 91 (SR-91).

3.1.1.7 Conclusions

Implementation of Mitigation Measure LU-1 would reduce impacts of Alternatives B, C, and D related to General Plan land use designations. Mitigation Measures LU-2 and LU-3 would reduce the adverse impacts of the construction of Alternatives B, C, and D related to solid waste.

In addition, Mitigation Measures CI-1 to CI-7, provided in Section 3.4, Community Impacts, would substantially mitigate adverse impacts of Alternatives B, C, and D related to right-of-way and construction-related disruptions. Mitigation Measures TRA-1 to TRA-4 provided later in Section 3.6, Traffic Transportation/Pedestrian and Bicycle Facilities, will substantially reduce the permanent adverse traffic impacts under Alternative D and the construction-related adverse traffic impacts under Alternatives B, C, and D.

3.1.2 CONSISTENCY WITH STATE, REGIONAL AND LOCAL PLANS

3.1.2.1 Methodology

This section evaluates any potential conflicts the proposed OCG project may have with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project or any conflicts with any applicable transportation plan, Habitat Conservation Plan (HCP), or Natural Community Conservation Plan (NCCP).

3.1.2.2 General and Community Plans

The OCG corridor traverses the Cities of Anaheim and Placentia and parts of unincorporated Orange County. The General Plans for each of these jurisdictions, including the City of Yorba Linda because it is part of the project study area, serve as a policy document describing in broad terms the type and distribution of land uses necessary to support a projected population, usually within a 20-year planning horizon. General Plans typically contain: goals and objectives that establish the framework of desired land uses within specified planning areas in a city or County, and programs or policies intended to achieve those goals in the short and long term. Each agency's General Plan establishes goals and policies for enhancing mobility to provide for efficient movement of people and goods and to provide a transportation system that supports the planned land uses in the Circulation Element. Key goals and policies applicable to the OCG project are included in these local jurisdictions' General Plan. Figure 3.1-1 (Sheets 1 to 8) show the General Plan land use designations within the OCG project study area.

County of Orange. The County coordinates with several transportation planning agencies, including Caltrans (State), the OCTA, the Transportation Corridor Agencies (TCA), and Orange County cities on various studies relating to freeway, tollway, and transportation corridor planning, construction, and improvement to facilitate the planning and implementation of an integrated Countywide circulation system. In addition, the County coordinates circulation planning with the OCTA for the purpose of promoting existing and future transit system programs. One policy ensures that all intersections within the unincorporated portion of Orange County maintain a peak hour level of service (LOS) D, according to the County Growth Management Plan Transportation Implementation Manual.

The County of Orange General Plan was adopted in February 2000 and contains the following transportation goals and policies relevant to the OCG project:

1. Provide a circulation (arterial highway) plan that is integrated with that of adjacent jurisdictions; provide a circulation plan that facilitates the safe, convenient, and efficient movement of people and goods throughout unincorporated areas of the County
2. Manage peak hour traffic congestion to achieve an acceptable LOS on existing and future circulation plan facilities in the unincorporated areas of the County

City of Anaheim. The City of Anaheim General Plan was comprehensively updated in May 2004. The General Plan provides area-specific policy direction through community policy areas. The

Solid Waste Management. The potential permanent direct impacts of Alternative D would be similar to the impacts described in the solid waste management discussion under Alternative B. However, the estimated amount of excavated material for Alternative D would be nominal compared with Alternatives B and C. Those excavated materials would be reused in the project or used for other projects requiring fill or as daily cover at area landfills. Alternative D would not affect solid waste management facilities or waste hauling services.

Schools. The access road proposed in Alternative D would not directly affect El Camino Real Continuation High School and would require no right-of-way from the school. A small part of the PYLUSD property north of the school and north of Richfield Channel would be acquired for Alternative D. Mitigation Measures CI-4 and CI-5, provided later in Section 3.4.2, Relocations, would minimize this impact.

Permanent Impacts Common to All Build Alternatives

Existing Land Uses. Existing land uses would be permanently and directly affected by the Build Alternatives, each of which would require acquisition of commercial, residential, and industrial parcels for use in a transportation project. Table 3.1-E, provided earlier, summarizes the numbers, locations, and types of acquisitions required under each Build Alternative. Mitigation Measure LU-1, later in this section, would minimize the effects of these property acquisitions under all three Build Alternatives.

Transit. Implementation of the Build Alternatives would not create a need to increase OCTA facilities and services, nor would it adversely impact transit services. The Build Alternatives would improve traffic flow, resulting in a beneficial long-term effect on transit services within the study area.

Temporary Impacts

Alternative A

Direct and indirect temporary impacts are not anticipated under Alternative A. Construction-related business and neighborhood disruptions would not occur with the No Build Alternative.

Alternative B

Direct temporary construction-related business and neighborhood disruptions would occur during construction of Alternative B. Construction activity may affect any one block for up to four years and two months.

Three industrial properties would be fully acquired temporarily for construction staging operations under Alternative B. These properties are located south of the railroad tracks at the intersections of Jefferson Street/Orangethorpe Avenue and Van Buren Street/Orangethorpe Avenue. The displaced industrial properties could be potentially relocated within the OCG project area, because many of the

project area is within the Canyon policy area. The Canyon policy area generally spans the north side of State Route 91 (SR-91) between State Route 57 (SR-57) and Imperial Highway. This area is a regional employment center consisting of office, industrial, and commercial uses and is further regulated by the Northeast Area Specific Plan. General Plan goals applicable to the Canyon policy area include promoting development that integrates with and minimizes impacts to surrounding land uses.

The Circulation Element of the Anaheim General Plan specifically references the OCG project and supports the development of safe rail freight movement while minimizing impacts on residents and motorists. This element also supports a system of freight movement that minimizes conflicts with street circulation, supports grade separations for major rail crossings, and coordinates with rail service providers to improve the aesthetics (e.g., landscaping) along rail corridors and to ensure proper maintenance of rail corridors and rights-of-way.

City of Placentia. The City of Placentia General Plan Land Use Element was adopted in 1988. The Land Use Element supports development projects that are consistent with the surrounding land uses. The General Plan Circulation Element was also adopted in 1988. The goal of the Circulation Element is to establish an arterial highway system that can provide safe, convenient, and efficient movement of people and goods within and through the City. The City supports linking arterial highways with adjoining jurisdictions so that projected traffic flows safely and efficiently through the City and ensures adequate capacity to accommodate the traffic generated by land uses within the City. The City complies with the Countywide Congestion Management Program (CMP) to reduce traffic congestion on the City's controlled arterial highway system and maintain LOS E or better at intersections.

City of Yorba Linda. The City of Yorba Linda General Plan was adopted on December 6, 1993, and includes goals to develop a circulation system that meets the needs of current and future residents of the City, has adequate capacity for projected future traffic demands at acceptable LOS, and facilitates the safe and efficient movement of people and goods throughout the City. Another goal supports development of a network of regional roadway facilities that ensures the safe and efficient movement of people and goods from within the City to areas outside its boundaries and accommodates the regional travel demands of areas outside of the City.

3.1.2.3 Regional Plans

SCAG's Regional Comprehensive Plan. SCAG's *Regional Comprehensive Plan* (RCP), *Regional Transportation Plan* (RTP), and *Regional Transportation Improvement Program* (RTIP) support transportation planning that meets the public need for improved access and for safe, comfortable, convenient, faster and economical movements of people and goods while preserving the existing system and the environment. The RTP includes a policy to mitigate environmental impacts to an acceptable level. Implementing freight improvements, advanced transportation technology, airport and seaport ground access, and traveler information services are RTP priorities. Maintaining and operating the existing transportation system is a priority over expanding capacity.

The proposed project is shown in the 2008 *Regional Transportation Plan* (RTP) as "BNSF railway line (Placentia to Imperial Highway) along Crowther/Orangethorpe. Grade separation corridor improvements at 11 arterial streets including preliminary engineering, program management, project reports, environmental impact report, right-of-way & construction and crossing closure/pedestrian bridge." The page from the 2008 RTP which includes this citation is provided in Appendix H.

Habitat Conservation Plan and Natural Community Conservation Plan. The OCG project study area is not included as part of any existing or planned HCP or NCCP. The project vicinity is urban and mostly built out.

3.1.2.4 Impacts

Permanent Direct and Indirect Impacts.

Alternative A. Alternative A is not consistent with the local jurisdictions' General Plans, the RCP or the RTP because it does not propose any transportation improvements to improve rail and surface transportation in this area.

All Build Alternatives (General Plan Consistency). The intent of the OCG project is to accomplish the project objectives listed in Section 1.2 (Project Purpose). By accomplishing the project objectives, the OCG project generally supports and is consistent with the transportation goals and policies contained within the General Plans for the Cities of Anaheim, Placentia, and Yorba Linda and the County of Orange; and SCAG's RCP and RTP. The General Plan goals and policies support better mobility of traffic at intersections by improving LOS to avoid traffic delays and reduce potential hazards to motorists. The City of Anaheim specifically references the OCG project and supports safe railroad freight operations within its jurisdiction. The OCG project, once implemented, would improve the overall mobility for motorists and pedestrians traveling within the project study area.

All Build Alternatives. A grade separation project along the Orangethorpe Corridor within the City of Placentia is listed in the adopted 2008 RTIP as Project ID number ORA000147. Therefore, the Build Alternatives are consistent with the RTIP.

SCAG's RCP, RTP, and RTIP. The OCG project is referenced in the RTP but is not specifically referenced in the RCP. All three Build Alternatives, however, would contribute to improving overall mobility for motorists traveling within the project study area, which is consistent with the policies in the SCAG RCP. Because the proposed project is included in the RTP and would improve mobility in the project study area consistent with the SCAG RCP, the project is considered to be consistent with the RCP and RTP.

3.1.2.5 Avoidance, Minimization, and/or Mitigation Measures

Because Alternatives B, C, and D would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project, no mitigation measures would be required.

3.1.2.6 Conclusions

There are no land use impacts related to potential conflicts with any existing land use, policy, or regulation plans in the project area as a result of Alternatives B, C, and D.

3.1.3 RESOURCES EVALUATED RELATIVE TO THE REQUIREMENTS OF SECTION 4(F)

The following parks and recreation discussion is summarized from the resources evaluated relative to the requirements of Section 4(f) (LSA Associates, Inc., January 2009) provided in Appendix D of this EIS.

3.1.3.1 Regulatory Setting

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 United States Code (USC) 303, declares that ". . . it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites."

Section 4(f) specifies that the Secretary [of Transportation] may approve a transportation program or project . . . requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, state, or local significance (as determined by the federal, State, or local officials having jurisdiction over the park, area, refuge, or site) only if:

1. there is no prudent and feasible alternative to using that land; and
2. the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

Section 4(f) further requires consultation with the United States Department of the Interior and, as appropriate, the involved offices of the United States Departments of Agriculture and Housing and Urban Development in developing transportation projects and programs that use lands protected by Section 4(f). If historic sites are involved, coordination with the State Historic Preservation Officer is also needed.

3.1.3.2 Methodology

To determine which Section 4(f) resources would be potentially used by the proposed OCG project, all park and recreational facilities within the OCG study area were identified. The OCG study area

for Section 4(f) resources was defined as a band approximately 0.8 km (0.5 mi) wide centered on the existing BNSF railroad right-of-way.

Of the many facilities identified, those that met the following criteria were eliminated from further consideration: (1) privately owned, (2) publicly owned but do not permit public recreation, and (3) properties greater than 0.8 km (0.5 mi) from the BNSF alignment. The resources that met one or more of the three elimination criteria were determined not to be Section 4(f) resources and were determined not to be subject to protection under the requirements of Section 4(f); therefore, they were not analyzed in the evaluation of Section 4(f) resources described here. The Section 4(f) resources within the study area are described below in terms of: (1) their existing characters and values as Section 4(f) resources and/or future park plan alignment, and (2) potential direct and constructive use of these resources by each of the OCG Build Alternatives.

Existing conditions were assessed through site visits, discussions with local agency representatives who have jurisdiction over the resources, and review of existing planning documents. Potential direct effects to each resource were identified using Geographic Information System (GIS) technology, which compared the boundaries of each resource with right-of-way requirements identified for each of the alternatives under consideration. Constructive use effects, such as noise and vibration, air quality, visual resources, and property access were assessed in concert with those individual technical studies conducted for the proposed OCG project.

Review of archival records identified properties/districts already listed in the National Register of Historic Places (National Register) or previously determined eligible for inclusion in the National Register. Previously unrecorded historic resources were evaluated, and preliminary determinations were made as to a property's eligibility for the National Register. Final Determinations of Eligibility (DOE) for these resources will be made through consultation with the Office of Historic Preservation (OHP) and through the Section 106 process. Caltrans and the Federal Highway Administration (FHWA) proposed that a Finding of No Adverse Effect without Standard Conditions is appropriate and sought the State Historic Preservation Officer's (SHPO's) concurrence in this finding, in a transmittal from FHWA to the SHPO dated June 30, 2005, pursuant to 36 CFR 800.5(b). After a review period of more than 60 days, SHPO had not yet provided formal concurrence with the Finding of No Adverse Effect without Standard Conditions and the Late Discovery Plan. Therefore, Caltrans is proceeding forward with its review of the environmental documentation for this project without formal SHPO concurrence, as the mandatory SHPO review period of 30 days under the 2004 PA was met.

In accordance with Section 4(f) guidance (FHWA Section 4(f) Policy Paper, March 1, 2005), the City of Placentia, the local agency with jurisdiction over Parque de los Niños, was consulted for guidance and concurrence on the activities, features, attributes, and significance of that Section 4(f) resource and the potential impacts of the OCG Build Alternatives on that park. Appendix D contains a letter from the City of Placentia Development Services Department acknowledging the potential impacts of the OCG Build Alternatives on the park, the necessary mitigation, and a determination that "...the proposed OCG Build Alternatives will not result in direct or constructive use impacts at the Parque de los Niños."

3.1.3.3 Affected Environment

Only one Section 4(f) Resource, Parque De Los Niños, was identified in the OCG study area. This park is shown on Figure 3.1-3. It is a 1.5-hectare (3.7-acre) community park located at 1701 Atwood Avenue and owned by the City of Placentia. As shown in Figure 3.1-3, this resource is immediately adjacent to the BNSF railroad right-of-way. Currently, it is affected by both vehicular and train noise due to its proximity to Richfield Road and the BNSF railroad. An existing 1.8-meter (m) (6-foot [ft]) high wall is located along the northern boundary of the facility, adjacent to the railroad right-of-way.

Existing facilities and activities at this park include the L. Jack Gomez Community Center, a swimming pool, baseball and softball fields, a playground, handball/racquetball and basketball courts, and off-street parking. Access to the park is via Atwood Avenue and Vicente Avenue. Pedestrian access to this resource is via a walkway over the Atwood Channel, south of the park.

3.1.3.4 Impacts to Section 4(f) Resources

Permanent Impacts

Alternative A

The No Build Alternative would not alter the existing setting at, and would not result in actual or constructive use of, Parque de los Niños because Alternative A does not include any project construction or features in this area.

As described in the *Noise and Vibration Analysis* (LSA Associates, Inc., January 2006), the 2030 vehicular noise level at this resource (identified as Receptor No. 108) associated with the No Build Alternative is 65 dBA L_{eq}, which is 1 dBA higher than the existing noise level. This noise level was projected from the ball fields, which are the closest activity sites to vehicular noise sources on Richfield Road to the east. The existing and 2030 No Project Alternative noise levels are within the FHWA noise abatement criteria of 67 L_{eq} for parklands. The future with No Build Alternative vehicular noise levels would not exceed the 67 L_{eq} for parkland and, therefore, would not impair the activities, features, or attributes that qualify this resource for protection under Section 4(f). Therefore, the No Build Alternative would not result in a constructive use of this park due to vehicular noise.

The ball fields would continue to be affected by existing rail noise and train whistles under Alternative A. Under the No Build Alternative, the 2030 noise level associated with rail activities is estimated to be 75 dBA L_{dn} at 30.5 m (100 ft) from the tracks, exceeding the 65 L_{dn} exterior noise standard established by the Federal Transit Administration (FTA) and the Federal Railroad Administration (FRA). This noise level is 3 dBA L_{dn} higher than the existing noise level of 67 dBA L_{dn} at 100 feet. This increase in the noise level at this park is associated with the expected increase in train operations in the future.

Under the No Build Alternative, there would be no change in groundborne train vibration from existing conditions. As discussed in Section 3.14, Noise and Vibration, existing properties along the BNSF railroad, including this resource, are currently exposed to 71 to 79 velocity in decibels (VdB) groundborne vibration from train operations. The VdB scale relates to a community response to vibration. Although these levels exceed the 75 VdB FTA vibration criteria for frequent events (more



FIGURE 3.1-3

1. PARKING
2. HANDBALL COURT
3. COMMUNITY CENTER
4. POOL
5. PLAY EQUIPMENT
6. BALLFIELD
7. PEDESTRIAN WALKWAY/ENTRANCE

SOURCE: EAGLE AERIAL, 2004.

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Orange County Gateway

Parque de los Niños

than 70 trains per day), established for institutional uses with primarily daytime uses, they are within the FTA criterion of 83 VdB for infrequent events (fewer than 70 trains per day). These vibration levels would remain the same for the No Build Alternative, since this alternative maintains the railroad tracks in their at-grade existing configuration. Because there would be no change in vibration, the No Build Alternative would not impair the activities, features, or attributes that qualify this resource for protection under Section 4(f). Therefore, the No Build Alternative would not result in any constructive use at this park related to vibration.

An existing view of this park and the existing rail facility is shown in Figure 3.1-4. The quality of views is not a contributing element to the activities, features, or attributes that qualify this resource for protection under Section 4(f). Given the resource's location within an urbanized area and adjacent to existing rail activity, implementation of the No Build Alternative would not alter its viewshed. Because the No Build Alternative would not alter the existing viewshed, it would not impair the activities, features, or attributes that qualify this resource for protection under Section 4(f). Therefore, the No Build Alternative would not result in a constructive use of this park related to visual resources.

The results of the *Air Quality Analysis* (LSA Associates, Inc., November 2006) showed no exceedances of the federal or State carbon monoxide (CO) standards within the OCG study area, with or without the OCG project. Potential air quality impacts would not impair the activities, features, or attributes that qualify the Parque de los Niños for protection under Section 4(f). Therefore, the No Build Alternative would not result in a constructive use of this park related to air quality.

Alternative B

Based on the preliminary engineering, Alternative B would not require the actual use of any land from this Park. The trench walls in Alternative B will extend from the ground surface to the bottom of the trench to a depth approximately 12 m (40 ft) below ground surface (bgs). This wall will include subsurface footings that would require subsurface easements under the Park property. Those footings will extend a short distance outside the BNSF right-of-way, under the site occupied by the Park. However, these footings will be at substantial depth and will not affect the existing surface uses at the Park. The depth of these footings would be well below any potential future uses at the Park and would not affect the ability of the City to make changes or provide other amenities at this Park in the future. The City of Placentia Municipal Code identifies required setbacks from property lines. In the event that additional structures are proposed in the Park, the R-1, Single-family Residential District setbacks would apply. It is unlikely that the City would propose any facilities or amenities at this Park in the future that would be close to the property line or that would be at depths that might affect or be affected by the footings for the Alternative B trench walls. Therefore, alternative B would not permanently incorporate parkland into a transportation facility within the meaning of 23 CFR Section 774.17 and would not result in the use of any land from this park.

The 2030 vehicular noise level at this resource associated with Alternative B is 65 dBA L_{eq}. This level is the same as the No Build Alternative and is 1 dBA higher than the existing noise level. This noise level was projected from the ball fields, which are the closest activity sites to vehicular noise sources on Richfield Road. This noise level is within the FHWA noise abatement criteria of 67 dBA



This is an existing view is from the community park (Parque de los Niños) near Richfield Road. It is also represents views from the park under Alternative A.



Views of train locomotives and cars/containers are eliminated with Alternative B as the tracks are within the trench.

FIGURE 3.1-4

Orange County Gateway

Parque de los Niños
Existing View and Alternative B View Simulation

L_{eq} for parklands. The vehicular noise levels under Alternative B would not exceed the 67 L_{eq} for parklands and, therefore, would not impair the activities, features, or attributes that qualify this resource for protection under Section 4(f). Therefore, Alternative B would not result in a constructive use of this park related to vehicular noise.

The noise level associated with rail activities would be reduced with Alternative B because the tracks would be lowered and within the trench. With implementation of this alternative, the rail noise level at this resource is estimated to be reduced by 7 dBA, to 58 dBA L_{dn}, at 30.5 m (100 ft) from the trench. This noise level is below the 65 dBA L_{dn} standard established by the FTA and FRA. Because the train noise levels under Alternative B would be below the 65 L_{eq} standard, this alternative would not impair the activities, features, or attributes that qualify this resource for protection under Section 4(f). Therefore, Alternative B would not result in a constructive use of this park related to rail noise.

Under Alternative B, freight and passenger trains would be located in a trench adjacent to Parque de los Niños. Lowering of the track profile to 12 m (40 f) below ground surface would result in a reduction in groundborne vibration of approximately 3 to 5 VdB from levels currently experienced with at-grade trains. Some of the vibration energy would be absorbed by the soils, and some energy would be reflected by the downward soil layers. Therefore, Alternative B would not result in rail vibration impacts on this Section 4(f) resource. Because the vibration would be reduced and below the standard, Alternative B would not impair the activities, features, or attributes that qualify this resource for protection under Section 4(f). Therefore, Alternative B would not result in a constructive use of this park related to vibration.

Given the location of this park within an urbanized area and adjacent to existing rail activity, implementation of the depressed railroad alignment associated with Alternative B would not alter its existing viewshed. Figure 3.1-4 depicts a existing view from within the park and the effects on this view associated with this alternative. Because Alternative B would not adversely alter the existing viewshed, it would not impair the activities, features, or attributes that qualify this resource for protection under Section 4(f). Therefore, Alternative B would not result in a constructive use of this park related to visual resources.

The results of the *Air Quality Analysis* showed no exceedances of the federal or State CO standards within the OCG study area, with or without the OCG project. Potential air quality impacts of Alternative B would not impair the activities, features, or attributes that qualify Parque de los Niños for protection under Section 4(f). In addition, the three Build Alternatives would result in a reduction in vehicle delay due to removal of at-grade crossings, which results in a reduction in criteria pollutants, as discussed in the air quality analysis in Section 3.13, Air Quality. Therefore, Alternative B would not result in a constructive use of this park related to air quality.

Alternative C

Based on the preliminary engineering, Alternative C would not require the direct (take) use of any land from this Park. The trench walls in Alternative C will extend from the ground surface to the bottom of the trench to a depth approximately 12 m (40 ft) bgs. This wall will include subsurface footings that would require subsurface easements under the Park property. Those footings will extend a short distance outside the BNSF right-of-way, under the site occupied by the Park. However, these

footings will be at substantial depth and will not affect the existing surface uses at the Park. The depth of these footings would be well below any potential future uses at the Park and would not affect the ability of the City to make changes or provide other amenities at this Park in the future. The City of Placentia Municipal Code identifies required setbacks from property lines. In the event that additional structures are proposed in the Park, the R-1, Single-family Residential District setbacks would apply. It is unlikely that the City would propose any facilities or amenities at this Park in the future that would be close to the property line or that would be at depths that might affect or be affected by the footings for the Alternative C trench walls. Therefore, Alternative C would not permanently incorporate parkland into a transportation facility within the meaning of 23 CFR Section 774.17 and would not result in the use of any land from this park.

The 2030 vehicular noise level associated with Alternative C at Parque de los Niños is 65 dBA L_{eq}. This level is the same as the No Build Alternative and is 1 dBA higher than the existing noise level. This noise level was projected from the ball fields, which are the closest activity sites to vehicular noise sources on Richfield Road. This noise level is within the FHWA noise abatement criteria of 67 dBA L_{eq} for parklands. The vehicular noise levels under Alternative C would not exceed the 67 L_{eq} for parklands and, therefore, would not impair the activities, features, or attributes that qualify this resource for protection under Section 4(f). Therefore, Alternative C would not result in a constructive use of this park related to vehicular noise.

The noise level associated with rail activities would be reduced with Alternative C, because the mainline railroad would be lowered and within the trench. With implementation of this alternative, the rail noise level at this resource is estimated to be reduced by 7 dBA, to 58 dBA L_{dn}, at 30.5 m (100 ft) from the trench. This level is below the 65 dBA L_{dn} standard established by the FTA and FRA. Because the train noise levels under Alternative C would be below the 65 L_{eq} standard, this alternative would not impair the activities, features, or attributes that qualify this resource for protection under Section 4(f). Therefore, Alternative C would not result in a constructive use of this park related to rail noise.

Under Alternative C, freight and passenger trains would be located in a trench adjacent to Parque de los Niños. Lowering of the track profile to 12 m (40 ft) below ground surface would result in a reduction in groundborne vibration of 3 to 5 VdB from levels experienced with at-grade trains. Some of the vibration energy would be absorbed by the soils, and some energy would be reflected by the downward soil layers. Adjacent to this park, the Olive Subdivision (primarily passenger rail traffic to South Orange County) and the emergency bypass tracks would be relocated closer to the park; however, the change in groundborne vibration levels as a result of this realignment would not be measurable, and there would be no effect on the outdoor uses of the park or the community center on site. Therefore, Alternative C would not result in rail vibration impacts on this Section 4(f) resource. Because the vibration would be reduced and below the standard, Alternative C would not impair the activities, features, or attributes that qualify this resource for protection under Section 4(f). Therefore, Alternative C would not result in a constructive use of this park related to vibration.

Similar to under Alternative B, given the location of this park in a nonurbanized area and adjacent to existing rail activity, implementation of the depressed railroad alignment associated with Alternative C would not alter its existing viewshed. However, under Alternative C, there would be a single at-grade track from Van Buren east to provide access to/from the Olive subdivision. As shown in Figure 3.1-5, trains on that single at-grade track would be visible from the park. However, with the taller



This is an existing view from the community park (Parque de los Niños) near Richfield Road.



This view simulation for Alternative C shows a taller wall in the middle ground. Trains will remain visible.

FIGURE 3.1-5

Orange County Gateway

Parque de los Niños
Existing View and Alternative C View Simulation

noise wall, less of the train would be visible than under Alternative B. The trains in the trench would not be visible from the park under Alternative C. Because Alternative C would not adversely alter the existing viewshed, it would not impair the activities, features, or attributes that qualify this resource for protection under Section 4(f). Therefore, Alternative C would not result in a constructive use of this park related to visual resources.

The results of the *Air Quality Analysis* showed no exceedances of the federal or State CO standards within the OCG study area, with or without the OCG project. Potential air quality impacts of Alternative C would not impair the activities, features, or attributes that qualify Parque de los Niños for protection under Section 4(f). In addition, the three Build Alternatives would result in a reduction in vehicle delay due to removal of at-grade crossings, which results in a reduction in criteria pollutants, as discussed in the air quality analysis in Section 3.13, Air Quality. Therefore, Alternative C would not result in a constructive use of this park related to air quality.

Alternative D

The construction of the overcrossing under Alternative D would occur entirely within the existing BNSF right-of-way. Alternative D would not require any subsurface footings under the Park. Therefore, Alternative D would not result in an actual use of any property from the Park.

The 2030 vehicular noise level at this resource associated with Alternative D is 65 dBA L_{eq}. This level is the same as the No Build Alternative and is 1 dBA higher than the existing noise level. This noise level was projected from the ball fields, which are the closest activity sites to vehicular noise sources on Richfield Road. This noise level is within the FHWA noise abatement criteria of 67 dBA L_{eq} for parklands. The vehicular noise levels under Alternative D would not exceed the 67 L_{eq} for parklands and, therefore, would not impair the activities, features, or attributes that qualify this resource for protection under Section 4(f). Therefore, Alternative D would not result in a constructive use of this park related to vehicular noise.

The noise level associated with rail activities would be the same as with Alternative A because the tracks would not be lowered and within a trench but would continue to be at-grade. With implementation of this alternative, the 2030 rail noise level at this resource is estimated to be 75 dBA at 30.5 m (100 ft) from the trench. This noise level exceeds the 65 dBA L_{dn} standard established by the FTA and FRA. This noise level is 3 dBA L_{dn} higher than the existing noise level of 67 dBA L_{dn} at 100 feet. This increase in the noise level at the park is associated with the expected increase in train operations in the future and not the proposed improvements under Alternative D. Therefore, Alternative D would not result in noise impacts that would impair the activities, features, or attributes that qualify this resource for protection under Section 4(f). Therefore, Alternative D would not result in a constructive use of this park related to rail noise.

Under Alternative D, there would be no change in groundborne train vibration from existing conditions. As discussed in Section 3.14, Noise and Vibration, existing properties along the BNSF railroad, including this resource, are currently exposed to 71 to 79 VdB groundborne vibration from train operations. The VdB scale relates to a community response to vibration. Although these levels exceed the 75 VdB FTA vibration criteria for frequent events (more than 70 trains per day), established for institutional uses with primarily daytime uses, they are within the FTA criterion of 83

VdB for infrequent events (fewer than 70 trains per day). These vibration levels would be the same for Alternative D as the No Build Alternative, because this alternative maintains the railroad tracks in their at-grade existing at-grade configuration. Because there would be no change in vibration, Alternative D would not impair the activities, features, or attributes that qualify this resource for protection under Section 4(f). Therefore, Alternative D would not result in any constructive use at this park related to vibration.

The new overcrossing structure (Richfield Road overcrossing) associated with Alternative D in the vicinity of this park is depicted on Figure 3.1-6. An existing new of this park and the existing rail facility are shown in Figure 3.1-6. The quality of views is not a contributing element to the activities, features, or attributes that qualify this resource for protection under Section 4(f). Given the resource's location within an urbanized area and adjacent to existing rail activity, implementation of Alternative D would not alter its viewshed. The adverse visual impact of this overcrossing can be minimized through the implementation of mitigation measures identified later in Section 3.7 (Visual/Aesthetics). Because Alternative D would not adversely alter the existing viewshed, it would not impair the activities, features, or attributes that qualify this resource for protection under Section 4(f). Therefore, Alternative D would not result in a constructive use of this park related to visual resources.

The results of the *Air Quality Analysis* showed no exceedances of the federal or State CO standards within the OCG study area, with or without the OCG project. Potential air quality impacts of Alternative D would not impair the activities, features, or attributes that qualify Parque de los Niños for protection under Section 4(f). In addition, the three Build Alternatives would result in a reduction in vehicle delay due to removal of at-grade crossings, which results in a reduction in criteria pollutants, as discussed in the air quality analysis in Section 3.13, Air Quality. Therefore, Alternative D would not result in a constructive use of this park related to air quality.

Atwood Avenue and Vincente Avenue, the primary access roads to this resource, would not be permanently modified by any of the three Build Alternatives. Existing access to this park would be maintained under all three Build Alternatives. Therefore, the Build Alternatives will not result in adverse effects related to access to this Section 4(f) resource that would affect the activities, features, or attributes that qualify this resource for protection under Section 4(f). Therefore, none of the Build Alternatives would result in a constructive use of this park related to access.

Temporary Impacts
Alternative A

Because no transportation improvements are associated with the No Build Alternative, there would be no direct or indirect temporary impacts on this Section 4(f) resource as a result of Alternative A.

Alternatives B, C, and D

Construction activities under Alternatives B, C, and D may temporarily require closures of Richfield Road and/or Van Buren Street, limiting access to the park via these sheets during construction. However, these closures would not occur simultaneously, and access to the park would be maintained at all times during construction of Alternatives B, C, and D. These temporary closures would not



This is an existing view from the community park (Parque de los Niños) near Richfield Road.



This view simulation for Alternative D shows the Richfield Road overcrossing.

FIGURE 3.1-6

Orange County Gateway

Parque de los Niños
Existing View and Alternative D View Simulation

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affect the activities, features, or attributes that qualify this resource for protection under Section 4(f). Therefore, these temporary access impacts under Alternatives B, C, and D would not result in a constructive use of this park.

Dust from construction activities under Alternatives B, C, and D may result in the need for more frequent cleaning of the swimming pool at the park. Refer to Mitigation Measure REC-1, below. Because the potential dust impacts on the pool can be addressed by more frequent cleaning, the construction of the Build Alternatives would not adversely affect the activities, functions, and attributes that qualify this resource for protection under Section 4(f). Therefore, the Build Alternatives will not result in a constructive use of this park as a result of temporary dust impacts.

3.1.3.5 Section 4(f) Resources Avoidance, Minimization, and/or Mitigation Measures

Effects of Alternatives B, C, and D on Parque de los Niños identified above could be minimized with the following measures.

REC-1 The City of Placentia Public Works Department will increase the frequency of swimming pool cleaning/maintenance at Parque de los Niños as necessary during construction activities adjacent to park.

3.1.3.6 Section 4(f) Resources Conclusions

Under the requirements of 49 USC Section 303, where proposed Build Alternatives impact Section 4(f) resources, an analysis of alternative locations for the proposed project that avoid Section 4(f) impacts must be prepared. Avoidance can occur through rerouting design changes or other methods. Such avoidance alternatives must be selected if they are determined to be prudent and feasible methods of achieving the project objectives. Because there are no direct or constructive use effects to a Section 4(f) resource resulting from the OCG project alternatives, identification of avoidance alternatives is not required.

As described above and in Appendix D, Resources Evaluated Relative to the Requirements of Section 4(f), none of the OCG Build Alternatives would result in the use of resources protected by Section 4(f). That analysis, which specifically evaluated the potential for the OCG Build Alternatives to use the Parque de los Niños, a public park owned and operated by the City of Placentia, determined that Alternatives B, C, and D would not result in the use of this Section 4(f) property. No comments related to this park or the potential for effects on this park under Section 4(f) were received from the public or agencies during the public review period (from June 27 to August 11, 2008) for the Draft EIS/EIR. All comments received on the Draft EIS/EIR are provided in Appendix K, Responses to Comments. Based on the analysis provided in this section and in Appendix D, and that no comments were received regarding this park during the public review period for the Draft EIS/EIR, it was determined that none of the Build Alternatives would result in the use of resources protected by Section 4(f).

3.2 GROWTH

This section analyzes the potential for the proposed Orange County Gateway (OCG) project to induce additional growth in the OCG project study area, based on the *Community Impact Assessment* (LSA, Associates, Inc., January 2006), local General Plans, regional planning agency programs, and local and regional data sources.

3.2.1 REGULATORY SETTING

The Council on Environmental Quality (CEQ) regulations, which implement the National Environmental Policy Act (NEPA) of 1969, require evaluation of the potential environmental consequences of all proposed federal activities and programs. This provision includes a requirement to examine indirect consequences, which may occur in areas beyond the immediate influence of a proposed action and at some time in the future. The CEQ regulations, 40 Code of Federal Regulations (CFR) 1508.8, refer to these consequences as secondary impacts. Secondary impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

The California Environmental Quality Act (CEQA) requires the analysis of a project's potential to induce growth. Section 15126.2(d) of the CEQA Guidelines requires that environmental documents ". . . discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment . . ."

3.2.2 METHODOLOGY

This analysis follows the guidelines provided in Caltrans *Environmental Handbook Volume 4, Community Impact Assessment,* Appendix D (Growth Inducement). Historical and projected levels of population, employment, and housing relevant to the OCG project study area are summarized. The relationships of the OCG project to relevant local jurisdictions' General and Specific Plans are reviewed, as are other relevant factors that could influence regional growth. The section contains information on current development plans to highlight planned growth in the County of Orange, and it contains a discussion of potential implications of the OCG project alternatives on planned and unplanned growth. The growth impact analysis addresses the relationship between this proposed transportation project and growth within the project study area. The relationship can be characterized in a variety of ways: (1) the project being responsive or reactive to both planned and unplanned growth, (2) the project facilitating planned growth or (3) the project inducing unplanned growth. The analysis considers both beneficial and adverse effects of all types of growth.

For the growth inducing impacts analysis for the proposed OCG project, the project study area was defined as the three cities crossed by the proposed OCG project alignments and all of Orange County. In addition to the local transportation benefits to the Cities of Placentia and Anaheim, the

OCG project would also provide regional transportation benefits. The OCG Corridor is part of the regional Alameda Corridor which is an important component of the regional freight and passenger rail system. Therefore, the potential for growth inducing impacts considered the potential for impacts in the cities crossed by the OCG project as well as the overall Orange County subregion. The OCG Corridor and the Orangethorpe Corridor are terms used to describe the physical corridor occupied by the project segment of the existing Burlington, Northern Santa Fe (BNSF) railroad tracks and Orangethorpe Avenue as they cross the Cities of Placentia and Anaheim.

Figure 1-1, provided earlier in Section 1.0, Purpose and Need, shows the OCG project study area in the Cities of Yorba Linda, Placentia and Anaheim. Figure 1-2, also in Section 1.0, shows the Southern California region served by the Alameda Corridor (of which the existing BNSF alignment is a key component). As shown on Figure 1-2, the OCG Corridor is in north Orange County; that is why all of Orange County is the regional study area for the assessment of potential growth inducing impacts of the proposed OCG project.

The Caltrans *Environmental Handbook, Volume 4, Community Impact Assessment, Appendix D (Growth Inducement)* identifies two methodologies for assessing the potential growth inducing impacts of transportation projects. One is an analytical approach, based on the land use assumptions and traffic impact analysis conducted for a project. The second is a checklist which offers a series of questions to identify whether the proposed transportation improvement may result in growth inducing impacts. The growth inducing impacts analysis for the OCG project was based on the checklist approach. This is largely because the proposed project is not providing increased capacity or a new transportation facility but rather is improving the efficiency of existing transportation facilities (the rail corridor and the intersecting roadways). Because the OCG project is not a capacity increasing project, the analytical approach does not lend itself to effective assessment of the potential for growth inducing impacts. Therefore, the checklist approach was used for the OCG project, as described later in this section.

3.2.3 AFFECTED ENVIRONMENT

3.2.3.1 Population

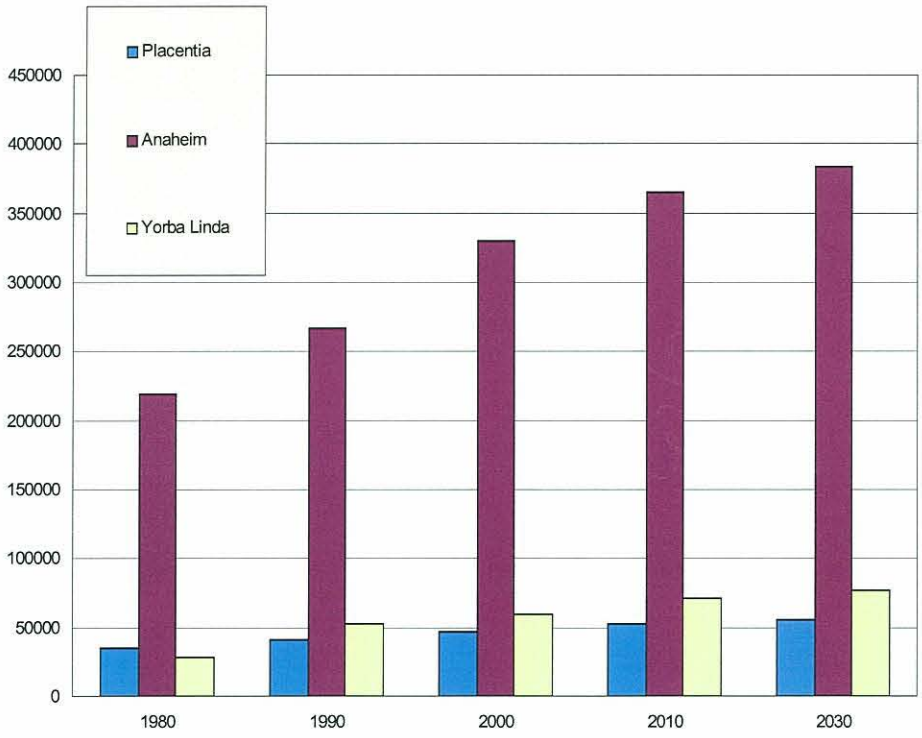
The Southern California region, which comprises roughly the southern one-third of the State of California and includes the Counties of Ventura, Los Angeles, San Bernardino, Imperial, Riverside, and Orange, has an existing population of roughly 18 million persons, which is projected to increase by another five million persons to 23 million by 2030.

Orange County currently has the second largest population by County in Southern California. The Southern California Association of Governments (SCAG) reports that Orange County's population totaled 1.9 million in 1980. In the 20 years that followed, the population increased by more than 68 percent, to 2.8 million in 2000. SCAG projects that Orange County will experience additional population growth over the next several decades, reaching 3.5 million in 2030, at an annual growth rate of approximately 0.8 percent.

The total populations in the Cities of Yorba Linda, Anaheim, and Placentia are shown in Table 3.2-A. The City of Placentia had the smallest population of the three cities in 2000 (46,488), and

SCAG projects that its population will increase to 55,164 persons in 2030. The City of Anaheim had the largest population of the three cities in 2000 (328,014), and the City's population is expected to increase to 397,072 persons in 2030. The City of Yorba Linda is anticipated to experience the greatest percentage of population growth (22 percent) of the three cities over the next several decades, growing from 58,918 persons to 76,011 persons by 2030. The 2000 and 2030 populations for the three cities and Orange County are summarized in Table 3.2-B.

Table 3.2-A: Population 1980 to 2030



Source: SCAG, 2004 RTP Growth Forecast.

Table 3.2-B: Population

Jurisdiction	Year 2000	Year 2030
City of Placentia	46,801	55,164
City of Yorba Linda	59,604	76,811
City of Anaheim	330,100	383,739
County of Orange	2,846,289	3,552,742

Source: United States Census 2000; SCAG 2004 RTP Growth Forecast.

3.2.3.2 Employment and Economic Conditions

According to the United States Census Bureau, employment in Orange County totaled 1.4 million persons in 2000, an increase of 12 percent from 1990 and is expected to increase to 1.9 million by 2030. This employment growth is 3 percent more than the Statewide average (9 percent) over the same period.

Table 3.2-C provides employment statistics for the Cities of Anaheim, Yorba Linda, and Placentia, and Orange County. According to the 2030 employment estimates from the 2004 SCAG *Regional Transportation Plan* (RTP), the number of people employed in these cities will increase from 2000 to 2030 at a much lower rate than the County as a whole, as shown in Table 3.2-C. This is reflective of the largely built out nature of the nonresidential areas in these three cities.

Table 3.2-C: Employment

Jurisdiction	Year 2000	Year 2030	Percent Change (2000 to 2030)
City of Placentia	17,563	20,299	15
City of Yorba Linda	16,213	17,705	9
City of Anaheim	179,049	203,609	13
County of Orange	1,514611	1,921,806	26

Source: United States Census 2000; SCAG 2004 RTP Growth Forecast.
Note: Employment numbers are of population age 16 years and over.

3.2.3.3 Housing

The total number of housing units in the Cities of Anaheim, Placentia, Yorba Linda, and the County of Orange are expected to increase as shown in Table 3.2-D, Housing.

Table 3.2-D: Housing

Jurisdiction	Year 2000		Year 2030 Projected Number of Housing Units	Percent Change in Housing Units (2000–2030)
	Total Housing Units	Occupied Housing Units		
City of Placentia	15,326	15,037	16,861	10
City of Yorba Linda	19,567	19,252	24,224	23
City of Anaheim	99,719	96,969	104,356	4
County of Orange	969,484	935,287	1,118,429	15

Source: United States Census 2000; SCAG 2004 RTP Growth Forecast.

3.2.3.4 Relationship of the OCG Project to Adopted Plans

The County of Orange and the Cities of Placentia, Anaheim and Yorba Linda General Plans' goals relating to circulation and growth are similar. Each jurisdiction seeks to reduce traffic congestion and accommodate existing and projected population with adequate transportation facilities, housing, and employment opportunities. They use plans and programs such as the Orange County Congestion Management Plan and the Measure M Growth Management Plan and recognize the need to coordinate with neighboring jurisdictions to reduce traffic congestion. Section 3.1, Land Use, has additional information on existing land uses and planned land uses within the three local jurisdictions (Yorba Linda, Placentia, and Anaheim) in the OCG study area.

The OCG Build Alternatives (B, C, and D) comply with the applicable State, County, and local growth management and transportation plans as summarized in Table 3.2-E. Alternative A, the No Project Alternative, is not consistent with applicable growth management and transportation plans because it does not propose transportation improvements consistent with these plans, as summarized in Table 3.2-E. These plans are described briefly in the following sections.

Table 3.2-E: Conformity with Growth Management and Transportation Plans

Document	Is the alternative in conformance with and/or included in the plan?			
	A	B	C	D
State of California AB 2928 Traffic Congestion Relief Program	No	Yes	Yes	Yes
SCAG RTP	No	Yes	Yes	Yes
SCAG Regional Transportation Improvement Plan	No	Yes	Yes	Yes
SCAG Regional Comprehensive Plan	No	Yes	Yes	Yes
OCTA Long-Range Transportation Plan	No	Yes	Yes	Yes
OCTA Regional Surface Transportation Program	No	Yes	Yes	Yes
Orange County Master Plan of Arterial Highways	No	Yes	Yes	Yes
County of Orange Growth Management Element	No	Yes	Yes	Yes
City of Placentia Growth Management Element	No	Yes	Yes	Yes
City of Anaheim Growth Management Element	No	Yes	Yes	Yes
City of Yorba Linda Growth Management Element	No	Yes	Yes	Yes

Sources: www.scag.ca.gov/(10/2/05), www.octa.net (10/3/05), www.dot.ca.gov/tcrp/guidelines/22101/1.htm (10/3/05).

State Legislation

State of California Traffic Congestion Relief Program. Assembly Bill 2928 (AB 2928), the *Transportation Congestion Relief Program* (TCRP), was enacted July 6, 2000. Project number 73 of the TCRP (December 2002) provided funding for the Orangethorpe Corridor railroad grade separation project, which included the eight railroad grade crossings proposed under the OCG project.

Regional Plans

SCAG is the metropolitan planning organization for six counties in California: Orange, Los Angeles, San Bernardino, Riverside, Ventura, and Imperial. SCAG is mandated by the federal government to develop plans for transportation, growth management, hazardous waste management, and air quality. SCAG has developed a plan called "Compass Vision" to address future growth in the region. The goal of the Compass Vision plan is to accommodate growth while maintaining quality of life for the people living in the region. SCAG's goal is to implement the plan in conjunction with local agencies to plan for growth. The OCG Build Alternatives are consistent with SCAG's regional transportation and growth management plans, as described in the following sections.

SCAG Regional Transportation Plan. *Destination 2030* is SCAG's 2004 RTP, adopted April 2004, that focuses on the balance between land use and the existing and future transportation systems in the region. SCAG estimates that east-west freight and passenger rail demand between Los Angeles County and San Bernardino/Riverside Counties will more than double by 2030. To accommodate this future demand, additional railway improvements are recommended. *Destination 2030* includes a discussion of the benefits of the Alameda Corridor grade separation project, which opened in April 2002. The Alameda Corridor is located in Los Angeles County, west of the OCG Corridor, from the Ports of Los Angeles and Long Beach to downtown Los Angeles. The benefits include improved safety, reduced vehicle-train delay (an estimated 90 percent), reduced noise and vibration, reduced emissions from idling automobiles and trucks at intersections, and expedited cargo transport as train speed has doubled. The goals and benefits of the Alameda Corridor grade separation project are similar to those of the proposed OCG project. The Alameda Corridor and its relation to the proposed OCG project is described in more detail in Section 3.2.2 and Section 1.0, Purpose and Need. In addition to the 2004 RTP, SCAG approved the CommunityLink21-2001 RTP in April 2001. CommunityLink21 included grade separations along the Orangethorpe Corridor as needed projects in the region.

The OCG project is programmed in the 2004 RTP as "BNSF railway line (Placentia to Imperial Hwy) along ss of Orangethorpe. Lowering/grade separation prelmin eng work includ tech studies, Proj Reprt & EIR across numerous streets)." Therefore, the OCG Build Alternatives conform with the 2004 RTP.

SCAG Regional Transportation Improvement Program. The project is currently shown in the adopted 2006 *Regional Transportation Improvement Program* (RTIP) as "BNSF rail line (Placentia to Imperial Hy) along Crowther/Orangethorpe E grade sep corridor impvs at 11 arterial sts incl P/E,

Pgm Mgmt, Prj Rpt, EIR, RW & const & xing closure/ped bri." This project listing includes the technical studies, the Project Report, program management, and the Environmental Impact Report (EIR) for the OCG project. It also includes design; right-of-way acquisition; and construction of the crossing closures at Placentia, Melrose, and Bradford Avenues. Therefore, the OCG Build Alternatives conform to the adopted 2006 RTIP.

SCAG Regional Comprehensive Plan. The SCAG *Regional Comprehensive Plan* (RCP) (Draft June 2005) is a compilation of SCAG planning policies and documents that can be easily used by planners. The RCP Transportation Chapter includes the same language used in SCAG's *Destination 2030* regarding accommodating future freight movement demand.

County Plans (Orange County Transportation Authority and the County of Orange)

The Orange County Transportation Authority (OCTA) is the countywide transportation and transit planning agency and the operator of public bus service in the County. The OCTA develops and implements plans for surface and rail transportation improvements, including freeway widening, rail service improvements, and transit improvements.

OCTA Long-Range Transportation Plan. The OCTA 2006 *Long-Range Transportation Plan* (LRTP, July 24, 2006) includes a general provision for railroad grade separations in the County. The LRTP identified the OCG project is necessary to improve goods movement in line with existing and projected freight growth. Therefore, the OCG Build Alternatives conform to OCTA's long-range plans.

OCTA Regional Surface Transportation Program. OCTA approved $4 million of *Regional Surface Transportation Program* (RSTP) funds in 1999 for preparation of environmental studies and preliminary engineering for the OCG project. OCTA later changed the funding source from RSTP to State Transportation Improvement Program (STIP) funds.

Orange County Master Plan of Arterial Highways. OCTA administers the Orange County Master Plan of Arterial Highways (MPAH) (May 23, 2005),which includes reviewing and approving road changes requested by local jurisdictions throughout the County. Within the OCG project limits, Orangethorpe Avenue, Tustin Avenue, and Rose Drive are identified as major highways and Chapman Avenue and Lakeview Avenue are identified as primary highways on the MPAH map. A major highway is defined as a six-lane divided road that accommodates 30,000 to 45,000 average daily traffic (ADT) and a primary highway is defined as a divided four-lane road that accommodates 20,000 to 30,000 ADT. A goal of the OCG project is to accommodate current and future traffic and freight/passenger movement capacities. There are no proposed new alignments in the OCG study area identified on the MPAH map. The OCG Build Alternatives would provide the same number of through lanes on the MPAH streets as they cross the BNSF alignment and, therefore, would be consistent with the MPAH.

Measure M. Measure M is a traffic improvement and growth management ordinance passed by a County-wide initiative in 1990. California cities are not required by State mandate to prepare growth management elements for their general plans. However, if a city is to receive Measure M funds, then it must include a growth management element in its adopted General Plan. The County and each local jurisdiction within the OCG study area has a growth management element in its General Plan, as described below.

County of Orange General Plan Growth Management Element. The goals of the County of Orange Growth Management Element (May 2003) relating to the OCG project are: (1) to reduce traffic congestion and (2) to ensure that adequate transportation facilities, public facilities, equipment, and services are provided for existing and future residents.

Local Plans: Cities of Yorba Linda, Placentia, and Anaheim, and Orange County

City of Placentia General Plan Growth Management Element. The City of Placentia Growth Management Element adopted by City Council on May 5, 1992, includes the following goals and policies relating to improving its transportation network: (1) to reduce traffic congestion on the City of Placentia's controlled arterial highway system, (2) to provide adequate transportation facilities for existing and future inhabitants of the City, and (3) to coordinate and cooperate with neighboring jurisdictions and the County to reduce traffic congestion.

City of Anaheim General Plan Growth Management Element. The City of Anaheim supports the OCG project as a means of improving transportation safety and efficiency in the region. Goal 2.1 of the City's Growth Management Element states: "Reduce traffic congestion on the city's arterial highway system." The OCG project Build Alternatives would improve traffic flow at the BNSF grade crossings, thereby complying with this City of Anaheim General Plan goal.

The Circulation Element of the City of Anaheim General Plan specifically references the OCG project and supports the development of safe rail freight movement while minimizing impacts on residents and motorists. The City also supports a system of freight movement that minimizes conflicts with street circulation, supports grade separations for major rail crossings, and coordinates with rail service providers to improve the aesthetics (e.g., landscaping) and ensure proper maintenance of rail corridors and rights-of-way.

City of Yorba Linda General Plan Growth Management Element. The City of Yorba Linda Growth Management Element adopted by City Council on December 6, 1993, includes the following goals intended to improve traffic circulation:

1. An adequate transportation/ circulation system that supports regional and local land uses at adopted Level of Service (LOS) standards and complies with requirements of the Countywide Traffic Improvement and Growth Management Program (Measure M).

2. Reduced traffic congestion on the City's streets and highways through active coordination with the Congestion Management Agency to achieve transportation improvements consistent with land use planning.

3.2.3.5 Summary. Section 3.1, Land Use, describes known proposed development projects in the vicinity of the OCG Corridor. In addition, Section 3.1 provides detailed figures (3.1-1, Sheets 1 to 8) that show General Plan lands uses in the vicinity of the OCG Corridor. As discussed in Section 3.1, much of the area surrounding the OCG Corridor is already developed in urban and suburban uses, including residential, commercial, and industrial uses. A substantial amount of growth is not anticipated in the immediate vicinity of the OCG Corridor in the future based on the nearly built out development and the land use designations in the local jurisdictions' General Plans. However, as noted above, all three cities and the County of Orange are forecasted to continue to experience growth in total population, employment, and housing through 2030. This growth is forecasted based on the General Plans for these local jurisdictions. Therefore, although substantial growth is not forecast in the immediate vicinity of the OCG Corridor, growth in the three cities and the County of Orange is forecast as discussed above.

3.2.4 IMPACTS

General Plan Consistency

As stated in the purpose and need, the goal of the OCG project is to accomplish the following objectives:

- Improve the economic vitality of the surrounding community by reducing traffic delays for residents, employees, and visitors to area businesses
- Improve the projected future vehicle LOS and reduce the amount of congestion and delay on the project area roadway network
- Increase the efficiency of moving people and goods by rail (freight and passenger) and cars and trucks in the OCG project area
- Increase public safety by eliminating at-grade rail/local street crossings
- Reduce operational train noise and whistles
- Reduce emergency vehicle response times
- Reduce air pollution from idling vehicles on local streets at rail crossings

The last objective is based on the more efficient access on local area streets crossing the BNSF alignment that would result from reduced delay crossing the OCG Corridor.

The goals and policies contained within the General Plans for the Cities of Anaheim, Placentia, and Yorba Linda, and the County of Orange (see Section 3.1, Land Use) are consistent with the goals and objectives of the OCG project.

Alternative A

Growth Inducement Analysis Checklist. As discussed in Section 3.2.1.1, Methodology, the growth-inducing impact analysis for the OCG alternatives was conducted using the checklist approach. The Caltrans *Environmental Handbook, Volume 4, Community Impact Assessment, Appendix D (Growth Inducement)* provides a checklist that offers eight questions to identify whether a project alternative may result in growth-inducing impacts. Those questions and the related answers for Alternative A are provided below.

1.a. Will the project attract more residential development or new population into the community or planning area?

1.b. If yes, would it be higher than is projected in the local General Plan?

Alternative A does not include the construction or operation of any grade separation or local street improvements in the OCG Corridor. Therefore, Alternative A does not provide any specific incentive for developers to propose new residential development in the Cities of Anaheim, Yorba Linda, and Placentia or in the rest of Orange County. Further, new residential development in these three cities and the County would more likely be pursued depending on specific market conditions and demand. Any new residential development pursued in these cities or elsewhere in the County would be required to be consistent with the applicable adopted General Plans. Therefore, Alternative A would not result in new residential development or new populations in the Cities of Anaheim, Placentia, and Yorba Linda or elsewhere in Orange County.

2.a. Will the project encourage the development of more acreage of employment generating land uses in the area (such as commercial, industrial or office)?

2.b. If yes, would it be beyond that which is designated in the current local General Plan?

Alternative A does not include the construction or operation of any grade separation or local street improvements in the OCG Corridor. Therefore, Alternative A does not provide any specific incentive for developers to propose new employment generating uses in the Cities of Anaheim, Yorba Linda, and Placentia or elsewhere in Orange County. Further, new employment-generating uses in these three cities and the County would more likely be pursued depending on specific market conditions and demand. Any new employment-generating uses pursued in these cities or in Orange County would be required to be consistent with the applicable adopted General Plans. Therefore, Alternative A would not result in new employment generating uses in the Cities of Anaheim, Placentia, and Yorba Linda or elsewhere in Orange County.

3.a. Will the project lead to the increase of roadway, intersection, sewer, water supply or drainage capacity?

3.b. If yes, would it be beyond that projected or planned for in the local General Plan?

Alternative A does not include the construction or operation of any grade separation or local street improvements in the OCG Corridor. Alternative A does not include any modifications to existing service and utility facilities, the construction of any new utility facilities or changes in the demand for existing utilities services in the Cities of Yorba Linda, Placentia, or Anaheim or elsewhere in Orange County. Therefore, Alternative A would not result in the increase of roadway or utility capacities.

4. Will the project encourage the rezoning or reclassification of lands in the community General Plan from agriculture, open space or low density residential to a more intensive land use?

Alternative A does not include the construction or operation of any grade separation or local street improvements in the OCG Corridor. Therefore, Alternative A does not provide any specific incentive for developers to propose land uses that would require the conversion of open space or agricultural uses or which would result in more intensive land uses in the Cities of Anaheim, Yorba Linda, and Placentia or elsewhere in Orange County. Any proposed land uses that would require such conversions or increase land use intensities in these three cities or the County would more likely be pursued depending on specific market conditions and demand. Further, any land uses that would require the conversion of agricultural and open space lands or that would increase land use intensities would require independent environmental review, including consistency with the applicable adopted General Plans. Therefore, Alternative A would not result in the conversion of agricultural or open space lands or increased land use densities in the Cities of Anaheim, Placentia, and Yorba Linda or elsewhere in Orange County.

5. Is the project not in conformance with the growth related policies, goals or objectives of the local General Plan or the area growth management plan? Or, is it in conflict with implementation measures contained in the area's growth management plan?

Alternative A of the OCG project does not include the construction of grade separations or local street improvements. Therefore, Alternative A does not provide for future projected growth in population and changes in land use. Alternative A is not consistent with applicable growth management and transportation plans, as discussed earlier in Section 3.2.3.4, Relationship of the OCG Project to Adopted Plans, and as summarized in Table 3.2-E.

6. Will the project lead to the intensification of development densities or accelerate the schedule for development or will it facilitate actions by private interests to redevelop properties within two miles of an existing or future major arterial roadway or within four miles of a limited access highway?

Alternative A does not include the construction or operation of any grade separation or local street improvements in the OCG Corridor. Therefore, Alternative A does not provide any specific incentive for developers to propose increased development densities or accelerated project implementation schedules. Any proposed land intensifications or schedule accelerations in the three cities or elsewhere in Orange County would more likely be pursued depending on specific market conditions

and demand. Further, any land use intensifications would require independent environmental review, including consistency with the applicable adopted General Plans. Schedule accelerations would have to be assessed for consistency with the applicable local jurisdiction's infrastructure phasing and their internal processing for development projects. Therefore, Alternative A would not result in an intensification of development densities or accelerate project implementation schedules in the Cities of Anaheim, Placentia, and Yorba Linda or elsewhere in Orange County.

7. Will the project measurably and significantly decrease home to work commuter travel times to and from or within the project area (more than 10% reduction or five or more minutes in commute savings time)?

Alternative A would not result in any commute time savings because it does not include the construction or operation of any grade separation or local street improvements in the OCG Corridor. As the volume of rail trips in the OCG Corridor increases in the future, travel times for commuters using roads crossing the BNSF tracks would increase as the number of trains in the peak hours increases the number of times commuters are delayed by crossing trains.

8. Is the project directly related to the generation of cumulative effects as defined by the CEQA Guidelines?

As described in Section 8.0, Cumulative Impacts, Alternative A is not anticipated to contribute to or result in cumulative adverse environmental impacts.

Growth Inducement Analysis Conclusion. In summary, Alternative A does not include the construction or operation of any grade separation or local street improvements in the OCG Corridor and is not anticipated to result in changes in adopted land use plans and demographic forecasts for the Cities of Anaheim, Yorba Linda, and Placentia, and Orange County. Therefore, based on the checklist analysis methodology, Alternative A would not result in growth inducing impacts in the OCG project study area.

The Build Alternatives: Alternatives B, C, and D

Growth Inducement Checklist. As discussed in Section 3.2.1.1, Methodology, the growth impact analysis for the OCG Build Alternatives was conducted using the checklist approach in the Caltrans *Environmental Handbook, Volume 4, Community Impact Assessment, Appendix D (Growth Inducement)*. Those questions and the related answers for Alternatives B, C and D are provided below.

1.a. Will the project attract more residential development or new population into the community or planning area?

1.b. If yes, would it be higher than is projected in the local General Plan?

Alternatives B, C and D propose the construction and operation of grade separation and local street improvements in the OCG Corridor. These Alternatives would separate the existing rail operations from eight existing local street operations along the OCG Corridor. The rail component would include separating the rail track and operations from local street operations and providing for future accommodation of a third rail line along this corridor. The third rail project is not part of the proposed OCG project. The local streets crossing the rail line would be grade separated from the rail line and the existing number of lanes on those roads would be retained after the project construction is complete. The result of the project would be to improve travel times for travelers using the streets crossing the rail line. However, the proposed OCG improvements do not include any increase in the capacity of either the rail tracks or the local streets. Therefore, although the OCG Build Alternatives would result in reduced travel delays on roads crossing the BNSF tracks, these Alternatives would not provide any specific incentive for developers to propose new residential development in the Cities of Anaheim, Yorba Linda, and Placentia or elsewhere in Orange County. Further, new residential development in these three cities and Orange County would more likely be pursued depending on specific market conditions and demand. Any new residential development pursued in these cities or elsewhere in the County would be required to be consistent with the applicable adopted General Plans. Therefore, Alternatives B, C, and D would not result in new residential development or new populations in the Cities of Anaheim, Placentia, and Yorba Linda or elsewhere in Orange County.

2.a. Will the project encourage the development of more acreage of employment generating land uses in the area (such as commercial, industrial or office)?

2.b. If yes, would it be beyond that which is designated in the current local General Plan?

Alternatives B, C, and D propose the construction and operation of grade separation and local street improvements in the OCG Corridor, which would result in improved travel times for travelers using the streets crossing the rail line. However, the proposed improvements do not include any increase in the capacity of either the rail tracks or the local streets. Therefore, although the OCG Build Alternatives would result in reduced travel delays on roads crossing the BNSF tracks, these Alternatives would not provide any specific incentive for developers to propose new employment generating land uses in the Cities of Anaheim, Yorba Linda, and Placentia or elsewhere in Orange County. Further, new employment-generating land uses in these three cities and the County would more likely be pursued depending on specific market conditions and demand. Any new employment generating land uses pursued in these cities or elsewhere in the County would be required to be consistent with the adopted General Plans. Therefore, Alternatives B, C, and D would not result in new employment-generating land uses in the Cities of Anaheim, Placentia, and Yorba Linda and elsewhere in Orange County.

3.a. Will the project lead to the increase of roadway, intersection, sewer, water supply or drainage capacity?

3.b. If yes, would it be beyond that projected or planned for in the local General Plan?

Alternatives B, C, and D propose the construction and operation of grade separation and local street improvements in the OCG Corridor that would result in improved travel times for travelers using the streets crossing the rail line. As part of these alternatives, local storm drains in the construction limits would be sized for the 100-year flood, as required by the Orange County Flood Control District. As a result, for those segments of storm channels in the OCG project disturbance limits, the capacity of those channels would be increased as part of the OCG project. However, this would not be considered growth inducing because it is consistent with long-term County of Orange plans to size major storm drains for the 100-year flood, and the project would not affect the capacity of these storm drains up and downstream from the project disturbance limits. Alternatives B, C, and D would also include the protection in place, relocation, and/or reconstruction of other existing utility (such as electricity and natural gas) facilities that are within the project disturbance limits. However, these utility modifications would not result in increased capacity of these utility facilities.

The proposed improvements under Alternatives B, C, and D do not include any increase in the capacity of either the rail tracks or the local streets. Therefore, although the OCG Build Alternatives would result in reduced travel delays for travelers crossing the BNSF tracks, these Alternatives would not increase the physical capacity of the local roadways crossing the BNSF through the addition of new travel or turn lanes.

Therefore, Alternatives B, C, and D would not result in the increase of roadway or utility capacities that could result in growth facilitation or growth inducement in the Cities of Yorba Linda, Anaheim, and Placentia or elsewhere in Orange County.

4. Will the project encourage the rezoning or reclassification of lands in the community General Plan from agriculture, open space or low density residential to a more intensive land use?

Alternatives B, C, and D propose the construction and operation of grade separation and local street improvements in the OCG Corridor, which would include the acquisition of full and partial parcels to accommodate the right-of-way needed for the project as well as temporary construction easements (TCEs) and construction staging areas. The majority of these parcels are currently developed with urban and suburban land uses. After the completion of construction, the TCEs and construction staging areas would revert to their original owners or be resold for other uses. Therefore, on these parcels, it is anticipated that some new development would occur. That development may include the incorporation of other parcels not affected by the project, depending on the intent of the proponent of that new development. There is only limited undeveloped land along the OCG corridor and there are no defined agricultural uses. There are low-density residential uses and one park along the OCG project alignment. Any proposed land uses on parcels affected by the construction of the OCG project or a combination of those parcels with other parcels would require independent environmental review, including consistency with the adopted General Plans. That potential development would not affect agricultural uses. However, that future development could propose intensifying or modifying uses at the park and/or in residential areas. At this time, any more detailed consideration of those possible future land uses would be speculative. Further, as described in Section 3.4, Community Impacts, the total area of the TCEs and the construction staging areas represents only a small part of land within the Cities of Anaheim and Placentia and Orange County. Therefore, any future land uses on those parcels after construction of the OCG project would not be

considered to be growth inducing because those future uses would have to be consistent with the applicable adopted General Plans and are not likely to substantively change the pattern of existing and planned land uses on and immediately adjacent to these parcels.

5. Is the project not in conformance with the growth related policies, goals or objectives of the local General Plan or the area growth management plan? Or, is it in conflict with implementation measures contained in the area's growth management plan?

Alternatives B, C, and D comply with the applicable State, county, and local jurisdiction growth management and transportation plans as described earlier in Section 3.2.3.4 and as summarized in Table 3.2-E.

6. Will the project lead to the intensification of development densities or accelerate the schedule for development or will it facilitate actions by private interests to redevelop properties within two miles of an existing or future major arterial roadway or within four miles of a limited access highway?

Alternatives B, C, and D propose the construction and operation of grade separation and local street improvements in the OCG Corridor, which would result in travel time savings for travelers using local roadways to cross the BSNF railroad tracks. However, this travel time savings is not likely to be sufficient incentive for developers to propose increased development densities or accelerated project implementation schedules. Any proposed land intensifications or schedule accelerations in the Cities of Yorba Linda, Placentia, and Anaheim or elsewhere in Orange County would more likely be pursued depending on specific market conditions and demand. Further, any land use intensifications would require independent environmental review, including consistency with the applicable adopted General Plans. Schedule accelerations would have to be assessed for consistency with local jurisdiction's infrastructure phasing and their internal processing for development projects. Therefore, Alternatives B, C, and D would not result in an intensification of development densities or acceleration project implementation schedules in the Cities of Anaheim, Placentia, and Yorba Linda or elsewhere in Orange County.

7. Will the project measurably and significantly decrease home to work commuter travel times to and from or within the project area (more than 10% reduction or five or more minutes in commute savings time)?

Alternatives B, C, and D would reduce travel delays for travelers using local streets to cross the BNSF tracks. This would result in a minor commute time savings because travelers would not be delayed by passing trains at at-grade crossings under Alternatives B, C, and D. In addition, as the volume of rail trips in the OCG Corridor increases in the future, travel times for commuters using the grade separations at roads crossing the BNSF tracks would improve. The actual time savings would vary depending on the total traffic volume on each street crossing the tracks and the timing of the traffic signal lights at those crossings. It is possible that the travel time savings would approach or exceed five minutes in the future, as the total number of trains on this track increases in the future.

Nonetheless, this represents a relatively small travel time savings and would not appear to be sufficient to induce substantial growth in the Cities of Anaheim, Placentia, and Yorba Linda or elsewhere in Orange County. Further, as discussed earlier, additional growth is already forecasted in all three of these cities and in Orange County and it is unlikely that this minor time savings would, by itself, be sufficient to induce additional growth, beyond what is already forecasted, in these three cities and Orange County.

8. Is the project directly related to the generation of cumulative effects as defined by the CEQA Guidelines?

As described in Section 4.0, Cumulative Impacts, Alternatives B, C, and D are not anticipated to contribute to or result in cumulative adverse environmental impacts.

Growth Inducement Analysis Conclusion. In summary, Alternatives B, C, and D propose the construction and operation of grade separation or local street improvements in the OCG Corridor. However, as discussed above, these alternatives are not anticipated to result in changes in adopted land use plans and demographic forecasts for the Cities of Anaheim, Yorba Linda, and Placentia, and Orange County. Therefore, based on the checklist analysis methodology, Alternatives B, C, and D would not result in growth-inducing impacts in the Cities of Anaheim, Yorba Linda, and Placentia or elsewhere in Orange County.

3.3 FARMLANDS/AGRICULTURAL LANDS

As part of the scoping and environmental analysis for the Orange County Gateway (OCG) project, farmland and agricultural lands were considered but no adverse impacts to these resources was identified. Specifically, although there are agricultural-producing properties (e.g., strawberries and avocados) in the vicinity of the OCG study area, these agricultural properties are zoned residential and are not considered prime, unique, or considered to be of statewide or local importance based on Form AD-1006 completed by the Natural Resource Conservation Service (NRCS) on September 13, 2002 (Appendix B). Based on information received from NRCS, there would be no impact to farmland defined as prime, unique, or considered to be of Statewide or local importance for the No Build Alternative (Alternative A) or the Build Alternatives (Alternatives B, C, or D). Mitigation is not required.

3.4 COMMUNITY IMPACTS

This section is summarized from the *Community Impact Assessment* (LSA Associates, Inc., October 2007). This section includes three main subsections related to community impacts: Community Character and Cohesion, Relocations, and Environmental Justice. These subsections are organized as stand-alone subsections and are included within the Community Impacts section because the issues are similar. Each of the subsections has its own discussions related to regulatory setting, methodology, affected environment, impacts, mitigation, and conclusions.

3.4.1 COMMUNITY CHARACTER AND COHESION

3.4.1.1 Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969, as amended, established that the federal government use all practicable means to ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings [42 United States Code (USC) 4331(b)(2)]. In its implementation of NEPA [23 USC 109(h)], the Federal Highway Administration (FHWA) directs that final decisions regarding projects are to be made in the best overall public interest. This requires taking into account adverse environmental impacts such as destruction or disruption of human-made resources, community cohesion, and the availability of public facilities and services.

Under the California Environmental Quality Act (CEQA), an economic or social change by itself is not to be considered a significant effect on the environment. However, if a social or economic change is related to a physical change, then that social or economic change may be considered in determining whether the physical change is significant. Because the proposed Orange County Gateway (OCG) project would result in physical changes to the environment, it is appropriate to consider changes to community character and cohesion in assessing the significance of the project's effects.

3.4.1.2 Methodology

Community cohesion is the degree to which residents have a sense of belonging to their neighborhood, a level of commitment of the residents to the community, or a strong attachment to neighbors, groups, and institutions, usually as a result of continued association over time. Community cohesion can be defined based on geographic divisions in an area, or on key demographic and social characteristics such as the presence of gathering places such as churches or activity centers, or similar demographic characteristics such as home ownership, ethnicity, and length of residence. For the OCG project analysis, cohesion was considered based on the geographic area crossed by the project alignment, the demographic characteristics of that area, and the presence of possible activity centers in that area. Community cohesion is of particular importance when a transportation facility is proposed that would divide an existing developed area.

The potential impacts of a transportation project, such as the proposed OCG project, that could adversely affect community cohesion including degradation of existing public access, division of existing established neighborhoods, separation of existing residential uses and community facilities, increasing urbanization, increasing isolation of some land uses, and/or growth inducement. The potential impacts of a transportation project that may positively affect community cohesion include improvement of public access, improved connections between neighborhoods, connecting residential uses with community facilities, and/or decreasing the isolation of some land uses.

Specifically, for the proposed OCG project, the following methodology was used to assess whether the Build Alternatives would negatively and/or positively affect community cohesion.

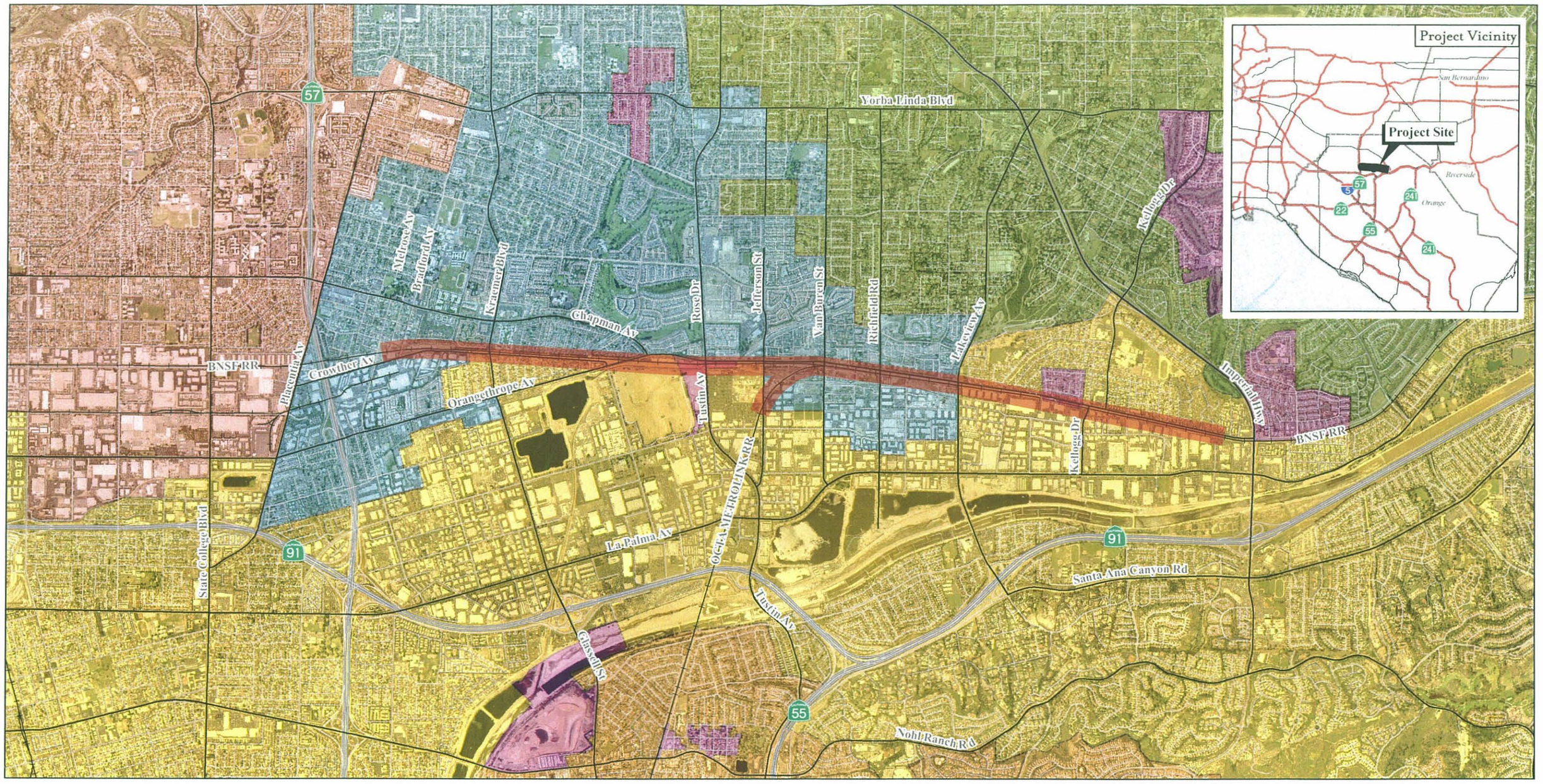
For the assessment of the potential for the proposed OCG project to adversely or beneficially affect community character and cohesion, the potential for those types of impacts were evaluated at three geographic levels.

First, it was useful to assess whether the proposed OCG project would have an adverse or beneficial effect at a subregional or city level. The alignment of the project segment of the Burlington Northern Santa Fe (BNSF) railroad physically passes through the Cities of Placentia and Anaheim as shown on Figure 3.4-1. As shown on Figure 3.4-1, the majority of the incorporated City of Placentia is north of the BNSF railroad and the majority of the incorporated City of Anaheim is south of the BNSF railroad. In addition, the incorporated cities of Yorba Linda and Fullerton are less than 0.6 kilometer (km, 1 mile [mi]), north and west of the BNSF rail alignment, respectively, as shown on Figure 3.4-1. There are two small pockets of unincorporated Orange County territory along the alignment, south of the alignment and adjacent to the west side of Tustin Avenue, and north of the alignment and west of Kellogg Drive as shown on Figure 3.4-1.

The questions asked in assessing whether the proposed OCG project would result in adverse or beneficial effects related to community character and cohesion in the Cities of Placentia and Anaheim were:

> What features, services and/or amenities in these cities contribute to the overall community character and the cohesiveness of these cities? What is the overall character of each city?
>
> Would the proposed OCG project result in adverse effects that would result in the degradation of the community character of the entire city or parts of the city?
>
> Would the proposed OCG project result in adverse effects that would contribute to the degradation of the existing cohesiveness across the city?
>
> Would the proposed OCG project result in beneficial effects that might positively affect the overall community character and/or the cohesiveness of the city?

A second geographic level considered in this analysis focused on the area around the BNSF alignment, based on United States 2000 census tracts in this area. Several census tracts are crossed by or in the immediate vicinity of the project segment of the BNSF alignment as shown on Figure 3.4-2. The use of census tracks for this analysis provided an opportunity to focus the analysis on a smaller area than incorporated cities and for which detailed demographic data are available. The questions asked in



Legend

Project Area

Railroad

Jurisdiction

County of Orange

City of Anaheim

City of Fullerton

City of Orange

City of Placentia

City of Yorba Linda

N

0 2,750 5,500 Feet

838.2 1,676.4 Meters

SOURCE: TBM (2004)

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FIGURE 3.4-1

Orange County Gateway

Cities in the OCG Area

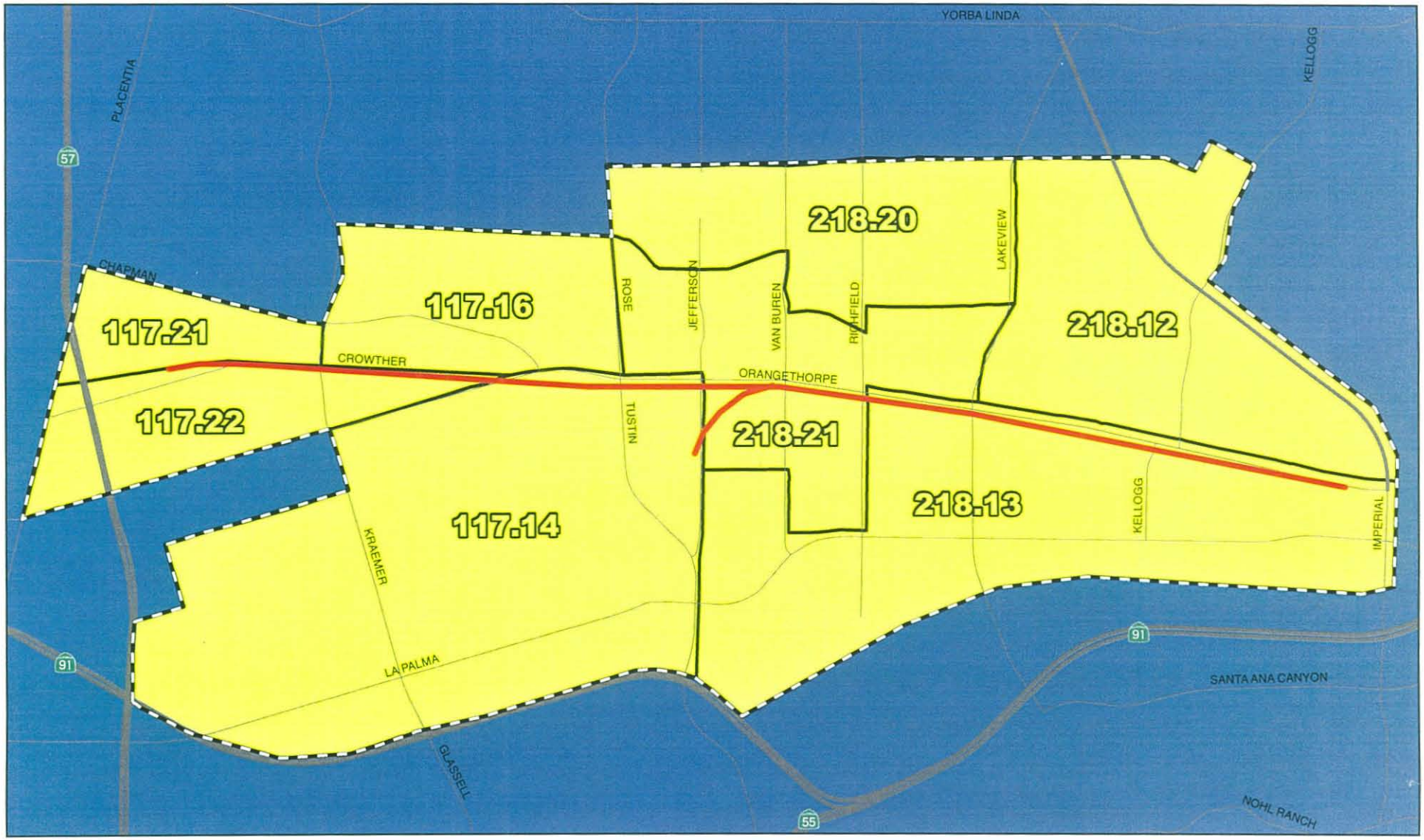


FIGURE 3.4-2

LEGEND

- Project Area
- Study Area Census Tracts
- 117.14 Individual Census Tract

NO SCALE

SOURCE: U.S. CENSUS BUREAU, 2000.

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Orange County Gateway

2000 Census Tracts

assessing whether the proposed OCG project would result in adverse or beneficial effects related to community character and cohesion in these census tracts were:

What are the key demographic characteristics of the census tracts? Do the demographic data for the census tracts indicate potential for community cohesion within individual census tracts? How do the census tracts relate to the features, services and/or amenities in the area cities?

Would the proposed OCG project result in adverse effects that would result in the degradation of the community character within individual or multiple census tracts?

Would the proposed OCG project result in adverse effects that would contribute to the degradation of the existing cohesiveness within individual or multiple census tracts?

Would the proposed OCG project result in beneficial effects that might positively affect the overall community character and/or the cohesiveness within individual or multiple census tracts?

The final level of geographic analysis considered those areas in the Cities of Placentia and Anaheim and unincorporated Orange County immediately adjacent to the project segment of the BNSF. Evaluating potential impacts at this level was important to assess whether the proposed project would result in a direct impact to community features, services and/or facilities or whether the project would adversely affect community character and/or cohesion at this local level. Figure 3.4-3 provides an aerial photograph along the project segment of the BNSF railroad which shows existing land uses immediately adjacent to the alignment in this local area. This local area essentially consider the first one or two rows of parcels, and the land uses on those parcels, adjacent to the BNSF alignment. The questions asked in assessing whether the proposed OCG project would result in adverse or beneficial effects related to community character and cohesion at this local level were:

Are there unique or unusual characteristics of this local area which contribute to community character and/or community cohesion? Are there features, services and/or amenities in this local area which contribute to a sense of community character and/or community cohesion?

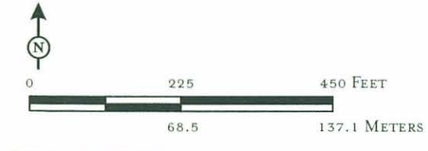
Would the proposed OCG project result in adverse effects that would result in the degradation of the community character in this local area?

Would the proposed OCG project result in adverse effects that would contribute to the degradation of the existing cohesiveness in this local area? Does the proposed OCG project adversely affect features, amenities and/or services in this local area?

Would the proposed OCG project result in beneficial effects that might positively affect the overall community character and/or the cohesiveness within individual or multiple census tracts?

Evaluating potential impacts related to community character and cohesion required several data gathering and analysis activities. The assessment of the alternatives began with a review of aerial photographs (February 2002) and maps of the area to identify the individual local jurisdictions and community features, amenities, and services in the area. General vehicle and pedestrian surveys were conducted to gain a broad perspective of the cities and the local areas immediately adjacent to the





SOURCE: TBM (2004)
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Legend

- Project Area
- BNSF Railroad
- City Boundaries

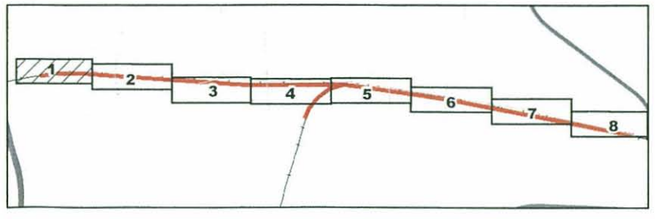


Figure 3.4-3

Orange County Gateway

Aerial Photograph
of the Local Area

Sheet 1 of 8

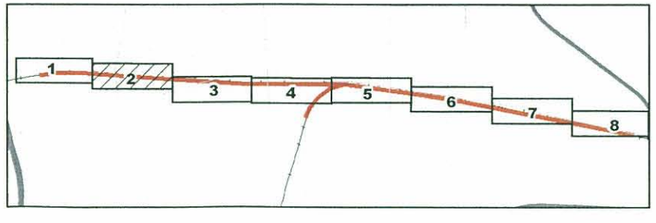


Legend

- Project Area
- BNSF Railroad
- City Boundaries

0 225 450 Feet

68.5 137.1 Meters



SOURCE: TBM (2004)
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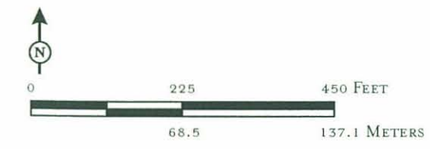
Figure 3.4-3

Orange County Gateway

Aerial Photograph of the Local Area

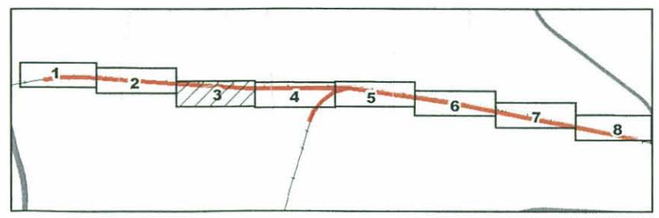
Sheet 2 of 8





Legend

- Project Area
- BNSF Railroad
- City Boundaries



SOURCE: TBM (2004)
i:\otg130\gis\mapbook_loc_aerial.mxd (01/17/06)

Figure 3.4-3

Orange County Gateway

Aerial Photograph
of the Local Area

Sheet 3 of 8



Legend

- Project Area
- BNSF Railroad
- City Boundaries

0 225 450 Feet
68.5 137.1 Meters

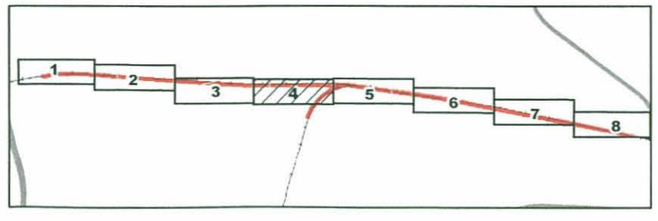


Figure 3.4-3

Orange County Gateway

Aerial Photograph of the Local Area

Sheet 4 of 8

SOURCE: TBM (2004)

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Legend

- Project Area
- BNSF Railroad
- City Boundaries

0 225 450 Feet

68.5 137.1 Meters

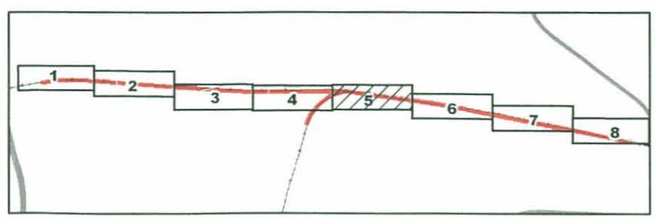


Figure 3.4-3

Orange County Gateway

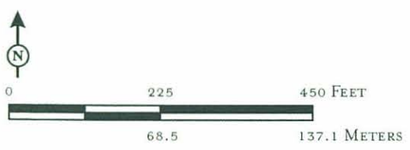
Aerial Photograph of the Local Area

Sheet 5 of 8

SOURCE: TBM (2004)

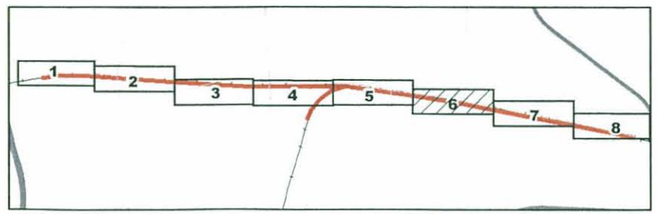
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Legend

- Project Area
- BNSF Railroad
- City Boundaries



SOURCE: TBM (2004)
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Figure 3.4-3

Orange County Gateway

Aerial Photograph
of the Local Area

Sheet 6 of 8

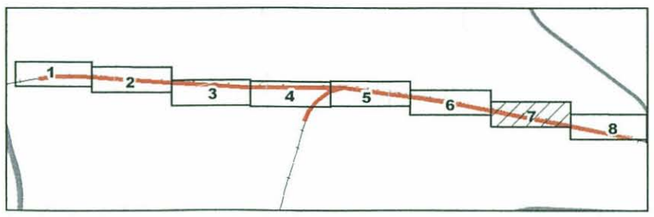


Legend

- Project Area
- BNSF Railroad
- City Boundaries

0 225 450 Feet

68.5 137.1 Meters



SOURCE: TBM (2004)

i:\otg130\gis\mapbook_loc_aerial.mxd (01/17/06)

Figure 3.4-3

Orange County Gateway

Aerial Photograph of the Local Area

Sheet 7 of 8



Legend

- Project Area
- BNSF Railroad
- City Boundaries

0 225 450 Feet

68.5 137.1 Meters

SOURCE: TBM (2004)

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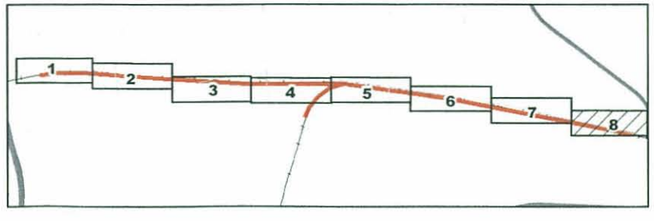


Figure 3.4-3

Orange County Gateway

Aerial Photograph
of the Local Area

Sheet 8 of 8

BNSF alignment, to evaluate specific neighborhoods or smaller areas, and to verify information gathered from secondary sources.

Secondary sources of information included the 2000 United States decennial census, the 2002 economic census, and the 2004/2005 Orange County Community Indicators. Demographic data for the census tracts in the study area were evaluated for characteristics such as population, race and ethnicity, household income, age, travel patterns, and housing characteristics, all of which can contribute to the character and cohesiveness of an area.

Information was also gathered from local and State agencies, including the California Department of Finance (DOF), the Cities of Placentia, Yorba Linda, and Anaheim, and the County of Orange. These sources generally had more current information and better forecasts than federal agencies, although typically not correlated to the census tract boundaries.

The information gathered from maps and aerial photographs (2004 and 2005), site visits (March 2002, April 2002, July 2005), censuses, and agencies was evaluated in spreadsheets, figures, and geographical information system (GIS) analysis to describe the potential impacts of each OCG alternative related to community character and cohesion in this section, Relocations (Section 3.4.2), and Environmental Justice (Section 3.4.3).

3.4.1.3 Affected Environment

This section provides an overview of the following three geographic levels considered in the analysis of the potential for the proposed OCG project to result in adverse and/or beneficial effects related to community character and community cohesion and, as discussed later, environmental justice (Section 3.4.3).

- Cities of Placentia, Anaheim, and Yorba Linda and unincorporated Orange County
- Census tracts traversed by or in the immediate vicinity of the project segment of the BNSF railroad
- The local area immediately adjacent to the BNSF alignment in the Cities of Placentia and Anaheim and unincorporated Orange County

Each of these geographic areas considered in this analysis is described below.

Cities of Placentia, Anaheim, and Yorba Linda and Unincorporated Orange County

This section briefly discusses the characteristics and features of the Cities of Placentia, Yorba Linda and Anaheim that contribute to each City's community character. More detailed demographic information at the local jurisdiction level is provided in the following section, for comparison with the census tract level information.

City of Placentia. The City of Placentia is predominantly on the north side of the BNSF railroad alignment, although parts of the City extend south across the tracks west of Kraemer Boulevard and between Jefferson Street and Lakeview Avenue as shown earlier on Figure 3.4-1. The City developed

from the early 1800s, with agriculture and the railroad playing important roles in the long term growth and development of the City. The City of Placentia was incorporated in 1926. The City currently covers 17 square km (6.6 square mi). The population of the City was 46,488 persons in 2000.

Placentia is predominately a residential community, with a wide range of housing types and styles located throughout the City. Commercial uses in the City tend to be located along major streets and at intersections of major streets and generally support the residential uses in the City. Industrial uses in the City are generally focused along Crowther Avenue and Orangethorpe Avenue and the BNSF railroad tracks.

The City of Placentia includes a wide range of facilities and services for its residents, employees and visitors, including:

- Shops and restaurants are provided in commercial areas across the City.
- Public elementary, middle and high schools are provided in residential areas throughout the City by the Placentia-Yorba Linda Unified School District.
- A total of 14 public parks and sports facilities are provided throughout the City.
- Municipal services, including police, planning, fire and other services, are provided from City Hall at 401 East Chapman Avenue.
- The Chamber of Commerce is located at 201 East Yorba Linda Avenue.
- Placentia Linda Hospital, at 1301 Rose Drive, serves the medical needs of much of the City.
- The Placentia Public Library is at 411 East Chapman Avenue.
- The Placentia Main Post Office is at 1400 North Kraemer Avenue.
- The Placentia Senior Center is at 143 South Bradford Avenue.
- Bus transit services are offered throughout the City by the Orange County Transportation Authority (OCTA). Passenger rail services are provided by MetroLink.
- The City is well served by the existing road circulation system and has relatively direct access to State Routes 91 and 57 (SR-91 and SR-57) for regional access.

Overall, the City of Placentia is a somewhat typical southern California suburban city, with a mix of residential, commercial, industrial, public and open space uses. Development is generally limited to one or two stories.

City of Anaheim. The City of Anaheim is the second largest city in Orange County, extending across north Orange County from approximately Valley View Boulevard on the west to east of State Route 241 (SR-241) on the east. Incorporated in 1876, Anaheim covers approximately 130 square kilometers (sq km) (50 square miles [sq mi]) and in 2000 had a population of 328,014 persons. Anaheim is known worldwide as a major entertainment destination and is home to Disneyland, Disney's California Adventure, Downtown Disney, the Anaheim Convention Center, the Honda Center (which is the home of the Anaheim Ducks professional hockey team), Angel Stadium, and the Grove of Anaheim. These

uses are supported by a substantial number of hotel rooms in and around the Anaheim Resort area and a wide range of restaurants and other visitor-serving commercial and recreation uses.

In addition to this substantial core function as a major visitor destination, Anaheim also has extensive areas developed in industrial and manufacturing uses. These uses are generally located along SR-91 in east Anaheim, east of SR 57 and in areas along SR-91 between Interstate 5 (I-5) and SR-57. Based on the 2000 United States Census, 20 percent of the employment in the City was in manufacturing.

A wide variety of housing is provided throughout the City of Anaheim, including single and multiple family housing types. As a result, large areas within the City of Anaheim are predominately residential, including extensive areas in east Anaheim, south of the Santa Ana River, paralleling the River and SR-91. There are residential areas in Anaheim south of Crowther Avenue between Kraemer Boulevard and Orangethorpe Avenue, and on both sides of Orangethorpe Avenue between Lakeview Avenue and Imperial Highway.

The City of Anaheim is typical of large southern California suburban cities with substantial destinations/attractions and employment bases. While much of housing in the City is predominately one and two stories, hotels, commercial uses, and newer residential structures are often multi-story. Although the overall sense of character of the City is largely based on the entertainment/visitor functions in the Anaheim Resort Area, much of the city is typical suburban residential uses supported by neighborhood commercial uses. Typical amenities (schools, parks, medical, municipal services, transportation, etc.) similar to those described earlier for the City of Placentia are provided throughout the City of Anaheim.

City of Yorba Linda. The City of Yorba Linda is generally north and east of the Cities of Placentia and Anaheim. The City of Yorba Linda is not crossed by the project segment of the BNSF. However, the corporate boundary of the City is just north of the eastern end of the project segment of the BNSF as shown earlier on Figure 3.4-1. In addition, several of the census tracts considered in this analysis include areas in the City of Yorba Linda as shown earlier on Figure 3.4-2. Therefore, the City of Yorba Linda is discussed in this city profile. Incorporated in 1967, Yorba Linda covers approximately 51.5 square km (19.9 square mi) and, in 2000, had a population of 58,918 persons. The Yorba Linda slogan "The Land of Gracious Living" describes the overall character of a suburban residential southern California city, with limited large employers and neighborhood commercial and municipal services to support its residents. Yorba Linda is home to the Richard M. Nixon Library and Birthplace. Typical amenities (schools, parks, medical, municipal services, transportation, etc.) similar to those described earlier for the City of Placentia are provided throughout the City of Yorba Linda.

Unincorporated Orange County. As noted earlier, there are two pockets of unincorporated Orange County in the vicinity of the BNSF railroad; both are essentially surrounded by the incorporated City of Anaheim. The unincorporated pocket north of Orangethorpe Avenue is developed in residential uses, similar to the residential uses in the adjacent parts of the incorporated City of Anaheim to the east and west. The other pocket, west of Tustin Avenue is developed in uses associated with the Orange County Water District (OCWD) retention basins to the immediate west.

Commuting Patterns in the Study Area Cities

SR-91 and SR-57 are the major east-west and north-south transportation facilities used by commuters traveling to and from the OCG project area. General commuting patterns in the project area are as follows: in the a.m. peak hour, residents from the area travel outbound to access SR-91 and SR-57 for work trips to Los Angeles County and central Orange County, while employees destined for commercial/industrial businesses south of Orangethorpe Avenue travel inbound on these same facilities. In the p.m. peak hour, these patterns are reversed. The 2000 United States Census provides several measures of commuting patterns. Travel patterns for Orange County and the OCG project study area cities are summarized in Table 3.4-A and are discussed below.

Table 3.4-A: Work Commute Travel Patterns in Orange County and the OCG Study Area Cities

	Regional	Study Area Cities		
	Orange County	**Placentia**	**Anaheim**	**Yorba Linda**
Work outside of residence	76%	97%	98%	95%
Travel Time				
60 to 89 minutes	6%	6%	6%	8%
Greater than 90 minutes	2%	2%	3%	3%
Travel Type				
Drive alone	77%	78%	71%	84%
Carpool	13%	13%	18%	9%
Walk	2%	2%	2%	1%

Source: United States Census Bureau, Census 2000, http://factfinder.census.gov.

- Place of Work: While the Orange County average for employees working outside their places of residence is 76 percent, at least 95 percent of employees in the three cities worked outside their places of residence in 2000.
- Travel Time: Approximately 6 percent of employees commuted between 60 and 89 minutes to work (one-way) in Orange County on a daily basis, and 2 percent drove for more than 90 minutes. Commuting times in the three cities were generally consistent with the County averages. However, in Yorba Linda, nearly 8 percent of employees commuted more than 90 minutes in 2000.
- Travel Together: Approximately 79 percent of employees in the three cities drove to work alone; 13 percent carpooled; and approximately 1 percent walked in 2000.

The following roads are used by commuters in the OCG project study area cities to access SR-57 and SR-91.

Kraemer Boulevard is a north-south four-lane roadway with an existing volume of approximately 18,000 vehicles per day (vpd). Kraemer Boulevard provides on- and off-ramp access to SR-91 south of the OCG study area.

Orangethorpe Avenue is an east-west four-lane road with an existing volume of approximately 16,000 vpd. This road provides regional access among the Cities of Buena Park, Fullerton, Anaheim, Placentia, and Yorba Linda, as well as an on- and off-ramp access to SR-91 south of the OCG study area.

Tustin Avenue-Rose Drive is a north-south four-lane road with an existing volume of approximately 24,000 vpd. This road provides regional access among the Cities of Brea, Yorba Linda, Placentia, and Anaheim and on- and off-ramp access to SR-91.

Lakeview Avenue is a north-south four-lane road crossing the BNSF railroad tracks, with approximately 18,000 vpd. This road provides regional access among the Cities of Yorba Linda, Placentia, and Anaheim, and on- and off-ramp access to SR-91.

Housing

The median home prices in Orange County and the Cities of Placentia, Anaheim, and Yorba Linda for 2000, 2005, and 2007 are shown in Table 3.4-B. As shown, the median home price in Orange County in 2000 was $382,000, in 2005 was $590,000 (an increase of 54 percent over 2000), and in 2007 was $640,000 (an 8 percent increase over 2005). Median home prices in Orange and Los Angeles Counties increased from August 2006 to August 2007. However, median home prices in all the other southland counties (San Bernardino, San Diego, Ventura, and Riverside Counties) declined over that one-year period. Housing sales have generally declined across the southland, including Orange County, largely as a result of instability in the long-term mortgage financing of many residential purchases in the County as well as nationwide. As a result, there are more residences for sale, including more foreclosure sales, and for-sale units are taking longer to sell ("August Cold to Home Sellers," Los Angeles Times, September 13, 2007).

Table 3.4-B: Median Home Prices

Jurisdiction	2000 Prices [1]	2005 Prices [2]	2007 Prices [2, 3]
County			
Orange County	$382,000	$590,000	$640,000
Study Area City			
Placentia	$264,500	$586,000	$590,000
Anaheim	$213,800	$598,250	$573,500
Yorba Linda	$346,100	$776,250	$831,250

Sources: [1] United States Census Bureau, Census 2000 http://factfinder.census.gov
[2] www.dataquick.com., 2006
[3] www.dataquick.com July 20, 2007.

As shown in Table 3.4-B, the median home prices in the Cities of Placentia and Anaheim were below the County median in 2007 and were above the County median in Yorba Linda (in 2005 and 2007, only).

The Housing Affordability Index (HAI), as defined by the Association of Realtors, measures the percentage of households that can afford a median-priced home. As of July 2004, only 11 percent of households in Orange County could afford a median-priced home in this County. This rate is 38 percent below the national HAI rate (55 percent) and 27 percent below the State HAI rate (19 percent). There is a great need for multifamily housing that is affecting both low-income and middle-income populations in Orange County. Renting, as opposed to owning, is often the only viable option for these groups as a result of rising home prices. However, for Orange County, the Fair Market Rent is the 50th percentile (or median) rent in the market. Table 3.4-C compares 2005 fair market rents with the median income in Orange County.

Table 3.4-C: Rental Housing Characteristics in Orange County

Rental Housing Characteristics	2005
One-bedroom apartment monthly fair market rent	$1,098
Two-bedroom apartment monthly fair market rent	$1,317
Three-bedroom apartment monthly fair market rent	$1,885
Orange County median family income (annual)	$76,206
Amount a household earning minimum wage can afford to pay in rent (monthly)	$351
Amount a household earning 30 percent of median family income can afford to pay in rent (monthly)	$557
Number of hours per week a minimum wage earner must work to afford a one-bedroom apartment	123

Source: 2005 Orange County Community Indicators, http://www.ocbc.org/rc/2005CommunityIndicators.pdf.

Census Tracts in the Study Area

The following 2000 census tracts, shown earlier on Figure 3.4-2, are within the study area for the OCG project: 117.14, 117.16, 117.21, 117.22, 218.12, 218.13, 218.20, and 218.21. The demographic characteristics of these census tracks are described in the following sections. In addition, information on demographic characteristics for Orange County and the study area cities is provided in this section, to provide a context for the demographic information for the study area census tracts.

Population. The United States Census reports that Orange County's population totaled 2.9 million in 2000, an 18 percent increase since 1990. SCAG forecasts that the population in the County will rise to 3.6 million by 2030. This represents an annual growth rate of 0.8 percent from 2020 to 2030. The 2000 populations of the Cities of Anaheim, Placentia, and Yorba Linda were 328,014; 46,488; and 58,918, respectively. The 2000 population of the census tracts in the OCG study area in 2000 was 32,925.

Age. According to the 2000 United States Census, the median age for Orange County was 33 years. The DOF forecast for age categories reports that the number of residents in Orange County aged 65 years or older rose to 270,228 in 2000, an increase of 179 percent since 1970. The number of residents

under age 18 reached 840,796 in 2000, a 65 percent increase from 1970. The DOF forecasts an additional increase of 35 percent in this age bracket by 2020.[1]

The average ages of residents in the Cities of Placentia, Anaheim, and Yorba Linda is 33.3 years, 37.4 years and 30.3 years, respectively. The average age within the census tracts in the OCG study area is 31.6 years, with Tract 218.13 having the highest average age of 35.5 years and Tract 117.14 having the lowest average age of 26.1 years.

The DOF forecasts little substantial change in age-bracket proportions for Orange County in the future. The proportion of children under age 18 will drop slightly from 33 percent to 30 percent, while seniors 65 or older will remain unchanged at 13 percent in 2020.

The population between the ages of 18 and 64 has decreased in the Cities of Placentia, Yorba Linda, and Anaheim, and the OCG study area census tracts since 1990, while the number of senior citizens and residents under the age of 18 has increased. SCAG projects that the percentage of senior citizens in the Southern California region will continue to rise over the next two decades, with approximately one in six people in the region expected to be a senior citizen in 2030.

Transit-Dependent Population. The Federal Transit Administration (FTA) defines transit-dependent persons as those who are (1) without private transportation, (2) elderly (over age 65), (3) youths (under age 18), or (4) below poverty or median income levels defined by the United States Census Bureau. The Cities of Anaheim, Placentia, and Yorba Linda reported an equal proportion of persons under 18 years of age (27 percent) and a lower proportion of persons over 65 years of age (6 percent) compared to the Statewide averages (27 and 11 percent, respectively). This reflects a trend in Orange County that the County is increasingly a home for young families.

The 2000 Census reports that 36.9 percent of the population of Orange County falls within the age or income levels defined as transit-dependent by the FTA. A total of 36.1 percent of the population of Placentia, 38.3 percent of the population of Anaheim, and 37 percent of the population of Yorba Linda are transit dependent. Within the OCG study area census tracts, 35.9 percent of the population is considered transit dependent, slightly less than County average, and consistent with the transit-dependent rates in the Cities of Placentia, Yorba Linda, and Anaheim.

Ethnicity. The DOF reports that Orange County's racial composition will include a growing proportion of non-White ethnic groups, and by 2020, Whites will comprise less than one-half of the County's residents. Table 3.4-D provides a demographic summary of the racial composition of Orange County; the Cities of Placentia, Yorba Linda, and Anaheim; and the OCG study area census tracts.

[1] California Department of Finance, www.dof.ca.gov/newdr/orange.txt, accessed 2005.

Table 3.4-D: Race and Ethnic Composition

Jurisdiction	Total Population	White (Non-Hispanic)	Black	American Indian/Native Alaskan	Asian	Hawaiian/ Pacific Islanders	Hispanic
Orange County	2,846,289	1,455,470 (51.1%)	44,256 (1.5%)	17,664 (0.6%)	394,874 (13.9%)	8,530 (0.3%)	876,451 (30.8%)
Placentia	46,488	24,967 (53.1%)	746(1.6)%	177(0.4%)	5,121(11%)	65(1.4%)	14,460 (31.1%)
Anaheim	328,014	117,607 (35.9%)	7,939(2.4%)	1,049(0.3%)	38,919(11.9%)	1,263(0.4%)	153,374 (46.8%)
Yorba Linda	58,918	44,071 (74.8%)	638 (1.1%)	139 (0.2%)	6,502 (11%)	50 (0.09%)	6,044 (10.3%)
OCG Study Area Census Tracts							
Tract 117.14	220	10 (4.5%)	0	0	58 (26%)	0	152 (69%)
Tract 117.16	4,213	1,948 (46.2%)	76 (1.8%)	35 (0.08%)	1,117 (26.5%)	0	967 (23%)
Tract 117.21	4,654	1,179 (25.3%)	147 (3.2%)	26 (0.6%)	329 (7.1%)	5 (0.1%)	2,857 (61.4%)
Tract 117.22	3,136	999 (31.9%)	102 (3.3%)	0	300 (9.6%)	0	1,561 (49.8%)
Tract 218.12	6,505	4,319 (66.4%)	145 (2.2%)	91 (1.4%)	596 (9.2%)	8 (0.1%)	1,165 (17.9%)
Tract 218.13	30	0	0	0	0	0	30 (100%)
Tract 218.20	4,209	2,752 (65.4%)	0	0	789 (18.8%)	9 (0.2%)	482 (11.5%)
Tract 218.21	5,258	2,820 (53.6%)	68 (1.3%)	27 (0.5%)	853 (16.2%)	0	1,305 (24.8%)
Totals, OCG Study Area Census Tracts	28,225	14,027 (49.7%)	538 (1.9%)	179 (0.6%)	4042 (14.3%)	22 (.08%)	8,609 (30.5%)

Source: United States Census Bureau, Census 2000, American FactFinder Table P7 (Hispanic or Latino by Race) (2000).

As shown in Table 3.4-D, in 2000, residents of Orange County were predominantly White (51.3 percent) and Hispanic (30.8 percent). Five out of eight 2000 study area census tracts are below the County percentages of the White population. Tract 218.13 has no White population, and Tract 117.14 has the lowest White population of all the study area tracts, at 5 percent. Thirty percent of the population in the study area census tracts reported Hispanic ethnicity in the 2000 Census. The entire population (30 people) in Tract 117.14 was Hispanic in 2000.

Non-Hispanic Whites are currently the largest ethnic group in the Cities of Placentia (53.1 percent) and Yorba Linda (74.8 percent). The study area census tracts as a whole are predominantly Non-Hispanic White (49.7 percent). The Hispanic population in the study area census tracts makes up 30.5 percent of the total population of those census tracts. The 2000 percentages of each ethnic/racial group in the OCG study area are similar to the rates for the County as a whole. The Black, American Indian/ Native Alaskan, Asian, and Other groups slightly exceed the County rates, all by less than 1 percent.

In summary, Tracts 218.12, 218.20, and 218.21 do not contain a disproportionate amount of minority (Table 3.4-D) or low-income (Table 3.3-G) populations relative to the OCG census tract study area as a whole. Tract 117.16 has a minority rate similar to the County (53.8 and 48.7 percent, respectively) and a lower percentage of low-income population (5 and 9 percent, respectively). Therefore, Tract 117.16 does not appear to have a disproportionate number of minority or low-income populations. The rates of Black, American Indian/Native American, and Asian populations within the eight OCG census tracts tend to slightly exceed the rates for Orange County and one or more of the study area cities (Placentia, Anaheim, and Yorba Linda).

When considering the mean population rates for all of the OCG study area census tracts combined, the Black, American Indian/Native Alaskan, Asian, and Other populations exceed the County rates, although those differences are low (at or below 1 percent).

Other Demographics. Table 3.4-E provides other demographic characteristics for the three study area cities, Orange County, and the State as reported in the 1990 and 2000 United States Censuses. At 18 percent, population growth in Orange County in the last decade was greater than California Statewide (14 percent). Median household income in Orange County in 1999 was $58,820, about 25 percent above the Statewide average, and the proportion of persons living in poverty (14.1 percent) in Orange County was lower than the State average, as shown in Table 3.4-E.

Income and Poverty. As shown in Tables 3.4-E and 3.4-F, the median household income in Orange County in 2000 was $58,820. Median household income at the census tract level is last reported from 2000. The median household income in Orange County in 2000 was exceeded by the median incomes in four census tracts in the OCG study area. Median household incomes in four census tracts in the OCG study area were below the County average, with Tract 117.14 having the lowest median household income at $35,893. The median household income in Orange County in 2000 was about 20 percent above the Statewide average, and the proportion of persons living in poverty (14.1 percent) was lower than the State average (14.2 percent). The United States Department of Health and Human Services (DHHS) poverty guideline in 2000 for a family of four was $17,603 and in 2006 is $20,000.

Table 3.4-E: OCG Study Area, County and State Demographics

Demographic Characteristic	Jurisdiction				
	Placentia	Anaheim	Yorba Linda	Orange County	California
Population change (1990 to 2000)	(-) 3.3%	(+) 13.7%	(+) 17.4%	(+) 18.1%	(+) 13.6%
Median household income	$62,803	$47,122	$89,593	$58,820	$47,493
Persons below poverty	8.7%	14.1%	3.0%	10.1%	14.2%
High school graduate or higher (over age 25 years)	81.5%	69.3%	93.4%	79.5%	76.8%
College graduate or higher (over age 25 years)	31.3%	19.6%	41.5%	30.8%	26.6%
Employed civilian labor force	24,586	152,255	31,111	1,338,838	14,718,928
Persons per household	3.07	3.34	3.05	3.00	2.87

Source: United States Censuses (1990 and 2000).

Table 3.4-F: 2000 Income and Poverty for the OCG Study Area Census Tracts and Orange County

Census Tract	Median Household[1] Income	Number of Occupied Housing Units	Number of Households Below Poverty[2]	Percent of Households Below Poverty
117.14	$35,893	78	48	62%
117.16	$82,190	1,316	65	5%
117.21	$38,462	1,490	416	28%
117.22	$42,333	872	313	36%
218.12	$65,984	2,202	283	13%
218.13	$52,500	13	5	39%
218.20	$83,578	1,330	22	2%
218.21	$60,060	1,998	200	10%
Averages and Totals for the Study Area Census Tracts	Average: $57,624	Total: 9,315	Total: 1,352	Average: 24.4%
County of Orange	$58,820	935,287	85,190	14.1%

Source: *Community Impact Assessment,* LSA Associates, Inc., October 2007; United States Census (2000). Some Census 2000 poverty status is based on 1999 incomes.

1 A "household" is a person or group of people who occupy a housing unit. (Source: www.census.gov/prod/2001pubs/c2kbr01-8.pdf, accessed October 31, 2005)

2 According to DHHS, the poverty guidelines for a family of four was $17,603 in 2000. (Source: aspe.hhs.gov)

Four tracts in the OCG study area (Tracts 117.14, 117.21, 117.22, and 218.13) reported the highest percentages of households living in poverty in 2000 (earning below $17,603) of all the study area census tracts.

Employment. Private nonfarm employment in Orange County totaled 1,330,960 persons in 2000, an increase of 12 percent from 1990. This employment growth is higher than the Statewide average (9 percent) (United States Census Bureau, www.census.gov/epcd/cbp/map/99data/06/059.txt).

The County's profile of business establishments and employment is presented in Table 3.4-G, with comparisons to the State economy. The primary economic sectors in the OCG project area include manufacturing, retail trade, and professional/technical services.

Table 3.4-G: Orange County and California Employment (2000)

Economic Sector	Establishments		Employees		Annual Payroll (millions)	
	Orange	CA	Orange	CA	Orange	CA
Construction	6,145 (8%)	9%	88,266 (6%)	6%	3,497 (7%)	6%
Manufacturing	5,768 (7%)	6%	223,025 (16%)	14%	9,425 (18%)	16%
Retail Trade	9,544 (12%)	14%	141,863 (10%)	12%	3,588 (7%)	7%
Finance, Insurance	5,004 (6%)	5%	84,604 (6%)	5%	4,862 (9%)	8%
Professional, Tech Serv.	10,690 (14%)	12%	99,031 (7%)	8%	6,368 (12%)	13%
Health Care, Social Asst.	7,905 (10%)	10%	106,138 (8%)	10%	3,508 (7%)	9%
Lodging, Food Service	5,565 (7%)	8%	112,670 (8%)	9%	1,514 (3%)	3%
All Other Sectors	36%	36%	39%	36%	37%	38%

Source: United States Census Bureau, Census 2000, http://factfinder.census.gov.

Local Area Adjacent to the BNSF Railroad Alignment

As discussed earlier, the smallest geographic area considered in the community impacts assessment was the local area directly adjacent to the project segment of the BNSF railroad. As shown earlier on Figure 3.4-3, this includes areas within the Cities of Placentia and Anaheim and two pockets of unincorporated Orange County, which are directly adjacent to the BNSF alignment. This local area does not include any part of the City of Yorba Linda because no part of that City is crossed by or immediately adjacent to the project segment of the BNSF railroad.

Community facilities in the local area are limited. Parque de los Niños, a public community park, is in the City of Placentia just south of the BNSF railroad tracks between Van Buren Street and Richfield Road. A Boys and Girls Club is provided in the City of Placentia on Crowther Avenue. Municipal services and facilities offered in Placentia and Anaheim, such as fire, police, libraries, schools, etc., are provided to the local area but there are no facilities (fire stations, schools, etc.) in the local area along the BNSF alignment. Some of the apartment complexes in the local area include outdoor common areas and facilities such as pools.

Orangethorpe and Crowther Avenues generally parallel the BNSF railroad tracks in the local area. As a result, the existing land uses along these two streets can be used to describe the community and neighborhood characteristics of the local area in the immediate vicinity of the BNSF tracks. The community/neighborhood characteristics along Crowther Avenue and Orangethorpe Avenue in the local area are described from west to east in Table 3.4-H. Refer to Figure 3.4-3 for locations of the

streets and areas identified in Table 3.4-H. Generally, the local area is characterized by various residential communities located mostly north of Orangethorpe Avenue, while the area south of Orangethorpe Avenue is generally characterized by commercial and industrial uses except between Van Buren Street and Richfield Road which has community park and residential uses. Local retail centers are located at some of the major intersections in the OCG local area.

Summary of Community Character and Cohesion

As described earlier, the project segment of the existing BNSF rail line traverses developed areas in the Cities of Placentia and Anaheim, which include a wide range of residential and nonresidential land uses. It is assumed, based on the wide variety of land uses and because these cities are bisected by the existing rail line and a number of major freeways and roads, that there is not a strong level of community cohesion across the Cities of Placentia and Anaheim. There are a variety of land uses along the BNSF and no clearly defined neighborhoods or communities. However, it is expected that, particularly within existing residential areas, there is a sense of community cohesion within those smaller areas in those cities as subdivided by the rail line, major roads and freeways, streets, and nonresidential land uses.

Demographic characteristics that can help identify the potential for community cohesion were assessed for the OCG area census tracts as summarized in Table 3.4-I. As shown, length of residence varies substantially among the census tracts and between owner- and renter-occupied units. In general, renters have lived in their units for shorter periods of time than owners. This is generally consistent with availability of single- and multiple-family residential units in these census tracts. Table 3.4-I also shows that a large percentage of households in the study area census tracks have two or more occupants. The percentage of home ownership varies dramatically based in some part on the percentage of single-family versus multiple-family housing in each census tract. The percentage of persons in the study area census tracts 65 years or older also varies but is not more than 13 percent in any census tract. The data in Table 3.4-I do not indicate a high level of community cohesion for the study area census tracts in whole. However, it is expected that there is a level of community cohesion within individual residential areas within the individual census tracts in the area. In particular, the smaller residential areas in the local area likely have a sense of cohesion within each of these neighborhoods, which were described earlier in Table 3.4-H.

Table 3.4-H: Community and Neighborhood Characteristics for the Local Area

Location in the Local Area	Description of Land Uses in the Local Area
Crowther Avenue between Melrose Avenue and Porter Way (City of Placentia)	The north and south sides of Crowther Avenue are developed in office space, industrial facilities, and warehouses. A Boys and Girls Club is at 132 East Crowther Avenue.
Crowther Avenue between Porter Way and Kraemer Boulevard (Cities of Placentia and Anaheim)	The north side of Crowther Avenue is adjacent to a gated apartment complex in Placentia. The south side of Crowther Avenue in Anaheim is adjacent to a gated single-family residential neighborhood. The area south of Crowther Avenue in Placentia is developed in industrial uses.
Crowther Avenue between Kraemer Boulevard and Orangethorpe Avenue (Cities of Placentia and Anaheim)	The north side of Crowther Avenue is adjacent to an apartment complex, close to the intersection of Crowther Avenue and Kraemer Boulevard. The remaining areas adjacent to and north of Crowther Avenue consist of single-family residences. The south side of Crowther Avenue is adjacent to a single-family

Table 3.4-H: Community and Neighborhood Characteristics for the Local Area

Location in the Local Area	Description of Land Uses in the Local Area
	residential neighborhood. A light commercial area south of Crowther Avenue at the intersection of Crowther Avenue and Orangethorpe Avenue includes a convenience store and Anaheim Hills Four Square Church.
Orangethorpe Avenue between Miller Street and Chapman Avenue (Cities of Anaheim and Placentia)	The north side of Orangethorpe Avenue is adjacent to a single-family residential neighborhood in Placentia. The south side of Orangethorpe Avenue in Anaheim is adjacent to detention basins owned and operated by the Orange County Water District (OCWD).
Orangethorpe Avenue between Chapman Avenue and Rose Drive/Tustin Drive (Cities of Anaheim and Placentia, and unincorporated Orange County)	The north side of Orangethorpe Avenue in Placentia is adjacent to single-family and multifamily residential neighborhoods. A light commercial area south of Orangethorpe Avenue in Anaheim includes a small strip mall with a bakery, restaurant, clothing dry cleaners, barber shop, hair salon, dentist, insurance company, dance school, and other small businesses. The unincorporated pocket of Orange County is developed with uses related to the OCWD facilities to the immediate west.
Orangethorpe Avenue between Rose Drive/Tustin Drive and Jefferson Street (Cities of Anaheim and Placentia)	The north side of Orangethorpe Avenue in Placentia is adjacent to two light commercial areas, including eateries, a convenience store, and Del Cerro Mobile Estates (171 spaces, no age restrictions). There is an industrial facility and storage yard south of Orangethorpe Avenue in Anaheim.
Orangethorpe Avenue between Jefferson Street and Van Buren Street (City of Placentia)	The north side of Orangethorpe Avenue is adjacent to a car wash, multifamily residences, undeveloped land, and land used for row crops. There are industrial areas and storage yards south of Orangethorpe Avenue.
Orangethorpe Avenue between Van Buren Street and Richfield Road (City of Placentia)	The north and south sides of Orangethorpe Avenue are adjacent to single-family and multifamily residences. Parque de los Niños, a community park, is south of Orangethorpe Avenue on the south side of, and immediately adjacent to, the BNSF railroad.
Orangethorpe Avenue between Richfield Road and Lakeview Avenue (City of Placentia)	The north side of Orangethorpe Avenue is adjacent to single-family and multifamily residences and light commercial areas, including a gas station. There are industrial areas south of Orangethorpe Avenue in the Atwood area.
Orangethorpe Avenue between Lakeview Avenue and Kellogg Drive (City of Anaheim)	The north side of Orangethorpe Avenue is adjacent to single-family residences, an area in row crops and a small orchard, a strip mall with small restaurants, a liquor store, chiropractic practice, bakery, clothing dry cleaners, and a Stater Brothers grocery store. There are industrial areas south of Orangethorpe Avenue.
Orangethorpe Avenue between Kellogg Drive and Imperial Highway (City of Anaheim)	The north side of Orangethorpe Avenue is adjacent to single-family and multifamily residences and a light commercial area. There are industrial areas south of Orangethorpe Avenue.

Source: *Community Impact Assessment* (LSA Associates, Inc. October 2007).

Table 3.4-I: Community Cohesion Characteristics for the OCG Study Area Census Tracts and Orange County

Census Tract	Median Year Householder Moved into Household		Percentage of Households with Two or More Occupants	Percentage of Home Ownership	Percentage of Population 65 Years or Older	Single-Family Dwelling Units (percent)
	Owner	Renter				
117.14	1985	1997	100	15	12	11
117.16	1997	1999	90	85	5	73
117.21	1993	1998	77	23	6	21
117.22	1993	1997	78	67	13	34
218.12	1988	1998	84	67	7	61
218.13	1997	1970	100	56	0	100
218.20	1994	1998	89	89	6	90
218.21	1996	1999	79	54	4	28
County of Orange	1992	1998	79	61	10	51

Source: United States Census Bureau, 2000.

3.4.1.4 Impacts

Alternative A

No direct or indirect impacts related to community character and cohesion would occur under the No Build Alternative because there would be no OCG project construction under this alternative. There would be no OCG project-related changes to the BNSF railroad alignment, and this alternative would not remove or adversely affect any community facilities or services. Therefore, Alternative A would not result in adverse impacts related to the community character and cohesion in the cities and areas around the BNSF railroad alignment.

Alternatives B, C, and D Permanent Impacts

Direct Impacts.

Community Character. As discussed earlier, the Cities of Placentia, Anaheim and Yorba Linda are representative suburban southern California cities, with varied mixes of housing types, employment uses, and municipal and private services in support of the residential and nonresidential uses in these cities. Alternatives B and C would place the existing BNSF railroad through the Cities of Placentia and Anaheim in a trench with grade separations at eight major road intersections. Alternative D would provide grade separations at the eight intersections. These alternatives would not substantially change the character of the Cities of Placentia, Anaheim and Yorba Linda because they would not remove or adversely affect community facilities or services in these cities. Further, Alternatives B and C would not create any new transportation facilities on new alignments that would substantially alter the BNSF alignment or views to and from the communities adjacent to this alignment. Alternative D would result in new transportation structures that would be visible from the adjacent areas. These structures would be similar to existing urban structures and land uses and would not be inconsistent with the suburban character

of the adjacent cities. Therefore, the existing characters of the cities of Placentia, Anaheim and Yorba Linda are not anticipated to be adversely affected by Alternatives B, C, and D. Alternatives B, C, and D would beneficially affect surface transportation by eliminating eight existing at-grade rail crossing and reducing delay for travelers in these cities.

As discussed earlier, the census tracts in the OCG study area are similar in overall character to the characters of the Cities of Placentia, Anaheim and Yorba Linda in that they provide mix of residential and nonresidential uses in a typical southern California style. Alternatives B, C, and D would not adversely affect the character of these census tracts because they would not remove or adversely affect community facilities or services in these census tracts. Alternatives B and C would not create any new transportation facilities on new alignments that would substantially alter the BNSF alignment or views to and from the census tracts adjacent to this alignment. As noted above, Alternative D would result in new transportation structures visible from the adjacent census tracts. However, these structures would not be inconsistent with the surrounding suburban uses. Therefore, the existing character of the study area census tracts is not anticipated to be adversely affected by Alternatives B, C, and D. Alternatives B, C, and D would beneficially affect surface transportation by reducing delays at eight road crossings which would benefit the residents, workers and visitors to these census tracts.

As discussed earlier, the local area along the alignment of the project segment of the BNSF railroad includes a mix of residential and nonresidential uses in the Cities of Placentia and Anaheim and two pockets of unincorporated Orange County. The character of this local area is similar to the character of the study area census tracts and cities in that this area includes typical southern California single- and multiple-family residential uses in pockets along the BNSF alignment that form individual residential neighborhoods. The residential uses are interspersed with nonresidential uses including office, industrial, warehouse, retention basin, parking, and commercial uses. Alternatives B, C, and D would not adversely affect the character of this local area because it would not remove or adversely affect community services or facilities in this area. Further, Alternatives B and C would not create any new transportation facilities on new alignments and would not provide structures that would substantially alter the BNSF alignment or views to and from the localized areas adjacent to this alignment. Alternative D would result in new transportation structures visible in the local area. These structures would not be inconsistent with the surrounding suburban uses. Therefore, the existing character of the local area is not anticipated to be adversely affected by Alternatives B, C, and D. Alternatives B, C, and D would beneficially affect surface transportation by reducing delays at eight road crossings which would benefit the residents, workers and visitors to these census tracts.

Community Cohesion. As discussed earlier, the Cities of Anaheim, Placentia and Yorba Linda are typical southern California cities with a mix of varied housing types and nonresidential uses. Although these are incorporated cities, there is no one factor that stands out as a unifying factor that would contribute to a strong sense of community cohesion across each city. However, within each city, it is expected that there are areas of strong community cohesion, based on demographic, geographic, housing and other factors. Alternatives B, C, and D would not result in any new divisions or barriers within these cities and, therefore, would not adversely affect community cohesion in these cities. Alternatives B, C, and D could contribute beneficially to community

cohesion in these cities by reducing traffic delays for residents, workers and visitors at the eight intersections proposed to be grade separated under Alternatives B, C, and D.

As discussed earlier, the demographic data for the study area census tracts do not indicate a strong level of community cohesion across the individual census tracts. There is no one factor that stands out as a unifying factor that would contribute to a strong sense of community cohesion within individual or multiple census tracts. However, within each census tract, it is expected that there are areas of community cohesion, based on demographic, geographic, housing and other factors. No demographic data are available at geographic units smaller than census tracts. However, as noted earlier, the demographic data for the study area census tracks indicate that these census tracts tend to have higher percentages of minority, low income, and transit-dependent populations than the three cities and the County. As a result, it is expected that residential areas within the census tracts may have a level of cohesion related to the relatively higher percentages of these types of populations. However, because no data are available for smaller areas within these census tracts, it is not possible to identify specific areas that may have a sense of cohesion related to ethnic, race, income, or accessibility factors. Nonetheless, Alternatives B, C, and D would not result in any new divisions or barriers within these census tracks and, therefore, would not adversely affect community cohesion in these census tracts. These alternatives could contribute beneficially to community cohesion in these census tracts by reducing traffic delays for residents, workers, and visitors at the eight intersections proposed to be grade separated under these alternatives.

As noted earlier, it is anticipated that there is likely a strong sense of community cohesion in smaller residential areas in the local area adjacent to the BNSF alignment. The existing Parque de los Niños, the Boys and Girls Club, Anaheim Four Square Church, and local neighborhood commercial uses likely contribute to the sense of community cohesion in the pockets of residential uses in the local area. These are land uses where residents of the local area can gather, for recreation, worship and shopping. Alternatives B, C, and D would not result in any new divisions or barriers within this local area, and would not remove the park, the Boys and Girls Club, or Anaheim Four Square Church, and, therefore, would not adversely affect community cohesion in this area. Alternatives B, C, and D could contribute beneficially to community cohesion in these localized areas by reducing traffic delays for residents, workers and visitors at the eight intersections proposed to be grade separated. Alternatives B, C, and D would not create any new divisions in the local area because all improvements would be to the existing rail line and the existing streets that cross the study area; therefore, these alternatives are not anticipated to result in an adverse impact related to community cohesion.

Indirect Impacts. Indirect impacts related to the implementation of Alternative B include beneficial effects such as better access across the existing railroad right-of-way (due to elimination of the existing at-grade crossings) for the existing communities on either side of the rail alignment. Pedestrian crossings at each of the new at-grade facilities under Alternative B would create better community connectivity and would allow pedestrians to travel more freely to and from the residential and commercial areas in the local area. Overall quality of life would be improved for the local area by reducing the existing noise and visual effects of the existing at-grade railroad.

The beneficial community connectivity impacts under Alternative C are similar to those described for Alternative B. However, under Alternative C, the trench segment of the project would extend only to

just east of Lakeview Avenue, with the Lakeview Avenue crossing constructed as an overcrossing. This would maintain an existing barrier in the Lakeview Avenue area (and east to Imperial Avenue) for connections to and from the local area. These conditions exist today, and the implementation of Alternative C would not create more of a barrier than what exists today. The overcrossing would be visually more of a barrier, but the separation of vehicles, pedestrians, and train traffic at this overcrossing under Alternative C would provide a safer connection in the local area than the existing condition.

Alternative D would present some new physical barriers to both residents and businesses in the local area surrounding the Orangethorpe Avenue intersections at Tustin Avenue/Rose Drive, Van Buren Street, Richfield Road, Lakeview Avenue, and Kellogg Drive. The grade separations at these locations would require the use of on-ramps and off-ramps to access the arterial roadways. However, the new grade separations would allow for safer crossings of the railroad right-of-way because the vehicle and pedestrian traffic would be separated from the train traffic. These impacts of Alternative D are not anticipated to adversely affect community cohesion because there is not a strong sense of community across the BNSF and across the major streets in the area. In addition, vehicles and pedestrians would be able to travel across the BNSF railroad at the interchange locations. Therefore, there would not be a long-term adverse indirect project impact related to community cohesion under Alternative D.

Summary of Potential Impacts Related to Community Character and Cohesion. In summary, Alternatives B, C, and D would not result in direct or indirect adverse impacts related to community character and cohesion at the city, census tract or local area geographic levels. Alternatives B, C, and D would result in beneficial effects related to the provision of grade separations at eight intersections and reduced delays for vehicular traffic.

Temporary Impacts (Alternatives A, B, C, and D). Temporary project impacts are defined as those that would occur only during construction of the OCG project. These temporary impacts would not occur prior to the construction effort and would be no longer evident on completion and full operation of the project. The temporary impacts would occur over a phased period, commensurate with the phasing of construction of the trench or each of the individual grade separations, as applicable, under Alternatives B, C, and D. Once the construction of the total OCG project is complete, the temporary impacts would cease, and the benefits of the OCG project would be realized. However, because the construction period for the OCG project is several years, mitigation is required to offset adverse effects during construction. There would be no temporary impacts under Alternative A because there would be no project construction under this alternative.

Mitigation measures to address temporary adverse impacts during construction are provided throughout Section 3.0. In addition, Table 7-1, provided later in Section 7.0, is a listing of all the project mitigation measures, when they would apply (during construction and/or operation), and the alternatives to which each measure applies. As listed in Table 7-1, there are mitigation measures to address short-term construction impacts related to land use; community impacts; utilities and emergency services; traffic; cultural resources; water quality and storm water runoff; geology, soils, topography, and paleontology; hazardous wastes and materials; air quality; noise and vibration; wetlands and other waters of the United States; and invasive species.

Temporary Business Disruptions. Construction activity associated with the Build Alternatives may produce an adverse effect on businesses located along the corridor. Disruption would occur when street access is restricted during construction, and businesses could also experience noise and dust impacts from construction activity. Businesses could lose on-street parking and perhaps some off-street parking as a result of nearby construction. For some businesses, especially small retail operations, prolonged construction could substantially affect their operation and viability.

The loss of access and street parking would depend on the sequence of construction. Full and partial street closings may be required at times throughout the construction period and may create noisy conditions. The precise effects on businesses located along the corridor would depend on site-specific conditions and the strength of each business at the outset of construction. Larger businesses should have less difficulty than smaller ones. Businesses having a loyal client base (such as those that provide unique goods or services) would have less difficulty than those depending on trade from the general public. Overall, the OCG project construction period would produce business disruptions and inconveniences that can be overcome in the majority of instances but may be insurmountable in others. Mitigation to address these potential temporary impacts are provided later in Section 3.4.2.5, in Measures CI-1, CI-2, and CI-3.

Temporary Neighborhood Disruptions. Construction activity associated with the Build Alternatives may affect the local area. During construction, Alternatives B, C, and D could temporarily divide neighborhoods, separate resident children from schools, or fragment edges of cohesive groups of people and, therefore, adversely affect how a community or neighborhood functions. As discussed later in this section, construction of the OCG Build Alternatives may affect a given area adjacent to the construction limits, including residential and nonresidential uses, by up to four years and two months under Alternative B; up to three years and two months under Alternative C; and approximately two years at a given intersection/crossing location under Alternative D (although the total length of time to construct all eight intersections under Alternative D is estimated at 13.5 years). However, these impacts are temporary and would occur only during construction, and the long-term impacts on the surrounding local area and communities would be beneficial rather than adverse.

As previously discussed, the actual loss of access and street parking would depend on the sequence of construction. Full and partial street closings may be required at times throughout the construction period and may create noisy conditions in residential areas due to rerouted traffic.

Alternative A Temporary Impacts

Business and Neighborhood Disruptions. No business and neighborhood disruptions due to construction would occur as a result of Alternative A. Increased train traffic on the railroad over time would continue to impair the ability of residents to cross the railroad tracks.

Alternatives B and C Temporary Impacts

Business and Neighborhood Disruptions. Temporary construction-related business and neighborhood disruptions would occur with the implementation of Alternatives B and C. Construction activity may affect any one block along the alignment for up to four years and two months under Alternative B and three years and two months under Alternative C.

Alternative D Temporary Impacts

Business and Neighborhood Disruptions. Temporary construction-related business and neighborhood disruptions would occur with the implementation of Alternative D. Construction of the grade separations would be phased over a period of approximately 13 years and 6 months over the entire corridor, but the construction period at any single intersection or location would be approximately 2 years. The temporary construction impacts would be more sustained than the impacts from Alternatives B and C because the overall project construction period would be more than 13 years. However, the temporary impacts under Alternative D would affect a smaller geographic area during the construction phase of each grade separation because Alternative D construction would occur only at specific locations (intersections) and not continuously along the BNSF alignment in the local area.

3.4.1.5 Avoidance, Minimization, and/or Mitigation Measures

Alternative A

No mitigation measures are required.

Alternatives B, C and D

Alternatives B, C, and D would not result in adverse impacts related to community character and cohesion. No mitigation is necessary. Mitigation for temporary construction impacts is summarized later in Table 7-1.

3.4.1.6 Conclusion

Alternative B, C, and D would not result in adverse impacts related to community character and cohesion.

Alternatives B, C, and D would benefit the community by reducing traffic congestion, reducing the current and potential costs of traffic delays caused by the existing and future railway operations, and reducing the current and potential safety hazards posed by the existing grade-level crossings. Improvements resulting from the proposed OCG project would provide all residents, including minority and low-income populations, with more mobility and greater connectivity. The OCG project would also increase the efficiency of moving people and goods throughout the surrounding communities and provide efficient access to existing and future developments within those communities.

3.4.2 RELOCATIONS

3.4.2.1 Regulatory Setting

The City of Placentia's Relocation Assistance Program (RAP) is based on the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended) and Title 49 Code of Federal Regulations (CFR) Part 24. The purpose of the RAP is to ensure that persons displaced as a result of a transportation project are treated fairly, consistently, and equitably so that such persons will not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole. Appendix D provides a summary of the RAP committed to by the City of Placentia for the OCG project.

All relocation services and benefits for the proposed OCG project would be administered without regard to race, color, national origin, or sex in compliance with Title VI of the Civil Rights Act (42 USC 2000d, et seq.). Appendix C provides a copy of the City of Placentia's Title VI Policy Statement.

3.4.2.2 Methodology

Constructing any of the proposed OCG Build Alternatives would require acquiring private property, some of which includes residences, nonresidential buildings, or other improvements. Project impacts include both full acquisition of parcels (and the uses on those parcels) and partial acquisitions, which may displace or alter existing uses. This analysis identifies properties and improvements affected by each of the proposed OCG Build Alternatives. This analysis was conducted using aerial photographs (2000) of the study area and GIS coverages for parcel lines (1996 through 2000), including existing land uses, and pedestrian surveys of the project area. Counts of buildings affected are based on the maximum footprint as described in the *Preliminary Engineering Report* for the Orange County Gateway and the project conceptual plans (in Attachments 1, 2, and 3 in the *Preliminary Engineering Report*) for all the Build Alternatives (KFM Engineering, Inc. 2004) and do not include buildings constructed or demolished since that time. As a result, actual impacts at the time of property acquisition for the proposed OCG project may vary from the potential impacts described in this section.

The following two types of effects to properties are considered in this section:

- *Full Acquisition* of a property occurs if the entire parcel is within the footprint of an alternative. Full acquisition of a parcel occurs if the footprint of an alternative results in the acquisition of an entire property, including any improvements on that parcel such as structures, landscaping, and parking.
- *Partial Acquisition* of a property occurs if any part of a parcel is within the footprint of the alternative but does not require the displacement of the entire property and the existing uses on that property. These impacts range from a sliver or edge of a parcel within the project footprint to substantial partial acquisitions that fall short of full acquisition of the parcel.

For displaced business properties, estimates were prepared for the number of employees potentially displaced. The numbers of employees potentially displaced by the OCG project alternatives were estimated based on a composite of urban planning standard floor area ratios (FAR) (Principals and

Practice for Urban Planning, Goodman and Freund, 1968) for different land uses, fiscal impact standard generation factors (The Fiscal Handbook, Burchell and Listokin, 1978), and a telephone survey of some business properties that would potentially be acquired.

The potential impacts of the proposed project on the local jurisdictions' property tax revenues were estimated based on the identified full property acquisitions for each Build Alternative.

The full and partial right-of-way acquisitions and TCEs identified for the OCG Build Alternatives are preliminary based on the 2004 conceptual design. The actual right-of-way (full and partial acquisitions) and TCEs needed if an OCG Build Alternative is selected for implementation would be defined during final design.

3.4.2.3 Affected Environment

The affected environment related to relocations as a result of the OCG project is the same as the affected local area environment described previously in Section 3.4.1.2.

A *Draft Relocation Impact Report* (DRIR) (LSA Associates, Inc., May 2006) was prepared for the OCG Build Alternatives. The DRIR summarizes the OCG alternatives; the general demographic characteristics of the OCG study area (population, housing, household size, ages, etc.); the anticipated displacements (property acquisitions) under the Build Alternatives; potential relocation resources in the area; and the primary relocation issues in this part of Orange County. A *Final Relocation Impact Report* (LSA Associates, Inc., January 2009) was prepared for the preferred alternative, Alternative D.

3.4.2.4 Impacts

Permanent Impacts

Alternative A

No partial or full acquisitions would occur under the No Build Alternative because no OCG project construction or implementation, including right-of-way acquisition, would occur under this alternative.

Alternatives B, C, and D (Direct and Indirect Impacts)

The estimated partial and full acquisitions for the three Build Alternatives are summarized in detailed tables and are discussed in this section. According to the DRIR, adequate relocation resources may not exist for residential owners and tenants in the Cities of Anaheim and Placentia. High housing costs and a shortage of housing in the Cities of Anaheim and Placentia may make relocation efforts difficult for displaced residents. Relocation resources for nonresidential buildings (businesses) may also be difficult to obtain within these cities due to the low vacancies of nonresidential properties in the Orange County area and the Southern California region.

The North Yorba Linda Estates, Yorba Linda Heights residential development, and Maag Ranch projects would each introduce new housing opportunities within the cumulative area, resulting in the

construction of over 1,000 single-family residential housing units. The construction of these housing units could potentially offset the residential displacements as a result of the OCG project. However, due to varying project schedules, it is not possible to determine the availability of these housing units relative to the property acquisition process for the OCG project. In addition, these residential developments would not compensate for the potential nonresidential displacements that would result from implementation of the proposed OCG project. Actual relocation opportunities would be dependent on what properties are available at the time right-of-way acquisition occurs for the OCG project, if a Build Alternative is selected for implementation. Therefore, this analysis did not assume that housing in North Yorba Linda Estates, Yorba Heights, and Maag Ranch was available as relocation housing for residents displaced by the OCG Build Alternatives.

The potential right-of-way acquisition, access, and tax revenue impacts of the OCG Build Alternatives are discussed in the following sections.

Alternative B Existing Land Use and Acquisitions. Tables 3.4-J and 3.4-K summarize the full and partial acquisitions by parcel needed to accommodate Alternative B. Table 3.4-K also lists the temporary construction easements (TCEs) that would be necessary during the construction of Alternative B. Assessor parcel numbers and addresses for private residences were excluded from the tables for privacy. The full and partial right-of-way acquisitions and TCEs identified for the OCG Build Alternatives are preliminary based on the 2004 conceptual design. The actual right-of-way (full and partial acquisitions) and TCEs needed if an OCG Build Alternative is selected for implementation would be defined during final design.

Figure 3.4-4 shows the proposed project boundary for Alternative B, including the anticipated full and partial property acquisitions under this alternative. As shown on Figure 3.4-4, parcels anticipated to be full acquisitions are shown as a cross-hatched pattern on the entire parcel. Parcels anticipated to be subject to partial acquisitions are shown in a striped pattern on the entire parcel; however, only the part of the parcel within the project limits is anticipated to be acquired for Alternative B; the remainder of the parcel would not be affected by the proposed OCG project.

Alternative B would require the full and permanent acquisition of 11 nonresidential properties and 5 residential parcels. As shown in Table 3.4-J, the 11 nonresidential parcels that would be acquired include industrial and commercial uses. One of the residential parcels is a storage area for equipment and vehicles within a residential parcel. Alternative B is designed to utilize existing right-of-way easements and minimize the number of acquisitions and amount of encroachment on surrounding properties. These properties are generally south of the railroad tracks at the intersections of Jefferson Street/Orangethorpe Avenue, Van Buren Street/Orangethorpe Avenue near the intersection of Kraemer Boulevard/East Crowther Avenue, and Orangethorpe Avenue/Miller Street. Descriptions of these properties (e.g., Assessor's parcel number, use, size, and address) are provided in Table 3.4-J. These property acquisitions would result in an adverse impact on the property owners and tenants which would be minimized based on compliance with the requirements of the RAP as described in Mitigation Measures CI-2, CI-4, CI-5, and CI-6. Nonetheless, even with mitigation, some displaced property owners may consider the experience of displacement to be a substantial adverse impact not fully mitigated by those mitigation measures.

Table 3.4-J: Full Property Acquisitions under Alternative B[1]

Assessor's Parcel Number (APN)	Existing Land Use	Size of Parcel (square feet [sf])	Address or Location	Jurisdiction
339-451-01	Industrial	19,890	511 Cameron St.	Placentia
340-381-01	Commercial	51,057	3303 E. Orangethorpe Ave.	Anaheim
345-161-23	Industrial	56,652	Southwest corner of Jefferson St. and Orangethorpe Ave.	Anaheim
346-162-01	Industrial	21,616	South of Orangethorpe Ave. and west of Van Buren Blvd. (north of Olive Subdivision)	Placentia
346-162-02	Industrial	199,597	South of Orangethorpe Ave. between Tustin Ave. and Van Buren St.	Placentia
346-164-25	Industrial	225,000	443 S. Van Buren St.	Placentia
346-241-01	Commercial	32,376	506 S. Fee Ana St.	Placentia
346-241-02	OCFCD	104,401	East of Fee Ana St. and south of Orangethorpe Ave.	Placentia
346-331-01	Industrial	20,335	Southwest corner of Orangethorpe Ave. and Lakeview Ave.	Placentia
	Residential	7,818		Placentia
	Residential/equipment and vehicle storage lot	5,257		Placentia
	Residential	17,692		Placentia
	Residential	20,897		Placentia
346-331-06	Commercial	35,506	625 S. Lakeview Ave.	Placentia
346-331-07	Commercial	25,000	17922 E. Orangeview Ave.	Placentia
	Residential	30,128		Placentia
ALTERNATIVE B TOTAL FULL ACQUISITIONS				
Total parcels fully acquired: 16			Total area acquired: 873,222 sf	
Residential parcels fully acquired: 5			Residential area acquired: 81,792 sf	
Nonresidential parcels fully acquired: 11			Nonresidential area acquired: 791,430 sf	

Sources: *Preliminary Engineering Report* (KFM 2004); LSA Geographic Information System 2004; Orange County Tax Assessor's Office 2003; tax.ocgov.com (October 2005); and review of 2004 and 2005 aerial photographs.

OCFCD = Orange County Flood Control District

[1] The full and partial right-of-way acquisitions and TCEs identified for the OCG Build Alternatives are preliminary based on the 2004 conceptual design. The actual right-of-way (full and partial acquisitions) and TCEs needed if an OCG Build Alternative is selected for implementation would be defined during final design.

Table 3.4-K: Partial Property Acquisitions and Temporary Construction Easements under Alternative B[1]

Assessor's Parcel Number (APN)	Existing Land Use	Size of Partial Acquisition (square feet [sf])	Size of Temporary Construction Easement (TCE) (sf)	Address or Location	Jurisdiction
APN unavailable	Commercial	0	282	Southeast corner of Van Buren St. and Orangethorpe Ave.	Placentia
APN unavailable	Residential	0	1,439		Placentia
APN unavailable	Residential	0	939		Placentia
APN unavailable	Residential	0	251		Placentia
APN unavailable	Residential	0	488		Placentia
APN unavailable	OCFCD	2,615	0	South of Orangethorpe Ave. at Crowther Ave.	Anaheim
APN unavailable	OCFCD	858	0	Atwood Channel at Jefferson St.	Anaheim
APN unavailable	OCFCD	6,438	0	South of railroad and Orangethorpe Ave. west of Jefferson St.	County of Orange and Anaheim
APN unavailable	OCFCD	1,015	0	Atwood Channel at Jefferson St.	Placentia
APN unavailable	OCTA buildings. Property is owned by the City of Placentia	13,331	11,700	North of Crowther Ave. near Porter Way and east of Bradford Ave.	Placentia
339-063-01	Parking, City of Placentia	3,633	1,115	101 E. Crowther Ave.	Placentia
339-063-02	Parking, City of Placentia	2,700	483	125 E. Crowther Ave.	Placentia
339-063-03	Parking, City of Placentia	162	0	North of Crowther Ave. at Cameron St.	Placentia
339-081-27	Industrial	1,510	690	500 Porter Way	Placentia
339-081-29	Industrial	1,586	720	320 E. Crowther Ave.	Placentia
339-081-30	Industrial	1,609	1,429	340 E. Crowther Ave.	Placentia
339-081-32	Industrial	869	540	390 E. Crowther Ave.	Placentia
339-081-33	Industrial	1,579	1,392	370 E. Crowther Ave.	Placentia
339-081-39	Industrial	782	2,979	505 Porter Way	Placentia
339-402-04	OCWD	0	426	Crowther Ave. and Bradford St.	Placentia
339-451-13	Industrial	2,234	2,050	210 E. Crowther Ave.	Placentia
340-313-08	Vacant	1,273	190	Between Crowther Ave. and Molokai Dr.,	Placentia

Note: Highlighted parcels are not listed in the Orange County Assessor's database. They may have been merged with another parcel or split into multiple parcels since the preparation of the engineering right-of-way plans.

Table 3.4-K: Partial Property Acquisitions and Temporary Construction Easements under Alternative B[1]

Assessor's Parcel Number (APN)	Existing Land Use	Size of Partial Acquisition (square feet [sf])	Size of Temporary Construction Easement (TCE) (sf)	Address or Location	Jurisdiction
				west of Kraemer Blvd.	
	Residential	32,797	5,016		Placentia
340-314-04	Parking	18,476	3,362	Northeast corner of Crowther Ave. and Kraemer Blvd.	Placentia
	Residential	3,560	816		Placentia
	Residential	4,578	350		Placentia
	Residential	2,500	350		Placentia
	Residential	2,500	350		Placentia
	Residential	2,500	350		Placentia
	Residential	2,500	350		Placentia
	Residential	2,500	350		Placentia
	Residential	0	350		Placentia
	Residential	0	350		Placentia
	Residential	0	350		Placentia
	Residential	0	350		Placentia
	Residential	990	350		Placentia
	Residential	2,500	350		Placentia
	Residential	2,500	350		Placentia
	Residential	0	350		Placentia
	Residential	0	350		Placentia
	Residential	0	350		Placentia
	Residential	0	759		Placentia
	Residential	0	153		Placentia
340-382-30	OCFCD easement	0	5,990	North of Crowther Ave. between Carbon Canyon Channel and Orangethorpe Ave.	Placentia
340-382-31	OCFCD easement	0	920	North of Crowther Ave. east of Carbon Canyon Channel	Placentia
340-393-47	Greenbelt with sidewalk in a residential area	24,777	3,915	Crowther Ave. east of Delores Circle	Placentia
341-343-10	Oil well and vacant	1,048	250	North of Orangethorpe Ave. between Jefferson	Placentia

Note: Highlighted parcels are not listed in the Orange County Assessor's database. They may have been merged with another parcel or split into multiple parcels since the preparation of the engineering right-of-way plans.

Table 3.4-K: Partial Property Acquisitions and Temporary Construction Easements under Alternative B[1]

Assessor's Parcel Number (APN)	Existing Land Use	Size of Partial Acquisition (square feet [sf])	Size of Temporary Construction Easement (TCE) (sf)	Address or Location	Jurisdiction
				St. and Van Buren St.	
341-343-11	Parking and agriculture (row crops)	0	1,157	North of Orangethorpe Ave. between Jefferson St. and Van Buren St.	Placentia
341-343-13	Vacant	0	388	North of Orangethorpe Ave. between Jefferson St. and Van Buren St.	Placentia
341-354-06	Agriculture (row crops)	6,032	1,527	North of Orangethorpe Ave. between Jefferson St. and Van Buren St.	Placentia
341-354-07	Paved parking and commercial stand for agriculture	463	133	North of Orangethorpe Ave. between Jefferson St. and Van Buren St.	Placentia
341-354-08	Paved parking	728	193	17201 E. Orangethorpe Ave.	Placentia
341-354-09	Paved parking	231	74	17211 E. Orangethorpe Ave.	Placentia
341-354-10	Oil well and paved parking	460	134	North of Orangethorpe Ave. between Jefferson St. and Van Buren St.	Placentia
341-354-11	Oil well and agriculture (row crops)	451	134	North of Orangethorpe Ave. between Jefferson St. and Van Buren St.	Placentia
341-354-12	Agriculture (row crops)	1,683	654	North of Orangethorpe Ave. between Jefferson St. and Van Buren St.	Placentia
341-354-13	Agriculture (row crops)	0	750	North of Orangethorpe Ave. between Jefferson St. and Van Buren St.	Placentia
341-373-06	City sidewalk	0	1,751	Northwest corner of Van Buren St. and Orangethorpe Ave.	Placentia
	Residential	0	318		Placentia
341-374-07	Commercial road	0	271	1613 E. Orangethorpe Ave.	Placentia
341-374-08	Commercial parking	0	128	North of Orangethorpe Ave. and east of Van Buren St.	Placentia

Note: Highlighted parcels are not listed in the Orange County Assessor's database. They may have been merged with another parcel or split into multiple parcels since the preparation of the engineering right-of-way plans.

Table 3.4-K: Partial Property Acquisitions and Temporary Construction Easements under Alternative B[1]

Assessor's Parcel Number (APN)	Existing Land Use	Size of Partial Acquisition (square feet [sf])	Size of Temporary Construction Easement (TCE) (sf)	Address or Location	Jurisdiction
341-374-09	Commercial	0	128	1619 E. Orangethorpe Ave.	Placentia
341-374-10	Commercial	0	103	North of Orangethorpe Ave. and east of Van Buren St.	Placentia
341-374-17	Commercial	0	1,031	17311 E. Orangethorpe Ave.	Placentia
	Residential	383	235		Anaheim
	Residential	386	248		Anaheim
	Residential	238	248		Anaheim
	Residential	80	248		Anaheim
343-351-60	Agricultural, orchard	12,690	3,215	4501 E. Orangethorpe Ave.	Anaheim
346-015-07	Industrial	0	1,365	527 Fee Ana St.	Placentia
	Residential	0	312		Placentia
	Residential	0	187		Placentia
346-164-44	Vacant	0	990	Southwest corner of Atwood Channel and the Olive Subdivision	Placentia
346-165-01	Vacant	0	990	West edge of Atwood Channel at the Olive Subdivision, east of Jefferson	Placentia
346-211-01	Commercial	0	368	1580 N. Kellogg Dr.	Anaheim
346-291-01	Commercial	0	1,907	1500 Lakeview Ave.	Placentia
346-291-02	OCFCD	0	385	Atwood Channel and Orangethorpe Ave.	Anaheim
346-391-12	Commercial	17,367	0	4875 E. Hunter Ave.	Anaheim
346-401-05	Commercial parking	1,614	0	Southwest corner of Orangethorpe Ave. and Kellogg Dr.	Anaheim
346-401-06	Commercial parking	0	320	5057 E. Hunter Ave.	Anaheim

Note: Highlighted parcels are not listed in the Orange County Assessor's database. They may have been merged with another parcel or split into multiple parcels since the preparation of the engineering right-of-way plans.

Table 3.4-K: Partial Property Acquisitions and Temporary Construction Easements under Alternative B[1]

Assessor's Parcel Number (APN)	Existing Land Use	Size of Partial Acquisition (square feet [sf])	Size of Temporary Construction Easement (TCE) (sf)	Address or Location	Jurisdiction
ALTERNATIVE B TOTAL PARTIAL ACQUISITIONS AND TCEs					
Total parcels partially acquired: 44 Residential parcels partially acquired: 15 Nonresidential parcels partially acquired: 29		Total area acquired: 188,726 sf	--	Residential area: 80,427 sf Nonresidential area: 108,299 sf	
Total TCEs: 73 Residential TCEs: 31 Nonresidential TCEs: 42		--	Total TCE area: 73,786 sf	Residential area: 24,835 sf Nonresidential area: 48,951 sf	

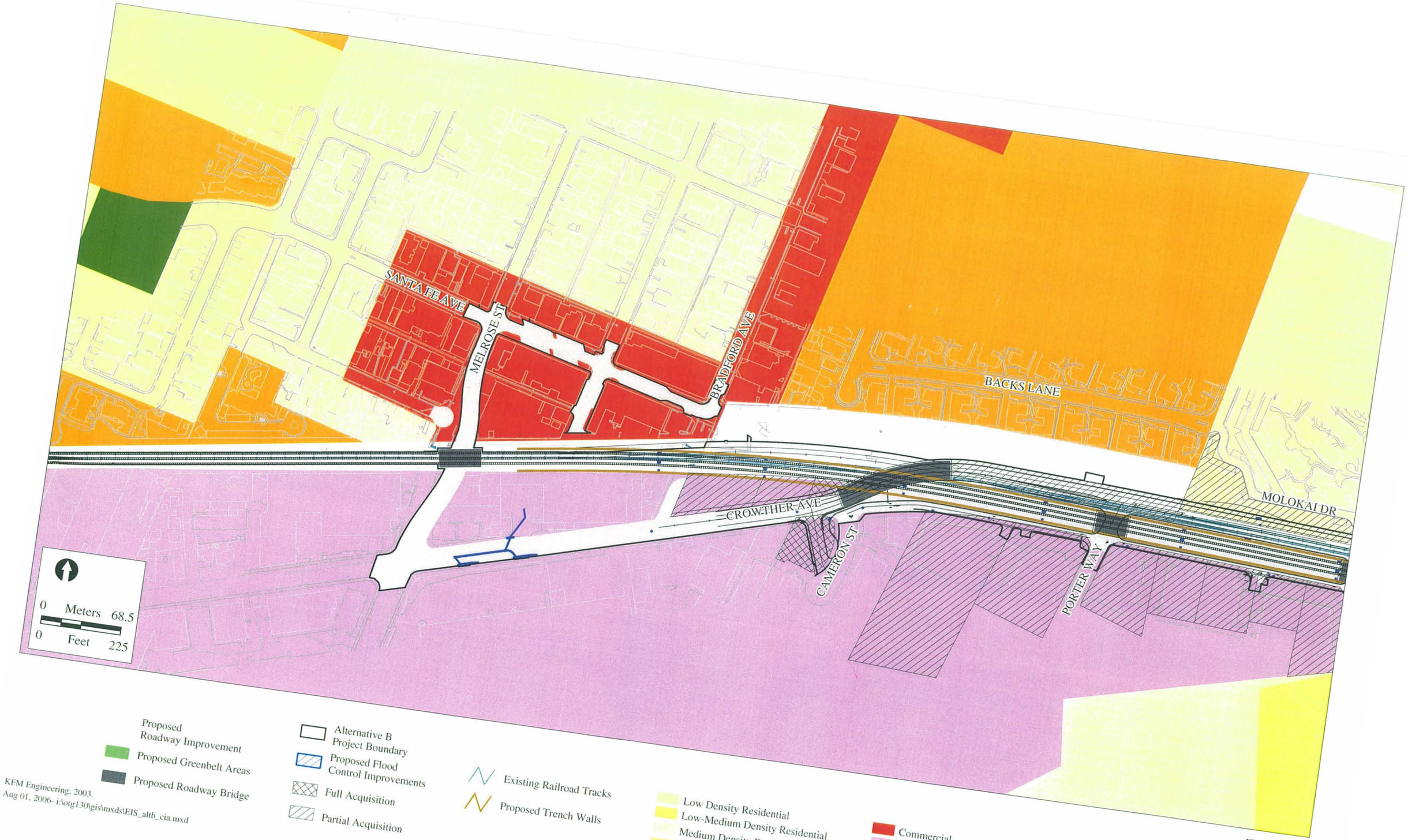
Sources: Concept Plans (KFM 2004); LSA Geographic Information System 2004; Orange County Tax Assessor's Office 2003; tax.ocgov.com (October 2005); and review of 2004 and 2005 aerial photographs.

Note: Highlighted parcels are not listed in the Orange County Assessor's database. They may have been merged with another parcel or split into multiple parcels since the preparation of the engineering right-of-way plans.

OCWD = Orange County Water District
OCFCD = Orange County Flood Control District
OCTA = Orange County Transportation Authority

[1] The full and partial right-of-way acquisitions and TCEs identified for the OCG Build Alternatives are preliminary based on the 2004 conceptual design. The actual right-of-way (full and partial acquisitions) and TCEs needed if an OCG Build Alternative is selected for implementation would be defined during final design.

Note: Highlighted parcels are not listed in the Orange County Assessor's database. They may have been merged with another parcel or split into multiple parcels since the preparation of the engineering right-of-way plans.



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Figure 3.4-4
Orange County Gateway

Alternative B
General Plan Land Uses
and Proposed Acquisitions
Sheet 1 of 8

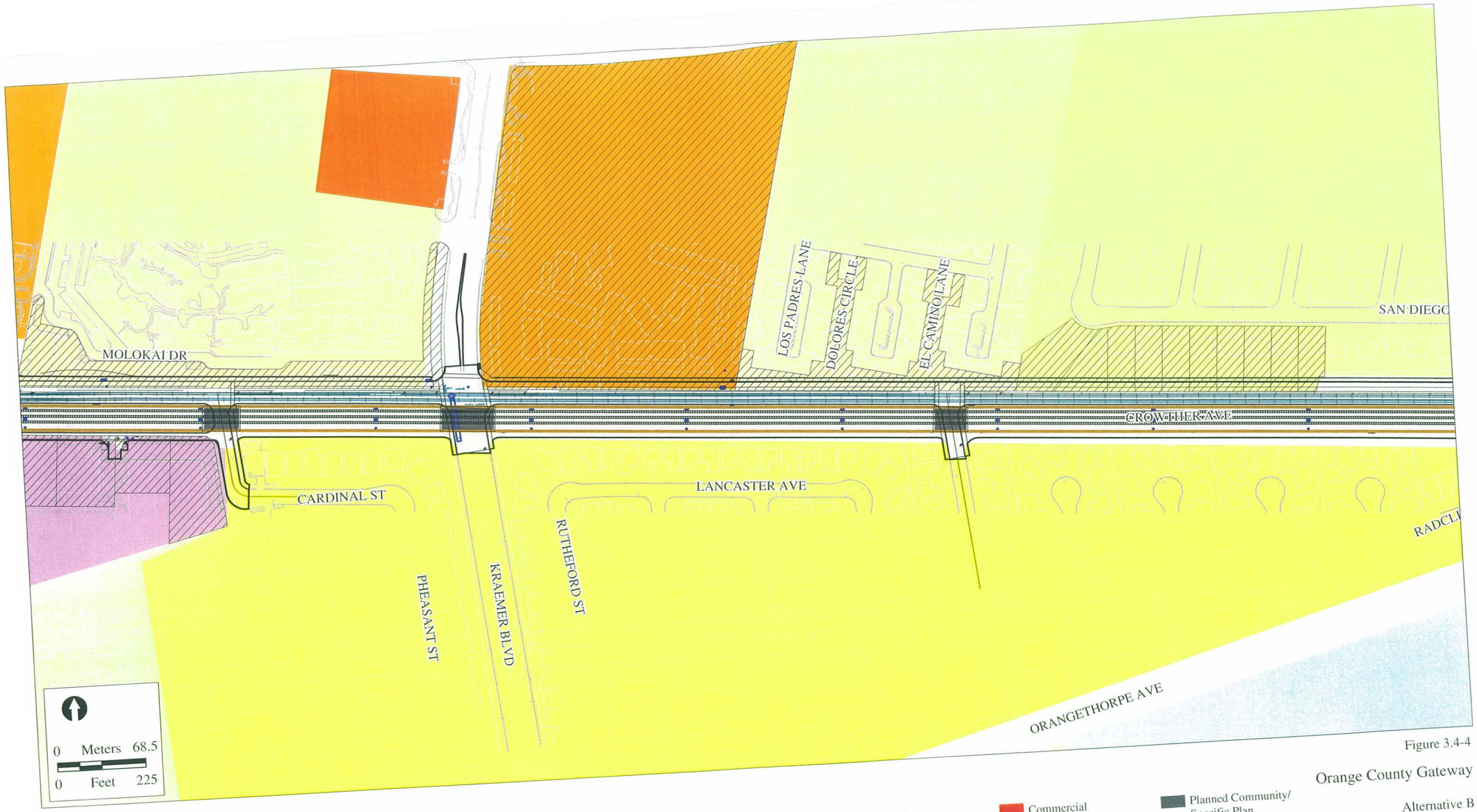


Figure 3.4-4

Orange County Gateway

Alternative B
General Plan Land Uses
and Proposed Acquisitions
Sheet 2 of 8

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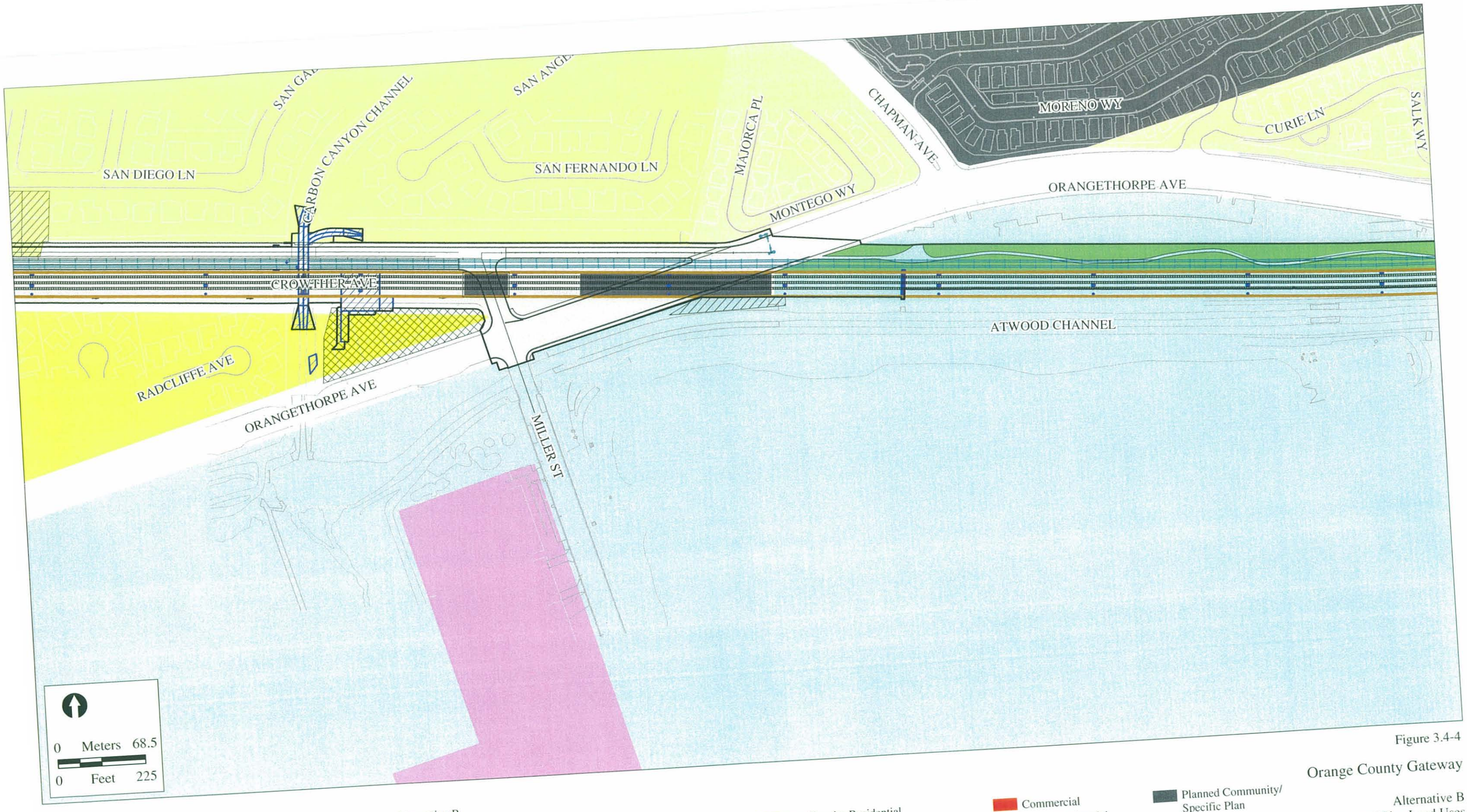
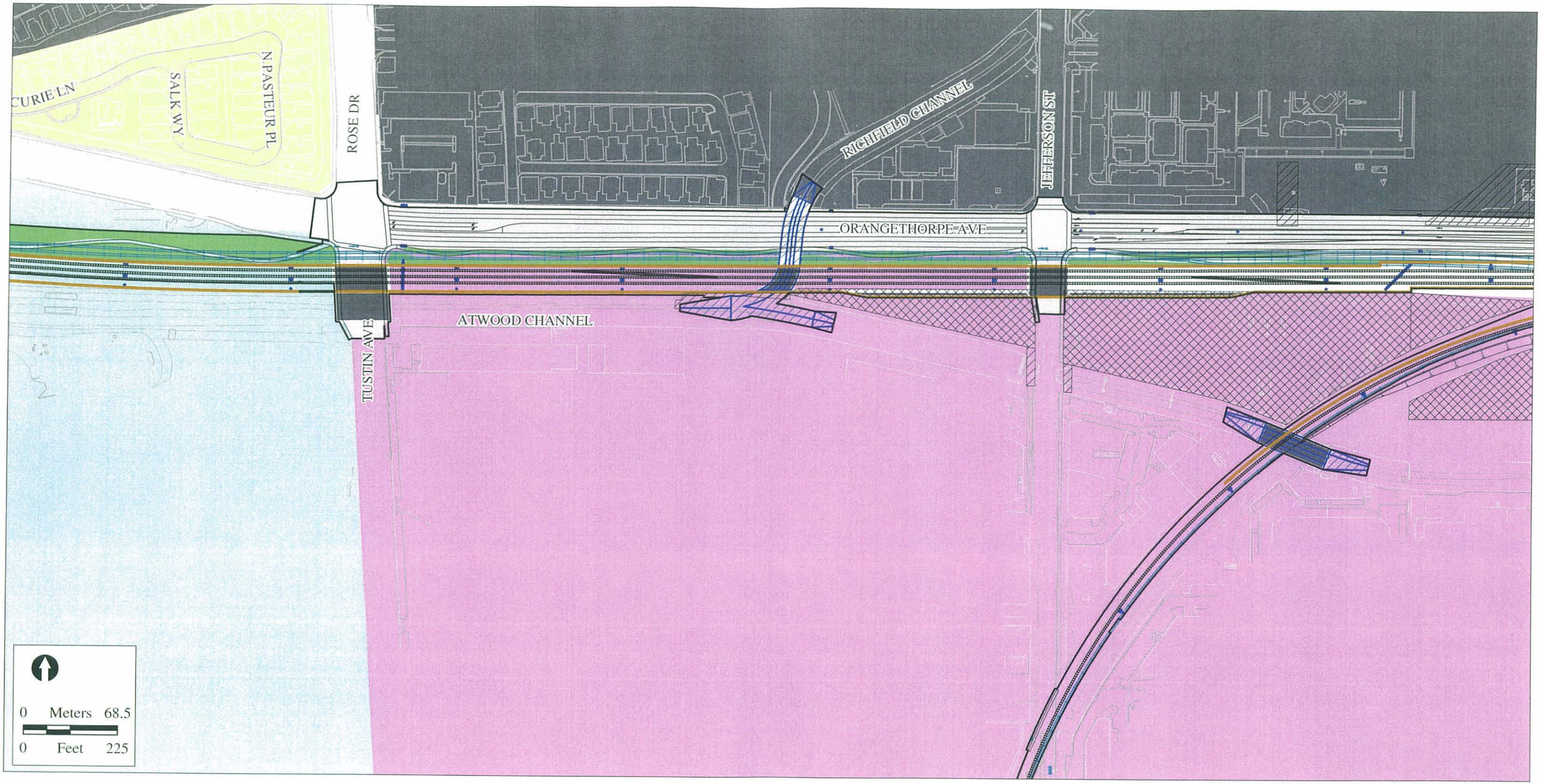


Figure 3.4-4

Orange County Gateway

Alternative B
General Plan Land Uses
and Proposed Acquisitions
Sheet 3 of 8

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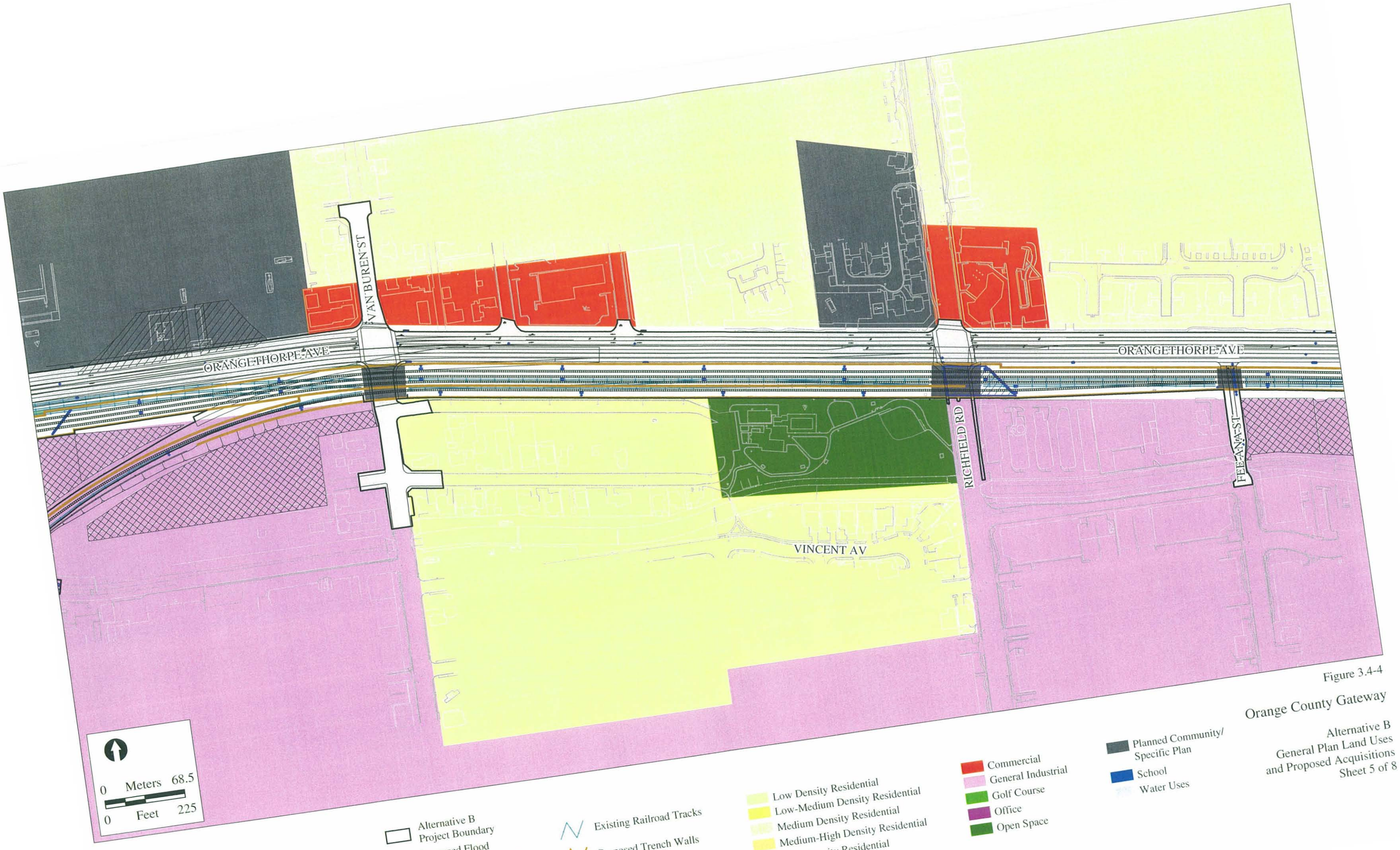


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Figure 3.4-4

Orange County Gateway

Alternative B
General Plan Land Uses
and Proposed Acquisitions
Sheet 4 of 8

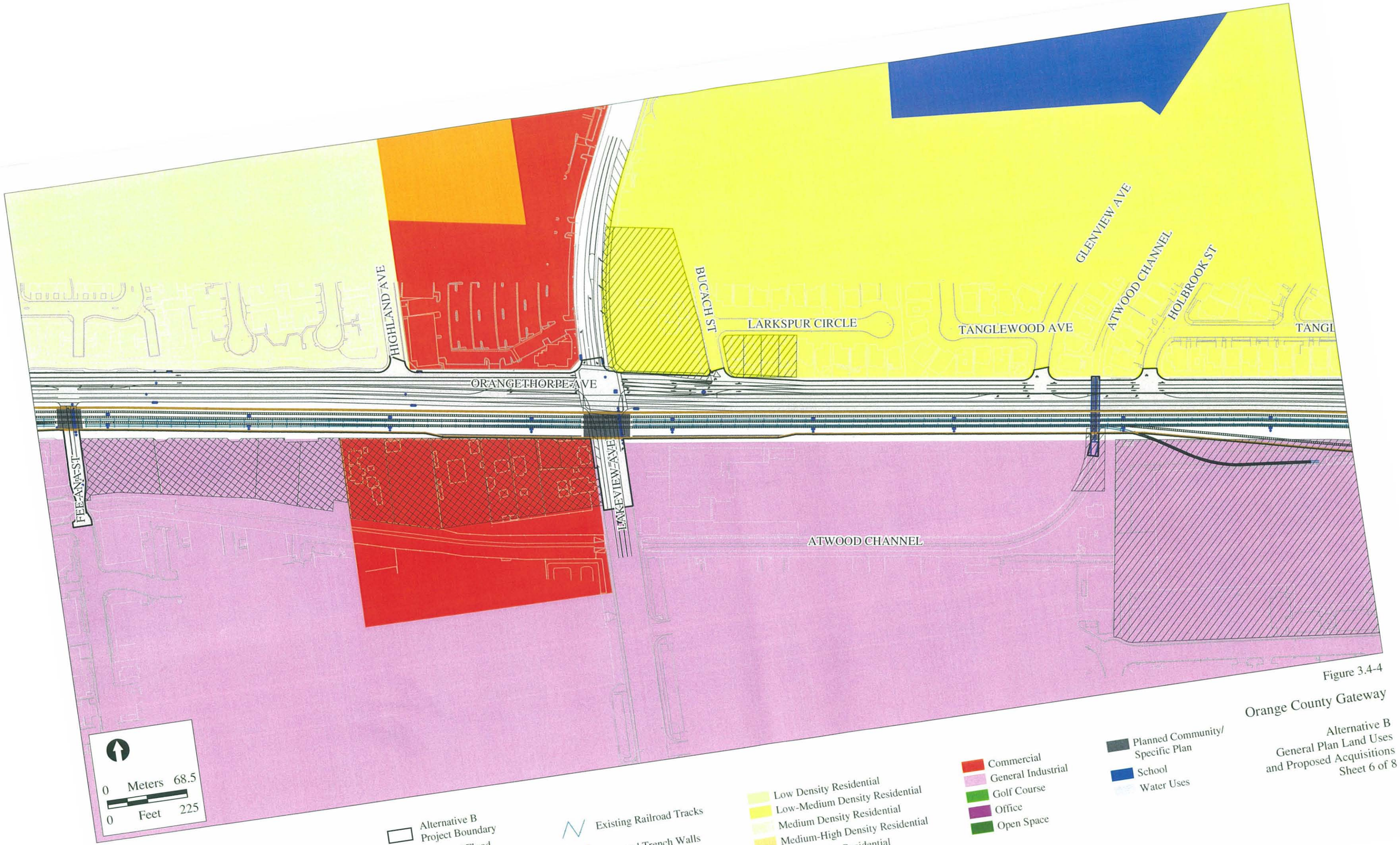


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Figure 3.4-4

Orange County Gateway

Alternative B
General Plan Land Uses
and Proposed Acquisitions
Sheet 5 of 8



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Figure 3.4-4

Orange County Gateway

Alternative B
General Plan Land Uses
and Proposed Acquisitions
Sheet 6 of 8



Figure 3.4-4

Orange County Gateway

Alternative B
General Plan Land Uses
and Proposed Acquisitions
Sheet 7 of 8

Proposed Roadway Improvement
Proposed Greenbelt Areas
Proposed Roadway Bridge

Alternative B Project Boundary
Proposed Flood Control Improvements
Full Acquisition
Partial Acquisition

Existing Railroad Tracks
Proposed Trench Walls

Low Density Residential
Low-Medium Density Residential
Medium Density Residential
Medium-High Density Residential
High Density Residential

Commercial
General Industrial
Golf Course
Office
Open Space

Planned Community/ Specific Plan
School
Water Uses

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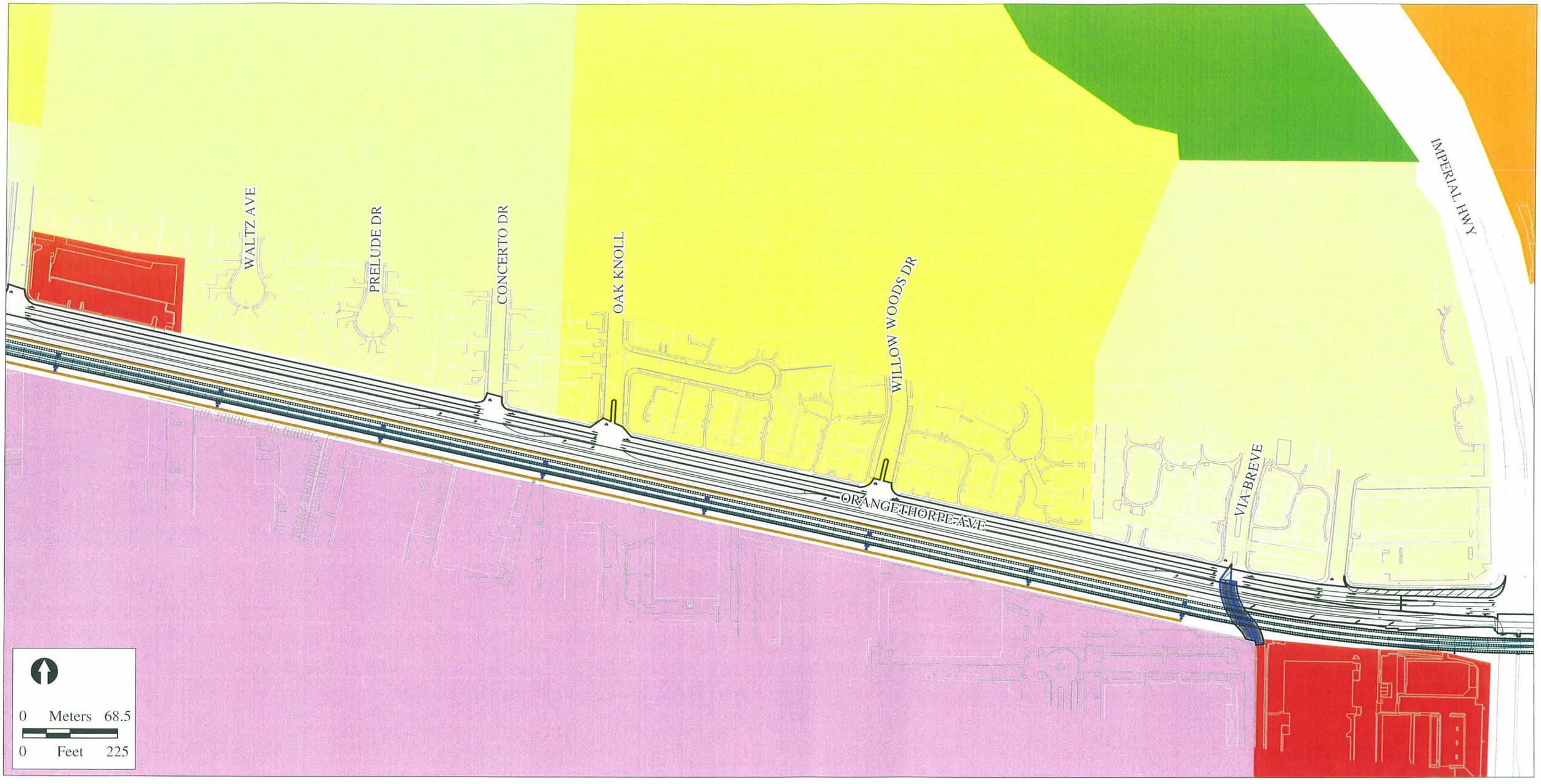


Figure 3.4-4

Orange County Gateway

Alternative B
General Plan Land Uses
and Proposed Acquisitions
Sheet 8 of 8

Proposed Roadway Improvement
Proposed Greenbelt Areas
Proposed Roadway Bridge

Alternative B Project Boundary
Proposed Flood Control Improvements
Full Acquisition
Partial Acquisition

Existing Railroad Tracks
Proposed Trench Walls

Low Density Residential
Low-Medium Density Residential
Medium Density Residential
Medium-High Density Residential
High Density Residential

Commercial
General Industrial
Golf Course
Office
Open Space

Planned Community/ Specific Plan
School
Water Uses

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Forty-four properties would be partially acquired under Alternative B. Descriptions of these properties (e.g., Assessor's parcel number, use, size, and address), are provided in Table 3.4-K.

As shown in Table 3.4-K, Alternative B would also require a total of 6,855 square m (73,786 square ft) of TCEs from a total of 73 parcels. As described in Section 2.0, Project Alternatives, the TCEs would be used only during construction of Alternative B and these areas would be returned to the original property owners.

The acquisition of full and partial parcels for Alternative B would not result in adverse effects to access to remaining residential and commercial properties in the area.

Alternative B Employees Displaced. As shown in Table 3.4-L, 11 nonresidential parcels would be fully acquired totaling 73,526 square m (791,430 sq ft). The existing uses on these parcels include commercial, industrial, auto, and oil recovery uses. Because most of the buildings on the nonresidential full parcels are one-story and occupy less than half of the total acre of each parcel, a FAR of 0.5 percent was used in this analysis to estimate building square footage per parcel. The number of employees per each full acquisition is one employee per 300 sf of industrial use and one employee per 500 sf of commercial use. The estimated number of employees that would be potentially displaced under Alternative B is 306.

Property Tax Revenues. Table 3.4-M lists the annual property taxes collected in the Cities of Placentia and Anaheim for fiscal year 2005 (the most recent available annual information). Table 3.4-M also lists the anticipated property tax losses under Alternative B based on the full property acquisitions listed earlier in Table 3.4-J (excluding properties owned by public agencies). As shown in Table 3.4-M, the full property acquisitions under Alternative B in the City of Placentia would reduce property taxes in that City by $37,238 and in Anaheim by $13,344. The total loss in property taxes in the two Cities would be $50,582. As shown in Table 3.4-M, the loss of property taxes as a result of Alternative B would total 0.67 percent of the total property tax in Placentia and 0.048 percent of the total property tax in Anaheim. These are very small percentages and would not result in a substantial adverse impact on these Cities' property tax revenues.

Alternative C Land Use and Acquisitions. Tables 3.4-N and 3.4-O summarize the full and partial acquisitions by parcel needed to accommodate Alternative C. Table 3.4-O also lists the TCEs that would be necessary during construction of Alternative C. The Assessor's parcel number and addresses for residences were excluded from the tables for privacy. The full and partial right-of-way acquisitions and TCEs identified for the OCG Build

Table 3.4-L: Alternative B Estimated Employee Displacement

	Assessor's Parcel Number (APN)	Jurisdiction	Existing Land Use	Parcel Acquired (square feet)	Floor Area Ratio (0.5) (square feet)	Employee per Square Foot	Displaced Employees
	339-451-01	Placentia	Industrial	19,890	9,945	1:300	**33**
	340-381-01	Anaheim	Commercial	51,057	25,529	1:500	**51**
	345-161-23	Anaheim	Industrial/auto wrecking with one oil well	56,652	5,665	1:1000	**6**
	346-162-01	Placentia	Industrial	21,616	10,808	1:300	**36**
	346-162-02	Placentia	Industrial/oil wells (5), vehicle and equipment storage	199,597	No buildings on parcel	1:10000	**20**
	346-164-25	Placentia	Industrial/auto wrecking	225,000	22,500	1:1000	**23**
	346-241-01	Placentia	Commercial	32,376	16,188	1:500	**32**
	346-331-01	Placentia	Industrial	20,335	10,168	1:300	**34**
	346-331-06	Placentia	Commercial	35,506	17,753	1:500	**36**
	346-331-07	Placentia	Commercial	25,000	12,500	1:500	**25**
	346-241-02	Placentia	OCFCD	104,401	No buildings on parcel	1:10000	**10**
Totals	**11 Business Parcels**	--	--	**791,430**	**315,216**	--	**306**

Sources: Principals and Practice of Urban Planning (Goodman, W., and Freund, E., 1968) and The Fiscal Impact Handbook (Burchell and Listokin, 1978).

Note: For parcels with no commercial buildings but some commercial or industrial activity such as an oil well, storage, or agriculture, the ratio of one employee per 10,000 square feet of the parcel was used to estimate the number of employees. These businesses do not have a constant work force. For parcels with very small buildings relative to the acreage, a FAR of 0.10 and 1:1000 ratio of employee per square foot was used to estimate the number of employees. See highlighted rows.

Table 3.4-M: Property Tax Loss

Jurisdiction	Annual Property Tax Revenues per Jurisdiction (1)	Alternative B			Alternative C			Alternative D		
		Number of Full Property Acquisitions	Total Property Tax Loss (2)	Percent Loss of Total Revenues	Number of Full Property Acquisitions	Total Property Tax Loss (2)	Percent Loss of Total Revenues	Number of Full Property Acquisitions	Total Property Tax Loss (2)	Percent Loss of Total Revenues
Anaheim	$27,663,924	2	$13,344	0.048%	3	$13,444	0.048%	15	$113,549	0.41%
Placentia	$5,564,621	14	$37,238	0.67%	16	$42,281	0.76%	60	$295,280	5.31%
Totals	--	16	$50,582	--	19	$55,725	--	75	$408,830	-

Sources: (1) 2005 Tax Ledger Summary A64 Placentia City and A01 Anaheim City, Orange County Auditor-Controller, February 1, 2006 (ac.ocgov.com)
(2) Treasurer Tax Collector, Orange County (http://tax.ocgov.com/tcweb/search_page.asp)

Table 3.4-N: Full Property Acquisitions under Alternative C[1]

Assessor's Parcel Number (APN)	Existing Land Use	Size of Parcel (square feet [sf])	Address or Location	Jurisdiction
339-451-01	Industrial	19,890	511 Cameron St.	Placentia
340-381-01	Commercial	51,057	3303 E. Orangethorpe Ave.	Anaheim
	Residential and agriculture (orchard and row crop)	105,845		Anaheim
345-161-23	Industrial	56,652	Southwest corner of Jefferson St. and Orangethorpe Ave.	Anaheim
346-162-01	Industrial	21,616	South of Orangethorpe Ave. and west of Van Buren Blvd. (north of Olive Subdivision)	Placentia
346-162-02	Industrial	199,597	South of Orangethorpe Ave. between Tustin Ave. and Van Buren St.	Placentia
346-164-25	Industrial	225,000	South of Orangethorpe Ave. and east of Jefferson St.	Placentia
346-241-01	Commercial	32,376	506 S. Fee Ana St.	Placentia
346-241-02	OCFCD	104,401	East of Fee Ana St. and south of Orangethorpe Ave.	Placentia
346-331-01	Industrial	20,335	Southwest corner of Orangethorpe Ave. and Lakeview Ave.	Placentia
	Residential	7,818		Placentia
	Residential storage lot	5,257		Placentia
	Residential	17,692		Placentia
	Residential	20,897		Placentia
346-331-06	Commercial	35,506	625 S. Lakeview Ave.	Placentia
346-331-07	Commercial	58,931	17922 E. Orangeview Ave.	Placentia
346-331-11	Commercial	19,754	625 S. Lakeview Ave.	Placentia
346-331-12	Commercial	117,426	719 S. Lakeview Ave.	Placentia
346-331-13	Commercial	181,593	719 S. Lakeview Ave.	Placentia
ALTERNATIVE C TOTAL FULL ACQUISITIONS				
Total parcels fully acquired: 19			Total area acquired: 1,301,643 sf	
Residential parcels fully acquired: 5			Residential area acquired: 157,509 sf	
Nonresidential parcels fully acquired: 14			Nonresidential area acquired: 1,144,134 sf	

Sources: *Preliminary Engineering Report* (KFM 2004); LSA Geographic Information System 2004; Orange County Tax Assessor's Office 2003; tax.ocgov.com (October 2005); and review of 2004 and 2005 aerial photographs.

OCFCD = Orange County Flood Control District

[1] The full and partial right-of-way acquisitions and TCEs identified for the OCG Build Alternatives are preliminary based on the 2004 conceptual design. The actual right-of-way (full and partial acquisitions) and TCEs needed if an OCG Build Alternative is selected for implementation would be defined during final design.

Table 3.4-O: Partial Property Acquisitions and Temporary Construction Easements under Alternative C[1]

Assessor's Parcel Number (APN)	Existing Land Use	Size of Partial Acquisition (square feet [sf])	Size of Temporary Construction Easement (TCE) (sf)	Address or Location	Jurisdiction
339-063-01	Parking, City of Placentia	3,633	1,115	101 E. Crowther Ave.	Placentia
339-063-02	Parking, City of Placentia	2,700	483	125 E. Crowther Ave.	Placentia
339-063-03	Parking, City of Placentia	162	0	North of Crowther Ave. at Cameron St.	Placentia
339-081-27	Industrial	1,510	690	500 Porter Way	Placentia
339-081-29	Industrial	1,586	720	320 E. Crowther Ave.	Placentia
339-081-30	Industrial	1,609	1,429	340 E. Crowther Ave.	Placentia
339-081-32	Industrial	869	540	390 E. Crowther Ave.	Placentia
339-081-33	Industrial	1,579	1,392	370 E. Crowther Ave.	Placentia
339-081-39	Industrial	782	2,979	505 Porter Way	Placentia
339-451-13	Industrial	2,234	2,050	210 E. Crowther Ave.	Placentia
	Residential	1,273	190		Placentia
	Residential	32,797	5,016		Placentia
340-314-04	Parking	18,476	3,362	Northeast corner of Crowther Ave. and Kraemer Blvd.	Placentia
	Residential	3,560	816		Placentia
	Residential	4,578	350		Placentia
	Residential	2,500	350		Placentia
	Residential	2,500	350		Placentia
	Residential	2,500	350		Placentia
	Residential	2,500	350		Placentia
	Residential	2,500	350		Placentia
	Residential	990	350		Placentia
	Residential	2,500	350		Placentia
	Residential	2,500	350		Placentia
	Residential	24,777	3,915		Placentia
341-122-89	City sidewalk with landscaping	4,886	3,024	North of Orangethorpe Ave. between Lincoln St. and Richfield Rd.	Placentia
341-123-30	City sidewalk with landscaping	2,472	1,502	North of Orangethorpe Ave. between Lincoln St. and Richfield Rd.	Placentia
341-343-10	Oil well and vacant	1,048	250	East of Jefferson St. and north of	Placentia

Note: Highlighted parcels are not listed in the Orange County Assessor's database. They may have been merged with another parcel or split into multiple parcels since the preparation of the engineering right-of-way plans.

Table 3.4-O: Partial Property Acquisitions and Temporary Construction Easements under Alternative C[1]

Assessor's Parcel Number (APN)	Existing Land Use	Size of Partial Acquisition (square feet [sf])	Size of Temporary Construction Easement (TCE) (sf)	Address or Location	Jurisdiction
				Orangethorpe Ave.	
341-354-06	Agriculture (row crops)	6,032	1,527	East of Jefferson St. and north of Orangethorpe Ave.	Placentia
341-354-07	Paved parking and commercial stand for agriculture	463	133	East of Jefferson St. and north of Orangethorpe Ave.	Placentia
341-354-08	Paved parking	728	193	17201 E. Orangethorpe Ave.	Placentia
341-354-09	Paved parking	231	74	17211 E. Orangethorpe Ave.	Placentia
341-354-10	Paved parking and oil well	460	134	East of Jefferson St. and north of Orangethorpe Ave.	Placentia
341-354-11	Paved parking and agriculture	451	134	East of Jefferson St. and north of Orangethorpe Ave.	Placentia
341-354-12	Agriculture (row crops)	1,683	654	East of Jefferson St. and north of Orangethorpe Ave.	Placentia
341-354-13	Agriculture (row crops)	0	750	East of Jefferson St. and north of Orangethorpe Ave.	Placentia
341-373-06	Sidewalk	0	2,027	Northwest corner of Van Buren St. and Orangethorpe Ave.	Placentia
	Residential	0	275		Placentia
	Residential	0	130		Placentia
	Residential	0	375		Placentia
341-374-07	Commercial access road	475	266	1613 E. Orangethorpe Ave.	Placentia
341-374-08	Commercial parking	224	126	North of Orangethorpe Ave. and east of Van Buren St.	Placentia
341-374-09	Commercial	223	126	1619 E. Orangethorpe Ave.	Placentia
341-374-10	Commercial	196	126	North of Orangethorpe	Placentia

Note: Highlighted parcels are not listed in the Orange County Assessor's database. They may have been merged with another parcel or split into multiple parcels since the preparation of the engineering right-of-way plans.

Table 3.4-O: Partial Property Acquisitions and Temporary Construction Easements under Alternative C[1]

Assessor's Parcel Number (APN)	Existing Land Use	Size of Partial Acquisition (square feet [sf])	Size of Temporary Construction Easement (TCE) (sf)	Address or Location	Jurisdiction
				Ave. and east of Van Buren St.	
341-374-11	Commercial	50	24	325 S. Depot St.	Placentia
341-374-17	Commercial	735	1,079	17311 E. Orangethorpe Ave.	Placentia
341-375-03	Commercial	1,841	1,201	1651 E. Orangethorpe Ave.	Placentia
	Residential	483	336		Placentia
341-376-05	Sidewalk and residential parking	465	299	Same owner as 341-376-04; adjacent to 1701 E. Orangethorpe Ave. east of Lincoln St.	Placentia
	Residential	383	235		Anaheim
	Residential	386	248		Anaheim
	Residential	238	248		Anaheim
	Residential	80	248		Anaheim
	Residential	130	0		Anaheim
343-361-15	City sidewalk and landscape	1,730	0	2099 E. Orangethorpe Ave.	Placentia
343-361-17	City sidewalk and landscape	470	0	201 S. Lakeview Ave.	Placentia
343-692-18	City sidewalk and landscape	757	1,276	E. Orangethorpe Ave. west of S. Highland Ave.	Placentia
343-701-05	Commercial	1,046	573	1801 E. Orangethorpe Ave.	Placentia
343-701-06	Commercial	1,108	553	1851 E. Orangethorpe Ave.	Placentia
343-702-04	City sidewalk and landscape	0	48	319 S. Caliente Ct.	Placentia
343-702-08	City sidewalk and landscape	0	46	1852 Belmont Ct.	Placentia
343-702-24	City sidewalk and landscape	3,206	1,540	North of Orangethorpe Ave. east of Richfield Rd.	Placentia
343-702-24	City sidewalk and landscape	296	145	North of Orangethorpe Ave. east of	Placentia

Note: Highlighted parcels are not listed in the Orange County Assessor's database. They may have been merged with another parcel or split into multiple parcels since the preparation of the engineering right-of-way plans.

Table 3.4-O: Partial Property Acquisitions and Temporary Construction Easements under Alternative C[1]

Assessor's Parcel Number (APN)	Existing Land Use	Size of Partial Acquisition (square feet [sf])	Size of Temporary Construction Easement (TCE) (sf)	Address or Location	Jurisdiction
				Richfield Rd.	
343-703-22	City sidewalk and landscape	1,984	1,032	North of Orangethorpe Ave. east of Richfield Rd.	Placentia
343-704-21	City sidewalk and landscape	2,716	1,522	North of Orangethorpe Ave. east of Richfield Rd.	Placentia
346-291-02	OCFCD	6,534	385	Atwood Channel at Orangethorpe Ave.	Placentia
346-331-14	Commercial	544	0	801 S. Lakeview Ave.	Placentia
346-391-12	Commercial parking	853	0	4875 E. Hunter Ave.	Anaheim
346-401-05	Commercial parking	1,614	0	Southwest corner of Orangethorpe Ave. and Kellogg Dr.	Anaheim
ALTERNATIVE C TOTAL PARTIAL ACQUISITIONS AND TCEs					
Total parcels partially acquired: 61 Residential parcels partially acquired: 19 Nonresidential parcels partially acquired: 42		Total area acquired: 167,836 sf	--	Residential area: 87,640 sf Nonresidential area: 80,196 sf	
Total TCEs: 61 Residential TCEs: 21 Nonresidential TCEs: 40		--	Total TCE area: 50,711 sf	Residential TCE area: 15,182 sf Nonresidential TCE area: 35,529 sf	

Sources: *Preliminary Engineering Report* (KFM 2004); LSA Geographic Information System 2004; Orange County Tax Assessor's Office 2003; tax.ocgov.com (October 2005); and review of 2004 and 2005 aerial photographs.

Note: Highlighted parcels are not listed in the Orange County Assessor's database. They may have been merged with another parcel or split into multiple parcels since the preparation of the engineering right-of-way plans.

OCFCD = Orange County Flood Control District

[1] The full and partial right-of-way acquisitions and TCEs identified for the OCG Build Alternatives are preliminary based on the 2004 conceptual design. The actual right-of-way (full and partial acquisitions) and TCEs needed if an OCG Build Alternative is selected for implementation would be defined during final design.

Note: Highlighted parcels are not listed in the Orange County Assessor's database. They may have been merged with another parcel or split into multiple parcels since the preparation of the engineering right-of-way plans.

Alternatives are preliminary based on the 2004 conceptual design. The actual right-of-way (full and partial acquisitions) and TCEs needed if an OCG Build Alternative is selected for implementation would be defined during final design.

Figure 3.4-5 shows the proposed project boundary for Alternative C, including the anticipated full and partial property acquisitions under this alternative. As shown on Figure 3.4-5, parcels anticipated to be full acquisitions are shown as a cross-hatched pattern on the entire parcel. Parcels anticipated to be subject to partial acquisitions are shown in a striped pattern on the entire parcel; however, only the part of the parcel within the project limits is anticipated to be acquired for Alternative C; the remainder of the parcel would not be affected by the proposed OCG project.

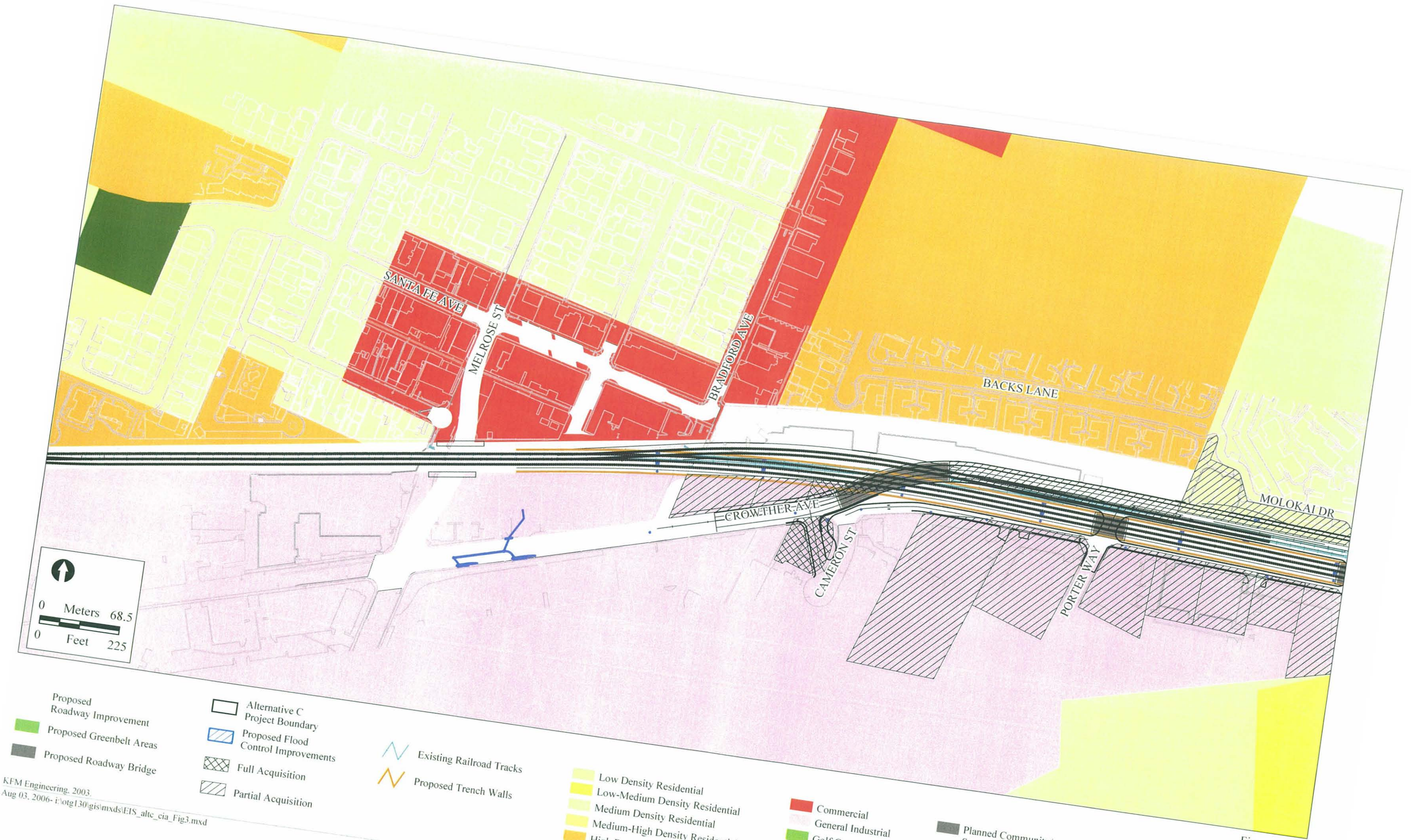
Alternative C would require the full and permanent acquisition of 14 nonresidential properties. Descriptions of these properties (e.g., Assessor's parcel number, use, size, and address) are provided in Table 3.4-N. Existing uses on these parcels include industrial and commercial uses.

Alternative C would also result in the full and permanent acquisition of five residential properties at the intersection of Lakeview Avenue and Orangethorpe Avenue. One of the properties is a residential storage lot with no residence. The residential properties are all located in the City of Placentia and in Tract 218.13. The entire population of Tract 218.13 is Hispanic. Therefore, it contains a disproportionate amount of a minority population when compared to the County and the study area cities. Under Alternative C, acquisition of the five residential properties would result in adverse impacts to an environmental justice population in Tract 218.13 but not in the OCG study area as a whole, because the study area as a whole does not have environmental justice populations disproportionate to the County populations. Impacts to the census tract environmental justice population would be mitigated based on compliance with the requirements of the RAP, as described in Mitigation Measures CI-4, CI-5, and CI-6.

One of the five residential properties at the northeast corner of Lakeview Avenue and Orangethorpe Avenue in the City of Anaheim, is also used for agriculture (orchard and row crops) and would be acquired for Alternative C. As discussed in Section 3.3, Farmland, this parcel is not identified as Prime or Unique Farmland. This parcel is designated on the City of Anaheim General Plan as low-density residential.

These property acquisitions would result in an adverse impact on the property owners and tenants which would be minimized through compliance with the requirements of the RAP as described later in Mitigation Measures CI-2, CI-4, CI-5, and CI-6. Nonetheless, even with mitigation, some displaced property owners may consider the experience of displacement to be a substantial adverse impact not fully mitigated by those mitigation measures.

A total of 61 properties would be partially acquired with Alternative C. Description of these properties (e.g., Assessor's parcel number, use, size, and address) is provided in Table 3.4-O. As shown in Table 3.4-O, Alternative C would also require a total of 4,711 sq m (50,711 sq ft) of TCEs from a total of 61 parcels. As described in Section 2.0, Project Alternatives, the TCEs would be used only during construction of Alternative C and these areas would be returned to the original property owners or resold by the City of Placentia at the completion of construction of Alternative C.



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Figure 3.4-5

Orange County Gateway

Alternative C
General Plan Land Uses
and Proposed Acquisitions
Sheet 1 of 7



Figure 3.4-5

Orange County Gateway

Alternative C
General Plan Land Uses
and Proposed Acquisitions
Sheet 2 of 7

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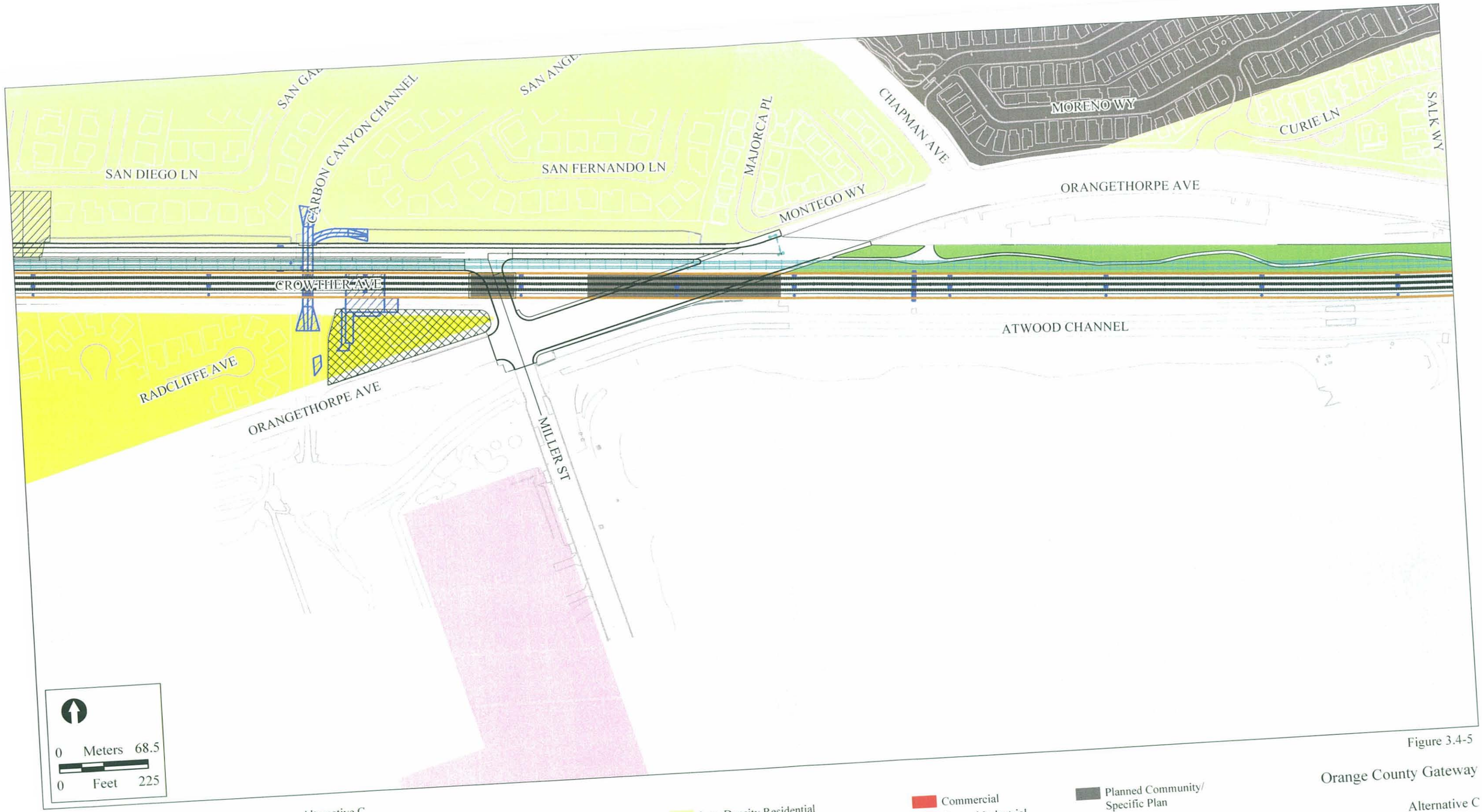
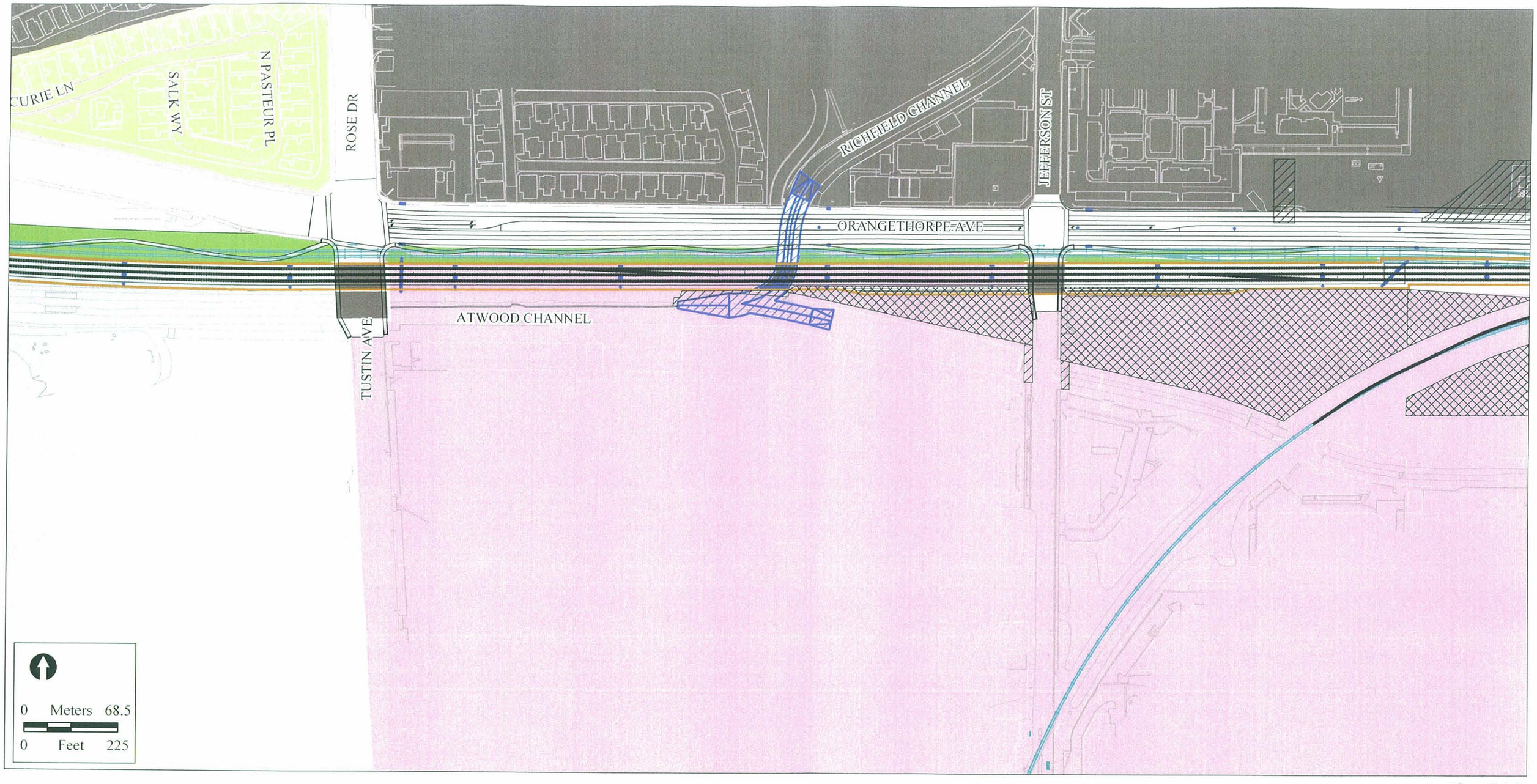


Figure 3.4-5

Orange County Gateway

Alternative C
General Plan Land Uses
and Proposed Acquisitions
Sheet 3 of 7

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Proposed Roadway Improvement
Proposed Greenbelt Areas
Proposed Roadway Bridge

Alternative C Project Boundary
Proposed Flood Control Improvements
Full Acquisition
Partial Acquisition

Existing Railroad Tracks
Proposed Trench Walls

Low Density Residential
Low-Medium Density Residential
Medium Density Residential
Medium-High Density Residential
High Density Residential

Commercial
General Industrial
Golf Course
Office
Open Space

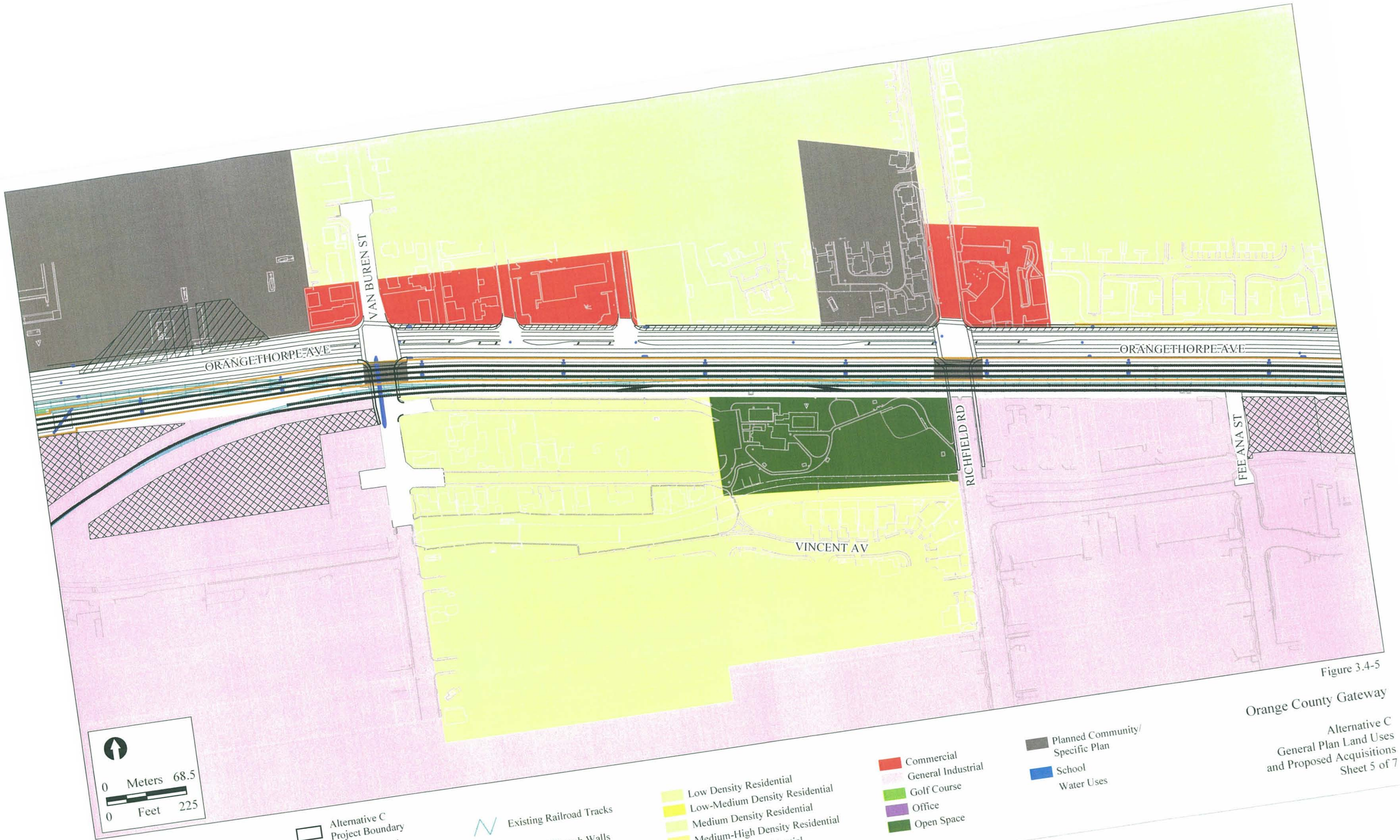
Planned Community/ Specific Plan
School
Water Uses

KFM Engineering. 2003.
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Figure 3.4-5

Orange County Gateway

Alternative C
General Plan Land Uses
and Proposed Acquisitions
Sheet 4 of 7

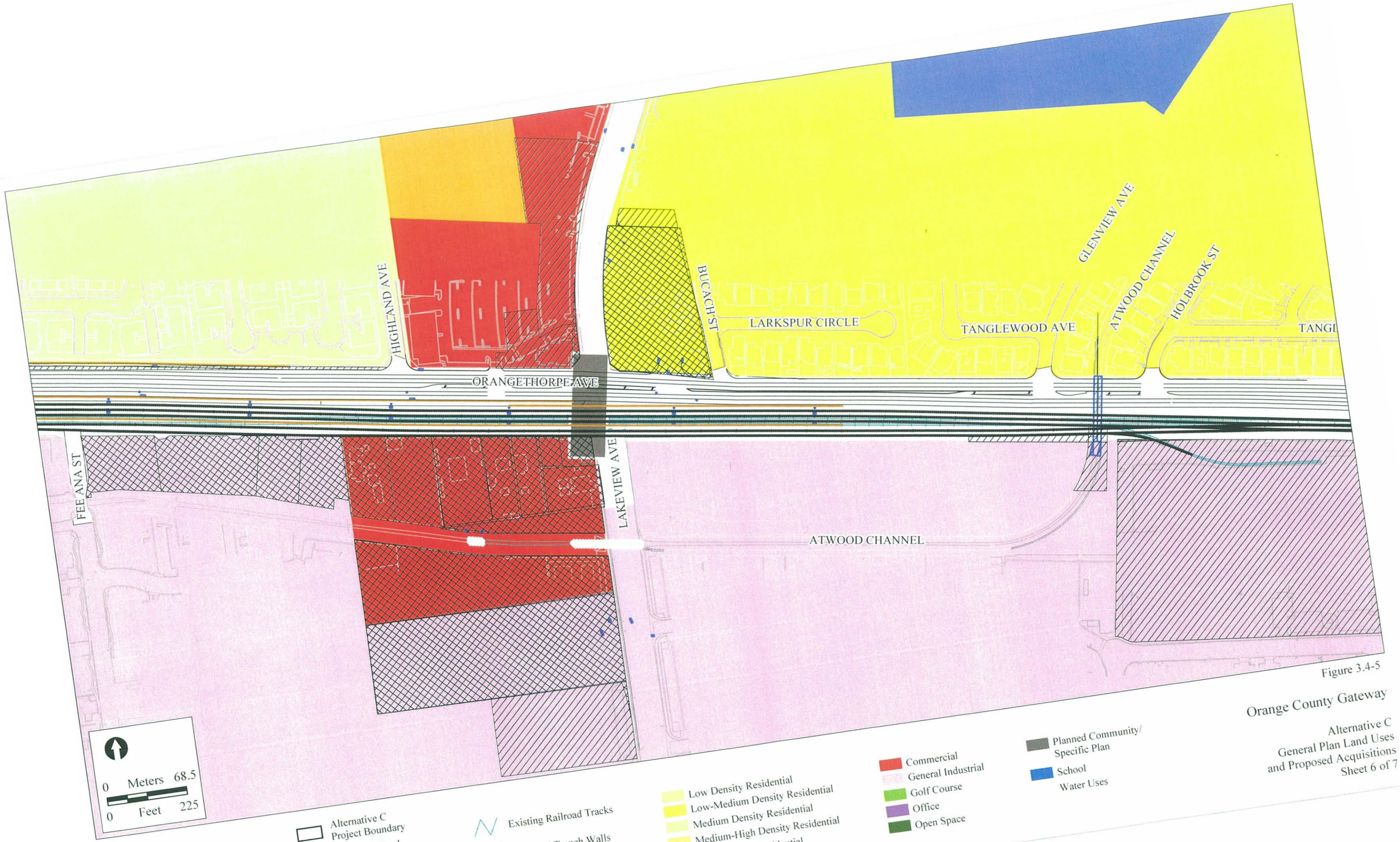


KFM Engineering, 2003.
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Figure 3.4-5

Orange County Gateway

Alternative C
General Plan Land Uses
and Proposed Acquisitions
Sheet 5 of 7



KFM Engineering, 2003.
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Figure 3.4-5

Orange County Gateway

Alternative C
General Plan Land Uses
and Proposed Acquisitions
Sheet 6 of 7



Proposed Roadway Improvement
Proposed Greenbelt Areas
Proposed Roadway Bridge

Alternative C Project Boundary
Proposed Flood Control Improvements
Full Acquisition
Partial Acquisition

Existing Railroad Tracks
Proposed Trench Walls

Low Density Residential
Low-Medium Density Residential
Medium Density Residential
Medium-High Density Residential
High Density Residential

Commercial
General Industrial
Golf Course
Office
Open Space

Planned Community/ Specific Plan
School
Water Uses

Figure 3.4-5

Orange County Gateway

Alternative C
General Plan Land Uses
and Proposed Acquisitions
Sheet 7 of 7

KFM Engineering, 2003.
Aug 03, 2006- i:\otg130\gis\mxds\EIS_altc_cia_Fig3.mxd

Alternative C would have a beneficial effect of making community facilities more accessible by reducing traffic delay in the project area. The acquisition of full and partial parcels for Alternative C would not result in adverse effects to access to remaining residential and commercial properties in the area.

Alternative C Employees Displaced. As shown in Table 3.4-P, 15 business parcels would be acquired totaling 1,249,979 sq ft. As shown in Table 3.4-P, the 14 nonresidential parcels include industrial, commercial, agriculture, and oil recovery uses. Because most of the buildings on the nonresidential full parcels are one-story and occupy less than half of the total acre of each parcel, a FAR of 0.5 percent was used in this analysis to estimate building square footage per parcel. The number of employees per each full acquisition is one employee per 300 sf of industrial use and one employee per 500 sf of commercial use. The estimated number of employees that would be potentially displaced under Alternative C is 461.

Property Tax Revenues. Table 3.4-M, provided earlier, lists the annual property taxes collected in the Cities of Placentia and Anaheim for fiscal year 2005 (the most recent available annual information). Table 3.4-M also lists the anticipated property tax losses under Alternative C based on the full property acquisitions listed earlier in Table 3.4-N (excluding properties owned by public agencies). As shown in Table 3.4-M, the full property acquisitions under Alternative C in the City of Placentia would reduce property taxes in that City by $13,444 and in Anaheim by $42,281. The total loss in property taxes in the two Cities would be $55,725. As shown in Table 3.4-M, the loss of property taxes as a result of Alternative C would total 0.76 percent of the total property tax in Placentia and 0.048 percent of the total property tax in Anaheim. These are very small percentages and would not result in a substantial adverse impact on these Cities' property tax revenues.

Alternative D Land Use and Acquisitions. Tables 3.4-Q and 3.4-R summarize the full and partial acquisitions by parcel needed to accommodate Alternative D.

Table 3.4-S lists the TCEs that would be necessary during construction of Alternative D. The full and partial right-of-way acquisitions and TCEs identified for the OCG Build Alternatives are preliminary based on the 2004 conceptual design. The actual right-of-way (full and partial acquisitions) and TCEs needed if an OCG Build Alternative is selected for implementation would be defined during final design. Figure 3.4-6 shows the proposed project boundary for Alternative D, including the anticipated full and partial property acquisitions under this Alternative. As shown on Figure 3.4-6, parcels anticipated to be full acquisitions are shown as a cross-hatched pattern on the entire parcel. Parcels anticipated to be subject to partial acquisitions are shown in a striped pattern on the entire parcel; however, only the part of the parcel within the project limits is anticipated to be acquired for Alternative D; the remainder of the parcel would not be affected by the proposed OCG project.

Table 3.4-P: Alternative C Estimated Employee Displacement

	Assessor's Parcel Number (APN)	Jurisdiction	Existing Land Use	Parcel Acquired (square feet)	Floor Area Ratio (0.5) (square feet)	Employee per Square Foot	Displaced Employees
	339-451-01	Placentia	Industrial	19,890	9,945	1:300	**33**
	340-381-01	Anaheim	Commercial	51,057	25,529	1:500	**51**
	343-351-60	Anaheim	Residential and agriculture (orchard and row crop)	105,845	No commercial buildings on parcel	1:10000	**11**
	345-161-23	Anaheim	Industrial/auto wrecking with one oil well	56,652	5,665	1:1000	**6**
	346-162-01	Placentia	Industrial	21,616	10,808	1:300	**36**
	346-162-02	Placentia	Industrial/oil wells, vehicle and equipment storage (Guarantee Royalties)	199,597	19,960	1:1000	**20**
	346-164-25	Placentia	Industrial/auto wrecking/few small buildings on site	225,000	22,500	1:1000	**23**
	346-241-01	Placentia	Commercial	32,376	16,188	1:500	**32**
	346-331-01	Placentia	Industrial	20,335	10,168	1:300	**34**
	346-331-06	Placentia	Commercial	35,506	17,753	1:300	**36**
	346-331-07	Placentia	Commercial	58,931	29,466	1:300	**98**
	346-331-11	Placentia	Commercial	19,754	9,877	1:300	**33**
	346-331-12	Placentia	Commercial/gravel, brick distributor	117,426	No buildings on parcel	1:10000	**20**
	346-331-13	Placentia	Commercial/gravel, brick distributor	181,593	18,159	1:1000	**18**
	346-241-02	Placentia	OCFCD	104,401	No buildings on parcel	1:10000	**10**
Totals	**15 Business Parcels**	--	--	**1,249,979**	**196,018**	--	**461**

Sources: Principals and Practice of Urban Planning (Goodman, W., and Freund, E., 1968) and The Fiscal Impact Handbook (Burchell and Listokin, 1978).
Note: For parcels with no commercial buildings but some commercial or industrial activity such as an oil well, storage, or agriculture, the ratio of one employee per 10,000 square feet of the parcel was used to estimate the number of employees. These businesses do not have a constant work force. For parcels with very small buildings relative to the acreage, a FAR of 0.10 and 1:1000 ratio of employee per square foot was used to estimate the number of employees. See highlighted rows.

Table 3.4-Q: Full Property Acquisitions under Alternative D[1]

Assessor's Parcel Number (APN)	Existing Land Use	Size of Parcel (square feet [sf])	Address or Location	Jurisdiction	Affected by the Following Grade Separation
APN unavailable (804-32b-14)	Agriculture (row crops)	8,336	North of Orangethorpe Ave. and west of Van Buren St.	Placentia	Van Buren St. overcrossing
	Residential/SFR	6,009		Placentia	Kraemer Blvd. undercrossing
	Residential/SFR	5,003		Placentia	Kraemer Blvd. undercrossing
	Residential/SFR	11,661		Placentia	Kraemer Blvd. undercrossing
340-381-01	Commercial	50,984	3303 E. Orangethorpe Ave.	Anaheim	Orangethorpe Ave. overcrossing
345-141-01	Commercial	108,819	South of Orangethorpe Ave. at Chapman Ave.	Anaheim	Orangethorpe Ave. overcrossing
345-152-01	Office	36,645	South of Orangethorpe Ave. at Chapman Ave.	Anaheim	Orangethorpe Ave. overcrossing
345-152-02	Office	1,975	South of Orangethorpe Ave. at Chapman Ave.	Anaheim	Orangethorpe Ave. overcrossing
341-331-01	Commercial	64,205	1212 E. Orangethorpe Ave.	Placentia	Tustin Ave./Rose Dr. overcrossing
341-331-05	Vacant, next to Richfield Channel	23,069	North of Orangethorpe Ave. and west of Jefferson St.	Placentia	Jefferson St. overcrossing
341-331-06	Vacant, next to Richfield Channel	53,414	North of Orangethorpe Ave. and west of Jefferson St.	Placentia	Jefferson St. overcrossing
341-331-09	OCFCD easement	397	Northwest corner of Orangethorpe Ave. and Jefferson St.	Placentia	Jefferson St. overcrossing
341-354-01	Oil wells and vacant	7,514	17272 Cherry St.	Placentia	Van Buren St. overcrossing
341-354-02	Oil wells and vacant	15,027	17262 Cherry St.	Placentia	Van Buren St. overcrossing
341-354-03	Agriculture (row crops)	7,353	North of Orangethorpe Ave. and west of Van Buren St.	Placentia	Richfield Rd. and Van Buren St. overcrossings
341-354-12	Agriculture (row crops)	15,634	North of Orangethorpe Ave. and west of Van Buren St.	Placentia	Richfield Rd. and Van Buren St. overcrossings
341-354-13	Agriculture (row crops)	13,453	North of Orangethorpe Ave. and west of Van Buren St.	Placentia	Richfield Rd. and Van Buren St. overcrossings
	Residential/ condominiums	11,200		Anaheim	Kellogg Dr. undercrossing

Note: Highlighted parcels are not listed in the Orange County Assessor's database. They may have been merged with another parcel or split into multiple parcels since the preparation of the engineering right-of-way plans.

Table 3.4-Q: Full Property Acquisitions under Alternative D[1]

Assessor's Parcel Number (APN)	Existing Land Use	Size of Parcel (square feet [sf])	Address or Location	Jurisdiction	Affected by the Following Grade Separation
	Residential/ condominiums	13,622		Anaheim	Kellogg Dr. undercrossing
343-052-55	Commercial	66,894	5041 E. Orangethorpe Ave.	Anaheim	Kellogg Dr. undercrossing
343-052-56	Commercial	14,219	5051 E. Orangethorpe Ave.	Anaheim	Kellogg Dr. undercrossing
343-052-57	Commercial	84,271	1741 N. Kellogg Dr.	Anaheim	Kellogg Dr. undercrossing
343-351-60	Agriculture (orchard)	105,845	4501 E. Orangethorpe Ave.	Anaheim	Lakeview Ave. overcrossing
343-701-04	Commercial	17,449	1807 E. Orangethorpe Ave.	Placentia	Richfield Rd. overcrossing
343-701-05	Commercial	26,756	1801 E. Orangethorpe Ave.	Placentia	Richfield Rd. overcrossing
343-701-06	Commercial	26,689	1851 E. Orangethorpe Ave.	Placentia	Richfield Rd. overcrossing
	Residential/ condominiums	4,257		Placentia	Richfield Rd. overcrossing
	Residential/ condominiums	2,092		Placentia	Richfield Rd. overcrossing
	Residential/ condominiums	3,047		Placentia	Richfield Rd. overcrossing
	Residential/ condominiums	2,051		Placentia	Richfield Rd. overcrossing
	Residential storage	2,868		Placentia	Richfield Rd. overcrossing
	Residential parking	4,618		Placentia	Richfield Rd. overcrossing
	Residential/SFR	3,452		Placentia	Richfield Rd. overcrossing
	Residential/SFR	3,592		Placentia	Richfield Rd. overcrossing
	Residential/SFR	3,592		Placentia	Richfield Rd. overcrossing
	Residential/SFR	4,536		Placentia	Richfield Rd. overcrossing
345-141-01	Commercial	108,819	3456 E. Orangethorpe Ave.	Placentia	Richfield Rd. overcrossing
345-152-01	Commercial	36,645	1150 E. Orangethorpe Ave.	Placentia	Richfield Rd. overcrossing
345-152-02	Commercial	1,975	East of APN 345-152-01	Anaheim	Richfield Rd. overcrossing

Note: Highlighted parcels are not listed in the Orange County Assessor's database. They may have been merged with another parcel or split into multiple parcels since the preparation of the engineering right-of-way plans.

Table 3.4-Q: Full Property Acquisitions under Alternative D[1]

Assessor's Parcel Number (APN)	Existing Land Use	Size of Parcel (square feet [sf])	Address or Location	Jurisdiction	Affected by the Following Grade Separation
345-161-23	Commercial	55,665	Southwest corner of Orangethorpe Ave. and Jefferson St.	Anaheim	Jefferson St. overcrossing
345-161-24	Commercial	88,406	1408 N. Tustin Ave.	Placentia	Tustin Ave./Rose Dr. overcrossing
	Residential/SFR	5,827		Placentia	Richfield Rd. overcrossing
	Residential/SFR	7,000		Placentia	Richfield Rd. overcrossing
	Residential/SFR	6,267		Placentia	Richfield Rd. overcrossing
	Residential/SFR	6,495		Placentia	Richfield Rd. overcrossing
	Residential/SFR	5,368		Placentia	Richfield Rd. overcrossing
346-015-11	Commercial	59,359	620 S. Richfield Rd.	Placentia	Richfield Rd. overcrossing
346-015-12	Commercial	46,007	610 S. Richfield Rd.	Placentia	Richfield Rd. overcrossing
346-015-13	Commercial	74,813	6472 Richfield Rd.	Placentia	Richfield Rd. overcrossing
346-162-01	Commercial storage yard	22,319	South of Orangethorpe Ave. and east of Jefferson St.	Placentia	Jefferson St. overcrossing
346-162-02	Commercial storage yard	199,088	South of Orangethorpe Ave. and east of Jefferson St.	Placentia	Jefferson St. overcrossing
	Residential/SFR	11,315		Placentia	Van Buren St. overcrossing
	Residential/SFR	7,526		Placentia	Van Buren St. overcrossing
346-164-22	Industrial/alley	7,471	Southwest corner of Orangethorpe Ave. and Van Buren St.	Placentia	Van Buren St. overcrossing
346-164-23	Commercial	7,484	503 S. Van Buren St.	Placentia	Van Buren St. overcrossing
	Residential/SFR	9,259		Placentia	Van Buren St. overcrossing
346-165-05	Vacant	23,792	East of Jefferson St. and north of the Olive Subdivision	Placentia	Jefferson St. overcrossing
346-171-01	Oil well	26,575	East of Van Buren St. and south of Atwood Channel	Placentia	Van Buren St. overcrossing
	Residential/SFR	4,344		Placentia	Van Buren St. overcrossing

Note: Highlighted parcels are not listed in the Orange County Assessor's database. They may have been merged with another parcel or split into multiple parcels since the preparation of the engineering right-of-way plans.

Table 3.4-Q: Full Property Acquisitions under Alternative D[1]

Assessor's Parcel Number (APN)	Existing Land Use	Size of Parcel (square feet [sf])	Address or Location	Jurisdiction	Affected by the Following Grade Separation
	Residential/SFR	4,371		Placentia	Van Buren St. overcrossing
	Residential/SFR	10,379		Placentia	Van Buren St. overcrossing
	Residential/SFR	4,867		Placentia	Van Buren St. overcrossing
	Residential/SFR	6,529		Placentia	Van Buren St. overcrossing
346-211-01	Commercial	25,341	1580 N. Kellogg Dr.	Anaheim	Kellogg Dr. undercrossing
346-211-02	Commercial	32,886	1550 N. Kellogg Dr.	Anaheim	Kellogg Dr. undercrossing
346-211-21	Commercial	3,104	Southeast corner of Orangethorpe Ave. and Kellogg Dr.	Anaheim	Kellogg Dr. undercrossing
346-211-24	Commercial	40,730	1440 S. State College Blvd.	Anaheim	Kellogg Dr. undercrossing
346-211-35	Commercial	8,678	1535 N. Harmony Cir. #Bldg.	Anaheim	Kellogg Dr. undercrossing
346-211-51	Commercial	1,213	Southeast corner of Orangethorpe Ave. and Kellogg Dr.	Anaheim	Kellogg Dr. undercrossing
346-331-01	Commercial parking/storage	20,333	Southwest corner of Orangethorpe Ave. and Lakeview Ave.	Placentia	Lakeview Ave. overcrossing
	Residential/SFR	7,879		Placentia	Lakeview Ave. overcrossing
	Residential/SFR	5,255		Placentia	Lakeview Ave. overcrossing
	Residential/SFR	17,699		Placentia	Lakeview Ave. overcrossing
	Residential/SFR	20,881		Placentia	Lakeview Ave. overcrossing
346-331-06	Commercial	35,496	625 S. Lakeview Ave.	Placentia	Lakeview Ave. overcrossing
346-331-11	Access road to commercial north of Atwood Channel	19,758	625 S. Lakeview Ave.	Placentia	Lakeview Ave. overcrossing
346-331-12	Commercial	117,425	719 S. Lakeview Ave.	Placentia	Lakeview Ave. overcrossing

Note: Highlighted parcels are not listed in the Orange County Assessor's database. They may have been merged with another parcel or split into multiple parcels since the preparation of the engineering right-of-way plans.

Table 3.4-Q: Full Property Acquisitions under Alternative D[1]

Assessor's Parcel Number (APN)	Existing Land Use	Size of Parcel (square feet [sf])	Address or Location	Jurisdiction	Affected by the Following Grade Separation
346-331-13	Commercial	181,593	719 S. Lakeview Ave.	Placentia	Lakeview Ave. overcrossing
ALTERNATIVE D TOTAL FULL ACQUISITIONS					
Total parcels fully acquired: 75			Total area acquired: 2,069,345 sf		
Residential parcels fully acquired: 32			Residential area acquired: 222,861 sf		
Nonresidential parcels fully acquired: 43			Nonresidential area acquired: 1,846,484 sf		

Sources: *Preliminary Engineering Report* (KFM 2004); LSA Geographic Information System 2004; Orange County Tax Assessor Office 2003; tax.ocgov.com (October 2005); and review of 2004 and 2005 aerial photographs.

Note: Highlighted parcels are not listed in the Orange County Assessor's database. They may have been merged with another parcel or split into multiple parcels since the preparation of the engineering right-of-way plans.

OCFCD = Orange County Flood Control District
SFR = Single-family residential

The full and partial right-of-way acquisitions and TCEs identified for the OCG Build Alternatives are preliminary based on the 2004 conceptual design. The actual right-of-way (full and partial acquisitions) and TCEs needed if an OCG Build Alternative is selected for implementation would be defined during final design.

Note: Highlighted parcels are not listed in the Orange County Assessor's database. They may have been merged with another parcel or split into multiple parcels since the preparation of the engineering right-of-way plans.

Table 3.4-R: Partial Property Acquisitions under Alternative D[1]

Assessor's Parcel Number (APN)	Existing Land Use	Size of Partial Acquisition (square feet [sf])	Address or Location	Jurisdiction	Affected by the following Grade Separation
APN unavailable	OCWD	10,542	Miller Basin	Anaheim	Orangethorpe Avenue overcrossing
APN unavailable(804-30-32a-3)	Agriculture (row crops)	3,638	North of Orangethorpe Ave. and west of Van Buren St.	Placentia	Van Buren Street overcrossing
339-081-32	Commercial	240	390 E. Crowther Ave.	Placentia	Kraemer Boulevard undercrossing
339-081-33	Commercial	78	370 E. Crowther Ave.	Placentia	Kraemer Boulevard undercrossing
340-451-01	City sidewalk/ landscape	4,067	Northwest corner of Orangethorpe Ave. and Rose Dr.	Placentia	Tustin Avenue/Rose Drive overcrossing
341-123-30	Oil well and vacant	24,670	Northwest corner of Orangethorpe Ave. and Richfield Rd.	Placentia	Richfield Road overcrossing
341-123-33	City green space	879	Northwest corner of Orangethorpe Ave. and Richfield Rd.	Placentia	Richfield Road overcrossing
341-331-02	Commercial and residential (mobile homes)	114,018	250 S. Rose Dr.	Placentia	Tustin Avenue/Rose Drive overcrossing
341-331-03	Vacant/ undeveloped PYLUSD property	191,664	North of Richfield Channel, northwest corner of Orangethorpe Ave. and Jefferson St.	Placentia	Jefferson Street overcrossing
341-331-04	Vacant	8,169	North of Richfield Channel, northwest corner of Orangethorpe Ave. and Jefferson St.	Placentia	Jefferson Street overcrossing
341-331-10	Vacant	6,563	North of Orangethorpe Ave. adjacent to Richfield Channel	Placentia	Jefferson Street overcrossing

Note: Highlighted parcels are not listed in the Orange County Assessor's database. They may have been merged with another parcel or split into multiple parcels since the preparation of the engineering right-of-way plans.

Table 3.4-R: Partial Property Acquisitions under Alternative D[1]

Assessor's Parcel Number (APN)	Existing Land Use	Size of Partial Acquisition (square feet [sf])	Address or Location	Jurisdiction	Affected by the following Grade Separation
341-371-06	Curb/City	702	1561 Cherry St.	Placentia	Van Buren Street overcrossing
341-373-06	Curb, vacant	570	Northwest corner of Cherry Ave. and Jefferson St.	Placentia	Van Buren Street overcrossing
341-341-18	City sidewalk/ landscape	3,569	Northwest corner of Orangethorpe Ave. and Rose Dr.	Placentia	Tustin Avenue/Rose Drive overcrossing
341-374-01	Vacant	363	6300 S. Van Buren St.	Placentia	Van Buren Street overcrossing
343-351-68	Vacant	130	1731 N. Bubach St.	Anaheim	Lakeview Avenue overcrossing
343-361-15	Commercial	1,730	2099 E. Orangethorpe Ave.	Placentia	Lakeview Avenue overcrossing
343-361-17	Commercial	470	201 S. Lakeview Ave. #Bldg.	Placentia	Lakeview Avenue overcrossing
	Residential/ private road	3,000		Placentia	Richfield Road overcrossing
343-702-24	Vacant	21,211	Northeast corner of Orangethorpe Ave. and Richfield Rd.	Placentia	Richfield Road overcrossing
	Residential/ private walkway	725		Placentia	Richfield Road overcrossing
	Residential/ private road	843		Placentia	Richfield Road overcrossing
	Residential/ private road	711		Placentia	Richfield Road overcrossing
345-161-01	Commercial	12,956	Southwest corner of Orangethorpe Ave. and Jefferson St. south of Atwood Channel	Placentia	Jefferson Street overcrossing
345-161-02	Commercial	24,784	1477 N. Jefferson St.	Anaheim	Jefferson Street overcrossing

Note: Highlighted parcels are not listed in the Orange County Assessor's database. They may have been merged with another parcel or split into multiple parcels since the preparation of the engineering right-of-way plans.

Table 3.4-R: Partial Property Acquisitions under Alternative D[1]

Assessor's Parcel Number (APN)	Existing Land Use	Size of Partial Acquisition (square feet [sf])	Address or Location	Jurisdiction	Affected by the following Grade Separation
345-161-03	Commercial	740	Southwest corner of Orangethorpe Ave. and Jefferson St.	Anaheim	Jefferson Street overcrossing
346-164-01	Commercial	41,828	541 S. Van Buren St.	Placentia	Van Buren Street overcrossing
346-164-25	Commercial	11,319	443 S. Van Buren St.	Placentia	Van Buren Street overcrossing
346-164-30	Commercial	740	633 S. Van Buren St.	Placentia	Van Buren Street overcrossing
	Residential	275		Placentia	Van Buren Street overcrossing
	Residential/ SFR	302		Placentia	Van Buren Street overcrossing
346-211-23	Commercial driveway and parking	1,847	1500 N. Kellogg Dr.	Anaheim	Kellogg Drive undercrossing
346-211-36	Commercial parking	59	1541 N. Harmony Cir. #Bldg.	Anaheim	Kellogg Drive undercrossing
346-331-14	Commercial landscape	544	801 S. Lakeview Ave. #A–H	Placentia	Lakeview Avenue overcrossing
ALTERNATIVE D TOTAL PARTIAL ACQUISITIONS					
Total parcels partially acquired: 34 Residential parcels partially acquired: 6 Nonresidential parcels partially acquired: 28			Total area acquired: 493,926 sf		Residential area acquired: 5,856 sf Nonresidential area acquired: 488,070 sf

Sources: *Preliminary Engineering Report* (KFM 2004); LSA Geographic Information System 2004; Orange County Tax Assessor's Office 2003; tax.ocgov.com (October 2005); and review of 2004 and 2005 aerial photographs.

Note: Highlighted parcels are not listed in the Orange County Assessor's database. They may have been merged with another parcel or split into multiple parcels since the preparation of the engineering right-of-way plans.

OCWD = Orange County Water District
SFR = Single-family residential

[1] The full and partial right-of-way acquisitions and TCEs identified for the OCG Build Alternatives are preliminary based on the 2004 conceptual design. The actual right-of-way (full and partial acquisitions) and TCEs needed if an OCG Build Alternative is selected for implementation would be defined during final design.

Note: Highlighted parcels are not listed in the Orange County Assessor's database. They may have been merged with another parcel or split into multiple parcels since the preparation of the engineering right-of-way plans.

Table 3.4-S: Temporary Construction Easements under Alternative D[1]

Assessor's Parcel Number (APN)	Land Use	Size of Temporary Construction Easement (TCE) (sf)	Address or Location	Jurisdiction	Affected by the following Grade Separation
	Residential/ apartments	13,151		Placentia	Kraemer Boulevard undercrossing

Sources: *Preliminary Engineering Report* (KFM 2004); LSA Geographic Information System 2004; Orange County Tax Assessor's Office 2003; tax.ocgov.com (October 2005); and review of 2004 and 2005 aerial photographs.

[1] The full and partial right-of-way acquisitions and TCEs identified for the OCG Build Alternatives are preliminary based on the 2004 conceptual design. The actual right-of-way (full and partial acquisitions) and TCEs needed if an OCG Build Alternative is selected for implementation would be defined during final design.



Proposed Roadway Improvement
Proposed Greenbelt Areas
Proposed Roadway Bridge

Alternative D Project Boundary
Proposed Flood Control Improvements
Full Acquisition
Partial Acquisition

Existing Railroad Tracks
Proposed Trench Walls

Low Density Residential
Low-Medium Density Residential
Medium Density Residential
Medium-High Density Residential
High Density Residential

Commercial
General Industrial
Golf Course
Office
Open Space

Planned Community/ Specific Plan
School
Water Uses

KFM Engineering, 2003.
Aug 03, 2006- i:\otg130\gis\mxds\EIS_altd_cia.mxd

Figure 3.4-6

Orange County Gateway

Alternative D

General Plan Land Uses and Proposed Acquisitions
Sheet 1 of 7

MOLOKAI DR

LOS PADRES LANE

DOLORES CIRCLE

EL CAMINO LANE

SAN DIEGO

CROWTHER AVE

CARDINAL ST

LANCASTER AVE

RUTHEFORD ST

RADCLI

PHEASANT ST

KRAEMER BLVD

ORANGETHORPE AVE

0 Meters 68.5

0 Feet 225

Proposed Roadway Improvement

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Low Density Residential

Low-Medium Density Residential

Medium Density Residential

Medium-High Density Residential

High Density Residential

Commercial

General Industrial

Golf Course

Office

Open Space

Planned Community/ Specific Plan

School

Water Uses

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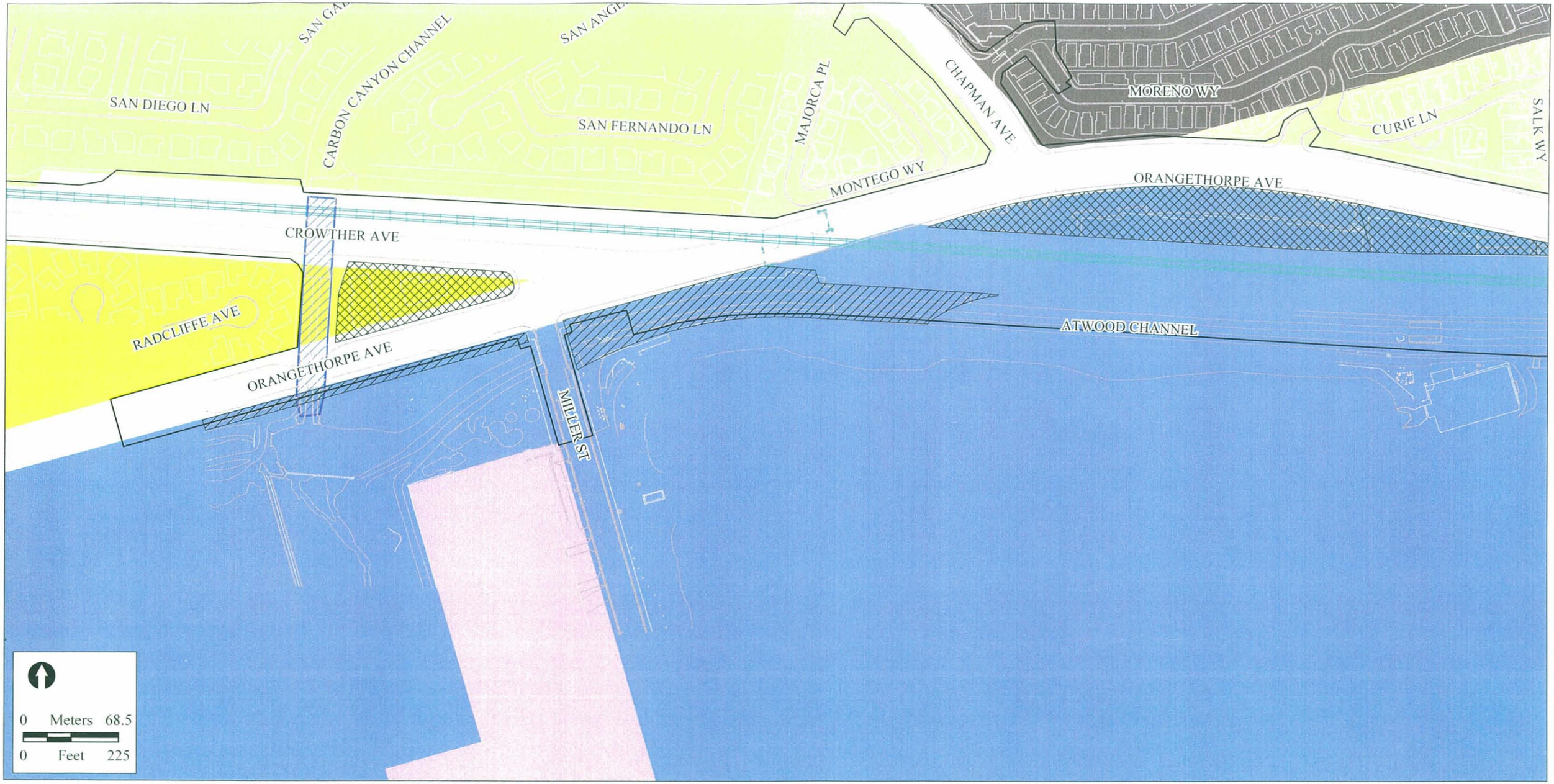
Figure 3.4-6

Orange County Gateway

Alternative D

General Plan Land Uses and Proposed Acquisitions

Sheet 2 of 7



Proposed Roadway Improvement
Proposed Greenbelt Areas
Proposed Roadway Bridge

Alternative D Project Boundary
Proposed Flood Control Improvements
Full Acquisition
Partial Acquisition

Existing Railroad Tracks
Proposed Trench Walls

Low Density Residential
Low-Medium Density Residential
Medium Density Residential
Medium-High Density Residential
High Density Residential

Commercial
General Industrial
Golf Course
Office
Open Space

Planned Community/ Specific Plan
School
Water Uses

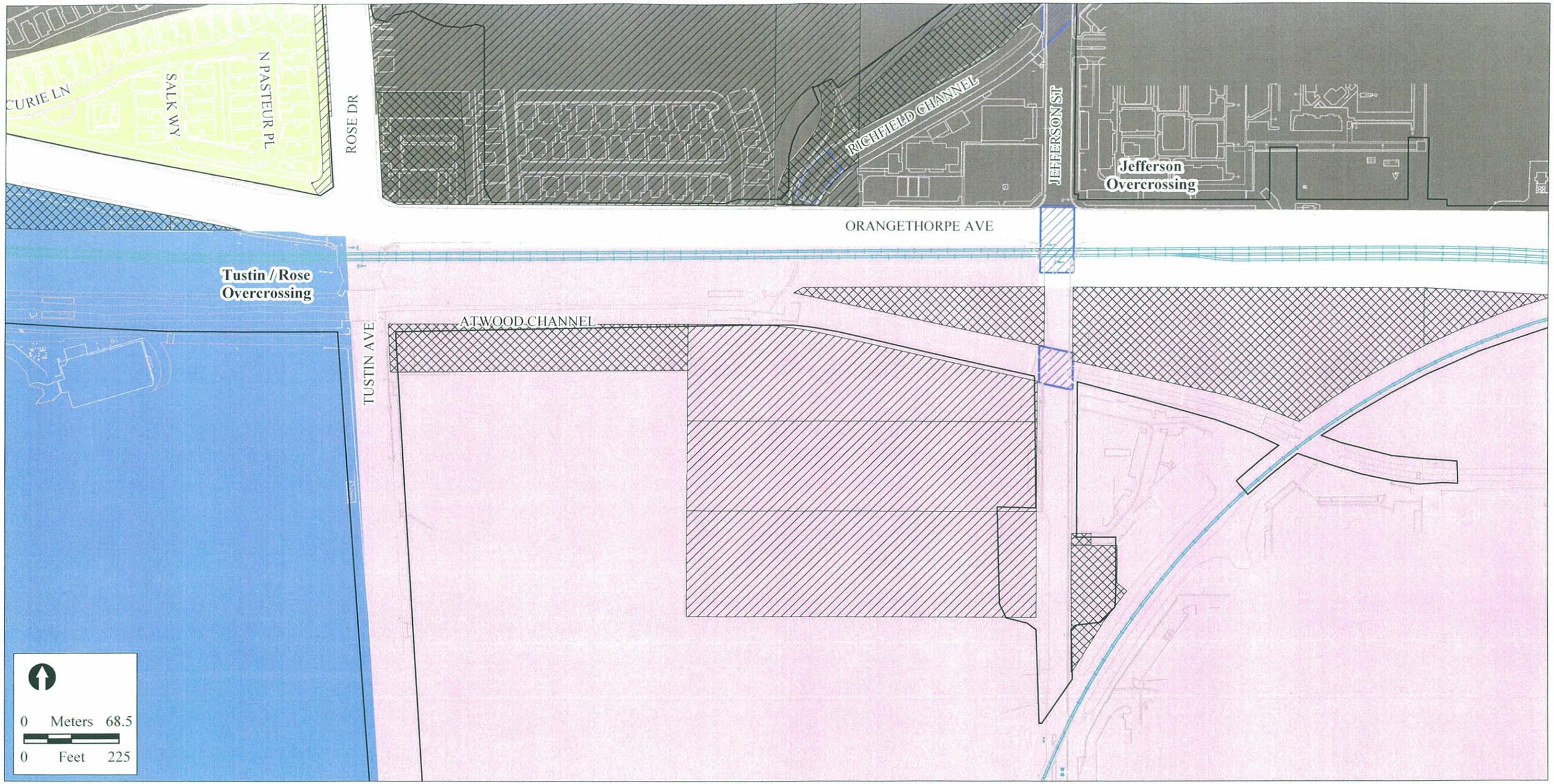
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Figure 3.4-6

Orange County Gateway

Alternative D

General Plan Land Uses and Proposed Acquisitions
Sheet 3 of 7



Proposed Roadway Improvement
Proposed Greenbelt Areas
Proposed Roadway Bridge
Alternative D Project Boundary
Proposed Flood Control Improvements
Full Acquisition
Partial Acquisition
Existing Railroad Tracks
Proposed Trench Walls
Low Density Residential
Low-Medium Density Residential
Medium Density Residential
Medium-High Density Residential
High Density Residential
Commercial
General Industrial
Golf Course
Office
Open Space
Planned Community/ Specific Plan
School
Water Uses

Figure 3.4-6

Orange County Gateway

Alternative D

General Plan Land Uses and Proposed Acquisitions
Sheet 4 of 7

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Figure 3.4-6

Orange County Gateway

Alternative D

General Plan Land Uses and Proposed Acquisitions Sheet 5 of 7

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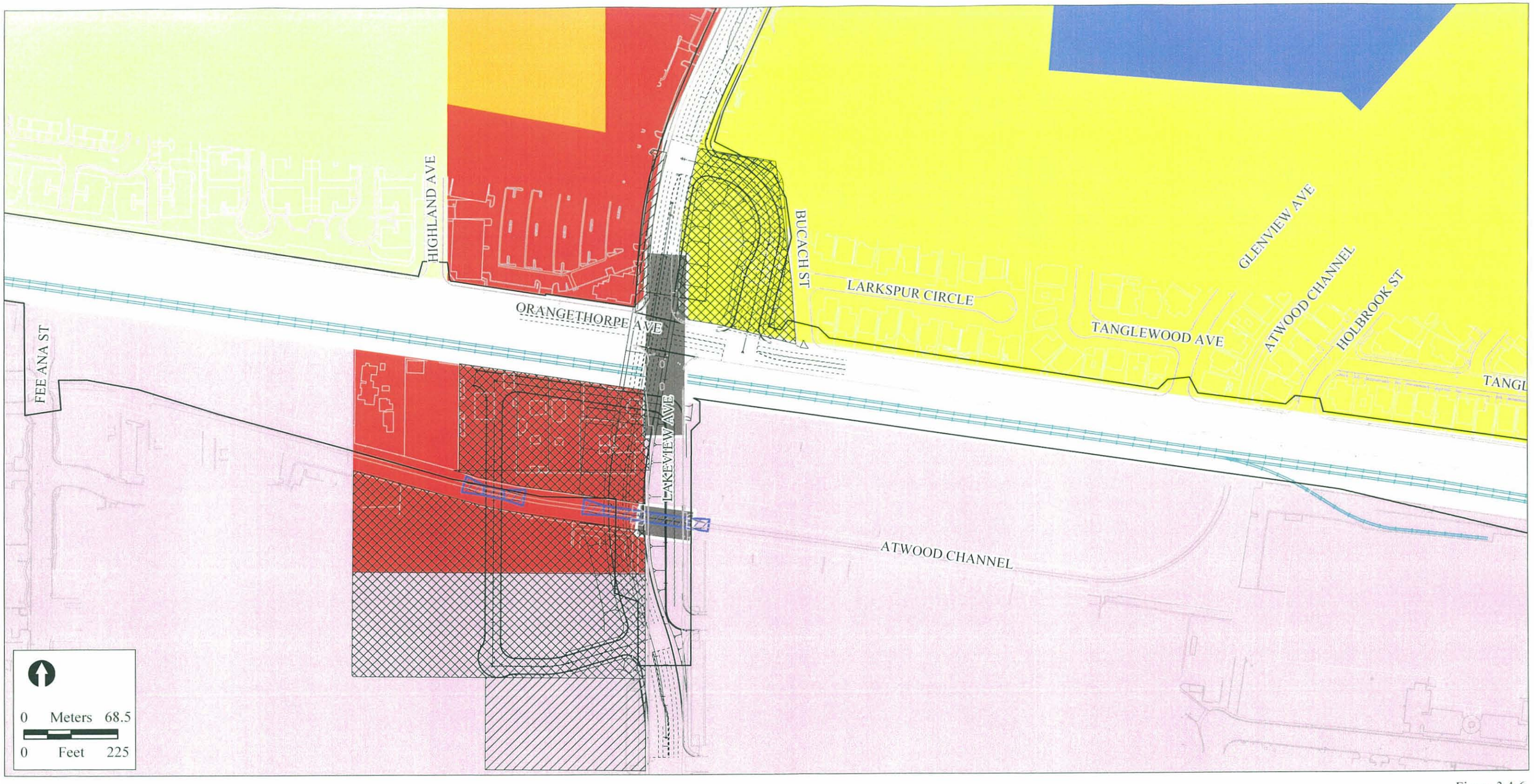


Figure 3.4-6

Orange County Gateway

Alternative D

General Plan Land Uses and Proposed Acquisitions
Sheet 6 of 7

KFM Engineering, 2003.
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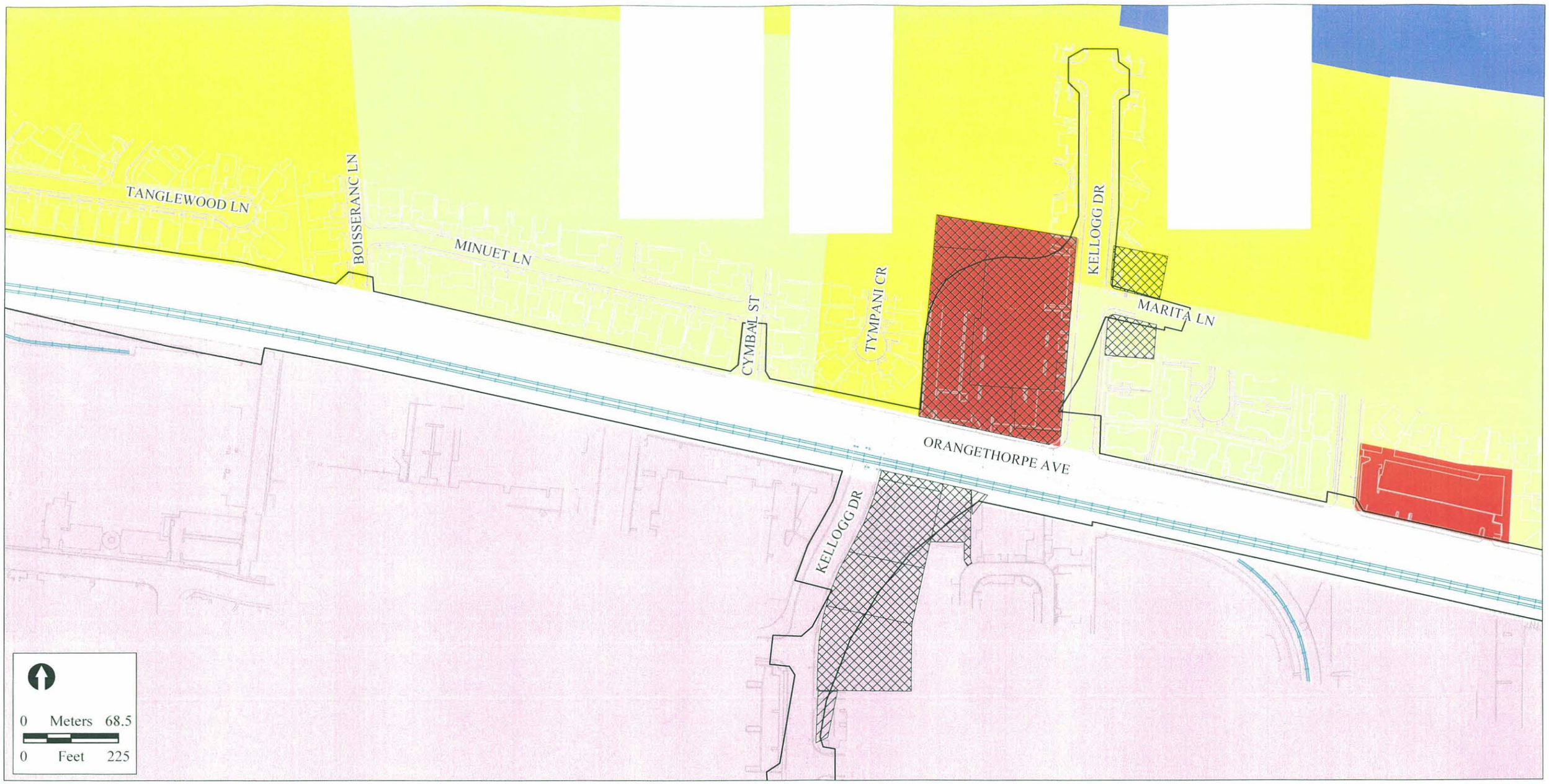


Figure 3.4-6

Orange County Gateway

Alternative D

General Plan Land Uses and Proposed Acquisitions
Sheet 7 of 7

KFM Engineering, 2003.
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A total of 75 parcels would be fully acquired under Alternative D, including 43 nonresidential and 32 residential parcels as shown in Table 3.4-Q. The existing land uses on the nonresidential parcels are commercial, industrial, public (easements), oil recovery, and agriculture.

Two of the residential parcels do not currently have housing units on them. The actual land uses are storage and residential parking.

The residential properties to be acquired are:

- Kramer Boulevard Undercrossing Grade Separation (3 properties within Census Tract 117.22)
- Van Buren Street Overcrossing Grade Separation (8 properties within Census Tract 218.21)
- Richfield Road Overcrossing Grade Separation (15 properties within Census Tract 218.21)
- Lakeview Avenue Overcrossing Grade Separation (4 properties within Census Tract 218.13)
- Kellogg Drive Undercrossing Grade Separation (2 properties within Census Tract 218.12)

Tracts 117.22 and 218.13 have environmental justice minority and poverty-level populations. However, as shown above, only 7 of the 75 total full acquisitions under Alternative D occur in these census tracts. Therefore, implementation of Alternative D would not result in disproportionately high and adverse impacts for environmental justice populations.

Several properties in Anaheim and Placentia, which are currently used for agriculture (row crops), would be acquired under Alternative D. Although these properties are currently used to produce agricultural crops, they are not classified as Prime or Unique Farmland and have a General Plan land use designation of residential.

Descriptions of the residential and nonresidential properties proposed for acquisition under Alternative D (e.g., Assessor's parcel number, use, size, and address) are provided in Tables 3.4-Q and 3.4-R. The Assessor's parcel number and address for residential parcels were excluded from the tables for privacy. These property acquisitions would result in an adverse impact on the property owners and tenants which would be partially mitigated based on compliance with the requirements of the RAP as described later in Mitigation Measures CI-2, CI-4, CI-5, and CI-6. Nonetheless, even with mitigation, some displaced property owners may consider the experience of displacement to be a substantial adverse impact not fully mitigated by those mitigation measures. Alternative D would have a beneficial effect of making community facilities more accessible by reducing traffic delay in the project area.

The acquisition of full and partial parcels for Alternative D would not result in adverse effects to access to remaining residential and commercial properties in the area.

Alternative D Employees Displaced. As shown in Table 3.4-T, 38 parcels occupied by nonresidential uses would be acquired totaling 160,356 sq m (1,726,054 sf). The uses on those parcels include commercial, oil recovery, agriculture, and auto uses. Because most of the buildings on the nonresidential full parcels are one-story and occupy less than half of the total acre of each parcel, a FAR of 0.5 percent was used in this analysis to estimate building square footage

Table 3.4-T: Alternative D Estimated Employee Displacement

	Assessor's Parcel Number (APN)	Jurisdiction	Existing Land Use	Parcel Acquired (square foot)	Floor Area Ratio (0.5) (square foot)	Employee per Square Foot	Displaced Employees
	APN unavailable (804-32b-14)	Placentia	Agriculture (row crops)	8,336	No buildings on parcel	1:10000	**1**
	340-381-01	Anaheim	Commercial	50,984	25,492	1:500	**33**
	341-331-01	Placentia	Commercial	64,205	32,103	1:500	**64**
	341-354-01	Placentia	Oil wells and vacant	7,514	No buildings on parcel	1:10000	**1**
	341-354-02	Placentia	Oil wells and vacant	15,027	No buildings on parcel	1:10000	**2**
	341-354-03	Placentia	Agriculture (row crops)	7,353	No buildings on parcel	1:10000	**1**
	341-354-12	Placentia	Agriculture (row crops)	15,634	No buildings on parcel	1:10000	**2**
	341-354-13	Placentia	Agriculture (row crops)	13,453	No buildings on parcel	1:10000	**1**
	343-052-55	Anaheim	Commercial	66,894	33,447	1:500	**67**
	343-052-56	Anaheim	Commercial	14,219	7,109	1:500	**14**
	343-052-57	Anaheim	Commercial	84,271	42,136	1:500	**84**
	343-351-60	Anaheim	Residential and agriculture (orchard and row crop)	105,845	No commercial buildings on parcel	1:10000	**11**
	343-701-04	Placentia	Commercial	17,449	8,725	1:500	**18**
	343-701-05	Placentia	Commercial	26,756	13,378	1:500	**27**
	343-701-06	Placentia	Commercial	26,689	13,344	1:500	**27**
	345-141-01	Placentia	Commercial	108,819	54,410	1:500	**109**
	345-152-01	Placentia	Commercial	36,645	18,332	1:500	**37**
	345-152-02	Anaheim	Commercial	1,975	988	1:500	**2**
	345-161-23	Anaheim	Industrial/auto wrecking and one oil well	55,665	5,566	1:1000	**6**
	345-161-24	Placentia	Commercial	88,406	44,203	1:500	**88**
	346-015-11	Placentia	Commercial	59,359	29,680	1:500	**59**

Note: For parcels with no commercial buildings but some commercial or industrial activity such as an oil well, storage, or agriculture, the ratio of one employee per 10,000 square feet of the parcel was used to estimate the number of employees. These businesses do not have a constant work force. For parcels with very small buildings relative to the acreage, a FAR of 0.10 and 1:1000 ratio of employee per square foot was used to estimate the number of employees. See highlighted rows.

Table 3.4-T: Alternative D Estimated Employee Displacement

	Assessor's Parcel Number (APN)	Jurisdiction	Existing Land Use	Parcel Acquired (square foot)	Floor Area Ratio (0.5) (square foot)	Employee per Square Foot	Displaced Employees
	346-015-12	Placentia	Commercial	46,007	23,004	1:500	**46**
	346-015-13	Placentia	Commercial	74,813	37,407	1:500	**75**
	346-162-01	Placentia	Commercial storage yard	22,319	No buildings on parcel	1:10000	**2**
	346-162-02	Placentia	Industrial/oil wells, vehicle and equipment storage (Guarantee Royalties)	199,088	19,908	1:1000	**20**
	346-164-22	Placentia	Industrial/alley	7,471	No buildings on parcel	1:10000	**1**
	346-164-23	Placentia	Commercial	7,484	3,742	1:500	**8**
	346-171-01	Placentia	Oil well	26,575	No buildings on parcel	1:10000	**3**
	346-211-01	Anaheim	Commercial	25,341	12,671	1:500	**25**
	346-211-02	Anaheim	Commercial	32,886	16,443	1:500	**33**
	346-211-21	Anaheim	Commercial	3,104	1,552	1:500	**3**
	346-211-24	Anaheim	Commercial	40,730	20,365	1:500	**41**
	346-211-35	Anaheim	Commercial	8,678	4,339	1:500	**9**
	346-211-51	Anaheim	Commercial	1,213	607	1:500	**1**
	346-331-01	Placentia	Commercial parking/storage	20,333	No buildings on parcel	1:10000	**2**
	346-331-06	Placentia	Commercial	35,496	17,748	1:500	**36**
	346-331-12	Placentia	Commercial	117,425	58,713	1:500	**117**
	346-331-13	Placentia	Commercial	181,593	90,797	1:500	**182**
Totals	**38 Business Parcels**	--	--	**1,726,054**	**636,209**	--	**1,258**

Sources: Principals and Practice of Urban Planning (Goodman, W., and Freund, E., 1968) and The Fiscal Impact Handbook (Burchell and Listokin, 1978).

Note: For parcels with no commercial buildings but some commercial or industrial activity such as an oil well, storage, or agriculture, the ratio of one employee per 10,000 square feet of the parcel was used to estimate the number of employees. These businesses do not have a constant work force. For parcels with very small buildings relative to the acreage, a FAR of 0.10 and 1:1000 ratio of employee per square foot was used to estimate the number of employees. See highlighted rows.

per parcel. The number of employees per each full acquisition is one employee per 300 sf of industrial use and one employee per 500 sf of commercial use. The estimated number of employees that would be potentially displaced under Alternative D is 1,258.

Property Tax Revenues. Table 3.4-M, provided earlier, lists the annual property taxes collected in the Cities of Placentia and Anaheim for fiscal year 2005 (the most recent available annual information). Table 3.4-M also lists the anticipated property tax losses under Alternative D based on the full property acquisitions listed earlier in Table 3.4-P (excluding properties owned by public agencies). As shown in Table 3.4-M, the full property acquisitions under Alternative D in the City of Placentia would reduce property taxes in that City by $295,280 and in Anaheim by $113,549. The total loss in property taxes in the two Cities would be $408,830. As shown in Table 3.4-M, the loss of property taxes as a result of Alternative D would total 5.31 percent of the total property tax in Placentia and 0.41 percent of the total property tax in Anaheim. The property tax loss in Placentia would be notable; however, because the property acquisition would be phased over approximately 10 years, the impact would be incremental over those 10 years as property for each crossing is acquired. Further, over time, the overall value of property in Placentia would be expected to continue to increase, which would somewhat offset the loss of property tax associated with acquisition for Alternative D. The property tax loss in Anaheim under Alternative D would be a very small percentage and would not result in a substantial adverse impact on that City's property tax revenues.

Temporary Impacts

Alternative A

No partial or full acquisitions would occur under the No Build Alternative because no OCG project construction or implementation, including right-of-way acquisition, would occur under this alternative.

Alternatives B, C, and D (Direct and Indirect Impacts)

All impacts related to partial or full acquisitions are considered permanent impacts whether the acquisitions are necessary for construction staging areas or are required for rights-of-way for the Build Alternatives. No temporary impacts to displacees are anticipated to occur, as the Uniform Act requires that suitable replacement housing be provided prior to displacement from the properties to be acquired. However, it is possible that replacement housing may not be readily available when property acquisition for an OCG Build Alternative occurs and the displaced residents may have to be relocated to temporary housing and then relocated again when permanent housing opportunities become available.

As discussed earlier, there may be some disruptions in local neighborhoods and at businesses adjacent to the construction areas, related to temporary traffic detours or delays or the loss of parking, during construction of Alternatives B, C, and D.

3.4.2.5 Avoidance, Minimization, and/or Mitigation Measures

Alternative A

No mitigation measures are required.

Alternatives B, C, and D

All impacts related to partial or full acquisitions are considered permanent impacts whether the acquisitions are necessary for construction staging or required for rights-of-way for the OCG Build Alternatives. The full and partial right-of-way acquisitions and TCEs identified for the OCG Build Alternatives are preliminary based on the 2004 conceptual design. The actual right-of-way (full and partial acquisitions) and TCEs needed if an OCG Build Alternative is selected for implementation would be defined during final design. The mitigation measures below would substantially reduce the adverse impacts of Alternatives B, C, and D related to property acquisitions.

CI-1 To mitigate construction-related business disruption impacts, the OCTA Resident Engineer will require the construction contractor to provide appropriate signage to direct patrons to alternate routes to businesses; to develop and implement traffic management plans to maintain access to businesses; to develop and implement a business outreach program to inform local merchants of construction schedules that may affect their establishments; and to provide a project office hotline to answer questions from property owners, businesses, and visitors to the area related to the project.

CI-2 The OCTA Project Engineer will coordinate with the affected property owners and industrial land uses subject to partial acquisitions (including parking) to determine if the uses on those parcels can be reconfigured on site in such a manner as to remain in operation. If a commercial or industrial partial acquisition cannot be reconfigured to allow for continued operation on the remainder parcel, the OCTA Project Engineer will coordinate and cooperate with the affected property owners in relocating the affected land use to land designated for the given land use, preferably within the boundaries of the study area cities.

CI-3 The OCTA Project Engineer will coordinate with the affected property owners whose parking areas are subject to parking acquisitions to determine whether replacement parking can be provided on-site or in the immediate vicinity.

CI-4 The acquisition and relocation program would be conducted by the OCTA Right-of-Way Agents in accordance with the provision of federal Public Law (PL) 91-646 and the Uniform Relocation Assistance and Real Property Acquisitions Policies Act (Uniform Act) of 1970 as amended (and as amended by PL100-17, 1987) and as adopted by the California Department of Transportation. The Uniform Act mandates that certain relocation services and payments be made available to eligible residents, businesses, and nonprofit organizations displaced by its projects. The Uniform Act provides for uniform and equitable treatment by federal or federally assisted programs of persons displaced from their homes, businesses, or farms and establishes uniform and equitable land acquisition policies.

CI-5 Where acquisition and relocation are unavoidable, the OCTA Right-of-Way Agents will follow the provisions of the Uniform Act and the 1987 Amendments as implemented by the Uniform Relocation Assistance and Real Property Acquisition Regulations for Federal and Federally Assisted Programs adopted by the Department of Transportation (March 2, 1989). An independent appraisal of the affected property would be obtained, and the OCTA Right-of-Way Agents would offer the full amount as determined by the appraisal. Relocation resources will be available to all residential and business relocatees without discrimination.

CI-6 The Uniform Act requires that comparable, decent, safe, and sanitary replacement housing that is within a person's financial means be made available before that person may be displaced. In the event that such replacement housing is not available to "re-house" persons displaced by the project within statutory limits for replacement housing payments, the OCTA Right-of-Way Agents may provide Last Resort Housing in a number of prescribed ways. Last Resort Housing would be provided in the event that comparable housing for displaced residents is not available. Last Resort Housing can include increased housing payments or the construction of new housing, depending on the specific circumstances associated with the housing needs for an individual project.

3.4.2.6 Conclusions

The proposed OCG Build Alternatives would result in varying degrees of relocation impact, primarily dependent on the number of nonresidential and residential displacements associated with each alternative. As discussed above in Section 3.4.1.3, relocation of potentially displaced residents may be difficult given the current housing market and projected growth of the Orange County area. As discussed earlier, some displaced persons may consider that the impact of the displacement and relocation is substantial, even after implementation of Mitigation Measures CI-1 to CI-6, provided earlier.

The employee data presented in this Environmental Impact Statement (EIS) is only an estimate of potentially impacted employees, based on data available at this time. Exact employee counts will vary over time, as employees periodically leave jobs, are laid off, or dismissed. Additionally, obtaining the exact number of employees is dependent on business owner and/or manager cooperation and does not account for workers that may not be formally employed at a particular business. The number of employees affected will depend on the actual number of employees at each business when property acquisition occurs.

3.4.3 ENVIRONMENTAL JUSTICE

3.4.3.1 Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* signed by President Clinton on February 11, 1994. This EO directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low income is defined based on

the United States Department of Health and Human Services (DHHS) poverty guidelines. For 2000, this was an annual family income of $17,603 for a family of four and for 2006, was $20,000 for a family of four.

All considerations under Title VI of the Civil Rights Act of 1964 and related statutes have also been included in the OCG project. The City of Placentia's commitment to upholding the mandates of Title VI is evidenced by its Title VI Policy Statement, which is provided in Appendix C.

Methodology. The environmental justice analysis was conducted using census tract-level information. Census tract-level data for racial and ethnic information have been reported from the 2000 Census. To provide full disclosure, data from entire tracts that intersected or were contiguous to the project footprint were included in the following discussion. While this overstates the population potentially affected by a given alternative, it was deemed more important to consider consistent census data than to try to achieve an exact match of data with alignments.

Environmental justice impacts are evaluated by comparing socioeconomic data for the affected communities with the surrounding area to determine whether or not the project has a disproportionate adverse impact on the following:

- Black persons
- Hispanic persons (the Census Bureau considers Hispanic or Latino ethnicity distinct from racial background)
- Asian-American persons
- American-Indian and Alaskan-Native persons
- Persons whose household income is at or below the DHHS poverty guidelines
- Transit-dependent persons

The analysis specifically considered the following questions related to the potential for the OCG project alternatives to result in adverse impacts related to environmental justice:

- Does the OCG project area contain higher than average concentrations of traditionally underserved groups when compared to the area surrounding the project area or the city or county as a whole? For this analysis, the concentrations of populations in the study area census tracts, shown earlier on Figure 3.4-2, were compared to the concentrations of populations in the Cities of Placentia, Anaheim, and Yorba Linda and the County as a whole.
- Are the areas in which these populations are located subject to disproportionate impacts? For this analysis, the potential impacts were identified and then assessed to determine whether they disproportionately affected an environmental justice population.
- Would the proposed OCG project increase traffic in low-income and minority neighborhoods? If so, will the increase be greater than in non-minority or non-low income neighborhoods? For this analysis, the findings of the traffic study were assessed to determine whether the proposed OCG project would result in greater adverse traffic impacts in low-income and minority neighborhoods versus non-minority and non-low income neighborhoods.

- Would access from minority or low-income neighborhoods to various services or cultural destinations (churches, parks, community centers, schools, libraries) be affected by the proposed OCG project? For this analysis, the potential short- and long-term impacts of the proposed project related to surface transportation and transit were identified and then assessed to determine whether they disproportionately affected an environmental justice population.
- Would the OCG project require the displacement of any minority or low-income residences? If so, are these impacts disproportionate? For this analysis, the number of relocations were identified and considered in the context of whether the census tracts included a substantial environmental justice population and whether the relocations would disproportionately affect an environmental justice population.
- Would the OCG project result in a proportional change of minority or low-income households in the area that will have access to transit services reduced? For this analysis, access to transit services during construction and operation of the OCG project were identified and assessed to determine whether the project would disproportionately adversely affect an environmental justice population.
- Are the benefits associated with the OCG project equitable for all segments of society? For this analysis, the benefits of the OCG project were identified and then assessed to determine whether all segments of society would benefit equitably.
- Have all groups in the OCG project area been involved in the decision making process through an effective and thorough public participation effort? For this analysis, the scoping and public information process was described and evaluated for allowing maximum participation of all groups in the process.

3.4.3.2 Affected Environment

Much of the data for describing the potential for minority, low-income, and transit-dependent populations in the study area census tracts were provided earlier in Section 3.4.1, Community Character and Cohesion. The key data identifying the minority, low-income, and transit-dependent populations for the study area census tracks, the cities, and Orange County are summarized in the following sections.

Based on the census data for the study area census tracts described below, it appears that the areas included within these tracts can be characterized as including substantial populations of minority and low-income populations. Because no specific groups or clusters of these populations can be identified at a geographic level smaller than the census tracts, this analysis assumed these tracts represented substantial environmental justice populations within each tract, including areas in the tracts immediately adjacent to the project segment of the BNSF railroad. The specific types of environmental justice populations found in these census tracts are described in the following sections.

Minority Populations. Table 3.4-D, provided earlier, summarized the ethnic composition of Orange County, the Cities of Placentia, Anaheim, and Yorba Linda, and the OCG study area census tracts. The following OCG study area census tracts have minority populations greater than the percents in the Cities and/or the County:

Tract 117.14: Sixty-nine percent of the persons within this tract cited Hispanic as their ethnic group, which is higher than the rates for the County and the three cities. The percentage of the Asian population group in this census tract also exceeds the rates for the County and the three cities.

Tract 117.16: The percentages of Black and Asian populations within this tract exceed the rates of these populations within Orange County and some of the city rates. The percentage of Hispanics within this tract exceeds only the rate for the City of Yorba Linda.

Tract 117.21: The percentages of Black, American Indian/Native Alaskan, and Hispanic groups exceed the rates of these populations within Orange County and the three cities. The percentage of Hawaiian/Pacific Islanders within this tract exceeds the rates within the County and the City of Yorba Linda.

Tract 117.22: The percentages of Black and Hispanic groups within this tract exceed the rates of these populations in Orange County and the three cities. The percentage of Asians in this tract exceeds the rate within the City of Placentia.

Tract 218.12: The percentage of White, Black, and American Indian/Native Alaskan groups within this tract exceeds the percentage of this population within Orange County. The percentages of Hispanics in this tract exceed only the rates of that population within the City of Yorba Linda.

Tract 218.13: The percentage of Hispanics within this tract exceeds the percentage of this population within the County and the cities. All of the residents in this tract cited Hispanic as their ethnic group, which is the highest rate within the OCG study area census tracts and higher than the rates for the County and the cities.

Tract 218.20: The percentages of White and Asian populations within this tract exceed the percentage of these populations within Orange County and the cities. The percentages of Hawaiian/Pacific Islander and Hispanic groups within this tract exceed the rates for the City of Yorba Linda only.

Tract 218.21: The percentages of Asians in this tract exceed the rates of the County and the cities. The percentage of Black, American Indian/Native American, and Hispanic groups within this tract exceed the rates for the City of Yorba Linda only.

Table 3.4-U identifies the number of full residential and nonresidential acquisitions for Alternatives B, C, and D by census tract. This table also lists the environmental justice populations in those census tracts, as summarized above.

Alternative B would result in residential acquisitions only in Tract 218.13, where five residential parcels would be acquired. Alternative B would also result in limited (one to four) acquisitions by census tracts of nonresidential uses. Based on the population and demographic data for each census tract, the acquisitions under Alternative B would impact some environmental justice populations (Hispanic and transit-dependent) in Tract 218.13.

Table 3.4-U: Acquisitions, Temporary Construction Easements, and Environmental Justice Populations

Census Tract	Number of Full Acquisitions per Alternative			Number of Partial Acquisitions per Alternative	Number of TCEs[1] per Alternative	Environmental Justice Populations[2]
	Residential	Nonresidential	Total Full Acquisitions			
117.14	None	Alt B-1 Alt C-1 Alt D-5	Alt B-1 Alt C-1 Alt D-5	Alt B-4 Alt D-6	None	Asian, Hispanic, Low-income
117.16	None	None	None	Alt B-12 Alt C-12 Alt D-1	Alt B-22 Alt C-12 Alt D-1	Black, Asian
117.21	None	Alt B-4	Alt B-4	Alt B-4 Alt C-3	Alt B-3 Alt C-3	Black, Hispanic, Low-income
117.22	Alt B-0 Alt C-0 Alt D-4	Alt B-2 Alt C-2 Alt D-1	Alt B-2 Alt C-2 Alt D-5	Alt B-9 Alt C-10 Alt D-2	Alt B-10 Alt C-9 Alt D-0	Black, Hispanic, Low-income, Transit-dependent
218.12	Alt C-1 Alt D-2	Alt C-0 Alt D-4	Alt C-1 Alt D-6	Alt B-5 Alt C-5	Alt B-5 Alt C-4	Black, American Indian/Native Alaskan
218.13	Alt B-5 Alt C-4 Alt D-4	Alt B-4 Alt C-7 Alt D-17	Alt B-9 Alt C-11 Alt D-21	Alt B-2 Alt C-4 Alt D-6	Alt B-5 Alt C-1 Alt D-0	Hispanic, Transit-dependent, Low-income
218.20	None	None	None	None	None	Asian
218.21	Alt D-23	Alt B-4 Alt C-4 Alt D-16	Alt B-4 Alt C-4 Alt D-29	Alt B-8 Alt C-28 Alt D-17	Alt B-27 Alt C-33 Alt D-0	Asian

Source: LSA Associates, Inc. (2007) and the 2000 United States Census.

1 TCE = temporary construction easements

2 Environmental justice populations are defined as populations in census tracts where the percentage of that population exceeds the percentage of that population in Orange County.

Alternative C would result in residential acquisitions only in Tracts 218.12 and 218.13, where one and four residential parcels, respectively, would be acquired. Alternative C would result in limited (one to seven) acquisitions by census tract of nonresidential uses. Based on the population and demographic data for each census tract, the acquisitions under Alternative C would impact some environmental justice populations in Tract 218.13. Alternative C would also result in the acquisition of 1 residential parcel in Tract 218.12; however, Tract 218.12 does not contain environmental justice populations because it does not have greater amounts of minority, low-income, or transit-dependent populations when compared to the County rates. Additionally, one acquisition in a census tract with a total population of 6,505 persons and over half of minority populations would not constitute an adverse impact for the environmental justice population.

As shown in Table 3.4-U, Alternative D would result in residential acquisitions in four census tracts:

- 4 acquisitions each in Tracts 117.22 and 218.13
- 2 acquisitions in Tract 218.12
- 23 acquisitions in Tract 218.21

Alternative D would also result in acquisitions of nonresidential uses in five different census tracts. Based on the population and demographic data for each census tract, the residential acquisitions under Alternative D would not impact environmental justice populations in Tract 218.21 (where the most acquisitions would occur) because minority populations constitute less than half of the population of this census tract, less than the County as a whole.

Table 3.4-U also summarizes the number of partial acquisitions and temporary construction easements (TCEs) under Alternatives B, C, and D. The tables in Section 3.4.2, Relocations, show the square footage of each partial acquisition and TCE under the Build Alternatives. Partial acquisitions and TCEs would occur in all the census tracts except Tract 218.20; however, each alternative does not necessarily result in a partial acquisition and/or TCE in each census tract. Nonetheless, based on the population and census tract data for each census tract, the partial acquisitions and TCEs under each Build Alternative would impact some environmental justice populations. The partial acquisitions and TCEs would affect land only and would not result in impacts on any structures on those parcels.

The "FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" (FHWA Web site, accessed October 24, 2007) requires evaluation of whether project impacts would disproportionately affect environmental justice populations. Section g of that guidance defines a disproportionately high and adverse effect on minority and low-income populations as "...an adverse effect that:

(1) is predominantly borne by a minority population and/or a low-income populations; or

(2) will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the nonminority population or the non low-income population."

The following study area census tracts in which property will be acquired for the proposed OCG project include environmental justice populations:

- Tract 117.22–Black, Hispanic, Low-income, and Transit-dependent.
- Tract 218.13–Hispanic and Transit-dependent

As a result, environmental justice populations will experience adverse impacts associated with property acquisition (full, partial, and TCEs). As shown in Table 3.4-U, the types of environmental justice populations vary from census tract to census tract. No individual environmental justice population occurs in every study area census tract. As a result, the project impacts related to property acquisition will not be borne predominantly by any one minority, low-income, or transit-dependent population, and will be incurred by the environmental justice populations in each census tract and the White populations in those census tracts. Further, the impacts associated with property acquisition will be of similar severity and magnitude for all populations in those census tracts, with environmental justice populations being displaced by the proposed OCG project. As a result, Alternatives B, C, and D would not result in disproportionately high and adverse effects on minority environmental justice populations.

Low-Income Populations. Table 3.4-F, provided earlier, summarized the numbers and percents of households below the poverty level, and the percents of persons below the poverty level for the OCG project census tracts and Orange County. Table 3.4-F shows that 14.1 percent of the population countywide is below the poverty level. As shown in that table, the following OCG study area census tract populations are greater than the poverty level in the County:

- Tract 117.14: 44 percent of the population is below the poverty level.
- Tract 117.21: 19.2 percent of the population is below the poverty level.
- Tract 117.22: 15.6 percent of the population is below the poverty level.
- Tract 218.13: 39 percent of the population is below the level of poverty.

In census tracts 117.16, 218.12, 218.20, and 218.21 the percents of persons below the poverty level are less than the percent countywide.

As shown earlier on Figure 3.4-2, Tracts 117.14, 117.21, and 117.22 are located on the west end of the OCG alignment and all three census tracts are crossed by the BNSF railroad. As described in Table 3.4-H and shown on Figure 3.4-5, the residential uses in this area are single-family. Tract 218.13 is located on the southeast portion of the OCG alignment in a primarily industrial area. The residential uses in this tract are single-family (Table 3.4-I). These four tracts have a greater percent of their populations below the poverty level than the County and the other census tracts in the OCG study area.

In addition, as described in Table 3.4-U, no full residential acquisitions would be required under any of the Build Alternatives in census tracts 117.14 and 117.21. Alternative D would require full acquisition of four residential parcels in census tract 117.22 out of a total of 872 occupied housing units in that tract. Alternatives B, C, and D would require 5, 4, and 4 full residential acquisitions, respectively, in census tract 218.13 out of a total of 13 occupied housing units in that tract.

Therefore, low income populations will experience potentially adverse impacts associated with property acquisitions (full, partial, and TCE) resulting from the Build Alternatives. The adverse impacts would be minimized with implementation of Mitigation Measures CI-4 through CI-6, provided in Section 3.4.2.5. The project impacts related to property acquisition will not be borne predominantly by any on minority, low-income, or transit-dependent population. Further, the impacts associated with property acquisition will be of similar severity and magnitude for all populations in the identified census tracts. Alternatives B, C, and D would not result in disproportionately high and adverse effects on low-income environmental justice populations.

Transit-Dependent Populations. As discussed earlier in Section 3.4.1.3, Affected Environment, the FTA defines transit dependency based on age, persons with no private transportation, and persons below the poverty level. The 2000 Census reported that 36.9 percent of the population in Orange County meets this definition of transit dependent. A total of 36.1 percent of the population of Placentia, 38.3 percent of the population of Anaheim and 37 percent of the population of Yorba Linda also meet this definition of transit dependent. Within the OCG census tracts, 35.9 percent of the population is transit dependent, which is slightly less than the County percent and consistent with the transit-dependent rates in the three cities. Therefore, the OCG study area cities and census tracts are not considered to contain a disproportionate amount of transit-dependent persons. However, at 35.9 percent, the transit-dependent rate in the OCG census tracts does represent a substantial amount of the total population.

Past Projects. As discussed in detail in Section 3.1, Land Use, the Cities of Placentia, Anaheim and Yorba Linda are predominately built out. The railroad and roads in the areas were constructed years ago and do not appear to represent uses that have had a disproportionately adverse impact on local area residents. The existing residential and other uses along the BNSF railroad alignment have, for the most part, been in place for a number of years and do not appear to have been substantively adversely impacted by other land use sin the area.

Community Participation in the Project. As discussed in detail later in Section 6.0, Summary of Public Involvement Process/Consultation/Tribal Coordination, the City of Placentia has conducted an extensive public participation program for the proposed OCG project. This program has included required notices under CEQA and NEPA; public access to the regular City of Placentia City Council and the OnTrac Board meetings; access to the City's Web site; public service announcements, including announcements at various community and citizen committee meetings; and public scoping meetings. Due to the large Hispanic population within the City and in the vicinity of the BNSF railroad alignments, notices for the scoping meetings were published in a Spanish-language newspaper of general circulation. Bilingual (English/Spanish) speakers were available at the scoping meetings to assist Spanish-speaking attendees.

All meetings, information materials, and public notices were made available throughout the City and to all segments of the population. As described in the *Scoping Summary Report* (LSA Associates, Inc. 2002), the general response of the public to the proposed project has been positive due to the ability of the project to eliminate the need for train whistles, relieve traffic congestion at railroad crossings, and eliminate the potential for train-motor vehicle accidents. Attendees at the scoping meetings identified

concerns associated with dust, noise, and circulation during construction and the potential for the trench to increase train vibrations in the area. These potential impacts of the proposed OCG project are addressed elsewhere in this EIS. No issues regarding environmental justice or potential disproportionate adverse impacts on environmental justice populations have been raised by the public regarding this project.

3.4.3.3 Impacts

Alternative A

No impacts related to environmental justice due to property acquisition or construction would occur as a result of Alternative A because no OCG-related property acquisition or project construction would occur under this alternative. However, minority and low-income populations would continue to be adversely affected by the same existing safety and delay conditions at the existing railroad crossings as the rest of the population in the local area, census tracts, and the cities.

Permanent Impacts: Alternatives B, C, and D

Direct Impacts on Minority Populations. As shown earlier in Table 3.4-D, the populations within the eight OCG census tracts tend to exceed the percentages for Black, American Indian/Native American, Hawaiian/Pacific Islander, and Hispanic ethnic groups at rates generally greater than Orange County and the Cities of Placentia and Yorba Linda. As result, it is anticipated that the acquisition of property for the proposed OCG project would impact a greater percentage of minority property owners and tenants than if the acquisitions were to occur elsewhere in Placentia or Anaheim, where the rates of minority populations might be lower.

As shown earlier in Tables 3.4-J, 3.4-K, 3.4-L, 3.4-M, 3.4-N, 3.4-O, 3.4-Q, and 3.4-R and on Figures 3.4-3, 3.4-4, and 3.4-5, Alternatives B, C, and D would all require the acquisition of property, including residential uses. Property acquisition would occur within all of the census tracts within the OCG study area except Tracts 218.20 and 218.12, which are not directly crossed by or immediately adjacent to the alignments of the project segments of the BNSF railroad and the intersecting local streets.

These acquisitions would adversely impact minority property owners and tenants at a greater rates than elsewhere, based on the percentages of minority populations within these census tracts, which are higher than the rates in the County and the two cities. However, this impact is not considered to be a disproportionately high and adverse impact for the following reasons:

- The impacts to adjacent property as a result of acquisition under Alternatives B, C, and D were minimized to the extent feasible in the conceptual design.
- These impacts cannot be avoided without substantially shifting the existing alignments of the project segments of the BNSF railroad and the intersecting local streets.
- The impacts occur on both sides of the alignments and were not shifted to one area or another and, therefore, were neutral in consideration of whether the properties are owned and/or occupied by minorities.

- Compliance with the requirements of the Uniform Relocation and Assistance Act and Mitigation Measures CI-4 through CI-6, provided earlier in Section 2.5, Avoidance, Minimization and/or Mitigation Measures, would provide maximum assistance and benefits to displaced persons, including any displaced minority owners and tenants.
- The benefits of the Build Alternatives, based on achieving the project objectives, would accrue specifically to environmental justice populations, as described below.
- There are anticipated to be sufficient relocation resources available in the project vicinity to accommodate the displaced residents and businesses

Direct Impacts on Low-Income Populations. As discussed earlier, the percents of populations below the poverty level in three of the OCG study area census tracts are greater than in the total County and the other study area census tracts. Residential uses will be acquired in these three census tracts under Alternatives B, C, and D. Because of the high percents of population below the poverty level in these three tracts, these Alternatives would have a disproportionately high and adverse impact on low income populations compared to the impacts in the other study area census tracts. However, these impacts cannot be avoided because the residential uses anticipated to be acquired for Alternatives B, C, and D are directly adjacent to the existing alignments of the BNSF railroad and the local area streets proposed for improvement under these Alternatives. These impacts can only be avoided under the No Project Alternative because the proposed improvements are to the existing BNSF and local streets adjacent to these residential uses. However, these impacts of Alternatives B, C, and D will be substantially mitigated based on implementation of Mitigation Measures CI-4 to CI-6, provided earlier in Section 3.4.2.5, Avoidance, Minimization, and/or Mitigation Measures.

Direct Impacts on Transit-Dependent Populations. Alternatives B, C, and D will reduce travel delays and improve safety at eight existing local street crossings of the BNSF railroad. This would benefit transit-dependent populations in the OCG census tracts and the three cities by improving the ability of the OCTA to operate on-time schedules due to reduced delays at these crossings. This would be a beneficial effect of Alternatives B, C, and D.

Direct Traffic Impacts. As noted above, Alternatives B, C, and D would result in reduced delays at eight crossings of the BNSF railroad. It is anticipated these Alternatives would not result in increased traffic through low income or minority neighborhoods because traffic flow will improve on major streets crossing the BNSF. Further, because of these improved flows, some traffic which currently uses local area streets may shift to one or more of the eight major arterials crossing the BNSF, based on the reduced congestion on those streets. Therefore, Alternatives B, C, and D would result in beneficial effects related to traffic.

Direct Impacts on Access. Alternatives B, C, and D would improve traffic flow and reduce congestion at the eight crossings of the BNSF which would benefit area residents, visitors and workers traveling to and from public services, facilities and other destinations in and around the local area. No existing access routes will be permanently closed or reduced as a result of Alternatives B, C, and D. Therefore, Alternatives B, C, and D will beneficially affect access in the local area.

Direct Benefits. As discussed above, Alternatives B, C, and D will result in traffic benefits and congestion relief at the eight crossings of the BNSF railroad. These benefits will accrue to all residents, workers and visitors to the area, regardless of income, ethnicity, or transit dependency. Therefore, the project benefits would accrue equitably for all populations in the local area, the OCG census tracts and the three Cities.

Indirect Impacts on Minority, Low-Income and Transit-Dependent Populations. Under Alternative B, the road profiles of the eight roads crossings on the BNSF railroad would remain at grade. The elimination of the existing at-grade crossings under Alternative B would facilitate safer pedestrian, bicyclist and motor vehicle traffic at these crossings which would benefit all populations, including minority, low income and transit-dependent populations in the OCG local area, census tracts and the three Cities. This would be a beneficial effect of Alternative B.

Alternative C would result in the same indirect benefits on environmental justice populations at seven of the eight crossings. AT the eighth, Lakeview Avenue would become a bridge overcrossing at the BNSF, which would provide for a safer and less congested crossing than the existing at grade crossing. However because the crossing would be on a bridge, it would be slightly different from the existing at-grade crossing. Nonetheless. Alternative C would result in beneficial indirect effects related to improved safety and reduced congestion at all eight crossings which would benefit all populations, including environmental justice populations, using these crossings.

Alternative D would provide similar safety and reduced congestion benefits at all eight crossings, on bridges and undercrossings. These crossings would be improved compared to the existing crossings, would benefit all populations, including environmental justice populations, using these crossings.

Indirect Traffic and Access Impacts. As noted above, Alternatives B, C, and D would result in direct traffic benefits to the OCG local area, census tracts and the three Cities, including environmental justice populations in those areas. Alternatives B, C, and D would not result in indirect traffic or access impacts in these areas.

Temporary Impacts: Alternatives B, C, and D

Temporary Impacts on Minority and Low-Income Populations. Temporary impacts that may be experienced by low income or minority populations adjacent to the OCG construction areas under Alternatives B, C, and D include noise, traffic, air quality and access impacts. As described throughout Section 3.0, these construction impacts will be temporary and of limited duration. Mitigation measures provided throughout Section 3.0 and summarized in Table 7-1 would substantially reduce the construction related project impacts, including those impacts on minority and low income populations.

Temporary Impacts on Transit-Dependent Populations. Temporary impacts that may affect transit-dependent populations may include temporary detours, relocation of stops, and delays in transit service

in the construction areas along the streets crossing the BNSF railroad. Mitigation Measure TRA-4, provided later in Section 3.6, Traffic, would substantially mitigate the adverse effects of construction on transit services, including impacts on transit-dependent populations.

Temporary Traffic Impacts. Alternatives B, C, and D would result in temporary traffic delays and potentially detours during construction, which would adversely impact all road users, including environmental justice populations. Mitigation Measures TRA-2, TRA-3, and TRA-4, provided later in Section 3.6, Traffic, would substantially reduce these short term adverse traffic impacts, for all road users, including environmental justice populations.

Temporary Impacts on Access. During construction of Alternatives B, C, and D, there may be local road closures/temporary detours and/or lane reductions. These impacts would occur for all users of the affected roads, including the environmental justice populations. Mitigation Measures TRA-2, TRA-3, and TRA-4, provided later in Section 3.6, Traffic, would substantially mitigate the adverse effects of project construction related to access.

3.4.3.4 Avoidance, Minimization, and/or Mitigation Measures

Alternative A

No mitigation measures are required.

Alternatives B, C, and D

Mitigation Measures CI-4 to CI-6 would avoid or substantially reduce adverse property acquisition impacts of Alternatives B, C, and D on environmental justice populations. Other mitigation measures to reduce adverse construction impacts on environmental justice populations are provided throughout Section 3.0 and are summarized in Table 7-1.

3.4.3.5 Conclusions

The proposed Build Alternatives would result in varying degrees of impact to low-income or minority populations. The Build Alternatives would not result in a disproportionately high and adverse impact to these populations, based on conceptual design to reduce property acquisition; mitigation measures to minimize and mitigate adverse project impacts related to property acquisition, relocation, traffic, and short-term construction impacts; and the benefits of the project to environmental justice and other populations.

The proposed Build Alternatives would benefit low-income and minority populations by reducing congestion, reducing the current and potential costs of traffic delays caused by the existing and future railway operations, and reducing the current and potential hazards posed by the existing grade-level crossings. Improvements resulting from the proposed project would provide minority and low-income populations with more mobility and greater connectivity throughout the surrounding communities. As

a result, Alternatives B, C, and D would not cause disproportionately high and adverse effects on any minority or low-income populations as per EO 12898 regarding environmental justice.

3.5 UTILITIES/EMERGENCY SERVICES

The utility analysis in this section is based on the preliminary engineering concept plans for Alternatives B, C, and D (Attachments to the *Preliminary Engineering Report,* KFM Engineering, 2004). The concept plans are available for review at the City of Placentia.

3.5.1 METHODOLOGY

A project is deemed to have environmental impacts to utilities and emergency services if the following occurs:

- The demand generated by the project exceeds the capacity of existing utility systems or emergency service or otherwise requires the expansion or construction of major new facilities.
- The project causes direct environmental effects (e.g., need for a new, physically altered, or the removal of an existing public facility).
- The project causes disruption/interruption of service.

A number of public agencies and utility providers serve the Orange County Gateway (OCG) study area and surrounding communities. These agencies were contacted when the Notice of Preparation (NOP) for the Draft Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) was circulated in order to obtain additional information regarding their current and anticipated services and facilities potentially affected by each project alternative.

The study areas for utilities and emergency services are considered to be the facilities and services provided or within the project disturbance limits and the service areas of the individual providers.

3.5.2 AFFECTED ENVIRONMENT

This section describes the environmental setting of utilities (cable television, telephone, electric, natural gas, fiber optic network, petroleum pipeline, storm drain/flood control, wastewater, and water) and emergency services (e.g., fire protection, emergency medical service, police/sheriff) provided in the area that may be affected by the project. Emergency service facilities and hospitals within approximately 1.6 kilometers (km) (1 mile [mi]) of the project limits are shown on Figure 3.5-1. Existing utility mapping is on file at the City of Placentia.

3.5.2.1 Fire Protection and Emergency Service

The Orange County Fire Authority (OCFA) provides fire protection and emergency medical service to the Cities of Yorba Linda and Placentia, and unincorporated Orange County within the OCG

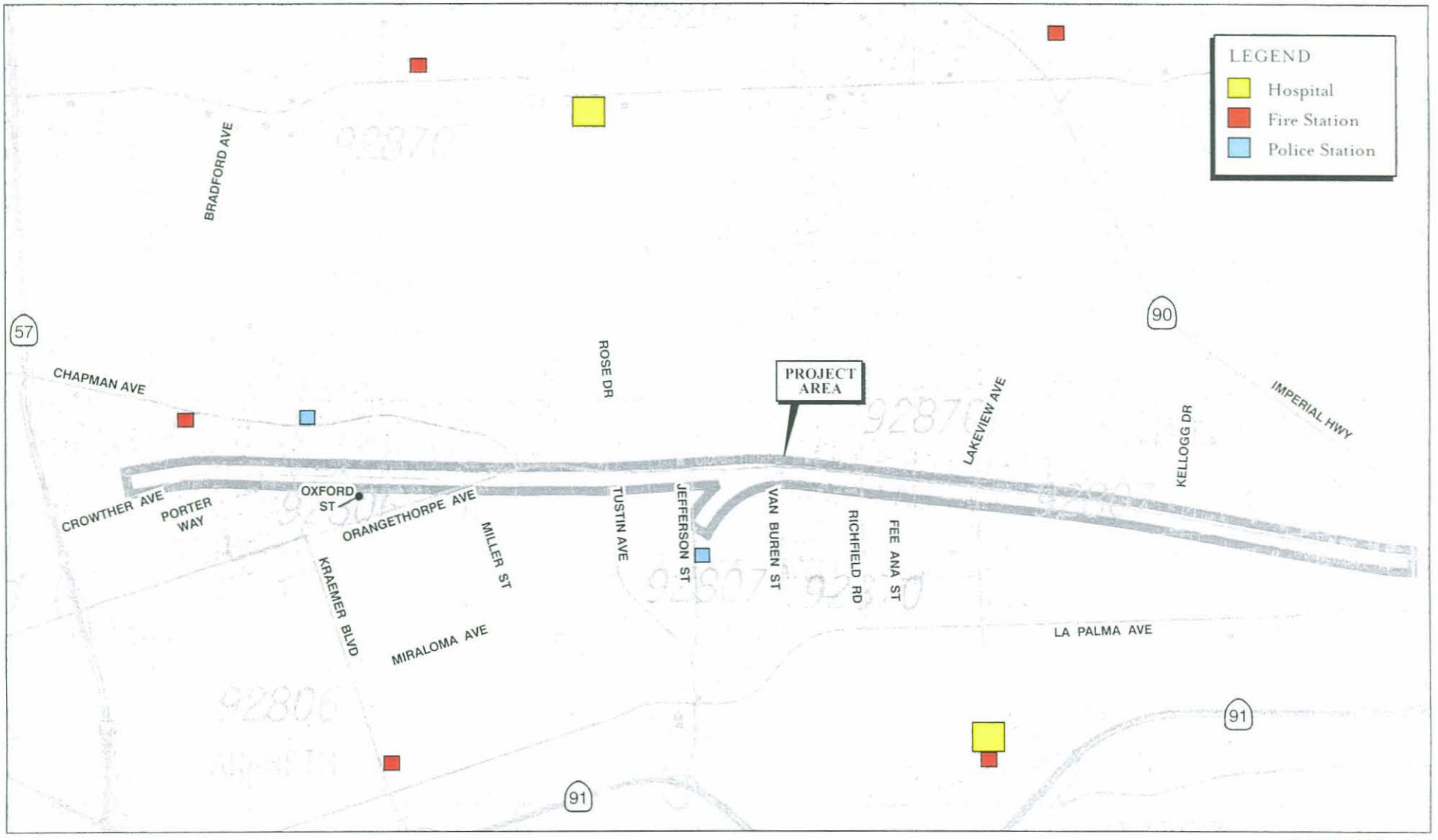


FIGURE 3.5-1

SOURCE: THE THOMAS GUIDE, ORANGE COUNTY, 2001.

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Orange County Gateway
Emergency Services

project area and the surrounding areas. The OCFA also provides hazardous materials response, helicopter support, and other disaster-related services and equipment. The City of Anaheim Fire Department provides fire protection, emergency medical service, and hazardous materials response to the City of Anaheim within the project study area. The OCFA has automatic and mutual aid contracts with the City of Anaheim and surrounding jurisdictions for servicing the area. These contracts call for dispatching of resources closest to an emergency site regardless of jurisdiction. The OCFA and City of Anaheim Fire Department meet the current demand for fire protection and emergency services and have no current plans for expansion within the project study area.

Table 3.5-A lists the fire stations nearest the project study area that would provide primary service to the project. It also provides approximate response time to the corner of Orangethorpe Avenue and Van Buren Street, which is centrally located within the project limits. Figure 3.5-1 identifies the locations of the five stations nearest the project right-of-way.

Table 3.5-A: Fire Stations Providing Primary Service

Station Name and Number[1]	Distance from Project Study Area (miles)	Driving Time to Study Area (minutes)	Total Response Time (minutes)[2]
Anaheim Station #8	1.8	3:05	4.35
OCFA Station #35	2.3	4:00	5:30
Anaheim Station #5	2.4	4:10	5:40
OCFA Station #34	2.6	4:30	6:00
OCFA Station #10	2.7	4:40	6:10
OCFA Station #32	4.9	8:25	9:55

Source: OCFA (April 24, 2002).

3.5.2.2 Hospitals

As shown in Figure 3.5-6, two hospitals serve the general vicinity of the project area: the Placentia-Linda Hospital and Kaiser Foundation Hospital-Anaheim. The Placentia-Linda Hospital is located at 1301 North Rose Drive in Placenta and Kaiser Foundation Hospital-Anaheim is located at 441 North Lakeview Avenue in Anaheim. Both hospitals are approximately 3.2 km (2 mi) from the corner of Orangethorpe Avenue and Van Buren Street, which is centrally located within the project limits. Both hospitals have been given an overall average hospital performance rating by the California HealthCare Foundation.

[1] Station locations are shown in Figure 3.5-1.

[2] Based on an average of 35 miles per hour travel time, 30 seconds of dispatching, and 1 minute of turnout time for engines.

3.5.2.3 Police/Sheriff

Four law enforcement agencies serve the general vicinity of the OCG project area: the Sheriff-Coroner Department of Orange County, the Placenta Police Department, the Anaheim Police Department, and the City of Brea Police Department. All of these agencies respond to calls for emergency and nonemergency calls within their jurisdictions. These agencies all meet current demands for service and have no current plans for expansion in the OCG project area.

The Sheriff facility closest to the OCG study area is the Sheriff Headquarters located at 550 N. Flower Street in Anaheim, approximately 26 km (16 mi) from the intersection of Imperial Highway and Orangethorpe Avenue. At any given time, one or two Sheriff's units are patrolling the unincorporated parts of north Orange County, including the OCG project study area. The Sheriff Department determines its staffing and service requirements by the number of calls it receives, the activity within an area, and the size of the area to patrol.

The City of Placenta Police Department has a station at 401 E. Chapman Avenue, approximately 0.4 km (0.25 mi) from the OCG study area, and a Placenta Police off-site office at 600 Jefferson Street in Anaheim, approximately 183 meters (200 yards) from the OCG study area (Figure 3.5-1). Service demand is based on the calls for service, crime reporting information, and population.

The City of Anaheim Police Department is located at 425 South Harbor Boulevard in Anaheim, approximately 8 km (5 mi) from the project study area. Service demand is determined by the number of calls for service, crime trends, and population.

The City of Brea Police Department is located at One Civic Center Circle in Brea, approximately 8 km (5 mi) from the project study area, with an estimated driving time of 10 minutes to the study area. The Brea Police Department serves the Cities of Brea and Yorba Linda. Service demand is determined by the number of calls for service, crime trends, and population.

3.5.2.4 Cable Television

Adelphia Communications is the primary cable television company in northern Orange County and serves the Cities of Anaheim, Placenta, and Yorba Linda. Existing overhead cable television lines are located along the OCG project right-of-way on the Southern California Edison (SCE) overhead utility lines.

3.5.2.5 Electric

Electricity is provided to the OCG study area and vicinity by SCE. Existing overhead electric transmission lines are located within the existing BNSF railroad right-of-way, parallel to the railroad tracks.

3.5.2.6 Fiber Optic Network

Level (3) Communications, LLC, has underground fiber optic facilities in the OCG study area. These fiber optic lines are not within the disturbance limits for the OCG Build Alternatives.

3.5.2.7 Natural Gas

Natural gas service is provided by Southern California Gas Company (SCGC) to the areas surrounding the OCG project limits. Diagrams provided by SCGC show 0.6 m (24 inch [in]) and 0.9 m (36 in) pipelines (Line Nos. 1016 and 4000) within the right-of-way for Orangethorpe Avenue. Approximately 12 other transmission and supply lines, ranging in size from 5 to 20 centimeters (2 to 8 in) in diameter, serve the OCG study area.

3.5.2.8 Petroleum Pipelines

Phillips Petroleum Company (PPC) and ExxonMobil Pipeline Company have petroleum pipeline facilities within the OCG study area as indicated on the project concept plans provided in Appendix A. PPC has a 0.2 m (6 in) active crude line that traverses the north side of Orangethorpe Avenue at Jefferson Street and near Atwood Avenue and a 0.2 m (6 in) idle line that runs north and south through Orangethorpe Avenue between Lincoln Street and Richfield Road. Currently, PPC has no plans for expansion of its facilities in this area.

ExxonMobil Pipeline Company has an active 0.2 m (6 in) pipeline (M-138) that traverses Jefferson Street and crosses Orangethorpe Avenue and an idle 0.1 m (4 in) pipeline (G-23-7) that traverses Lincoln Street and crosses Orangethorpe Avenue.

3.5.2.9 Telephone

Telephone service is provided to the Cities of Anaheim, Placenta, and Yorba Linda by Pacific Bell Telephone Company. Approximately 18 underground vaults are located near the OCG project limits. Overhead lines are located on the west side of Bradford Street.

3.5.2.10 Sewer

Several existing sewer pipelines traverse or run parallel to the BNSF railroad right-of-way. Four agencies are responsible for the sewer pipelines within the OCG study area. They are the Orange County Sanitation District (OCSD), the City of Placenta Engineering Department, the City of Anaheim Engineering Department, and the Yorba Linda Water District (YLWD).

3.5.2.11 Storm Drain/Flood Control

Four flood control channels maintained by the Orange County Flood Control District cross beneath the Burlington Northern Santa Fe (BNSF) railroad. These are the Kraemer Boulevard storm drain, Carbon Canyon Channel, Richfield Channel, and Atwood Flood Control Channel.

3.5.2.12 Potable Water

Potable water is supplied to the City of Anaheim by the City of Anaheim Public Utilities Department. The City of Anaheim has several water mains within and near the OCG study area. Two pressure-regulation stations are located south of the BNSF railroad, one on Lakeview Avenue and the other on Kellogg Drive. Anaheim has no current plans to expand its potable water facilities in this area. The existing water facilities meet current water demands.

The Cities of Placenta and Yorba Linda receive their potable water supply from the Southern California Water Company (SCWC) and the YLWD.

Water pipelines that may be affected by the proposed OCG Build Alternatives, water pipeline sizes, approximate locations, and agencies are listed in Table 3.5-B.

Table 3.5-B: Water Pipelines

Diameter	Street Location/Description	Water Agency
0.2 m (8 in)	Bradford	SCWC
0.3 m (12 in)	Porter to Cardinal	SCWC
0.2 m (8 in)	Along Crowther from Cardinal to Kraemer	City of Anaheim
0.15 m (6 in)	Along Crowther between Oxford Street and the Bedford Street cul-de-sac	City of Anaheim
0.25 m (10 in)	On Orangethorpe, west of Miller and south of Orangethorpe on Miller	City of Anaheim
0.3 m (12 in)	Jefferson	SCWC
0.25 m (10 in)	Van Buren	SCWC
0.25/0.3 m (10/12 in)	West of and to Imperial	SCWC
0.66 m (26 in)	Richfield	YLWD
0.9 m (36 in)	East of Richfield	YLWD
0.3 m (12 in)	Lakeview to Glenview; crosses under BNSF railroad and interties with YLWD	City of Anaheim
0.46 m (18 in)	Lakeview	YLWD
0.25 m (10 in)	Lakeview and interties with Anaheim	YLWD
0.3 m (12 in)	Kellogg: Crosses under BNSF railroad	City of Anaheim
Not applicable	Pressure reducing Station No. 36, on the east side of Kellogg Drive just south of the BNSF right-of-way	City of Anaheim
Not applicable	Pressure reducing Station No. 64, on the east side of Lakeview Avenue just south of the BNSF right-of-way	City of Anaheim

Source: KFM Engineering; City of Anaheim Public Utilities Department (2002 and July 21, 2008).

The Orange County Water District (OCWD), a groundwater recharge agency, has three deep basin recharge facilities just south of Orangethorpe Avenue and west of Tustin Avenue: Anaheim Lake, Kraemer Basin, and Miller Basin. These recharge facilities supply approximately 75 percent of the total demand for water to the residents of northern Orange County. A discussion on potential project impacts to groundwater is provided later in Section 3.11, Water Quality and Stormwater Runoff.

The Metropolitan Water District of Southern California (Metropolitan) is a regional water wholesaler that delivers water to 26 member agencies, including the Metropolitan Water District of Orange County (MWDOC) and the City of Anaheim. Metropolitan is not responsible for providing water directly to the project site or surrounding areas. Rather, local water purveyors (the City of Anaheim, SCWC, and YLWD) distribute Metropolitan water through their local facilities. Metropolitan owns and operates three large water transmission pipelines that cross the OCG project alignment at Jefferson Street, Richfield Road, and Porter Way at Crowther Avenue. Table 3.5-C, Metropolitan Pipelines, lists the locations, diameters, design capacities, material types, and services provided by these three Metropolitan pipelines.

Table 3.5-C: Metropolitan Pipelines

Metropolitan Pipeline Designation	Location	Diameter	Design Capacity	Type of Material	Type/Destination of Service
East Orange County Feeder No. 1 (EF-1)	Jefferson and Orangethorpe	1.5 m (60 in)	8.5 cubic meters per second (cms) (300 cubic feet per second [cfs])	Precast concrete pipe	Untreated water to OCWD underground storage aquifers and Anaheim Lake for groundwater recharge
East Orange County Feeder No. 2 (EF-2)	Richfield and Orangethorpe	2 m (78 in)	8.8 cms (310 cfs)	Welded steel pipe, mortar lined	Treated drinking water to central and eastern parts of Orange County
Second Lower Feeder (SLF)	61 m (200 ft) east of Porter Way and Orangethorpe	2.1 m (84 in)	12 cms (425 cfs)	Welded steel pipe, mortar lined	Treated drinking water to central and southern parts of Los Angeles County and central and western parts of Orange County

Source: Metropolitan, April 25, 2002; MWDOC, April 17, 2002.

According to Metropolitan, these pipelines experience seasonal variations in use. The EF-1 is used primarily in winter months, and the other two flow at a higher rate during summer months. In addition to these three pipelines, there is an approximately 243 m (800 ft) long segment of Metropolitan's EF-1 pipeline that closely parallels the trench line for Alternatives B and C.

Existing Metropolitan facilities meet the current and near future demands of its member agencies. Metropolitan has no current plan to expand or construct additional pipelines within the OCG study area and adjacent areas. However, Metropolitan reserves the right to add or expand facilities within the study area if required to meet its service obligations to its member agencies. The member agencies lack extensive water storage facilities and, therefore, rely on regular water flow from Metropolitan.

3.5.3 IMPACTS

This impact evaluation focuses on the potential effects of the OCG alternatives on existing utility systems and emergency services. In addition, the analysis addresses the consistency of the project actions with utility, and emergency service planning documentation of the County and affected cities' General Plans. Utilities and emergency services were mapped and/or described, and potential impacts were estimated according to facility location in or adjacent to the project study area.

Each jurisdiction, according to their General Plans within OCG study area, seeks to provide and maintain an adequate level of service for all utilities and emergency services.

Population growth typically results in an increase in demand for utilities and emergency services. The OCG project would not increase population in the project area or the region. Therefore, the proposed OCG project would not create a need to expand utilities and emergency services facilities. Potential permanent and temporary impacts of each alternative related to utilities and emergency services are described in the following sections.

3.5.3.1 Permanent Impacts

Alternative A: Direct and Indirect Impacts.

Emergency Services. Under Alternative A, fire protection and emergency service and police/ sheriff services would continue to be adversely affected by delays at the existing at-grade crossings. Forecasts suggest an increase from the current volume of 50 to 70 trains per day to 135 to 155 trains per day by the year 2030. This equates to one train passing through the corridor, blocking intersections, approximately every 10 minutes, 24 hours a day. By 2030, under Alternative A, crossing gates would block intersections roughly 40 to 50 percent of the time during the peak hours of the morning commute. Traffic delays during train crossings are most extensive during peak travel times. However, even during less congested periods, emergency vehicles such as police cars, fire engines, and ambulances are delayed at crossings, increasing their response times. As the number of trains increases, emergency response times would increase, which is inconsistent with the public safety goals of the Cities of Anaheim, Yorba Linda, and Placentia, and the County. Therefore, Alternative A would continue to result in permanent direct adverse impacts to emergency services, similar to and greater than the existing crossing delays experienced in this area.

Utilities. Alternative A would not result in adverse effects to utilities because there would be no construction or other physical disruption of these existing facilities under this Alternative.

No permanent indirect adverse impacts have been identified for Alternative A.

Alternatives B and C: Direct and Indirect Impacts.

Emergency Services. Alternatives B and C could generate a need for new or additional fire and emergency medical service equipment for access to and egress from the trench. Access points into the trench would be provided at each end as the tracks enter and exit the trench, as well as two access points into the trench at Lakeview Avenue and Jefferson Street, as described in detail in Section 2.0, Project Description. Mitigation Measure HW-1 (provided later in Section 3.13, Hazardous Waste/Materials), which requires that an Emergency Response and Evacuation Plan be developed and reviewed and approved by the appropriate authorities prior to implementation, would apply to Alternatives B and C. The Emergency Response and Evacuation Plan would specifically address access to and egress from the trench by emergency service providers, among other emergency and evaluation procedures. Implementation of Mitigation Measure HW-1 would mitigate the adverse impacts to emergency service associated with Alternatives B and C.

Alternatives B and C would benefit fire, emergency medical and police/sheriff services by improving traffic flow north and south across the railroad tracks. Delays associated with passing trains would be eliminated, and service units could reach calls for assistance more efficiently because they would not be delayed at locations where roads and the railroad intersect. No mitigation is necessary.

Police/Sheriff Services. For Alternatives B and C, permanent adverse impacts to police services and facilities and the Orange County Sheriff's Department (OCSD) would not occur. The City of Anaheim Police Department does not anticipate that the project would generate a need for additional facilities or staff (*Scoping Summary Report,* LSA 2002). No mitigation is required.

As discussed above, Alternatives B and C would beneficially affect all emergency service providers' response times by eliminating delays at road intersections with the railroad tracks.

Cable Television, Fiber Optic Network, Natural Gas, Petroleum Pipeline, Telephone, and Sewer. Alternatives B and C would not require the use of the above utilities and would, therefore, not affect the demand for these utility services. However, relocation of existing utility lines and facilities in or immediately adjacent to the project limits would likely be required in areas where the lines cross or are immediately adjacent to the project construction limits.

Electricity. Alternatives B and C would have increased lighting and other energy requirements, such as trench lighting and emergency lights and would result in a small increase in demand for electric service in this area. Relocation of electric utility lines adjacent to the existing railroad would potentially be required.

Storm Drain/Flood Control under Alternative B. Alternative B would require the reconstruction of flood control facilities that span the proposed trench, as well channel improvements to accommodate the proposed project street realignments. Kraemer Boulevard Storm Drain, Carbon Canyon Channel, Richfield Channel, and Atwood Channel would be reconstructed over the trench. The East Richfield Channel (west of Imperial Highway) would be widened. The capacity of these structures would be increased to accommodate the 100-year storm as required by the Orange County Flood Control District (OCFCD). A pump station would be constructed to pump storm water that collects in the trench. Refer to Section 3.10, Hydrology and Floodplains, for a detailed discussion of flood control improvements for Alternative B.

Storm Drain/Flood Control under Alternative C. Alternative C would require the reconstruction of flood control facilities that span the proposed trench, as well channel improvements to accommodate the proposed project street realignments. Kraemer Boulevard Storm Drain, Carbon Canyon Channel, and Richfield Channel would be reconstructed over the trench. Atwood Channel would be improved and the East Richfield Channel (west of Imperial Highway) would be widened. The capacity of these structures would be increased to accommodate the 100-year storm as required by the OCFCD. A pump station would be constructed to pump storm water that collects in the trench. (Refer to Section 3.10, Hydrology and Floodplains, for a detailed discussion of flood control improvements for Alternative C.)

Potable Water. Alternatives B and C would not increase the demand for potable water to the area. Therefore, the following local and regional water supply agencies would not be adversely impacted in terms of demand for water: City of Anaheim Public Utilities Department, SCWC, and YLWD. Under Alternatives B and C, most of these water agencies' facilities that traverse or cross the project right-of-way would be affected and would require relocation or mitigation. Alternatives B and C would require that Metropolitan's pipelines Nos. 1 and 2 and the Second Lower Feeder be relocated to a lower depth.

No permanent indirect impacts to utilities or emergency services have been identified for Alternatives B and C.

Alternative D: Direct and Indirect Impacts.

Emergency Service. Alternative D would improve traffic flow and eliminate delays in the area, thereby improving fire and emergency services' ability to respond to service calls. Permanent direct adverse impacts to police services and facilities and the Orange County Sheriff's Department would not occur under Alternative D.

Cable Television, Fiber Optic Network, Natural Gas, Petroleum Pipeline, Telephone, and Sewer. Alternative D would not require the use of the above utilities and would, therefore, not affect the demand for these utility services. However, relocation of these utility lines and facilities would likely be required in areas where the lines cross or are within or are immediately adjacent to the project construction limits under Alternative D.

Electricity. Alternative D would require lighting and other energy requirements, such as emergency lights in an undercrossing, slightly increasing the demand for electric service in this area. Relocation of electric utility lines adjacent to the existing railroad would potentially be required.

Storm Drain/Flood Control. Alternative D would require the reconstruction of the Kraemer Boulevard Storm Drain and the Kellogg Drive Storm Drain. The capacity of these structures would also be increased to accommodate the 100-year storm as required by the OCFCD. A pump station would be constructed to pump storm water from the low point of the Kraemer Boulevard undercrossing. Refer to Section 3.10, Hydrology and Floodplains, for a detailed discussion of flood control improvements for this alternative.

Potable Water. Alternative D would not increase the demand for water to the area and would not impact potable water suppliers.

There are no permanent direct adverse impacts to utilities or emergency services identified for Alternative D.

3.5.3.2 Temporary Impacts

Temporary impacts that are attributable to the construction activity, phasing, and scheduling are identified below. These impacts cannot be avoided. However, the construction-related impacts would end when the project is fully operational. The construction period is of such a long duration that mitigation measures to address the road capacity constraints and physical closures are recommended. Construction-related mitigation is provided later in Section 3.5.4. Construction impacts and mitigation related to air quality and noise are presented later in Sections 3.14 and 3.15, respectively.

Alternative A: Temporary Direct and Indirect Impacts. Alternative A would not result in temporary direct or indirect adverse impacts to utilities or emergency services because this alternative would not include any construction or physical disruption of utilities or emergency services.

Alternatives B, C, and D:Temporary Direct and Indirect Impacts.

Emergency Services. Construction of Alternatives B, C, and D could result in temporary adverse impacts to fire and emergency services. Currently, OCSD and City of Anaheim Fire and Police Department response times are delayed by trains, and emergency response times could be further delayed during construction of Alternatives B, C, and D due to temporary detours and lane closures.

Construction of Alternatives B, C, and D could result in temporary adverse effects to police/sheriff services. The City of Placentia Police Department anticipates that construction would temporarily limit access to and from the northern and southern areas of the City. Limited access increases the potential for hazards to both the public and the officers due to longer response times. The City of Brea Police Department does not anticipate temporary adverse project effects on its services or facilities. Refer to Section 3.6.2.3 for a discussion on temporary impacts associated with construction activity and road closures/detours under each Build Alternative.

Petroleum Pipelines, Sewer, Storm Drain/Flood Control. Construction of Alternatives B, C, and D could result in temporary adverse impacts to these utility facilities. Specifically, for any facilities within the project disturbance limits, the utility facilities would require either relocation or protection in place during construction of Alternatives B, C, and D.

Potable Water. Construction of Alternatives B, C, and D could result in temporary adverse impacts to local and regional agency operations and existing potable water facilities. Specifically, for any facilities within the project disturbance limits, the utility facilities would require either relocation or protection in place during construction of Alternatives B, C, and D.

Cable Television, Fiber Optic Network, Natural Gas, Petroleum Pipeline, Telephone, and Sewer. Construction of Alternatives B, C, and D could result in temporary adverse impacts to these types of utility facilities. Specifically, for any facilities within the project disturbance limits, the utility facilities would require either relocation or protection in place during construction of Alternatives B, C, and D.

No temporary indirect adverse impacts have been identified for Alternatives B, C, and D.

3.5.4 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The following measures mitigate adverse permanent and temporary effects to utilities and emergency services under Alternatives B, C, and D. Mitigation relevant to storm drains and flood control facilities is presented in Section 3.9, Hydrology and Floodplains, and Section 3.10, Water Quality and Storm Water Runoff. Mitigation for emergency access and detours is provided in Section 3.6, Traffic.

PSU-1 The OCTA Project Engineer will require the construction contractor to provide and post public notices regarding work to be done on a particular segment two weeks prior to construction, and to provide traffic routing signs to route vehicular and bicycle traffic through segments under construction and to suggest possible alternate routes. The OCTA Project Engineer will require the construction contractor to maximize construction vehicle access to construction sites during off-peak traffic hours and to direct construction vehicle access around residential areas. (Applies to Alternatives B, C, and D.)

PSU-2 Prior to issuance of a grading permit, a Construction Safety Program will be prepared by the OCTA Project Manager and OCTA Project Engineer and approved by Orange County Fire Authority (OCFA) and the Cities of Placentia and Anaheim Police Departments to identify appropriate construction practices that are necessary to minimize the potential disruption to emergency service providers during construction of off-site roadway improvements. The plan will incorporate the following elements:

PSU-2a The OCTA Resident Engineer will require the construction contractor to provide full access to all areas in the project area for emergency responses. An emergency north-south access corridor will be created to be open at all times during construction. Prior to construction activities, the OCTA Resident Engineer will require the construction contractor to prepare a detour plan for the preferred project which will be reviewed and approved by the fire protection providers for the area. The plan will also provide access to the railroad right-of-way in order that rail passengers and workers may be reached in case of an accident. (Applies to Alternatives B, C, and D.)

PSU-2b During final design, the OCTA Project Engineer will ensure that the final construction specifications for the preferred alternative include built-in fire facilities such as hydrants at the surface and standpipes within the corridor as necessary to meet emergency needs. (Applies to Alternatives B, C, and D.)

PSU-2c Emergency lighting will be implemented to ensure access and egress of rail passengers and to enable firefighter and emergency worker access. (Applies to Alternatives B, C, and D.)

PSU-2d The OCTA Project Manager and OCTA Project Engineer, under the guidance of OCFA and State regulations, will prepare a management plan to handle spilled hazardous materials. (Applies to Alternatives B, C, and D.)

PSU-2e The OCTA Project Manager and OCTA Resident Engineer, the Cities of Placentia and Anaheim Police and Fire Departments, the OCFA, and the Orange County Sheriff will coordinate reliable communication lines to rail dispatch centers in order to stop rail traffic through the corridor or communicate any other emergency needs. (Applies to Alternatives B, C, and D.)

PSU-2f Equipment, such as hazardous material monitoring devices and firefighting foam, shall be added by the OCTA Project Manager and OCTA Resident Engineer, as required by OCFA, to caches of equipment in the trench areas. (Applies to Alternatives B and C.)

PSU-2g Any on-site fire services staff who may be required as determined by OCFA to ensure compliance and fire prevention during construction will be hired by the OCTA Project Manager and OCTA Resident Engineer. (Applies to Alternatives B, C, and D.)

PSU-2h The OCTA Resident Engineer will require the construction contractor to provide the applicable fire/police and sheriff departments accurate and timely information regarding any impediments to north–south travel along any road affected by project construction. (Applies to Alternatives B, C, and D.)

PSU-3 The OCTA Project Manager and OCTA Resident Engineer will ensure that any public utility that is acquired as part of right-of-way acquisition for the preferred project will be relocated, replaced, or protected in place. Prior to construction, the OCTA Resident Engineer will require the construction contractor to ensure that all underground and aboveground utilities within the proposed construction zone are relocated, replaced, or protected in place. The relocation will be coordinated with the utility service providers and is not anticipated to involve an interruption in service. Aboveground utilities will be located or screened in a manner that minimizes their visibility by the public. (Applies to Alternatives B, C, and D.)

PSU-4 During final design, the OCTA Project Engineer will coordinate with Metropolitan Water District of Southern California (Metropolitan) and the Orange County Sanitation Districts (OCSD) for advanced water and sewer utility relocation. The work may include the design for relocation of the following major Metropolitan and OCSD utility crossings:

Metropolitan: 2.1-meter (m) (84-inch [in]) Feeder Line at Station 137+70
Metropolitan: 1.5 m (60 in) Feeder Line at Jefferson
Metropolitan: 2 m (78 in) Feeder Line at Richfield
OCSD: Sewer Siphon at Carbon Canyon Channel
OCSD: Sewer Siphon at Tustin/Rose
OCSD: Sewer in Orangethorpe Avenue

(Applies to Alternatives B, C, and D.)

PSU-5 The OCTA Resident Engineer will require the construction contractor to provide temporary bypasses or supplemental supplies, as determined by affected water suppliers, as needed, to minimize service disruption and maintain fire protection capabilities. (Applies to Alternatives B, C, and D.)

3.5.5 CONCLUSION

Under Alternatives B, C, and D, temporary and permanent adverse impacts to utilities and emergency services would occur. All Build Alternatives would require relocation of existing utilities. Mitigation measures in Section 3.5.4 would reduce or eliminate any adverse effects associated with these relocations. The Build Alternatives would have a long-term beneficial effect of increased public safety through improved emergency response times compared to the No Build Alternative.

3.6 TRAFFIC, TRANSPORTATION, PEDESTRIAN AND BICYCLE FACILITIES

The purpose of this section is to evaluate the potential transportation impacts of the proposed Orange County Gateway (OCG) project. This analysis identifies circulation impacts to State highways, local arterial streets, transit operations, and bicycle and pedestrian facilities within the OCG study area. Measures of evaluation include daily traffic volumes, intersection levels of service (LOS), vehicular traffic delay estimates, rail volume and delay, transit disruption, and bicycle and pedestrian blockage. This section has been summarized from the *Traffic Impact Analysis* (LSA Associates, Inc., October 2007).

3.6.1 REGULATORY SETTING

3.6.1.1 Current Master Plan of Arterial Highways Designations

In Orange County, each city must maintain a General Plan Circulation Element that is consistent with and does not preclude the implementation of the Countywide Master Plan of Arterial Highways (MPAH). The MPAH designates the function and the number of lanes of each regionally significant roadway in the County. The MPAH designations in the OCG project area are illustrated in Figure 3.6-1. All future crossings of the Burlington Northern Santa Fe (BNSF) line will be constructed to their planned capacities as designated in the individual cities' Circulation Elements and Master Plans. The level of traffic growth forecasted in the year 2030 is associated with the implementation of the future year 2030 circulation system. Therefore, in the year 2030 analysis, the MPAH through lane capacity is included in all intersection operation analyses.

2030 represents a forecast year approximately 20 years after the anticipated initiation of construction of the proposed OCG project. Traffic forecasts from the Tri-City Traffic Model extend only to 2025. The year 2025 is forecast as build out of the local area General Plans and the MPAH in support of those General Plan land uses. Only minimal development and growth in the Cities of Placentia and Yorba Linda are anticipated after 2025, based on the adopted General Plans for those Cities. Therefore, there would not be a material difference between the traffic forecasted for 2025 based on build out of the General Plans and traffic that would occur in 2030. Therefore, for the OCG project traffic analysis, the available 2025 forecasts from the Tri-City Model were assumed to represent traffic volumes in the area in 2030, based on minimal growth over that five-year period. The traffic forecasts cited in the OCG technical studies and this Environmental Impact Statement (EIS) are noted as 2030. The technical memorandum describing this analysis is provided in Appendix J.

In June 2007, analysis was conducted to assess the changes in land use and traffic volumes between 2025 and 2030 (Austin-Foust Associates, Inc., June 6, 2007, technical memorandum). Based on that analysis, it was determined that the changes in land use between 2025 and 2030, based on the Orange County Projections–2004 (which were adopted after the *Traffic Impact Analysis* traffic modeling was conducted), would be less than 1 percent, based on forecast increases in dwelling units in the



FIGURE 3.6-1

SOURCE: OCTA, December 11, 2000

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Cities of Placentia and Yorba Linda between 2025 and 2030. Forecast increases in employment in those two cities between 2025 and 2030 would be less than 1.6 percent. As a result, there is no material difference in the land use and employment assumptions for the traffic analysis between 2025 and 2030. Therefore, based on the analysis conducted in June 2007, it was determined that the use of adopted 2025 traffic volumes from the Tri-City Traffic Model adequately reflect traffic volumes in the project area in 2030. The June 6, 2007, technical memorandum is provided in Appendix J.

3.6.1.2 Orange County Congestion Management Program

Within the defined Orange County Congestion Management Program (CMP) Highway network, no intersection may be allowed to deteriorate to a condition that is worse than LOS E or the existing LOS, if worse than LOS E, without mitigation being prescribed in an acceptable deficiency plan. (Refer to the section below and Table 3.6-A for a detailed discussion of LOS.) In the case of base conditions reflecting an LOS worse than LOS E, "existing LOS" shall be defined as any increase in volume-to-capacity (V/C) ratio of up to 0.10 over the base condition. V/C ratio increases beyond 0.10 above the base condition are considered noncompliant with the CMP LOS objectives and require mitigation or a deficiency plan. Orangethorpe Avenue, Tustin/Rose Drive, Imperial Highway, and State Route 91 (SR-91) are the designated CMP links within the OCG project study area.

Table 3.6-A: Description of Level of Service for Arterial Roadways with Signalized Intersections

Level of Service	Definition
A	Describes operations with average intersection stopped delay of 10.0 seconds or less (how long a driver must wait at a signal before the vehicle can begin moving again).
B	Describes operations with average intersection stopped delay in the range of 10.0 to 20.0 seconds per vehicle (spv) and with reasonably unimpeded operations between intersections.
C	Describes operations with higher average stopped delays at intersections (in the range of 20.0 to 35.0 spv). The stable operations between locations may be restricted given the ability to maneuver and change lanes at mid-block locations. These conditions can be more restrictive than LOS B. Furthermore, the longer queues and/or adverse signal coordination may contribute to lower average speeds.
D	Describes operations where the influence of delay is more noticeable (35.0 to 55.0 spv). Intersection stopped delay is longer, and the range of travel speed is about 40 percent below the free-flow speed. This is caused by inappropriate signal timing, high volumes, and some combinations of both.
E	Is characterized by significant approach stopped delay (55.0 to 80.0 spv) and average travel speeds of one-third the free-flow speed or lower. These conditions are generally considered to represent the capacity of the intersection or arterial.
F	Characterizes arterial flow at extremely low speeds, with high intersection stopped delay (greater than 80 spv). Poor progression, long cycle lengths, and high traffic demand volumes may be a major contributing factor to this condition. Traffic may be characterized by frequent stop-and-go conditions.

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

3.6.1.3 Methodology

Traffic volume data for study area intersections and roadway segments were collected and provided by the City of Placentia traffic modeling consultant. The study area intersections and roadway segments were selected in consultation with the Cities of Placentia, Fullerton, Yorba Linda, and Anaheim. Additional locations were included in response to issues raised by Caltrans District 12. The study area for the traffic impacts analysis is discussed below in Section 3.6.2, Existing Conditions.

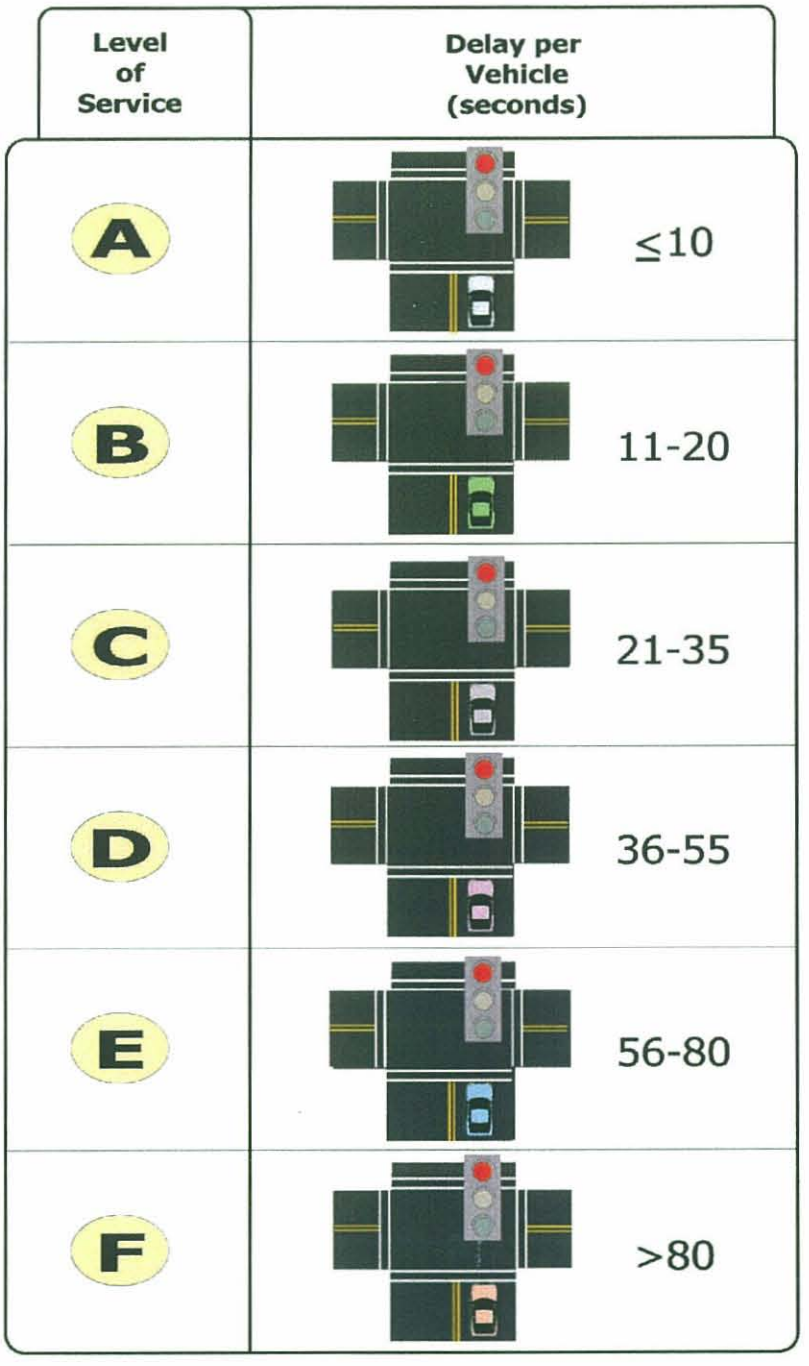
Because the OCG project would not itself generate traffic or have an effect on the total traffic volume within the study area, the study area determination is exempt from the regional Countywide and CMP requirements. The OCG study area for the traffic impact analysis encompasses a total of 101 intersections within four cities and unincorporated County areas as shown later on Figure 3.6-3A.

The OCG project is planned to be constructed and fully operational by the year 2030. Vehicular traffic forecasts for the 2030 horizon year were prepared using a regional subarea model of the Orange County Traffic Analysis Model (OCTAM) 3.1 specially developed for this analysis. The 2030 horizon considers future growth in the region as indicated in the Orange County Projections (OCP)-2000 socioeconomic projections and is consistent with Caltrans requirements for long-range analyses.

Forecast conditions are evaluated without and with the OCG project. The OCG project is represented by the elimination of at-grade rail crossings of study area arterials as described in each Build Alternative. All four project alternatives were examined. Build Alternatives B, C, and D were compared to the No Build Alternative (Alternative A) to determine potential traffic impacts of the proposed project. Peak-hour LOS were analyzed at the 101 intersections along with delay along the Orangethorpe corridor due to gate down time. Additionally, a screenline V/C analysis of north-south arterial roadways was conducted to identify the effects of the OCG project on overall north-south traffic flow and to determine if elimination of at-grade crossings creates excessive demand for the north-south roadways. The analysis also identifies the potential for adverse effects of the OCG project on alternative modes of transportation such as pedestrians, bicycles, and transit.

The degree of congestion at an intersection is described by the LOS, which ranges from A to F, with A representing free-flow conditions with little delay and F representing oversaturated traffic flow throughout the peak hour. Figure 3.6-2 illustrates different LOS. Table 3.6-A provides a description of LOS for arterial roadways with signalized intersections.

The LOS at signalized study area intersections were evaluated using the intersection capacity utilization (ICU) methodology. The ICU methodology compares the V/C ratios of conflicting turn movements at an intersection and sums these conflicting V/C ratios for each intersection approach to determine the overall ICU. For unsignalized intersections and for those signalized intersections under the control of Caltrans, the *Highway Capacity Manual* (HCM) methodology was used to determine peak-hour intersection LOS. In the unsignalized HCM methodology, the LOS is presented in terms of total intersection delay and approach delay of the major and minor streets. Additionally, at the request of Caltrans District 12 staff, all signalized arterial/freeway ramp intersections were analyzed



Factors Affecting LOS of Signalized Intersections

Traffic Signal Conditions:
- Signal Coordination
- Cycle Length
- Protected left turn
- Timing
- Pre-timed or traffic activated signal
- Etc.

Geometric Conditions:
- Left- and right-turn lanes
- Number of lanes
- Etc.

Traffic Conditions:
- Percent of truck traffic
- Number of pedestrians
- Etc.

Source: 2000 HCM, Exhibit 16-2, Level of Service Criteria for Signalized Intersections

FIGURE 3.6-2

Orange County Gateway
Illustrations of Levels of Service for Signalized Intersections

SOURCE: CALTRANS STANDARD ENVIRONMENTAL REFERENCE

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using the HCM signalized intersection operational methodology. The HCM signalized intersection methodology describes LOS in terms of the overall control delay at an intersection.

The potential for adverse project traffic impacts was determined by examining existing policies set forth by the Cities of Placentia, Anaheim, and Yorba Linda and the Orange County CMP. Any of the following conditions would be considered an adverse project impact:

1. **Intersection Level of Service:** If the project causes an intersection to exceed LOS D, the intersection is considered directly adversely impacted by the project. If an intersection operates worse than LOS D, and the impact is determined to result from cumulative plus proposed project traffic, there would be a significant cumulative adverse impact. For intersections located on the CMP roadway network, LOS E is considered the LOS threshold, and no intersection may be allowed to deteriorate to a condition that is worse than LOS E or the existing LOS, if worse than LOS E, without prescribed mitigation. For locations that operate at worse than LOS E conditions in the base condition, an adverse project impact occurs when the project causes an increase in the V/C ratio of 0.10 or more. Orangethorpe Avenue, Tustin Avenue-Rose Drive, Imperial Highway, and SR-91 are the designated CMP links within the OCG study area.

2. **Traffic Safety:** An adverse project impact would occur if conditions are created that lead to unsafe travel conditions for all modes as a direct result of project design and/or implementation.

3. **Transit Disruption:** An adverse project impact would occur if the project directly results in disruptions to transit service in the project area once implemented and fully operational.

4. **Alternate Travel Mode Disruption:** An adverse project impact would occur if once implemented and fully operational, the project directly results in disruptions, impedance, or blockage of existing bicycle and pedestrian routes.

5. **Construction Activity:** An adverse project impact would occur if as a result of the construction of the OCG project during any and each phase of implementation, arterial lanes and capacity are reduced from existing conditions leading to deteriorated LOS over existing or without project conditions.

3.6.2 AFFECTED ENVIRONMENT

The OCG project is proposed within the Orangethorpe Corridor of the BNSF railroad line between Placentia Avenue and Imperial Highway. The project study area for the traffic analysis includes intersections and roadway segments in the Cities of Placentia, Anaheim, and Yorba Linda and the County of Orange. Figure 3.6-3A illustrates study area intersections for existing conditions and Alternatives B and C. Figure 3.6-3B illustrates study area intersections for Alternative D.

3.6.2.1 Area Circulation System

A brief description of the existing roadway crossings over the project segment of the BNSF railroad tracks analyzed in this section is provided below.

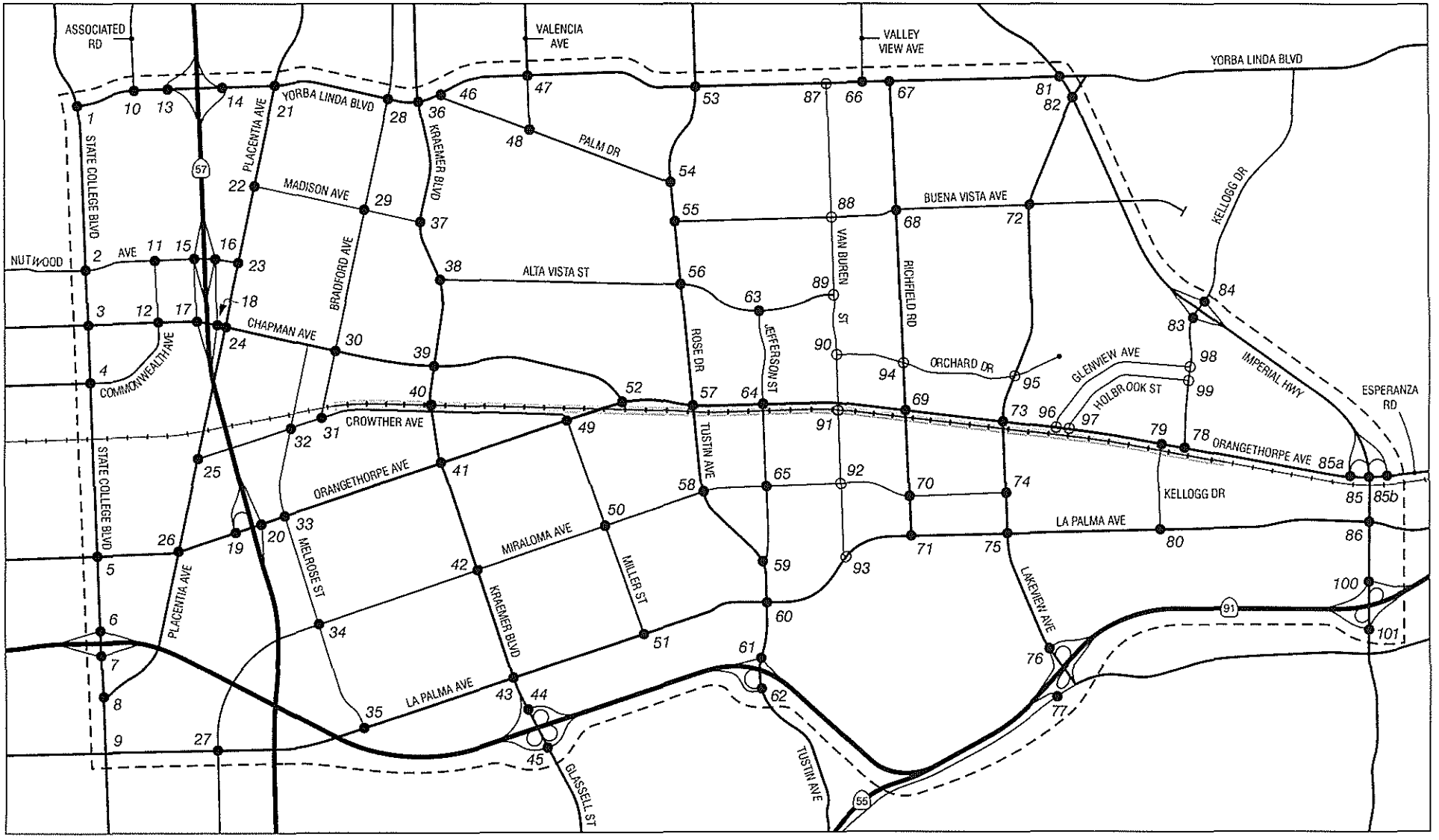


FIGURE 3.6-3A

NO SCALE

86 ● MPAH INTERSECTIONS
99 ○ NON-MPAH INTERSECTIONS
- - - STUDY AREA BOUNDARY
PROJECT LIMITS

SOURCE: LSA Associates, Inc., June 2002

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Orange County Gateway

Existing Condition and Alternatives B and C
Traffic Analysis Study Area

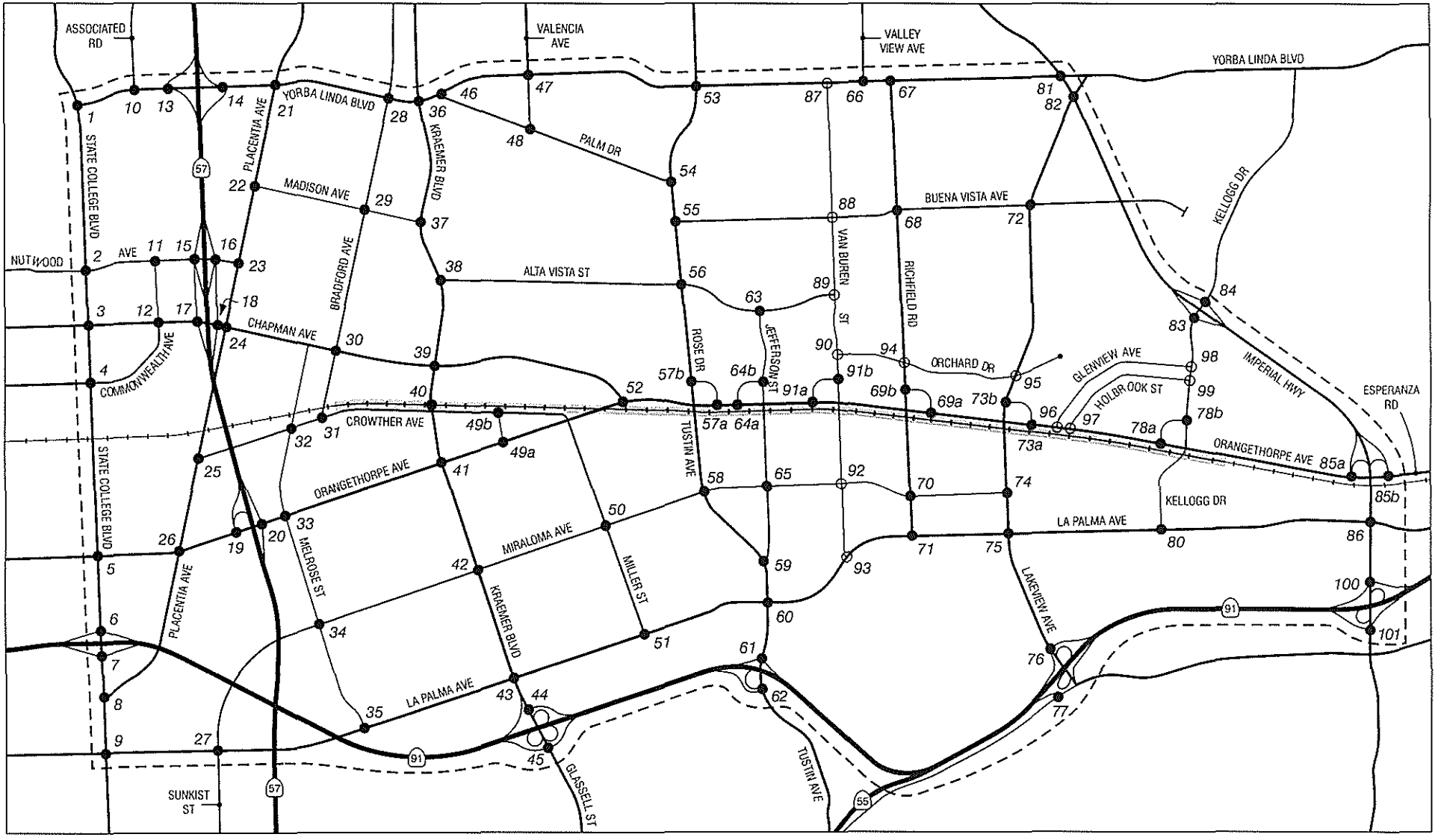


FIGURE 3.6-3B

NO SCALE

86 ● MPAH INTERSECTIONS
99 ○ NON-MPAH INTERSECTIONS
STUDY AREA BOUNDARY
PROJECT LIMITS

Orange County Gateway
Alternative D
Traffic Analysis Study Area

SOURCE: LSA Associates, Inc., June 2002

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Kraemer Boulevard is a four-lane roadway with an existing traffic volume of approximately 18,000 vehicles per day (VPD). This roadway is a Major Arterial Highway on the Orange County MPAH that provides regional and local access among and within the Cities of Yorba Linda, Placentia, and Anaheim. A Class III (signed) bike route is designated on this arterial north of Chapman Avenue on the *Orange County Commuter Bikeways Strategic Plan* (OCTA, August 2001). This road has sidewalks and crosswalks at its intersection with Crowther Avenue.

Orangethorpe Avenue is a four-lane roadway with an existing traffic volume of approximately 16,000 VPD. This roadway is a Major Arterial Highway on the MPAH that provides regional and local access among and within the Cities of Buena Park, Fullerton, Anaheim, Placentia, and Yorba Linda. Orangethorpe Avenue is also designated on the CMP network. A Class III (signed) bike route is designated on this arterial between Chapman Avenue and Jefferson Street. This road does not have sidewalks at its crossing with the railroad tracks (between Miller Street and Chapman Avenue).

Tustin Avenue-Rose Drive is a four-lane roadway with an existing traffic volume of approximately 24,000 VPD. This roadway is a Major Arterial Highway on the MPAH that provides regional and local access among and within the Cities of Brea, Yorba Linda, Placentia, and Anaheim. This roadway is designated on the CMP. A Class III (signed) bike route is designated on this arterial north of Orangethorpe Avenue. This road has sidewalks and crosswalks at its intersection with Orangethorpe Avenue, with the exception of the south leg of the intersection adjacent to the railroad crossing.

Jefferson Street is a four-lane roadway north of the railroad tracks and a two-lane roadway south of the railroad tracks, with an existing traffic volume of approximately 6,000 VPD. This roadway is a Secondary Arterial Highway on the MPAH that provides local access within the Cities of Placentia and Anaheim. A Class III (signed) bike route is designated on this arterial north of Orangethorpe Avenue. This road has sidewalks and crosswalks at its intersection with Orangethorpe Avenue.

Van Buren Street is a two-lane roadway with an existing traffic volume of approximately 7,000 VPD. This roadway is not designated on the MPAH. It provides local access within the Cities of Yorba Linda, Placentia, and Anaheim. A Class III (signed) bike route is designated on this arterial north of Orangethorpe Avenue. This road has sidewalks and crosswalks at its intersection with Orangethorpe Avenue, with the exception of the south leg of the intersection adjacent to the railroad tracks.

Richfield Road is a four-lane roadway with an existing traffic volume of approximately 9,000 VPD. This roadway is a Secondary Arterial Highway on the MPAH that provides local access within the Cities of Yorba Linda, Placentia, and Anaheim. A Class III bike route is designated on this arterial north and south of Orangethorpe Avenue. This road has sidewalks and crosswalks at its intersection with Orangethorpe Avenue.

Lakeview Avenue is a four-lane roadway crossing the railroad tracks, with approximately 18,000 VPD. This roadway is a Primary Arterial Highway on the MPAH that provides regional access within the Cities of Yorba Linda, Placentia, and Anaheim. There is no bike route designated along this roadway. This road has crosswalks at its intersection with Orangethorpe Avenue and sidewalks only on the west leg of the intersection.

Kellogg Drive is a four-lane roadway crossing the railroad tracks and a four-lane roadway north of Orangethorpe Avenue, with an existing traffic volume of approximately 8,000 and 13,000 VPD on these segments, respectively. This roadway is a Secondary Arterial Highway on the MPAH that provides local access within the Cities of Yorba Linda, Placentia, and Anaheim. There is no bike route designated along this roadway. This offset roadway has crosswalks at its intersection with Orangethorpe Avenue and sidewalks only on the north side of the intersection.

3.6.2.2 Existing Transit and Bus Services

The Orange County Transportation Authority (OCTA) provides transit services to the OCG project area through fixed route bus schedules. Based on the OCTA Bus System Book, effective March 10 through June 8, 2002, the fixed route service in the study area is illustrated in Figure 3.6-4. Many of the existing routes use the north-south arterials crossing the BNSF rail line.

Buses operated by the Placentia-Yorba Linda Unified School District (PYLUSD) transport children to and from school across the BNSF railroad tracks using the following roads: Kraemer Boulevard, Orangethorpe Avenue, Tustin Avenue/Rose Drive, Jefferson Street, Van Buren Street, Richfield Road, Lakeview Avenue, and Kellogg Drive. The total number of daily school bus crossings across the BNSF railroad in Placentia is 270.

3.6.2.3 Existing Bicycle and Pedestrian Facilities

Bicycle travel is accommodated in the study area through the use of designated bikeways. Class I bikeways provide for bicycle travel on a paved right-of-way, completely separated from streets or roadways, with minimal cross-flow of motorists. Class II bikeways are a striped lane for one-way travel on a roadway or street. Class III bikeways are on-road, signed facilities intended to provide continuity to the bicycle system. Figure 3.6-5 illustrates the current bicycle facilities in the OCG project study area. Many of the BNSF crossings provide direct north-south circulation for bicycle traffic in additional to motor vehicle traffic.

Sidewalks are provided for pedestrians in the study area. All arterial streets in the study area with complete rights-of-way are constructed with sidewalks between 1.5 and 3.4 meters (m) (5 and 11 feet [ft]) in width. Most of the eight arterial street/rail crossings within the OCG project area currently provide sidewalks for pedestrians. No other pedestrian crossings are provided or currently planned in the project area.

3.6.2.4 Existing Traffic Operations

The existing average daily traffic volumes in the OCG study area are presented in Figure 3.6-6. Table 3.6-B presents the existing a.m. and p.m. peak-hour LOS at the 101 OCG study area intersections. As shown in Table 3.6-B, 91 study area intersections currently operate at satisfactory LOS and the following intersections currently operate at unsatisfactory LOS. (Refer to Section 3.6.3.1 for LOS definitions and thresholds.) The locations of these intersections within the OCG study area are illustrated in Figure 3.6-7.

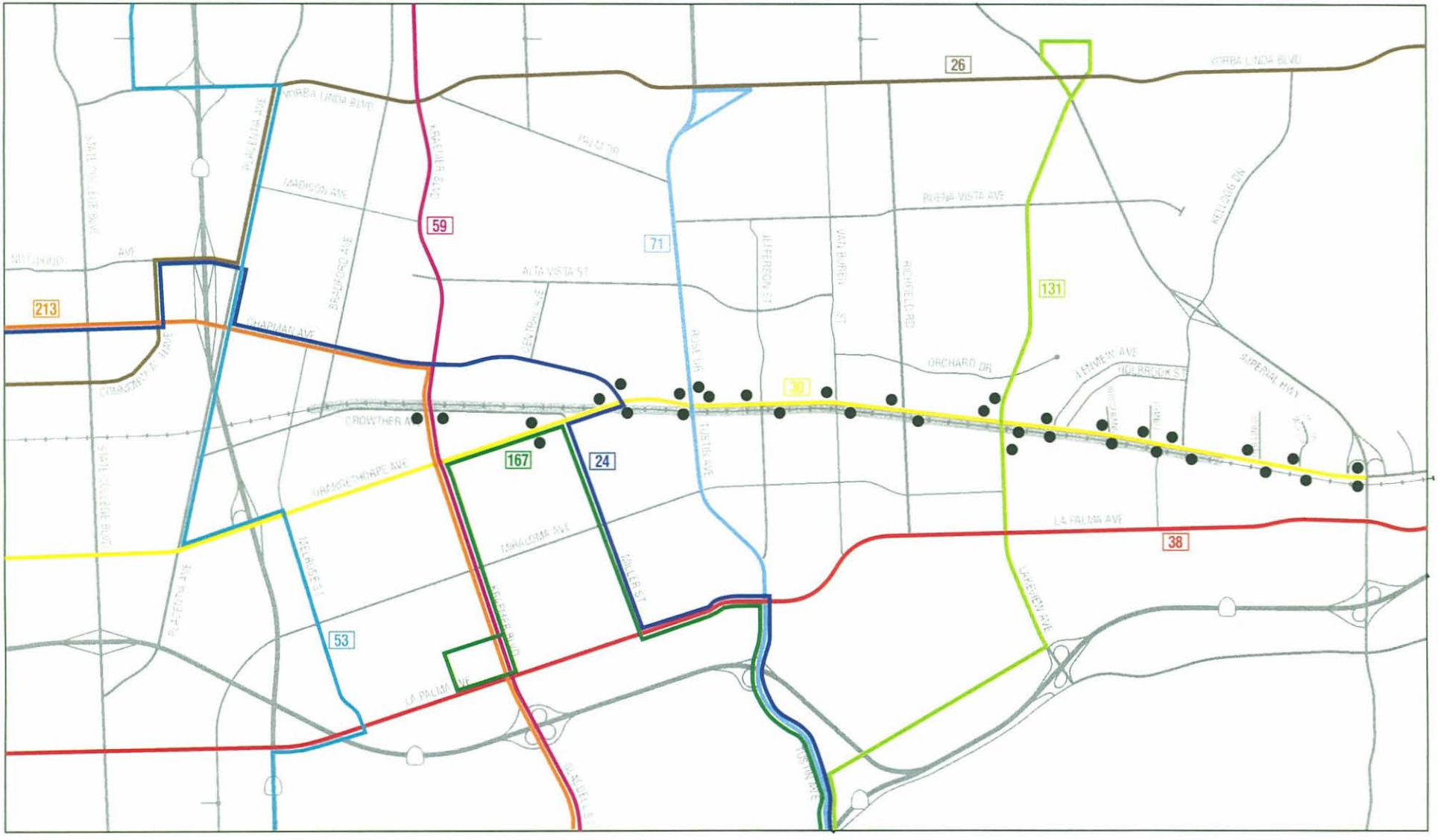


FIGURE 3.6-4

N

NO SCALE

LEGEND

30 OCTA TRANSIT ROUTE

● TRANSIT STOP

PROJECT LIMITS

Orange County Gateway

Existing Condition

Transit Routes

SOURCE: OCTA Bus System Book, March 10 - June 8, 2002

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FIGURE 3.6-5

LEGEND

- CLASS I OFF-ROAD (PAVED)
- CLASS II ON-ROAD (STRIPED LANES)
- CLASS III ON-ROAD (SIGNED ONLY)
- PROJECT LIMITS

NO SCALE

Orange County Gateway
Existing Condition
Bicycle Facilities

SOURCE: LSA Associates, Inc., 2004

I:\OTG130\G\Traffic\Existing Bikeways.cdr (1/9/06)

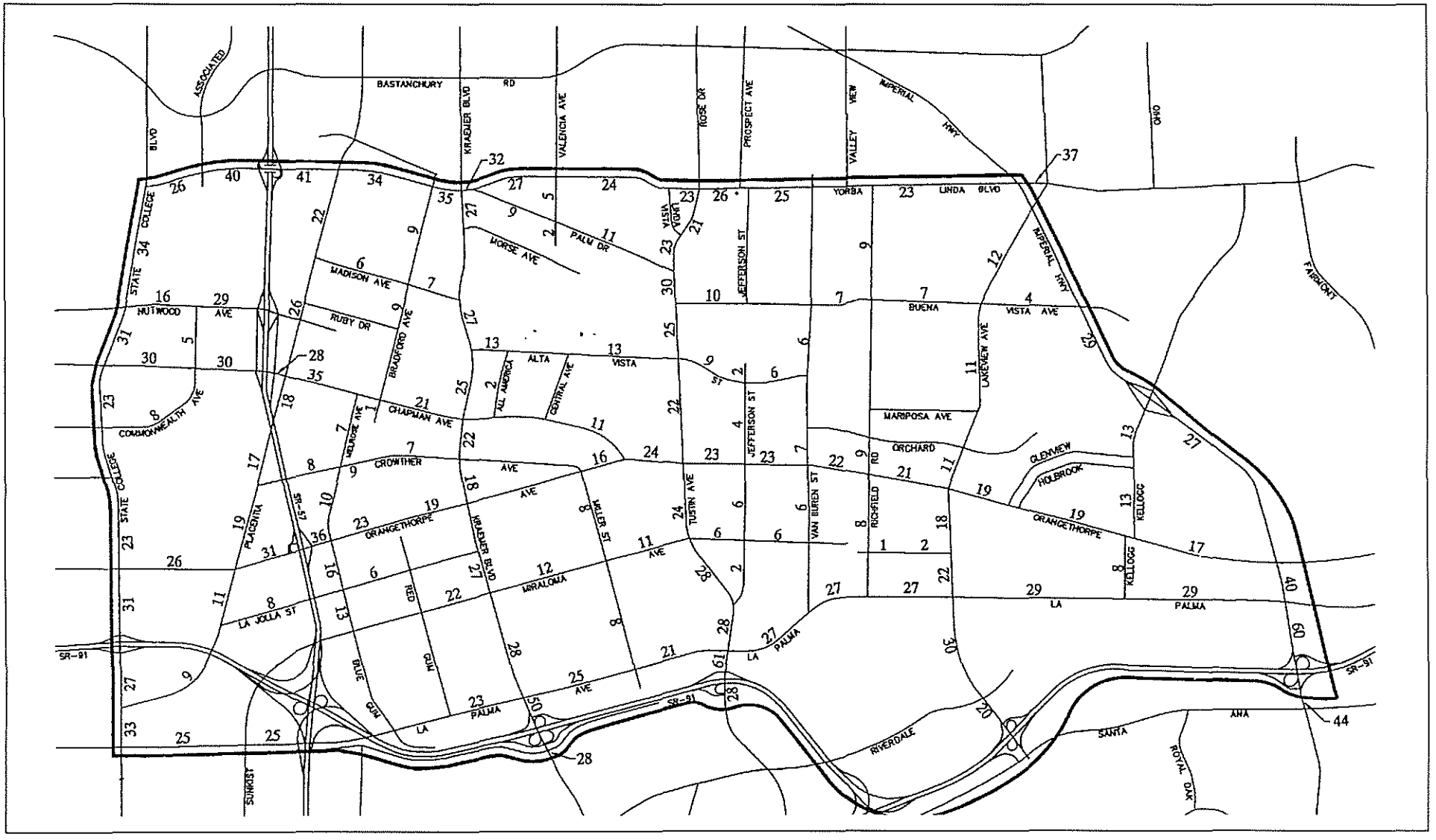


FIGURE 3.6-6

LEGEND

25 AVERAGE DAILY TRAFFIC VOLUMES (THOUSANDS)

STUDY AREA BOUNDARY

N

NO SCALE

Orange County Gateway

Existing Average Daily Traffic Volumes

SOURCE: Austin Foust Associates, Inc., May 3, 2002

I:\OTG130\G\Traffic\ADT - Existing.cdr (4/28/04)

Table 3.6-B: Existing Intersection Level of Service Summary

	Jurisdiction/Intersection	Existing V/C, LOS, and Delay							
		AM	LOS	Delay	LOS	PM	LOS	Delay	LOS
	Fullerton								
1	State College and Yorba Linda	.80	C			.93	E		
2	State College and Nutwood	.63	B			.64	B		
3	State College and Chapman	.76	C			.87	D		
4	State College and Commonwealth	.69	B			.70	B		
5	***State College and Orangethorpe***	.87	D			.89	D		
10	Associated Rd. and Yorba Linda	.65	B			.61	B		
11	Nutwood and Commonwealth	.41	A			.39	A		
12	Chapman and Commonwealth	.56	A			.77	C		
13	SR-57 SB and Yorba Linda			13.5	B			> 80	F
14	SR-57 NB and Yorba Linda			18.4	B			61.8	E
15	SR-57 SB and Nutwood			21.4	C			21.9	C
16	SR-57 NB and Nutwood			20.2	C			20.3	C
17	SR-57 SB and Chapman			14.4	B			14.4	B
18	SR-57 NB and Chapman			19.8	B			22.7	C
21	Placentia and Yorba Linda	.90	D			.95	E		
22	Placentia and Madison	.55	A			.61	B		
	Placentia								
19	***SR-57 SB and Orangethorpe***			20.7	C			21.4	C
20	***SR-57 NB and Orangethorpe***			54.9	D			24.3	C
23	Placentia and Nutwood	.71	C			.63	B		
24	Placentia and Chapman	.73	C			.76	C		
25	Placentia and Crowther	.47	A			.55	A		
26	Placentia and Orangethorpe	.53	A			.86	D		
28	Bradford and Yorba Linda	.52	A			.71	C		
29	Bradford and Madison			15.2	C			19.7	C
30	Bradford and Chapman	.61	B			.59	A		
31	Bradford and Crowther			15.2	C			15.4	C
32	Melrose and Crowther			14.8	B			17.9	C
33	Melrose and Orangethorpe	.51	A			.70	B		
36	Kraemer and Yorba Linda	.70	B			.85	D		
37	Kraemer and Madison	.70	B			.64	B		
38	Kraemer and Alta Vista	.73	C			.82	D		
39	Kraemer and Chapman	.83	D			.84	D		
46	Palm Dr. and Yorba Linda	.44	A			.47	A		
47	Valencia and Yorba Linda	.66	B			.50	A		
48	Valencia and Palm Dr.			12.7	B			13.4	B
53	Tustin and Yorba Linda	.62	B			.79	C		
54	Tustin and Palm Dr.	.69	B			.58	A		
55	Tustin and Buena Vista	.79	C			.81	D		

Table 3.6-B: Existing Intersection Level of Service Summary

	Jurisdiction/Intersection	Existing V/C, LOS, and Delay							
		AM	LOS	Delay	LOS	PM	LOS	Delay	LOS
	Placentia (cont'd)								
56	Tustin and Alta Vista	.98	E			.88	D		
57	***Rose/Tustin and Orangethorpe***	.93	E			.85	D		
63	Jefferson and Alta Vista	.41	A			.36	A		
64	Jefferson and Orangethorpe	.54	A			.52	A		
69	Richfield and Orangethorpe	.71	C			.75	C		
74	Lakeview and Miraloma			>50	F			>50	F
88	Van Buren and Buena Vista			26.7	D			41.6	E
89	Van Buren and Alta Vista	.64	B			.52	A		
90	Van Buren and Orchard Dr.			12.3	B			11.9	B
91	Van Buren and Orangethorpe	.65	B			.62	B		
92	Van Buren and Miraloma			22.2	C			34.7	D
94	Richfield and Orchard Dr.			22.5	C			46.5	E
95	Lakeview and Orchard Dr.			> 50	F			10.6	B
	Anaheim								
6	***State College and SR-91 WB***			22.2	C			34.5	C
7	***State College and SR-91 EB***			24.6	C			35.0	C
8	State College and Placentia	.68	B			.96	E		
9	State College and La Palma	.72	C			.98	E		
27	Miraloma and La Palma	1.14	F			1.00	E		
34	Melrose and Miraloma	.42	A			.61	B		
35	Melrose and La Palma	.51	A			.80	C		
40	Kraemer and Crowther	.66	B			.77	C		
41	Kraemer and Orangethorpe	.83	D			.76	C		
42	Kraemer and Miraloma	.65	B			.78	C		
43	Kraemer and La Palma	.76	C			1.22	F		
44	Kraemer and SR-91 WB			23.6	C			22.6	C
45	Glassell and SR-91 EB			> 50	F			> 50	F
49	Miller and Orangethorpe	.54	A			.59	A		
50	Miller St. and Miraloma	.59	A			.59	A		
51	Miller St. and La Palma	.48	A			.63	B		
52	Chapman and Orangethorpe	.65	B			.55	A		
58	Tustin and Miraloma	.86	D			.73	C		
59	Tustin and Jefferson			> 50	F			> 50	F
60	Tustin and La Palma	1.01	F			1.09	F		
61	***Tustin and SR-91 WB***			31.6	C			21.2	C
62	***Tustin and SR-91 EB***			49.7	D			33.1	C
65	Jefferson and Miraloma			18.2	C			17.5	C
70	Richfield and Miraloma			> 50	F			> 50	F

Table 3.6-B: Existing Intersection Level of Service Summary

	Jurisdiction/Intersection	Existing V/C, LOS, and Delay							
		AM	LOS	Delay	LOS	PM	LOS	Delay	LOS
	Anaheim (cont'd)								
71	Richfield and La Palma	.45	A			.56	A		
73	Lakeview and Orangethorpe	.73	C			.84	D		
75	Lakeview and La Palma	.54	A			.72	C		
76	Lakeview and SR-91 WB			15.7	B			8.8	A
77	Lakeview and SR-91 EB			15.2	B			17.2	B
78	N. Kellogg and Orangethorpe	.56	A			.62	B		
79	S. Kellogg and Orangethorpe	.54	A			.62	B		
80	S. Kellogg and La Palma	.50	A			.45	A		
83	N. Kellogg and Imperial SB			24.0	C			14.6	B
84	N. Kellogg and Imperial NB	.53	A			.30	A		
85	Imperial and Orangethorpe			50.1	D			52.6	D
86	Imperial Hwy. and La Palma	.77	C			.79	C		
93	Van Buren and La Palma	.47	A			.49	A		
96	Glenview and Orangethorpe			> 50	F			30.4	D
97	Holbrook and Orangethorpe			24.6	C			12.8	B
98	N. Kellogg and Glenview	.58	A			.29	A		
99	N. Kellogg and Holbrook			35.2	E			12.1	B
100	***Imperial Hwy. and SR-91 WB***			12.8	B			9.5	A
101	***Imperial Hwy. and SR-91 EB***			11.4	B			16.9	B
	Yorba Linda								
66	Valley View and Yorba Linda	.49	A			.72	C		
67	Richfield and Yorba Linda	.44	A			.67	B		
68	Richfield and Buena Vista			17.4	C			15.5	C
72	Lakeview and Buena Vista			24.1	C			24.5	C
81	Imperial Hwy. and Yorba Linda	.42	A			.68	B		
87	Van Buren and Yorba Linda	.46	A			.63	B		

Source: *Traffic Impact Analysis* (LSA Associates, Inc., October 2007).

Notes:

- Grey shading denotes intersections that exceed performance criteria (LOS D for all non-CMP intersections, and LOS E for all CMP intersections).
- CMP intersections are shown in ***bold italic font.***
- Delay calculations and LOS are presented for unsignalized intersections and Caltrans ramp intersections in the study area. All other calculations for signalized intersections use the ICU/LOS methodology. Delay is expressed in average seconds of delay per vehicle.

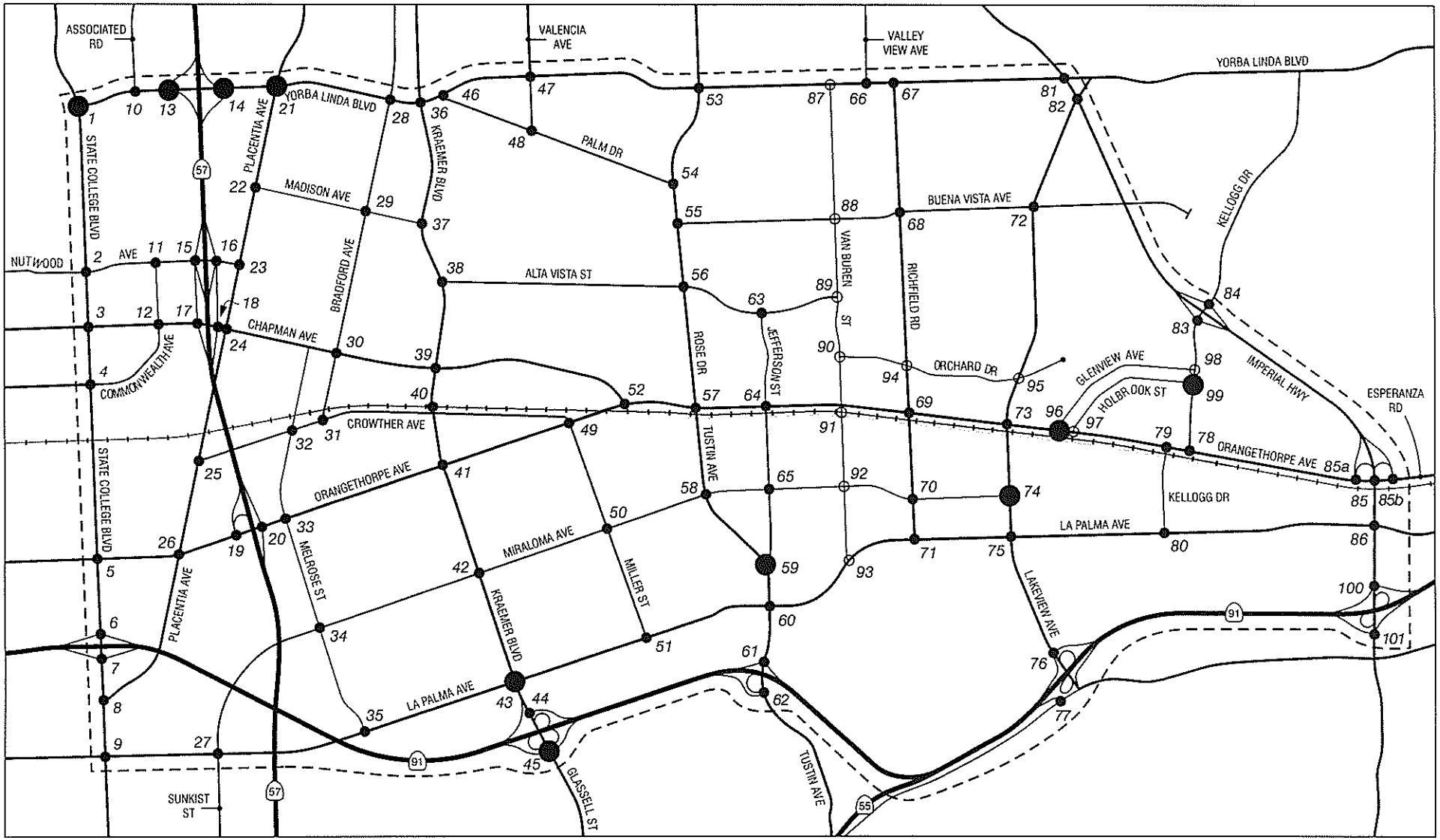


FIGURE 3.6-7

LEGEND

- MPAH INTERSECTIONS
- NON-MPAH INTERSECTIONS
- INTERSECTIONS OPERATING AT LOS E OR F
- STUDY AREA BOUNDARY
- PROJECT LIMITS

NO SCALE

Orange County Gateway
Existing Conditions
Intersections Operating at Los E or F

SOURCE: LSA Associates, Inc., June 2002

I:\OTG130\G\Traffic\Study Area - Intersections.cdr (4/28/04)

- State College Boulevard/Yorba Linda Boulevard
- SR-57 southbound ramps/Yorba Linda Boulevard
- SR-57 northbound ramps/Yorba Linda Boulevard
- Placentia Avenue/Yorba Linda Boulevard
- Lakeview Street/Miraloma Avenue
- Glenview Avenue/Orangethorpe Avenue
- Kraemer Boulevard/La Palma Avenue
- Glassell Street/SR-91 eastbound ramps
- Tustin Avenue/Jefferson Street
- North Kellogg Drive/Holbrook Street

3.6.2.4 Existing Rail Activity

The BNSF railroad line through Orange County is one of three main rail freight routes into and out of the Los Angeles area. International trade cargo comes into and out of the Ports of Los Angeles and Long Beach. The BNSF railroad line serves the ports via the Alameda Corridor (a joint-use line serving both the Union Pacific and BNSF railroad companies), connects to the Hobart Yard outside downtown Los Angeles, and proceeds southeast through Pico Rivera and Santa Fe Springs. The line extends east of the OCG project area through northern Orange County, the City of Corona, San Bernardino County, and ultimately the Gulf States and eastern United States.

The current volume of rail traffic along the line is 50 to 70 trains per day. The majority of this rail traffic is attributable to freight. However, passenger service is provided on this line by both Amtrak and Metrolink.

Because of its linkage to the Ports of Los Angeles and Long Beach, growth in international trade results will result in growth in rail volumes within the Orangethorpe Corridor. The volume of port cargo has increased substantially over the past five years and is expected to continue its rapid growth. In numbers of trains, forecasts suggest an increase from the current volume of 50 to 70 trains per day to 135 to 150 trains per day by the year 2030 *(Traffic Impact Analysis)*. This equates to one train passing through the corridor, blocking intersections, approximately every 10 minutes, 24 hours a day. By 2030, if no grade crossing improvements are implemented, crossing gates will block intersections roughly 40 to 50 percent of the time during the peak hours of the morning commute.

3.6.3 IMPACTS

3.6.3.1 Permanent Impacts

Permanent impacts are evaluated for a design year 20 years after project opening; therefore, the analysis of permanent traffic impacts of the OCG project is for a future 2030 traffic horizon. Based on the proposed implementation schedule, the OCG project would be constructed and operational by 2010. Traffic impacts are considered by comparing the future traffic operations without the OCG

project (i.e., no grade separations) to future traffic operations with the OCG project (i.e., grade separations at identified north-south arterial crossings). It should be noted that the OCG project would not by itself generate new vehicle trips. Rather, the project would provide relief to the delay currently associated with the at-grade rail crossings, which could result in greater attraction to the north-south routes than what is currently experienced.

For the 2030 condition, implementation of the MPAH is assumed in the through lane capacity at each intersection. For example, all major arterials have three through lanes in each direction for both approaches. Primary and secondary arterials have two through lanes in each direction. The existing left-turn capacity at each intersection is assumed in the future 2030 baseline condition. Right-turn lanes may be altered to reflect a shared through right lane to achieve the designated through lane capacity.

Alternative A

The transportation impact analysis prepared for the No Build Alternative includes the forecasted growth in traffic to the year 2030, the additional capacity afforded by the MPAH through lanes at the OCG study area intersections, and the current configurations of the rail crossings in the OCG area. All north-south arterial crossings from Kraemer Boulevard to Kellogg Drive are assumed to be in the current at-grade condition under Alternative A.

Figure 3.6-8 illustrates the future year 2030 No Build Alternative daily traffic volumes along each study area roadway. To quantify the daily traffic demand on north-south arterials along the project corridor, a V/C analysis was completed for each north-south arterial with a rail crossing and for the project corridor as a whole. This analysis is summarized in Table 3.6-C.

Table 3.6-C: 2030 No Build Alternative Daily Volume-to-Capacity Ratios at Rail Crossings

Arterial Crossing	Average Daily Volume	MPAH Capacity	Volume-to-Capacity Ratio
Kraemer Blvd.	29,000	56,300	0.52
Tustin Ave.-Rose Dr.	30,000	56,300	0.53
Jefferson St.	7,000	25,000	0.28
Van Buren St.	3,000	25,000	0.12
Richfield Dr.	11,000	25,000	0.44
Lakeview Ave.	21,000	37,500	0.56
Kellogg Dr.	10,000	25,000	0.40

Source: *Traffic Impact Analysis* (LSA Associates, Inc., October 2007).

As seen in the table, each crossing is forecasted to provide adequate capacity to accommodate the 2030 daily volume under the No Build Alternative. The daily roadway capacity appears adequate to accommodate forecasted 2030 traffic volumes. Table 3.6-D presents the results of the 2030 No Build Alternative intersection analysis. For Alternative A, 28 of the 101 OCG study area intersections are

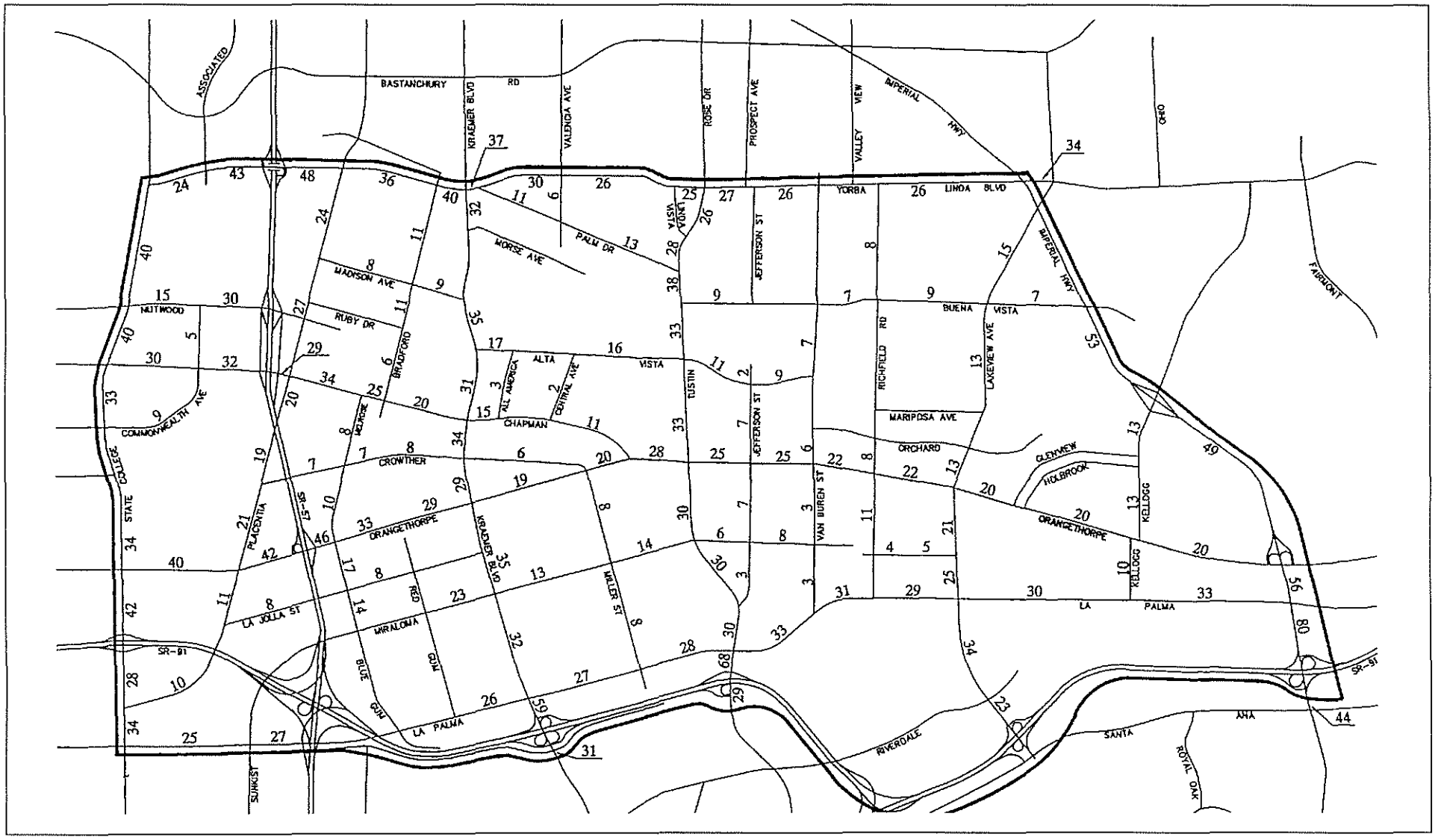


FIGURE 3.6-8

LEGEND

25 AVERAGE DAILY TRAFFIC VOLUMES (THOUSANDS)

STUDY AREA BOUNDARY

PROJECT LIMITS

N

NO SCALE

SOURCE: Austin Foust Associates, Inc., May 3, 2002

I: OTG130 G Traffic ADT - Alt A.cdr (9/19/05)

Orange County Gateway

Alternative A - No Build

2030 Daily Traffic Volumes

Table 3.6-D: Year 2030 Intersection Level of Service Summary, Alternative A—No Build

	Jurisdiction/Intersection	Year 2030							
		AM	LOS	Delay	LOS	PM	LOS	Delay	LOS
	Fullerton								
1	State College and Yorba Linda	.97	E			1.22	F		
2	State College and Nutwood	.76	C			.85	D		
3	State College and Chapman	.89	D			1.07	F		
4	State College and Commonwealth	.96	E			.92	E		
5	***State College and Orangethorpe***	1.04	F			1.24	F		
10	Associated Rd. and Yorba Linda	.83	D			.70	B		
11	Nutwood and Commonwealth	.43	A			.50	A		
12	Chapman and Commonwealth	.56	A			.76	C		
13	SR-57 SB and Yorba Linda			19.7	B			22.8	C
14	SR-57 NB and Yorba Linda			23.1	C			21.9	C
15	SR-57 SB and Nutwood			27.3	C			21.5	C
16	SR-57 NB and Nutwood			33.5	C			21.8	C
17	SR-57 SB and Chapman			16.8	B			14.5	B
18	SR-57 NB and Chapman			20.5	C			24.3	C
21	Placentia and Yorba Linda	.97	E			1.03	F		
22	Placentia and Madison	.61	B			.68	B		
	Placentia								
19	***SR-57 SB and Orangethorpe***			26.2	C			23.4	C
20	***SR-57 NB and Orangethorpe***			> 80	F			39.5	D
23	Placentia and Nutwood	.82	D			.73	C		
24	Placentia and Chapman	.85	D			.99	E		
25	Placentia and Crowther	.49	A			.64	B		
26	Placentia and Orangethorpe	.81	D			1.07	F		
28	Bradford and Yorba Linda	.61	B			.81	D		
29	Bradford and Madison			29.1	D			> 50	F
30	Bradford and Chapman	.76	C			.71	C		
31	Bradford and Crowther			26.1	D			18.9	C
32	Melrose and Crowther			15.6	C			19.0	C
33	Melrose and Orangethorpe	.64	B			.87	D		
36	Kraemer and Yorba Linda	1.00	E			1.00	E		
37	Kraemer and Madison	.80	C			.68	B		
38	Kraemer and Alta Vista	.80	C			.84	D		
39	Kraemer and Chapman	.81	D			.86	D		
46	Palm Dr. and Yorba Linda	.45	A			.45	A		
47	Valencia and Yorba Linda	.67	B			.46	A		
48	Valencia and Palm Dr.			25.5	D			24.9	C
53	Tustin and Yorba Linda	.66	B			.76	C		
54	Tustin and Palm Dr.	.92	E			.69	B		
55	Tustin and Buena Vista	.84	D			.86	D		

Table 3.6-D: Year 2030 Intersection Level of Service Summary, Alternative A—No Build

		Year 2030							
	Jurisdiction/Intersection	AM	LOS	Delay	LOS	PM	LOS	Delay	LOS
	Placentia (cont'd)								
56	Tustin and Alta Vista	.98	E			.88	D		
57	***Rose/Tustin and Orangethorpe***	.93	E			.85	D		
63	Jefferson and Alta Vista	.41	A			.36	A		
64	Jefferson and Orangethorpe	.54	A			.52	A		
69	Richfield and Orangethorpe	.71	C			.75	C		
74	Lakeview and Miraloma			> 50	F			> 50	F
88	Van Buren and Buena Vista			26.7	D			41.6	E
89	Van Buren and Alta Vista	.64	B			.52	A		
90	Van Buren and Orchard Dr.			12.3	B			11.9	B
91	Van Buren and Orangethorpe	.65	B			.62	B		
92	Van Buren and Miraloma			22.2	C			34.7	D
94	Richfield and Orchard Dr.			22.5	C			46.5	E
95	Lakeview and Orchard Dr.			> 50	F			10.6	B
	Anaheim								
6	***State College and SR-91 WB***			22.2	C			34.5	C
7	***State College and SR-91 EB***			24.6	C			35.0	C
8	State College and Placentia	.68	B			.96	E		
9	State College and La Palma	.72	C			.98	E		
27	Miraloma and La Palma	1.14	F			1.00	E		
34	Melrose and Miraloma	.42	A			.61	B		
35	Melrose and La Palma	.51	A			.80	C		
40	Kraemer and Crowther	.66	B			.77	C		
41	Kraemer and Orangethorpe	.83	D			.76	C		
42	Kraemer and Miraloma	.65	B			.78	C		
43	Kraemer and La Palma	.76	C			1.22	F		
44	Kraemer and SR-91 WB			23.6	C			22.6	C
45	Glassell and SR-91 EB			> 50	F			> 50	F
49	Miller and Orangethorpe	.54	A			.59	A		
50	Miller St. and Miraloma	.59	A			.59	A		
51	Miller St. and La Palma	.48	A			.63	B		
52	Chapman and Orangethorpe	.65	B			.55	A		
58	Tustin and Miraloma	.86	D			.73	C		
59	Tustin and Jefferson			> 50	F			> 50	F
60	Tustin and La Palma	1.01	F			1.09	F		
61	***Tustin and SR-91 WB***			31.6	C			21.2	C
62	***Tustin and SR-91 EB***			49.7	D			33.1	C
65	Jefferson and Miraloma			18.2	C			17.5	C
70	Richfield and Miraloma			> 50	F			> 50	F

Table 3.6-D: Year 2030 Intersection Level of Service Summary, Alternative A—No Build

	Jurisdiction/Intersection	Year 2030 AM	LOS	Delay	LOS	PM	LOS	Delay	LOS
	Anaheim (cont'd)								
71	Richfield and La Palma	.45	A			.56	A		
73	Lakeview and Orangethorpe	.99	E			.98	E		
75	Lakeview and La Palma	.61	B			.81	D		
76	Lakeview and SR-91 WB			26.3	C			11.3	B
77	Lakeview and SR-91 EB			17.3	B			17.9	B
78	N. Kellogg and Orangethorpe	.61	B			.68	B		
79	S. Kellogg and Orangethorpe	.55	A			.62	B		
80	S. Kellogg and La Palma	.53	A			.67	B		
83	N. Kellogg and Imperial SB			> 50	F			> 50	F
84	N. Kellogg and Imperial NB	.57	A			.35	A		
85a	Imperial SB and Orangethorpe			21.8	C			21.9	C
85b	Imperial NB and Orangethorpe			9.1	A			16.2	B
86	Imperial Hwy. and La Palma	1.16	F			1.04	F		
93	Van Buren and La Palma	.51	A			.55	A		
96	Glenview and Orangethorpe			43.3	E			26.9	D
97	Holbrook and Orangethorpe			24.7	C			18.1	C
98	N. Kellogg and Glenview	.60	A			.30	A		
99	N. Kellogg and Holbrook			> 50	F			> 50	F
100	***Imperial Hwy. and SR-91 WB***			22.1	C			18.5	B
101	***Imperial Hwy. and SR-91 EB***			13.9	B			21.9	C
	Yorba Linda								
66	Valley View and Yorba Linda	.46	A			.61	B		
67	Richfield and Yorba Linda	.35	A			.53	A		
68	Richfield and Buena Vista			22.1	C			21.0	C
72	Lakeview and Buena Vista			56.2	F			27.8	D
81	Imperial Hwy. and Yorba Linda	.54	A			.84	D		
87	Van Buren and Yorba Linda	.34	A			.45	A		

Source: *Traffic Impact Analysis* (LSA Associates, Inc., October 2007).

Notes:

- Grey shading denotes intersections that exceed performance criteria (LOS D for all non-CMP intersections, and LOS E for all CMP intersections).
- CMP intersections are shown ***in bold italic font.***
- Delay calculations and LOS are presented for unsignalized intersections and Caltrans ramp intersections in the study area. All other calculations for signalized intersections use the ICU/LOS methodology. Delay is expressed in average seconds of delay per vehicle.

forecasted to operate with unsatisfactory LOS. Those intersections are highlighted in Table 3.6-D, and their locations are illustrated in Figure 3.6-9.

Direct Impacts. Although the ICU and HCM methodologies used in the intersection LOS analysis provide an estimate of future intersection operations, they do not quantify the delay along the north-south arterial corridors due to the existing at-grade railroad crossings. The *Traffic Delay Analysis* (Meyer, Mohaddes Associates [MMA], September 2002, provided in Appendix B of the *Traffic Impact Analysis*) includes a detailed analysis of increased rail activity along the BNSF corridor, increased vehicular traffic along the arterials in the vicinity of the corridor, and the potential delay savings of implementation of the OCG project. A summary of the total daily vehicle hours of delay along each arterial cross street under the 2030 No Build Alternative is provided in Table 3.6-E.

Table 3.6-E: Vehicle Delay Due to At-Grade Crossings under Alternative A

Cross Streets	2030 Total Daily Vehicle Hours of Delay
Jefferson Street	51
Kellogg Drive	46
Kraemer Boulevard	315
Lakeview Avenue	171
Orangethorpe Avenue	130
Richfield Drive	91
Tustin Avenue-Rose Drive	224
Van Buren Street	91

Source: *Traffic Delay Analysis* (Meyer, Mohaddes Associates, September 2002) provided in Appendix B of the *Traffic Impact Analysis* (LSA Associates, Inc., October 2007).

Indirect Impacts. Alternative A (No Build) would indirectly affect future LOS at the major cross streets in the study area. The LOS would decrease (i.e., worsen) under Alternative A because delay and impacts associated with at-grade street/rail intersections would increase as the number of daily trains on the BNSF rail alignment increases to 2030.

Alternative B

The transportation impact analysis prepared for Alternative B includes the forecasted growth in traffic to the year 2030, the additional capacity afforded by the MPAH through lanes at the study area intersections, and grade separations at all rail crossings from Kraemer Boulevard to Imperial Highway (as defined for Alternative B in Section 2.0, Project Alternatives).

Direct Impacts. No direct adverse traffic impacts for Alternative B have been identified. Figure 3.6-10 illustrates the future 2030 Alternative B daily traffic volumes along each study area roadway.

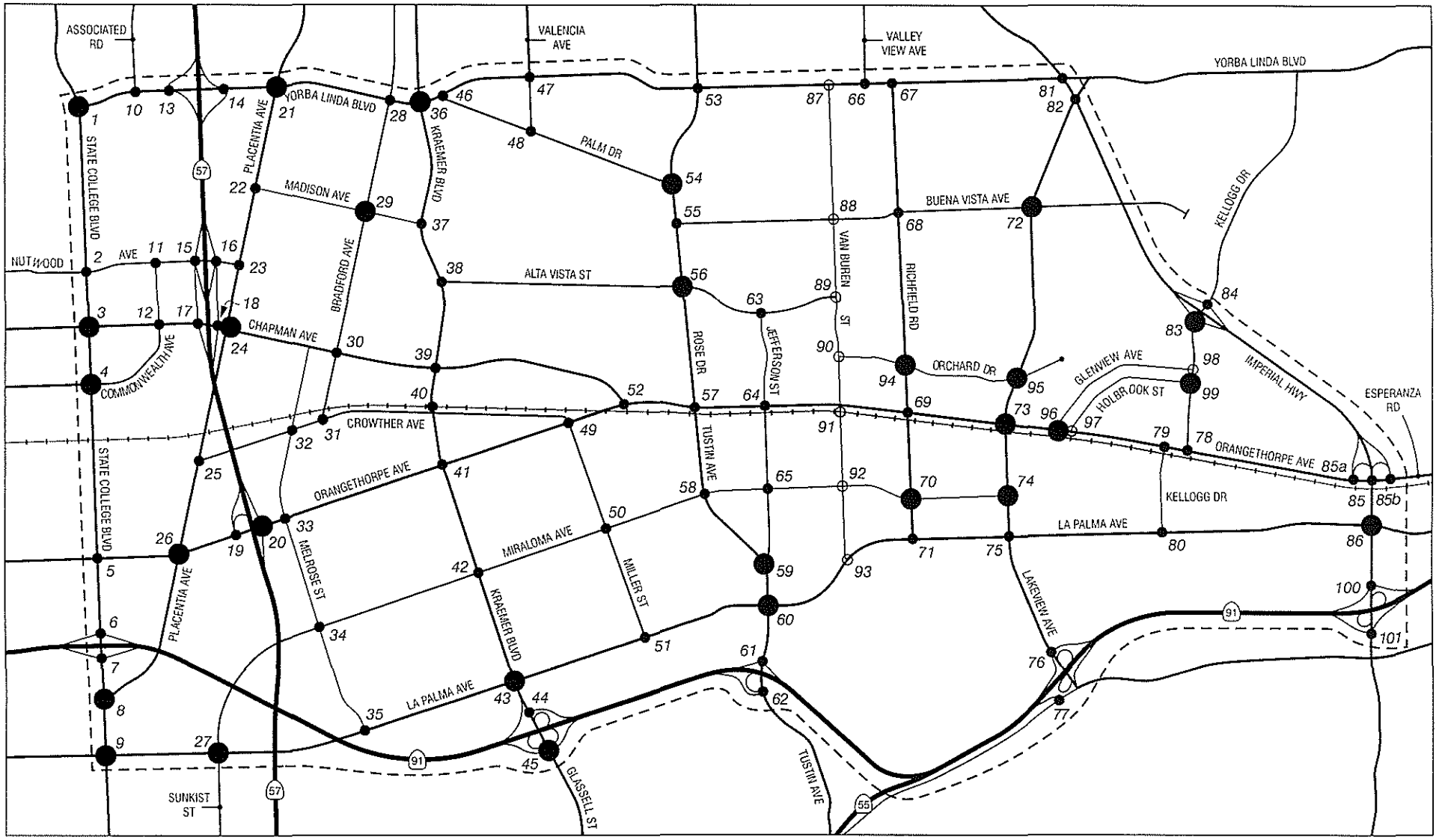


FIGURE 3.6-9

LEGEND

- 86 ● MPAH INTERSECTIONS
- 99 ○ NON-MPAH INTERSECTIONS
- 96 ● INTERSECTIONS FORECAST TO OPERATE AT LOS E OR F
- — — STUDY AREA BOUNDARY
- PROJECT LIMITS

N

NO SCALE

Orange County Gateway

Alternative A - No Build
2030 Intersections Forecast to
Operate at LOS E or F

SOURCE: LSA Associates, Inc., June 2002

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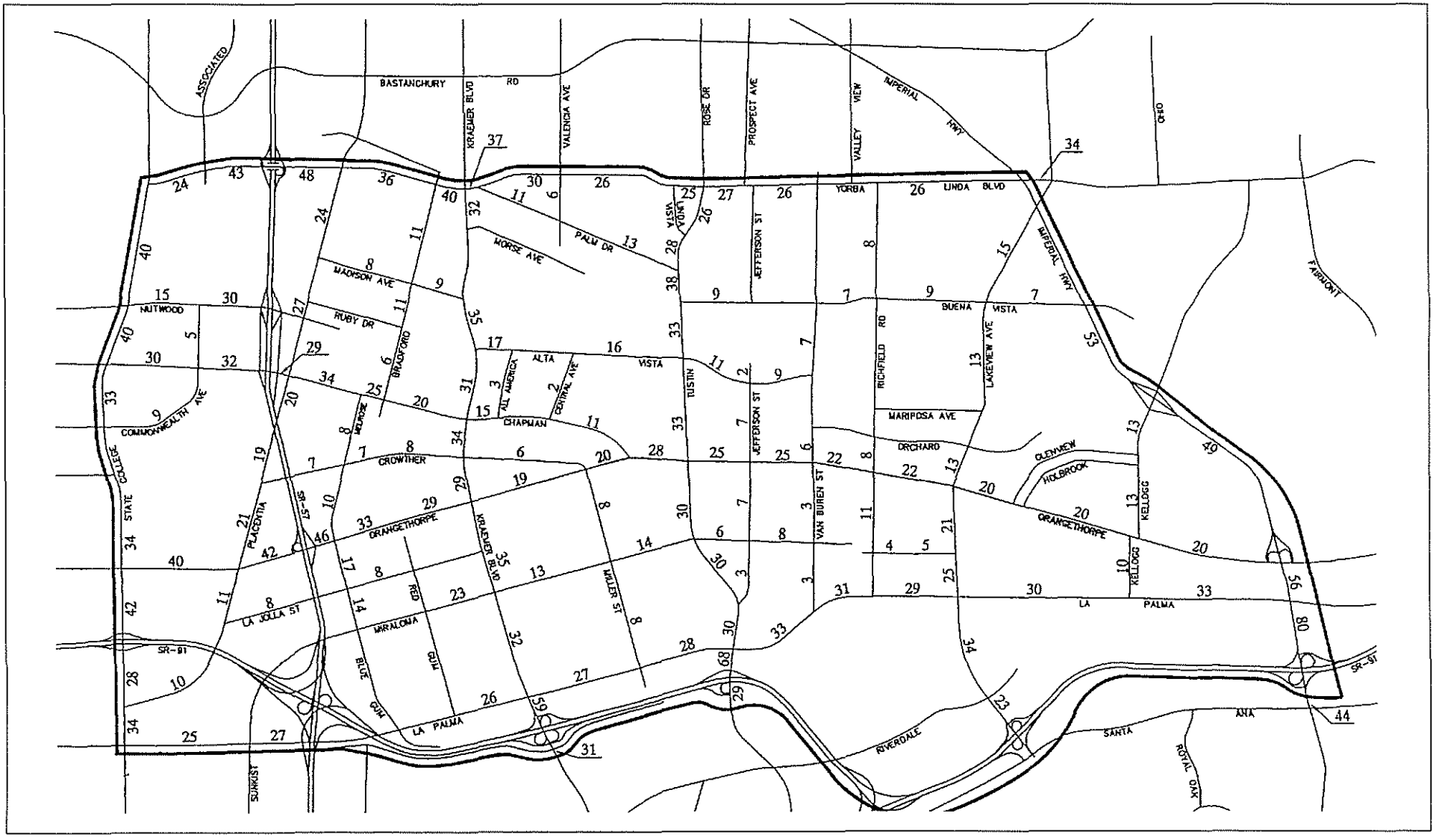


FIGURE 3.6-10

LEGEND

25 AVERAGE DAILY TRAFFIC VOLUMES (THOUSANDS)

STUDY AREA BOUNDARY

PROJECT LIMITS

NO SCALE

Orange County Gateway

Alternative B

2030 Daily Traffic Volumes

SOURCE: Austin Foust Associates, Inc., May 3, 2002

I:\OTG\130 G Traffic ADT - Alt B.cdr (9/19/05)

No change in total daily traffic volume is forecasted under Alternative B as compared to the No Build Alternative.

To determine whether Alternative B would increase the overall demand on north-south arterials along the project corridor, a V/C analysis was completed for Alternative B and compared to the Alternative A V/C analysis. The results of the V/C ratio analyses are identical for the No Build Alternative and Alternative B, as shown in Table 3.6-C. The OCG grade separation project under Alternative B would not create greater or lesser demand for north-south travel but would provide relief to the delay currently associated with the existing at-grade rail crossings. In Alternative B, delay attributable to at-grade railroad crossings, as shown in Table 3.6-E, for Alternative A would be eliminated due to the grade separated intersections provided under Alternative B.

Peak-hour intersection turn movements were forecasted for the 2030 Alternative B and were analyzed using the ICU and HCM methodologies. Table 3.6-F presents the results of the 2030 Alternative B intersection analysis.

With the implementation of Alternative B, the same 28 study area intersections would operate at unsatisfactory LOS as under the No Build Alternative, with the exception of Lakeview Avenue/Orangethorpe Avenue. This intersection would be improved as shown in Table 3.6-G.

As Table 3.6-G indicates, the unsatisfactory LOS in the a.m. and p.m. peak hours at the Lakeview Avenue/Orangethorpe Avenue intersection would be eliminated under Alternative B. This improvement is due to the implementation of dual eastbound and westbound left-turn lanes, a second northbound through lane, and an added southbound right-turn lane at Lakeview Avenue/Orangethorpe Avenue, as part of Alternative B.

When compared to the Alternative A, Alternative B would not result in any direct adverse LOS impacts to the study area intersections. Because Alternative B proposes lowering of the railroad tracks to remove the existing at-grade crossings, vehicle delay associated with gate down time under Alternative A would effectively be eliminated with Alternative B. Motorist safety would be no worse and may be enhanced through standard construction design and elimination of the existing at-grade crossings.

Transit, Bicycle, and Pedestrian Facilities. Each OCG Build Alternative plans for the construction of some concept of grade separation of the BNSF railroad. These grade separations, whether by railroad lowering or arterial overcrossings and undercrossings, would reconstruct the crossing roadways to their ultimate MPAH cross sections. This ultimate configuration includes the provision of Class II bicycle lanes and right-of-way for Class I bicycle trails where indicated in the applicable County or municipal General Plans. Existing sidewalks on the arterials would be replaced as part of Alternative B. In addition, the greenbelt area adjacent to the trench, shown on Appendix A, would include pedestrian and bicycle facilities as practical.

As the ultimate roadway cross sections would be provided, transit and school bus routes and route selection would not be precluded with implementation of the OCG project under Alternative B. While the routes, stops, and service frequencies of transit service change regularly and can change

Table 3.6-F: Year 2030 Intersection Level of Service Summary, Alternative B

	Jurisdiction/Intersection	Year 2030							
		AM	LOS	Delay	LOS	PM	LOS	Delay	LOS
	Fullerton								
1	State College and Yorba Linda	.97	E			1.22	F		
2	State College and Nutwood	.76	C			.85	D		
3	State College and Chapman	.89	D			1.07	F		
4	State College and Commonwealth	.96	E			.92	E		
5	***State College and Orangethorpe***	1.04	F			1.24	F		
10	Associated Rd. and Yorba Linda	.83	D			.70	B		
11	Nutwood and Commonwealth	.43	A			.50	A		
12	Chapman and Commonwealth	.56	A			.76	C		
13	SR-57 SB and Yorba Linda			19.7	B			22.8	C
14	SR-57 NB and Yorba Linda			23.1	C			21.9	C
15	SR-57 SB and Nutwood			27.3	C			21.5	C
16	SR-57 NB and Nutwood			33.5	C			21.8	C
17	SR-57 SB and Chapman			16.8	B			14.5	B
18	SR-57 NB and Chapman			20.5	C			24.3	C
21	Placentia and Yorba Linda	.97	E			1.03	F		
22	Placentia and Madison	.61	B			.68	B		
	Placentia								
19	***SR-57 SB and Orangethorpe***			26.2	C			23.4	C
20	***SR-57 NB and Orangethorpe***			>80	F			39.5	D
23	Placentia and Nutwood	.82	D			.73	C		
24	Placentia and Chapman	.85	D			.99	E		
25	Placentia and Crowther	.49	A			.64	B		
26	Placentia and Orangethorpe	.81	D			1.07	F		
28	Bradford and Yorba Linda	.61	B			.81	D		
29	Bradford and Madison			29.1	D			>50	F
30	Bradford and Chapman	.76	C			.71	C		
31	Bradford and Crowther			26.1	D			18.9	C
32	Melrose and Crowther			15.6	C			19.0	C
33	Melrose and Orangethorpe	.64	B			.87	D		
36	Kraemer and Yorba Linda	1.00	E			1.00	E		
37	Kraemer and Madison	.80	C			.68	B		
38	Kraemer and Alta Vista	.80	C			.84	D		
39	Kraemer and Chapman	.81	D			.86	D		
46	Palm Dr. and Yorba Linda	.45	A			.45	A		
47	Valencia and Yorba Linda	.67	B			.46	A		
48	Valencia and Palm Dr.			25.5	D			24.9	C
53	Tustin and Yorba Linda	.66	B			.76	C		
54	Tustin and Palm Dr.	.92	E			.69	B		
55	Tustin and Buena Vista	.84	D			.86	D		

Table 3.6-F: Year 2030 Intersection Level of Service Summary, Alternative B

	Jurisdiction/Intersection	Year 2030							
		AM	LOS	Delay	LOS	PM	LOS	Delay	LOS
	Placentia (cont'd)								
56	Tustin and Alta Vista	.98	E			.88	D		
57	***Rose/Tustin and Orangethorpe***	.93	E			.85	D		
63	Jefferson and Alta Vista	.41	A			.36	A		
64	Jefferson and Orangethorpe	.54	A			.52	A		
69	Richfield and Orangethorpe	.71	C			.75	C		
74	Lakeview and Miraloma			>50	F			>50	F
88	Van Buren and Buena Vista			26.7	D			41.6	E
89	Van Buren and Alta Vista	.64	B			.52	A		
90	Van Buren and Orchard Dr.			12.3	B			11.9	B
91	Van Buren and Orangethorpe	.65	B			.62	B		
92	Van Buren and Miraloma			22.2	C			34.7	D
94	Richfield and Orchard Dr.			22.5	C			46.5	E
95	Lakeview and Orchard Dr.			>50	F			10.6	B
	Anaheim								
6	***State College and SR-91 WB***			22.2	C			34.5	C
7	***State College and SR-91 EB***			24.6	C			35.0	C
8	State College and Placentia	.68	B			.96	E		
9	State College and La Palma	.72	C			.98	E		
27	Miraloma and La Palma	1.14	F			1.00	E		
34	Melrose and Miraloma	.42	A			.61	B		
35	Melrose and La Palma	.51	A			.80	C		
40	Kraemer and Crowther	.66	B			.77	C		
41	Kraemer and Orangethorpe	.83	D			.76	C		
42	Kraemer and Miraloma	.65	B			.78	C		
43	Kraemer and La Palma	.76	C			1.22	F		
44	Kraemer and SR-91 WB			23.6	C			22.6	C
45	Glassell and SR-91 EB			>50	F			>50	F
49	Miller and Orangethorpe	.44	A			.53	A		
50	Miller St. and Miraloma	.59	A			.59	A		
51	Miller St. and La Palma	.48	A			.63	B		
52	Chapman and Orangethorpe	.65	B			.55	A		
58	Tustin and Miraloma	.86	D			.73	C		
59	Tustin and Jefferson			>50	F			>50	F
60	Tustin and La Palma	1.01	F			1.09	F		
61	***Tustin and SR-91 WB***			31.6	C			21.2	C
62	***Tustin and SR-91 EB***			49.7	D			33.1	C
65	Jefferson and Miraloma			18.2	C			17.5	C
70	Richfield and Miraloma			>50	F			>50	F
71	Richfield and La Palma	.45	A			.56	A		

Table 3.6-F: Year 2030 Intersection Level of Service Summary, Alternative B

	Jurisdiction/Intersection	Year 2030 AM	LOS	Delay	LOS	PM	LOS	Delay	LOS
	Anaheim (cont'd)								
73	Lakeview and Orangethorpe	.89	D			.91	E		
75	Lakeview and La Palma	.61	B			.81	D		
76	Lakeview and SR-91 WB			26.3	C			11.3	B
77	Lakeview and SR-91 EB			17.3	B			17.9	B
78	N. Kellogg and Orangethorpe	.55	A			.62	B		
79	S. Kellogg and Orangethorpe	.61	B			.68	B		
80	S. Kellogg and La Palma	.53	A			.67	B		
83	N. Kellogg and Imperial SB			> 50	F			> 50	F
84	N. Kellogg and Imperial NB	.57	A			.35	A		
85a	Imperial SB and Orangethorpe			21.8	C			21.9	C
85b	Imperial NB and Orangethorpe			9.1	A			16.2	B
86	Imperial Hwy. and La Palma	1.16	F			1.04	F		
93	Van Buren and La Palma	.51	A			.55	A		
96	Glenview and Orangethorpe			43.3	E			26.9	D
97	Holbrook and Orangethorpe			24.7	C			18.1	C
98	N. Kellogg and Glenview	.60	A			.30	A		
99	N. Kellogg and Holbrook			> 50	F			> 50	F
100	***Imperial Hwy and SR-91 WB***			22.1	C			18.5	B
101	***Imperial Hwy and SR-91 EB***			13.9	B			21.9	C
	Yorba Linda								
66	Valley View and Yorba Linda	.46	A			.61	B		
67	Richfield and Yorba Linda	.35	A			.53	A		
68	Richfield and Buena Vista			22.1	C			21.0	C
72	Lakeview and Buena Vista			56.2	F			27.8	D
81	Imperial Hwy. and Yorba Linda	.54	A			.84	D		
87	Van Buren and Yorba Linda	.34	A			.45	A		

Source: *Traffic Impact Analysis* (LSA Associates, Inc., October 2007).

Notes:

- Grey shading denotes intersections that exceed performance criteria (LOS D for all non-CMP intersections, and LOS E for all CMP intersections).
- CMP intersections are shown ***in bold italic font.***
- Delay calculations and LOS are presented for unsignalized intersections and Caltrans ramp intersections in the study area. All other calculations for signalized intersections use the ICU/LOS methodology. Delay is expressed in average seconds of delay per vehicle.

Table 3.6-G: Lakeview Avenue/Orangethorpe Avenue Level of Service Summary

Alternative	AM Peak Hour	PM Peak Hour
No Build	0.99 (LOS E)	0.98 (LOS E)
Alternative B	0.89 (LOS D)	0.91 (LOS E)

Source: *Traffic Impact Analysis* (LSA Associates, Inc., October 2007).

regularly for school bus services and, therefore, cannot be anticipated for the year 2030, transit services and school bus services should not be adversely affected under Alternative B. In fact, Alternative B has the potential to improve transit and school bus performance by reducing delays and making headways more reliable by reducing the influence of rail activity on vehicular traffic on intersecting streets along the Orangethorpe corridor.

With the ultimate roadway and rights-of-way provided under Alternative B, bicycle and pedestrian travel would be supported within the corridor. Bicyclists and pedestrians would not have to cross the rail lines at grade; therefore, safety would be improved over the rail lines. Alternative B would not create adverse impacts for bicyclists or pedestrians but would potentially improve safety and mobility for these alternate modes.

Indirect Impacts. There would be no indirect traffic impacts associated with Alternative B.

Alternative C

The transportation impacts analysis prepared for Alternative C includes the forecasted growth in traffic to the year 2030, the additional capacity afforded by the MPAH through lanes at the study area intersections, and grade separations at all arterials from Bradford Avenue to west of Kellogg Drive as defined in the project description for Alternative C (Section 2.0). All north-south arterial crossings from Kraemer Boulevard to west of Lakeview Avenue are in the Alternative C grade separation configuration. Lakeview Avenue would be constructed as a bridge overcrossing of the railway corridor. For this analysis, Kellogg Drive was assumed to remain as an at-grade crossing.

Direct Impacts. No direct traffic impacts for Alternative C have been identified. Figure 3.6-11 illustrates the future year 2030 Alternative C daily traffic volumes along each study area roadway. No change in daily traffic is forecasted with implementation of Alternative C compared to Alternative A. To determine whether Alternative C would increase the overall demand on north-south arterials along the project corridor, a V/C analysis for the project corridor was completed for Alternative C, similar to Alternatives A and B. Compared to Alternative A, Alternative C is not forecasted to result in any change in demand at each of the crossings. Each crossing, and the entire north-south corridor, is forecasted to provide adequate lane capacity to accommodate the forecasted 2030 daily volume under Alternative C. In Alternative C, delay to vehicular traffic would be eliminated due to the grade separation of the cross streets and the rail line.

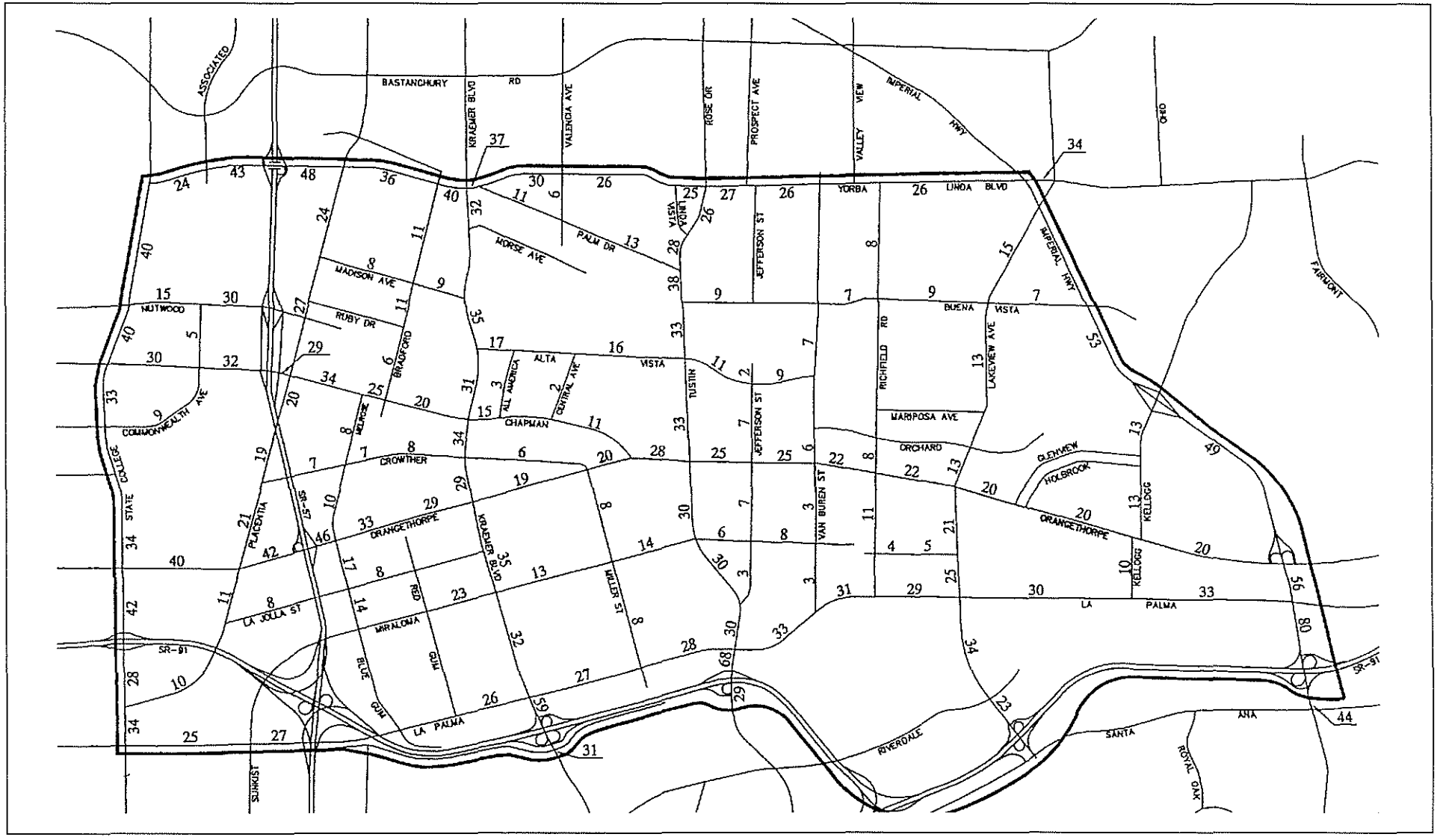


FIGURE 3.6.11

LEGEND

25 AVERAGE DAILY TRAFFIC VOLUMES (THOUSANDS)

STUDY AREA BOUNDARY

PROJECT LIMITS

N

NO SCALE

Orange County Gateway

Alternative C

2030 Daily Traffic Volumes

SOURCE: Austin Foust Associates, Inc., May 3, 2002

I: OTG130 G Traffic ADT - Alt C.cdr (9/19/05)

Peak-hour intersection turn movements were forecasted for the year 2030 Alternative C and analyzed using the ICU and HCM methodologies. Table 3.6-H presents the results of the 2030 Alternative C intersection analysis. As shown in Table 3.6-H, with Alternative C, the 28 study area intersections that are forecasted to operate with unsatisfactory LOS under Alternative A would also operate with unsatisfactory LOS under Alternative C, with exception of Lakeview Avenue/Orangethorpe Avenue. Construction of a standard grade separation at this location would result in this intersection operating with a satisfactory LOS in Alternative C.

When compared to Alternative A, the rail lowering under the Alternative C configuration would not result in any direct LOS impacts to the study area intersections. Because Alternative C proposes lowering of the railroad tracks to remove the existing at-grade crossings, vehicle delay associated with gate down time under Alternative A would be eliminated with Alternative C. Motorist safety would be no worse and may be improved through standard construction design and elimination of the existing at-grade crossings.

Transit, Bicycle, and Pedestrian Facilities. Alternative C would have similar effects on transit, bicycle, and pedestrian facilities as Alternative B. Refer to the discussion of transit, bicycle, and pedestrian facilities and potential impacts of the OCG project on those facilities provided earlier under Alternative B.

Indirect Impacts. There would be no indirect traffic impacts associated with Alternative C.

Alternative D

The transportation impacts analysis prepared for Alternative D includes the forecasted growth in traffic to the year 2030, the additional capacity afforded by the MPAH through lanes at the study area intersections and standard grade separations at all arterials as defined in the project description for Alternative D. All north-south arterial crossings from Kraemer Boulevard to Kellogg Drive would be constructed as grade separations with at-grade intersections in an interchange configuration at Orangethorpe Avenue. This alternative creates more intersections than Alternatives B and C and, as a result, has a greater possibility of adversely affecting delay along the corridor.

Figure 3.6-12 illustrates the future year 2030 Alternative D daily traffic volumes along each study area roadway. No change in daily traffic is forecasted with Alternative D as compared to Alternative A. To determine whether Alternative D would increase the overall demand on north-south arterials along the project corridor, a V/C analysis for the project corridor was completed for Alternative D, similar to Alternatives A, B, and C. Compared to Alternative A, Alternative D is not forecasted to result in any change in demand at each of the crossings. Each crossing, and the entire north-south corridor, is forecasted to provide adequate lane capacity to accommodate the year 2030 daily volume. The issue of delay at rail/street crossings would be eliminated in this Alternative due to the grade separations provided at these intersections under Alternative D.

Peak-hour intersection turn movements were forecasted for Alternative D using year 2030 data and analyzed using the ICU and HCM methodologies. Table 3.6-I presents the results of the year 2030

Table 3.6-H: Year 2030 Intersection Level of Service Summary, Alternative C

	Jurisdiction/Intersection	Year 2030							
		AM	LOS	Delay	LOS	PM	LOS	Delay	LOS
	Fullerton								
1	State College and Yorba Linda	.97	E			1.22	F		
2	State College and Nutwood	.76	C			.85	D		
3	State College and Chapman	.89	D			1.07	F		
4	State College and Commonwealth	.96	E			.92	E		
5	***State College and Orangethorpe***	1.04	F			1.24	F		
10	Associated Rd. and Yorba Linda	.83	D			.70	B		
11	Nutwood and Commonwealth	.43	A			.50	A		
12	Chapman and Commonwealth	.56	A			.76	C		
13	SR-57 SB and Yorba Linda			19.7	B			22.8	C
14	SR-57 NB and Yorba Linda			23.1	C			21.9	C
15	SR-57 SB and Nutwood			27.3	C			21.5	C
16	SR-57 NB and Nutwood			33.5	C			21.8	C
17	SR-57 SB and Chapman			16.8	B			14.5	B
18	SR-57 NB and Chapman			20.5	C			24.3	C
21	Placentia and Yorba Linda	.97	E			1.03	F		
22	Placentia and Madison	.61	B			.68	B		
	Placentia								
19	***SR-57 SB and Orangethorpe***			26.2	C			23.4	C
20	***SR-57 NB and Orangethorpe***			> 80	F			39.5	D
23	Placentia and Nutwood	.82	D			.73	C		
24	Placentia and Chapman	.85	D			.99	E		
25	Placentia and Crowther	.49	A			.64	B		
26	Placentia and Orangethorpe	.81	D			1.07	F		
28	Bradford and Yorba Linda	.61	B			.81	D		
29	Bradford and Madison			29.1	D			> 50	F
30	Bradford and Chapman	.76	C			.71	C		
31	Bradford and Crowther			26.1	D			18.9	C
32	Melrose and Crowther			15.6	C			19.0	C
33	Melrose and Orangethorpe	.64	B			.87	D		
36	Kraemer and Yorba Linda	1.00	E			1.00	E		
37	Kraemer and Madison	.80	C			.68	B		
38	Kraemer and Alta Vista	.80	C			.84	D		
39	Kraemer and Chapman	.81	D			.86	D		
46	Palm Dr. and Yorba Linda	.45	A			.45	A		
47	Valencia and Yorba Linda	.67	B			.46	A		
48	Valencia and Palm Dr.			25.5	D			24.9	C
53	Tustin and Yorba Linda	.66	B			.76	C		
54	Tustin and Palm Dr.	.92	E			.69	B		
55	Tustin and Buena Vista	.84	D			.86	D		

Table 3.6-H: Year 2030 Intersection Level of Service Summary, Alternative C

	Jurisdiction/Intersection	Year 2030							
		AM	LOS	Delay	LOS	PM	LOS	Delay	LOS
	Placentia (cont'd)								
56	Tustin and Alta Vista	.98	E			.88	D		
57	***Rose/Tustin and Orangethorpe***	.93	E			.85	D		
63	Jefferson and Alta Vista	.41	A			.36	A		
64	Jefferson and Orangethorpe	.54	A			.52	A		
69	Richfield and Orangethorpe	.71	C			.75	C		
74	Lakeview and Miraloma			> 50	F			> 50	F
88	Van Buren and Buena Vista			26.7	D			41.6	E
89	Van Buren and Alta Vista	.64	B			.52	A		
90	Van Buren and Orchard Dr.			12.3	B			11.9	B
91	Van Buren and Orangethorpe	.65	B			.62	B		
92	Van Buren and Miraloma			22.2	C			34.7	D
94	Richfield and Orchard Dr.			22.5	C			46.5	E
95	Lakeview and Orchard Dr.			> 50	F			10.6	B
	Anaheim								
6	***State College and SR-91 WB***			22.2	C			34.5	C
7	***State College and SR-91 EB***			24.6	C			35.0	C
8	State College and Placentia	.68	B			.96	E		
9	State College and La Palma	.72	C			.98	E		
27	Miraloma and La Palma	1.14	F			1.00	E		
34	Melrose and Miraloma	.42	A			.61	B		
35	Melrose and La Palma	.51	A			.80	C		
40	Kraemer and Crowther	.66	B			.77	C		
41	Kraemer and Orangethorpe	.83	D			.76	C		
42	Kraemer and Miraloma	.65	B			.78	C		
43	Kraemer and La Palma	.76	C			1.22	F		
44	Kraemer and SR-91 WB			23.6	C			22.6	C
45	Glassell and SR-91 EB			> 50	F			> 50	F
49	Miller and Orangethorpe	.44	A			.53	A		
50	Miller St. and Miraloma	.59	A			.59	A		
51	Miller St. and La Palma	.48	A			.63	B		
52	Chapman and Orangethorpe	.65	B			.55	A		
58	Tustin and Miraloma	.86	D			.73	C		
59	Tustin and Jefferson			> 50	F			> 50	F
60	Tustin and La Palma	1.01	F			1.09	F		
61	***Tustin and SR-91 WB***			31.6	C			21.2	C
62	***Tustin and SR-91 EB***			49.7	D			33.1	C
65	Jefferson and Miraloma			18.2	C			17.5	C
70	Richfield and Miraloma			76.6	F			> 50	F

Table 3.6-H: Year 2030 Intersection Level of Service Summary, Alternative C

	Jurisdiction/Intersection	Year 2030 AM	LOS	Delay	LOS	PM	LOS	Delay	LOS
	Anaheim (cont'd)								
71	Richfield and La Palma	.45	A			.56	A		
73a	Lakeview (SB) and Orangethorpe	.70	B			.51	A		
73b	Lakeview (NB) and Orangethorpe	.52	A			.78	C		
75	Lakeview and La Palma	.61	B			.81	D		
76	Lakeview and SR-91 WB			26.3	C			11.3	B
77	Lakeview and SR-91 EB			17.3	B			17.9	B
78	N. Kellogg and Orangethorpe	.61	B			.68	B		
79	S. Kellogg and Orangethorpe	.55	A			.62	B		
80	S. Kellogg and La Palma	.53	A			.67	B		
83	N. Kellogg and Imperial SB			> 50	F			> 50	F
84	N. Kellogg and Imperial NB	.57	A			.35	A		
85a	Imperial SB and Orangethorpe			21.8	C			21.9	C
85b	Imperial NB and Orangethorpe			9.1	A			16.2	B
86	Imperial Hwy. and La Palma	1.16	F			1.04	F		
93	Van Buren and La Palma	.51	A			.55	A		
96	Glenview and Orangethorpe			43.3	E			26.9	D
97	Holbrook and Orangethorpe			24.7	C			18.1	C
98	N. Kellogg and Glenview	.60	A			.30	A		
99	N. Kellogg and Holbrook			> 50	F			> 50	F
100	***Imperial Hwy and SR-91 WB***			22.1	C			18.5	B
101	***Imperial Hwy and SR-91 EB***			13.9	B			21.9	C
	Yorba Linda								
66	Valley View and Yorba Linda	.46	A			.61	B		
67	Richfield and Yorba Linda	.35	A			.53	A		
68	Richfield and Buena Vista			22.1	C			21.0	C
72	Lakeview and Buena Vista			56.2	F			27.8	D
81	Imperial Hwy. and Yorba Linda	.54	A			.84	D		
87	Van Buren and Yorba Linda	.34	A			.45	A		

Source: *Traffic Impact Analysis* (LSA Associates, Inc., October 2007).

Notes:

- Grey shading denotes intersections that exceed performance criteria (LOS D for all non-CMP intersections, and LOS E for all CMP intersections).
- CMP intersections are shown ***in bold italic font.***
- Delay calculations and LOS are presented for unsignalized intersections and Caltrans ramp intersections in the study area. All other calculations for signalized intersections use the ICU/LOS methodology. Delay is expressed in average seconds of delay per vehicle.

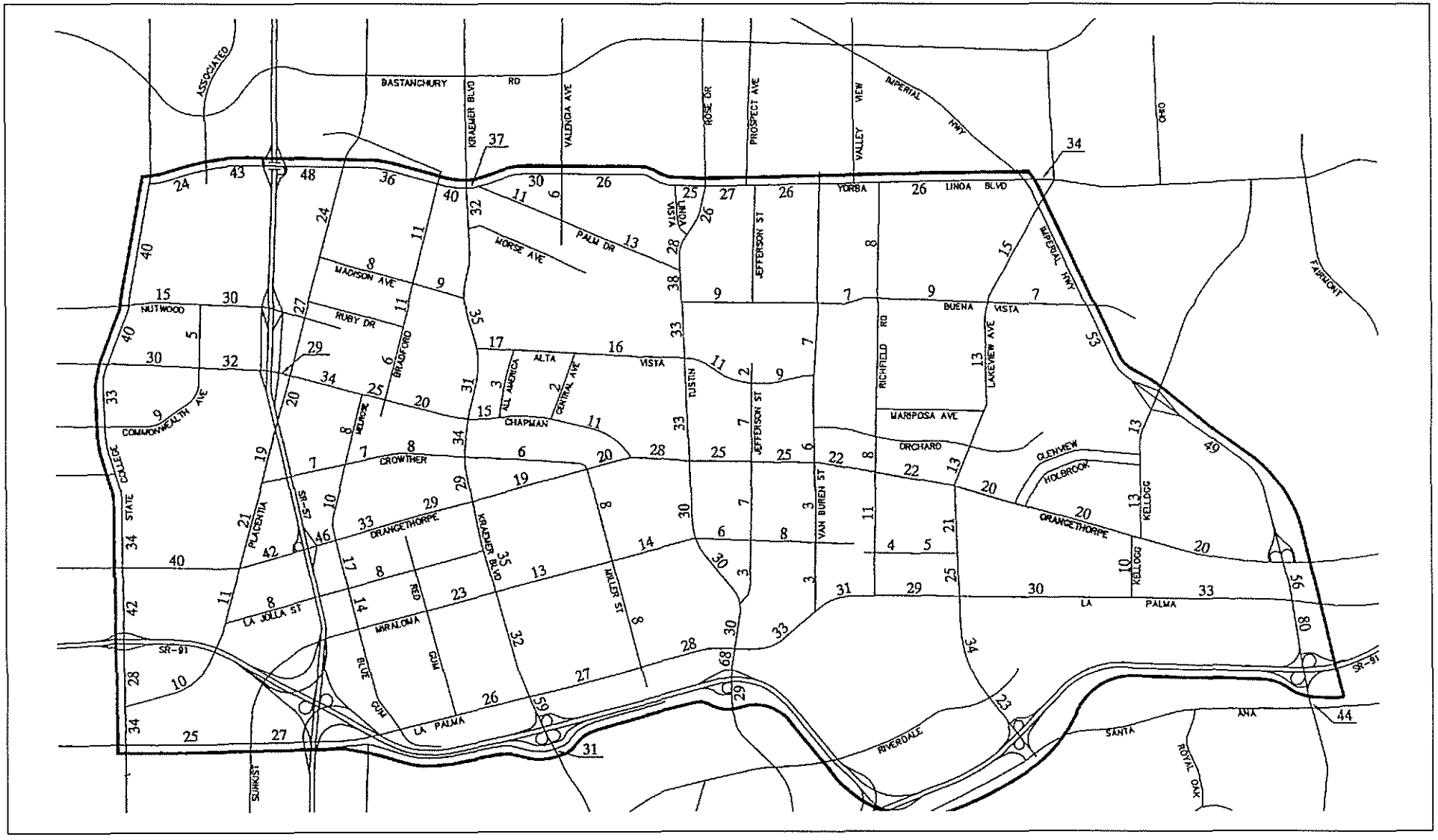


FIGURE 3.6.12

LEGEND

25 AVERAGE DAILY TRAFFIC VOLUMES (THOUSANDS)

STUDY AREA BOUNDARY

PROJECT LIMITS

NO SCALE

Orange County Gateway

Alternative D

2030 Daily Traffic Volumes

SOURCE: Austin Foust Associates, Inc., May 3, 2002

I: OTG130 G Traffic ADT - Alt D.cdr (9/19/05)

Table 3.6-I: Year 2030 Intersection Level of Service Summary, Alternative D

	Jurisdiction/Intersection	Year 2030							
		AM	LOS	Delay	LOS	PM	LOS	Delay	LOS
	Fullerton								
1	State College and Yorba Linda	.97	E			1.22	F		
2	State College and Nutwood	.76	C			.85	D		
3	State College and Chapman	.89	D			1.07	F		
4	State College and Commonwealth	.96	E			.92	E		
5	***State College and Orangethorpe***	1.04	F			1.24	F		
10	Associated Rd. and Yorba Linda	.83	D			.70	B		
11	Nutwood and Commonwealth	.43	A			.50	A		
12	Chapman and Commonwealth	.56	A			.76	C		
13	SR-57 SB and Yorba Linda			19.7	B			22.8	C
14	SR-57 NB and Yorba Linda			23.1	C			21.9	C
15	SR-57 SB and Nutwood			27.3	C			21.5	C
16	SR-57 NB and Nutwood			33.5	C			21.8	C
17	SR-57 SB and Chapman			16.8	B			14.5	B
18	SR-57 NB and Chapman			20.5	C			24.3	C
21	Placentia and Yorba Linda	.97	E			1.03	F		
22	Placentia and Madison	.61	B			.68	B		
	Placentia								
19	***SR-57 SB and Orangethorpe***			26.2	C			23.4	C
20	***SR-57 NB and Orangethorpe***			>80	F			39.5	D
23	Placentia and Nutwood	.82	D			.73	C		
24	Placentia and Chapman	.85	D			.99	E		
25	Placentia and Crowther	.49	A			.64	B		
26	Placentia and Orangethorpe	.81	D			1.07	F		
28	Bradford and Yorba Linda	.61	B			.81	D		
29	Bradford and Madison			29.1	D			>50	F
30	Bradford and Chapman	.76	C			.71	C		
31	Bradford and Crowther			26.1	D			18.9	C
32	Melrose and Crowther			15.6	C			19.0	C
33	Melrose and Orangethorpe	.64	B			.87	D		
36	Kraemer and Yorba Linda	1.00	E			1.00	E		
37	Kraemer and Madison	.80	C			.68	B		
38	Kraemer and Alta Vista	.80	C			.84	D		
39	Kraemer and Chapman	.81	D			.86	D		
46	Palm Dr. and Yorba Linda	.45	A			.45	A		
47	Valencia and Yorba Linda	.67	B			.46	A		
48	Valencia and Palm Dr.			25.5	D			24.9	C
53	Tustin and Yorba Linda	.66	B			.76	C		
54	Tustin and Palm Dr.	.92	E			.69	B		
55	Tustin and Buena Vista	.84	D			.86	D		

Table 3.6-I: Year 2030 Intersection Level of Service Summary, Alternative D

	Jurisdiction/Intersection	Year 2030							
		AM	LOS	Delay	LOS	PM	LOS	Delay	LOS
	Placentia (cont'd)								
56	Tustin and Alta Vista	.98	E			.88	D		
57a	***Rose/Tustin and Orangethorpe***	.94	E			.77	C		
57b	***Rose/Tustin and Orangethorpe***	.99	E			1.03	F		
63	Jefferson and Alta Vista	.41	A			.36	A		
64a	Jefferson and Orangethorpe	.64	B			.46	A		
64b	Jefferson and Orangethorpe	.50	A			.41	A		
69a	Richfield and Orangethorpe	.88	D			.75	C		
69b	Richfield and Orangethorpe	.78	C			.66	B		
74	Lakeview and Miraloma			>50	F			>50	F
88	Van Buren and Buena Vista			26.7	D			41.6	E
89	Van Buren and Alta Vista	.64	B			.52	A		
90	Van Buren and Orchard Dr.			12.3	B			11.9	B
91	Van Buren and Orangethorpe	.70	B			.47	A		
92	Van Buren and Miraloma			22.2	C			34.7	D
94	Richfield and Orchard Dr.			22.5	C			46.5	E
95	Lakeview and Orchard Dr.			>50	F			10.6	B
	Anaheim								
6	***State College and SR-91 WB***			22.2	C			34.5	C
7	***State College and SR-91 EB***			24.6	C			35.0	C
8	State College and Placentia	.68	B			.96	E		
9	State College and La Palma	.72	C			.98	E		
27	Miraloma and La Palma	1.14	F			1.00	E		
34	Melrose and Miraloma	.42	A			.61	B		
35	Melrose and La Palma	.51	A			.80	C		
40	Kraemer and Crowther	.66	B			.77	C		
41	Kraemer and Orangethorpe	.83	D			.76	C		
42	Kraemer and Miraloma	.65	B			.78	C		
43	Kraemer and La Palma	.76	C			1.22	F		
44	Kraemer and SR-91 WB			23.6	C			22.6	C
45	Glassell and SR-91 EB			>50	F			>50	F
49	Miller and Orangethorpe	.54	A			.78	C		
50	Miller St. and Miraloma	.59	A			.59	A		
51	Miller St. and La Palma	.48	A			.63	B		
52	Chapman and Orangethorpe	.65	B			.55	A		
58	Tustin and Miraloma	.86	D			.73	C		
59	Tustin and Jefferson			>50	F			>50	F
60	Tustin and La Palma	1.01	F			1.09	F		
61	***Tustin and SR-91 WB***			31.6	C			21.2	C
62	***Tustin and SR-91 EB***			49.7	D			33.1	C

Table 3.6-I: Year 2030 Intersection Level of Service Summary, Alternative D

	Jurisdiction/Intersection	Year 2030							
		AM	LOS	Delay	LOS	PM	LOS	Delay	LOS
	Anaheim (cont'd)								
65	Jefferson and Miraloma			18.2	C			17.5	C
70	Richfield and Miraloma			>50	F			>50	F
71	Richfield and La Palma	.45	A			.56	A		
73a	Lakeview and Orangethorpe	.70	B			.51	A		
73b	Lakeview and Orangethorpe	.52	A			.78	C		
75	Lakeview and La Palma	.61	B			.81	D		
76	Lakeview and SR-91 WB			26.3	C			11.3	B
77	Lakeview and SR-91 EB			17.3	B			17.9	B
78a	Kellogg and Orangethorpe	.70	B			.66	B		
78b	Kellogg and Orangethorpe	.66	B			.76	C		
80	S. Kellogg and La Palma	.53	A			.67	B		
83	N. Kellogg and Imperial SB			>50	F			>50	F
84	N. Kellogg and Imperial NB	.57	A			.35	A		
85a	Imperial SB and Orangethorpe			21.8	C			21.9	C
85b	Imperial NB and Orangethorpe			9.1	A			16.2	B
86	Imperial Hwy. and La Palma	1.16	F			1.04	F		
93	Van Buren and La Palma	.51	A			.55	A		
96	Glenview and Orangethorpe			43.3	E			26.9	D
97	Holbrook and Orangethorpe			24.7	C			18.1	C
98	N. Kellogg and Glenview	.60	A			.30	A		
99	N. Kellogg and Holbrook			>50	F			>50	F
100	***Imperial Hwy. and SR-91 WB***			22.1	C			18.5	B
101	***Imperial Hwy. and SR-91 EB***			13.9	B			21.9	C
	Yorba Linda								
66	Valley View and Yorba Linda	.46	A			.61	B		
67	Richfield and Yorba Linda	.35	A			.53	A		
68	Richfield and Buena Vista			22.1	C			21.0	C
72	Lakeview and Buena Vista			56.2	F			27.8	D
81	Imperial Hwy. and Yorba Linda	.54	A			.84	D		
87	Van Buren and Yorba Linda	.34	A			.45	A		

Source: *Traffic Impact Analysis* (LSA Associates, Inc., October 2007).

Notes:

- Grey shading denotes intersections that exceed performance criteria (LOS D for all non-CMP intersections, and LOS E for all CMP intersections).
- CMP intersections are shown ***in bold italic font.***
- Delay calculations and LOS are presented for unsignalized intersections and Caltrans ramp intersections in the study area. All other calculations for signalized intersections use the ICU/LOS methodology. Delay is expressed in average seconds of delay per vehicle.

Alternative D intersection analysis. With Alternative D, the 28 study area intersections that are forecasted to operate with unsatisfactory LOS under Alternative A would also operate with unsatisfactory LOS under Alternative D. In addition, Alternative D would result in an unsatisfactory LOS at Richfield Road/Orangethorpe Avenue in the a.m. peak hour, as shown in Table 3.6-I. Mitigation for this adverse impact of Alternative D is presented later in Section 3.6.4.

Transit, Bicycle, and Pedestrian Facilities. Each Build Alternative would have similar effects on transit, bicycle, and pedestrian facilities. Refer to the discussion of transit, bicycle, and pedestrian facilities and potential impacts of the OCG project on those facilities provided earlier under Alternative B. However, unlike Alternatives B and C, Alternative D does not include a greenbelt and, therefore, would not provide pedestrian or bicycle facilities in a greenbelt.

3.6.3.2 Temporary Impacts

Temporary project impacts are defined as those impacts that would occur during the construction of the OCG project. These temporary impacts would not occur before or after the construction effort. The temporary impacts would occur over a phased period, concurrent with the phasing of construction of each OCG Build Alternative. Once construction of the total OCG project is complete, the temporary impacts would cease, and the benefits of the OCG project would be realized.

Delay calculations and LOS are presented for unsignalized intersections and Caltrans ramp intersections in the study area. All other calculations for signalized intersections use the ICU/LOS methodology. Delay is expressed in average seconds of delay per vehicle.

The impacts evaluation criteria used in this analysis include effects due to construction. Where the construction activity would lead to the closure of a roadway or the reduction in travel lanes along a roadway or at an intersection, thus leading to short-term deterioration in LOS, an adverse impact is forecasted to occur. A construction staging plan has been developed for each alternative to represent the proposed construction planning, phasing, and scheduling at a level of detail associated with the current conceptual project engineering.

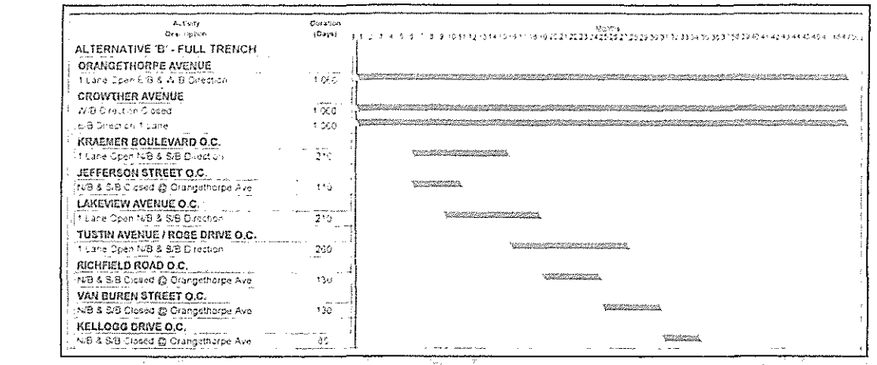
Alternative A

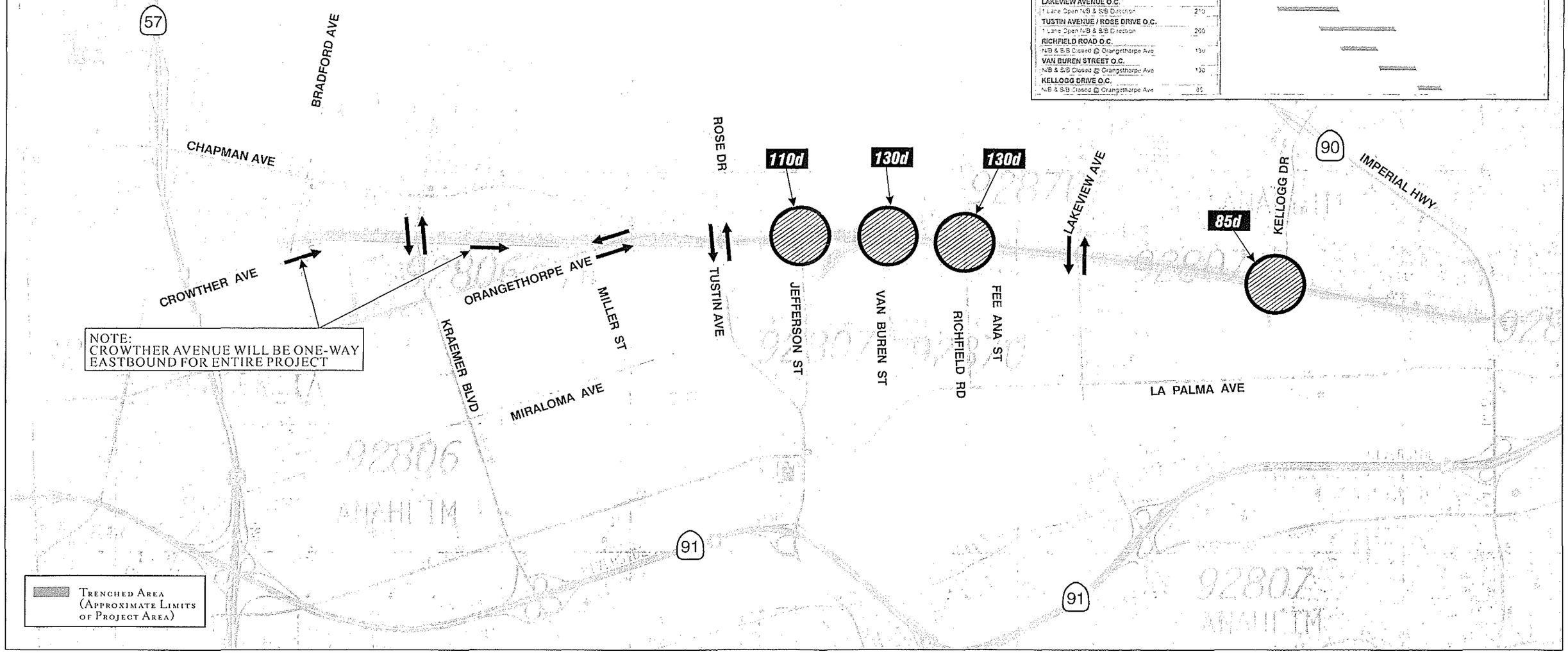
No construction activity would be associated with Alternative A. Therefore, no direct or indirect temporary construction traffic impacts would occur under Alternative A.

Alternative B

The proposed construction staging plan for Alternative B is illustrated in Figure 3.6-13. This preliminary construction staging is based on current project planning and engineering and is subject to refinement during final design if Alternative B is selected for implementation. As shown, construction activity for Alternative B is scheduled for approximately 50 months (or just over four years).

Activity Description	Duration (Days)
ALTERNATIVE 'B' - FULL TRENCH	
ORANGETHORPE AVENUE	
1 Lane Open E/B & W/B Direction	1,000
CROWTHER AVENUE	
W/B Direction Closed	1,000
E/B Direction 1 Lane	1,000
KRAEMER BOULEVARD O.C.	
1 Lane Open N/B & S/B Direction	370
JEFFERSON STREET O.C.	
N/B & S/B Closed @ Orangethorpe Ave	110
LAKEVIEW AVENUE O.C.	
1 Lane Open N/B & S/B Direction	210
TUSTIN AVENUE / ROSE DRIVE O.C.	
1 Lane Open N/B & S/B Direction	260
RICHFIELD ROAD O.C.	
N/B & S/B Closed @ Orangethorpe Ave	130
VAN BUREN STREET O.C.	
N/B & S/B Closed @ Orangethorpe Ave	130
KELLOGG DRIVE O.C.	
N/B & S/B Closed @ Orangethorpe Ave	85





LEGEND

- ONE LANE OPEN EACH DIRECTION AT ALL TIMES
- FULL STREET CLOSURE
- 110d - NUMBER OF WORKING DAYS REQUIRED TO CONSTRUCT

0 1000 2000
FEET

SOURCE: KFM Engineering, May 2002

I:\OTG\130 G Traffic\Const. Staging - Alt B.cdr (4-28-04)

FIGURE 3.6-13

Orange County Gateway
Alternative B
Proposed Construction Staging

Direct Impacts. Roadway closures under Alternative B would result in direct, temporary adverse impacts during project construction at:

1. Jefferson Street
2. Richfield Road
3. Van Buren Street
4. Kellogg Drive

Kraemer Boulevard/Orangethorpe Avenue, Tustin Avenue-Rose Drive/Orangethorpe Avenue, and Lakeview Avenue/Orangethorpe Avenue would provide one open lane in each direction during construction at these crossings. In addition, Orangethorpe Avenue (between Miller Street and Imperial Highway) would provide one open lane in each direction along the entire length of the project for the duration of construction. Crowther Avenue (between Bradford Avenue and Orangethorpe Avenue) would be limited to one lane eastbound during the construction, and westbound traffic would be closed, as shown on Figure 3.6-13.

Figures 3.6-14 through 3.6-17 illustrate the regional and primary alternate travel routes for the four roadway closures. The figures also illustrate the change in daily traffic volumes as a result of each closure, and the intersections that are forecasted to operate at unacceptable LOS (i.e., LOS E or LOS F) for each closure.

In addition, the locations of fire stations and city halls (i.e., police stations) within the OCG study area are shown on these figures. This information is provided to illustrate the potential direction of travel for emergency vehicles within the area. Emergency vehicle response times may be adversely affected based on the lane closures. For the closed crossings, the alternate routes selected provide the safest, shortest routes to get to either side of the closures. However, it is acknowledged that during construction Alternative B would provide only one lane in each direction on Orangethorpe Avenue, Crowther Avenue, Kraemer Boulevard, Tustin Avenue-Rose Drive, and Lakeview Avenue. Depending on the time of day and traffic volume along these corridors, it is possible that emergency vehicles could experience some delay as a result of the individual intersection closures and the lane reductions on area streets.

Indirect Impacts. There would be no indirect temporary adverse traffic impacts under Alternative B.

Alternative C

The proposed construction staging plan for Alternative C is illustrated in Figure 3.6-18. This preliminary construction staging is based on current project planning and engineering and is subject to refinement during final design if Alternative C is selected for implementation. As shown, construction activity for Alternative C is scheduled for approximately 38 months (or just over three years).

Direct Impacts. Four roadway closures under Alternative C would result in direct, temporary adverse impacts during project construction:

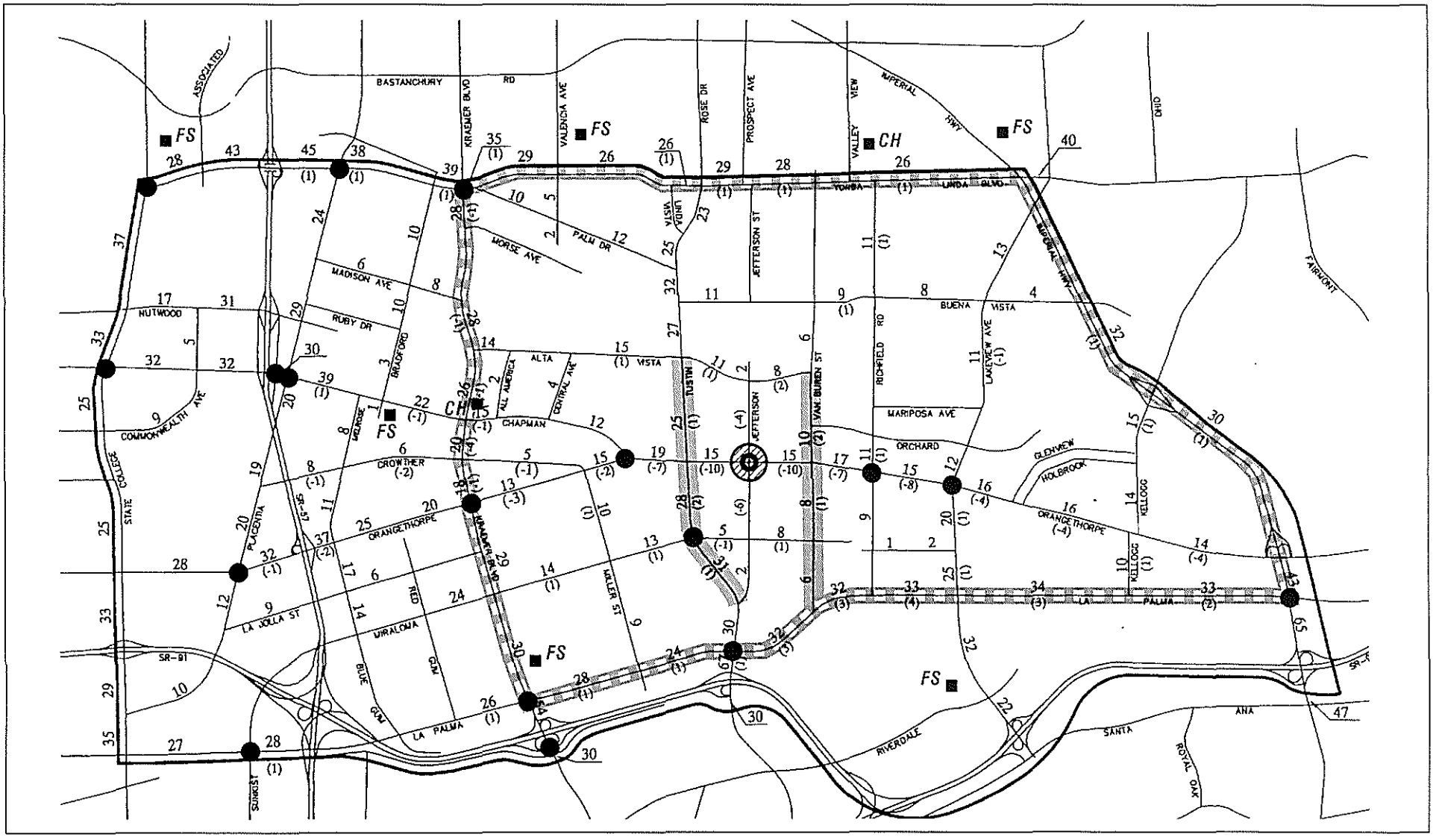


FIGURE 3.6-14

LEGEND

- STUDY AREA BOUNDARY
- INTERSECTION CLOSED FOR CONSTRUCTION
- XX ADT VOLUME (THOUSANDS)
- (YY) CHANGE DUE TO ALTERNATIVE
- LEVEL OF SERVICE E/F INTERSECTION
- REGIONAL ALTERNATE ROUTE
- PRIMARY ALTERNATE ROUTE BY PHASE
- FS FIRE STATION
- CH CITY HALL

NO SCALE

SOURCE: Revised Traffic Impact Analysis (LSA 2004)

I: OTG130 G Traffic Appendix E Alt B-Jefferson.cdr (9/26/05)

Orange County Gateway

Alternatives B and C

Jefferson Street Closure

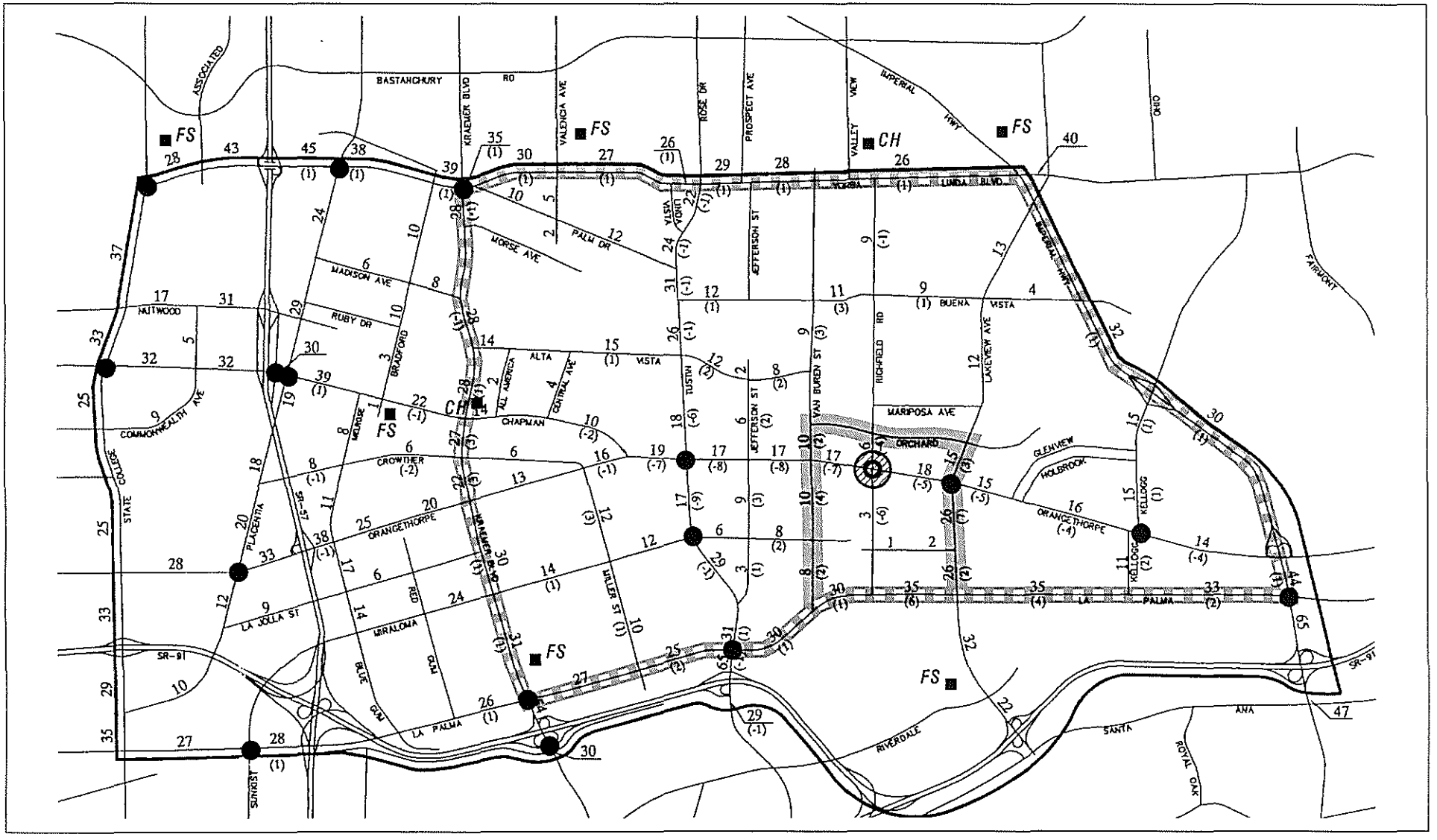


FIGURE 3.6-15

LEGEND

- STUDY AREA BOUNDARY
- INTERSECTION CLOSED FOR CONSTRUCTION
- XX ADT VOLUME (THOUSANDS)
- (YY) CHANGE DUE TO ALTERNATIVE
- LEVEL OF SERVICE E/F INTERSECTION
- REGIONAL ALTERNATE ROUTE
- PRIMARY ALTERNATE ROUTE BY PHASE
- FS FIRE STATION
- CH CITY HALL

NO SCALE

Orange County Gateway

Alternatives B, C, and D

Richfield Road Closure

SOURCE: Revised Traffic Impact Analysis (LSA 2004)

I: OTG130 G Traffic Appendix E Alt B-Richfield.cdr (9/26/05)

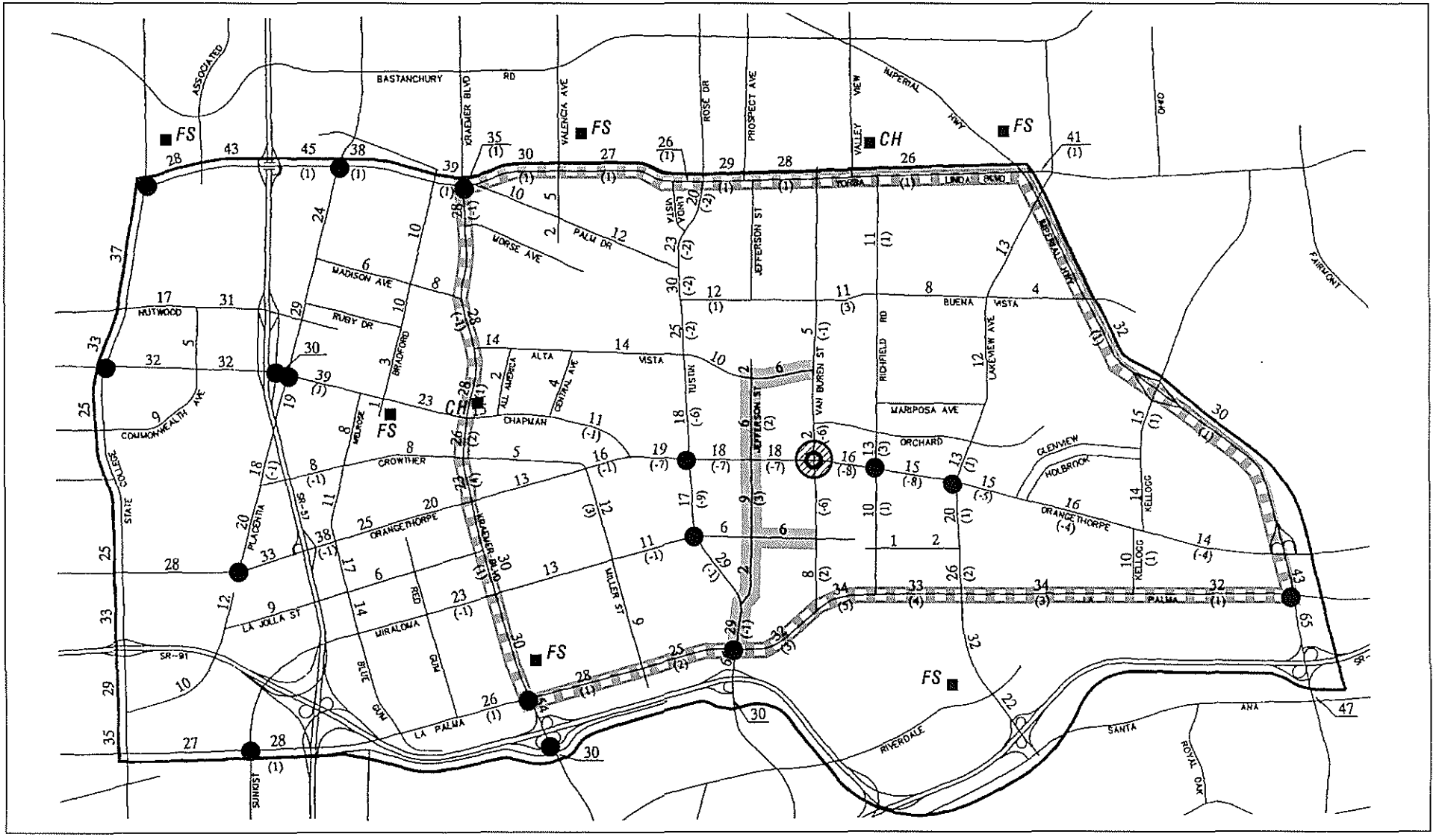


FIGURE 3.6-16

LEGEND

- STUDY AREA BOUNDARY
- INTERSECTION CLOSED FOR CONSTRUCTION
- XX ADT VOLUME (THOUSANDS)
- (YY) CHANGE DUE TO ALTERNATIVE
- LEVEL OF SERVICE E/F INTERSECTION
- REGIONAL ALTERNATE ROUTE
- PRIMARY ALTERNATE ROUTE BY PHASE
- FS FIRE STATION
- CH CITY HALL

NO SCALE

SOURCE: Revised Traffic Impact Analysis (LSA 2004)

I:\OTG130 G Traffic Appendix F Alt B-Van Buren.cdr (9/27/05)

Orange County Gateway

Alternatives B, C, and D

Van Buren Street Closure

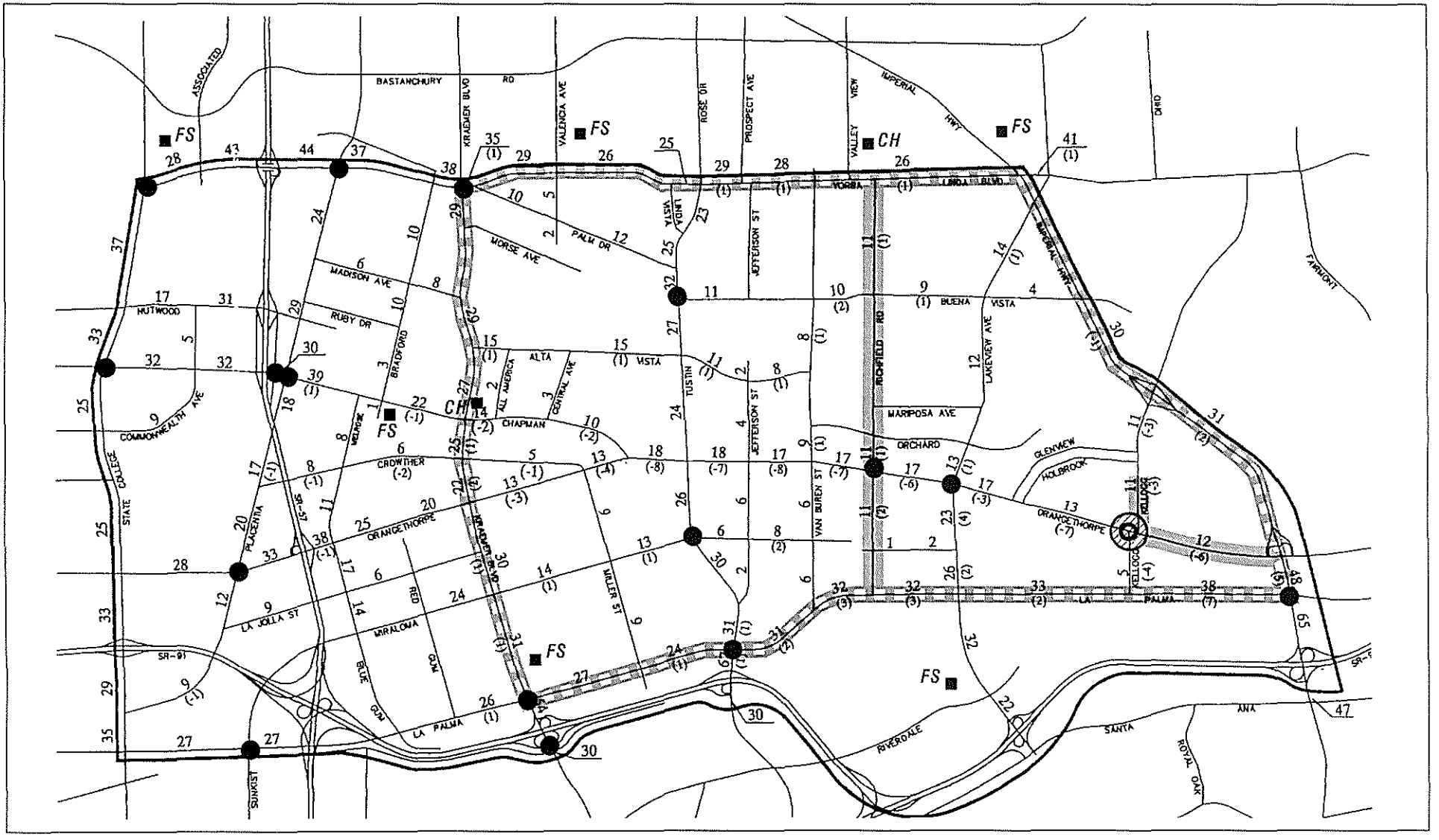


FIGURE 3.6-17

LEGEND

- STUDY AREA BOUNDARY
- INTERSECTION CLOSED FOR CONSTRUCTION
- XX / (YY) ADT VOLUME (THOUSANDS) / CHANGE DUE TO ALTERNATIVE
- LEVEL OF SERVICE E/F INTERSECTION
- REGIONAL ALTERNATE ROUTE
- PRIMARY ALTERNATE ROUTE BY PHASE
- FS FIRE STATION
- CH CITY HALL

NO SCALE

SOURCE: Revised Traffic Impact Analysis (LSA 2004)

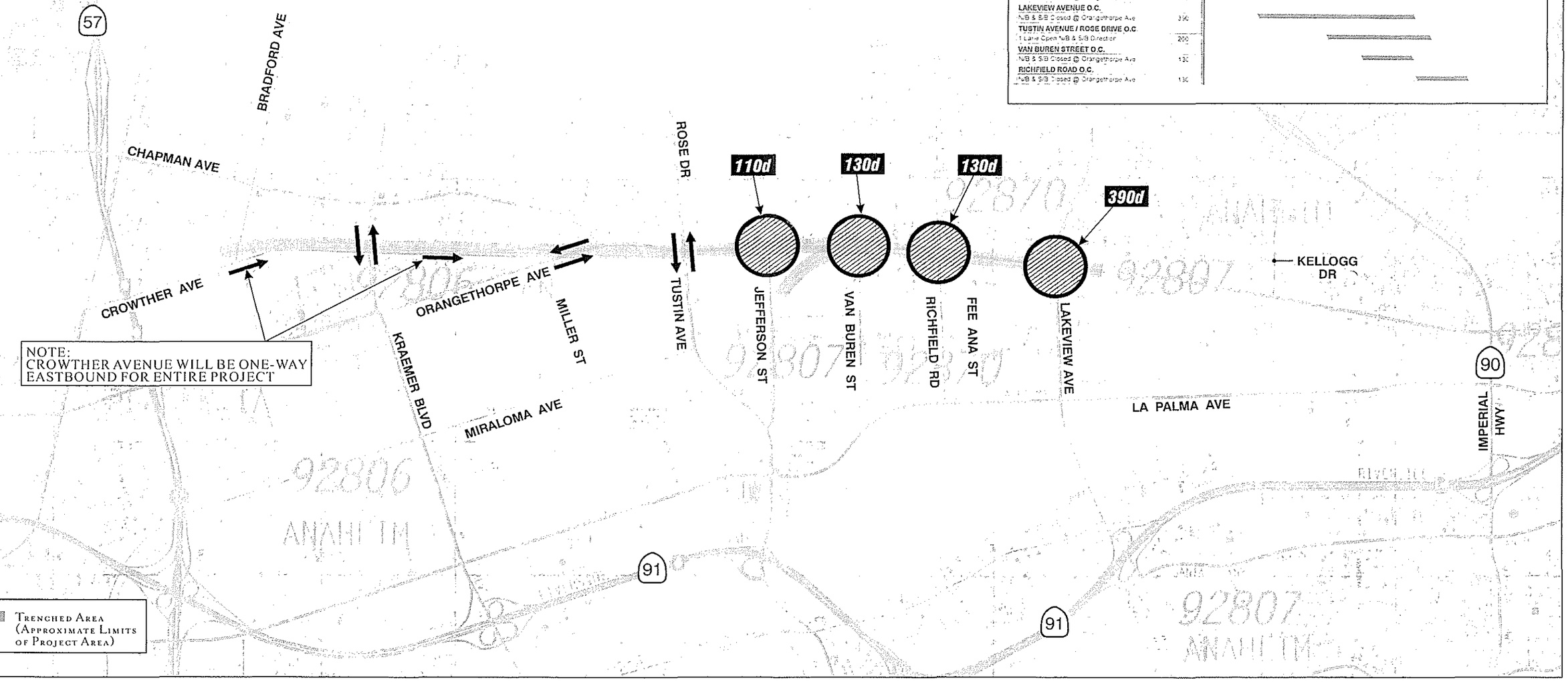
I:\OTG130 G Traffic Appendix E Alt B-Kellogg.cdr (9/26/05)

Orange County Gateway

Alternative B

Kellogg Drive Closure

Activity Description	Duration (Days)
ALTERNATIVE 'C' - PARTIAL TRENCH	
ORANGETHORPE AVENUE	
1 Lane Open E/B & W/B Direction	810
CROWTHER AVENUE	
W/B Direction Closed	600
E/B Direction 1 Lane	810
KRAEMER BOULEVARD O.C.	
1 Lane Open N/B & S/B Direction	210
JEFFERSON STREET O.C.	
N/B & S/B Closed @ Orangethorpe Ave	110
LAKEVIEW AVENUE O.C.	
N/B & S/B Closed @ Orangethorpe Ave	390
TUSTIN AVENUE / ROSE DRIVE O.C.	
1 Lane Open N/B & S/B Direction	200
VAN BUREN STREET O.C.	
N/B & S/B Closed @ Orangethorpe Ave	130
RICHFIELD ROAD O.C.	
N/B & S/B Closed @ Orangethorpe Ave	130



LEGEND

- ONE LANE OPEN EACH DIRECTION AT ALL TIMES
- FULL STREET CLOSURE
- 110d - NUMBER OF WORKING DAYS REQUIRED TO CONSTRUCT

N

0 1000 2000
FEET

SOURCE: KFM Engineering, May 2002

I: OTG130 G Traffic Const. Staging - Alt C.cdr (4 27 04)

FIGURE 3.6-18

Orange County Gateway
Alternative C
Proposed Construction Staging

1. Jefferson Street
2. Van Buren Street
3. Richfield Road
4. Lakeview Avenue

Kraemer Boulevard/Orangethorpe Avenue and Tustin Avenue-Rose Drive/Orangethorpe Avenue would provide one open lane in each direction during construction at these crossings. In addition, Orangethorpe Avenue (between Miller Street and east of Lakeview Avenue) would provide one open lane in each direction along the entire length of the project for the duration of construction. Crowther Avenue (between Bradford Avenue and Orangethorpe Avenue) would be limited to one lane eastbound during the construction, and westbound traffic would be closed as shown on Figure 3.6-18.

Figures 3.6-14 through 3.6-16, provided earlier, illustrate the alternate routes selected for the Jefferson Street, Richfield Road, and Van Buren Street roadway closures, respectively. The conditions under Alternative C would be similar to Alternative B at these locations and, therefore, the selection process for the alternative routes around these roadway closures would be the same in each of these alternatives. Lakeview Avenue, however, would not be closed under Alternative B. The grade separation conditions at Lakeview Avenue/Orangethorpe Avenue would be similar for Alternatives C and D. As such, the alternate routes selected for this closed roadway are provided as part of the Alternative D discussion below and are shown later on Figure 3.6-23.

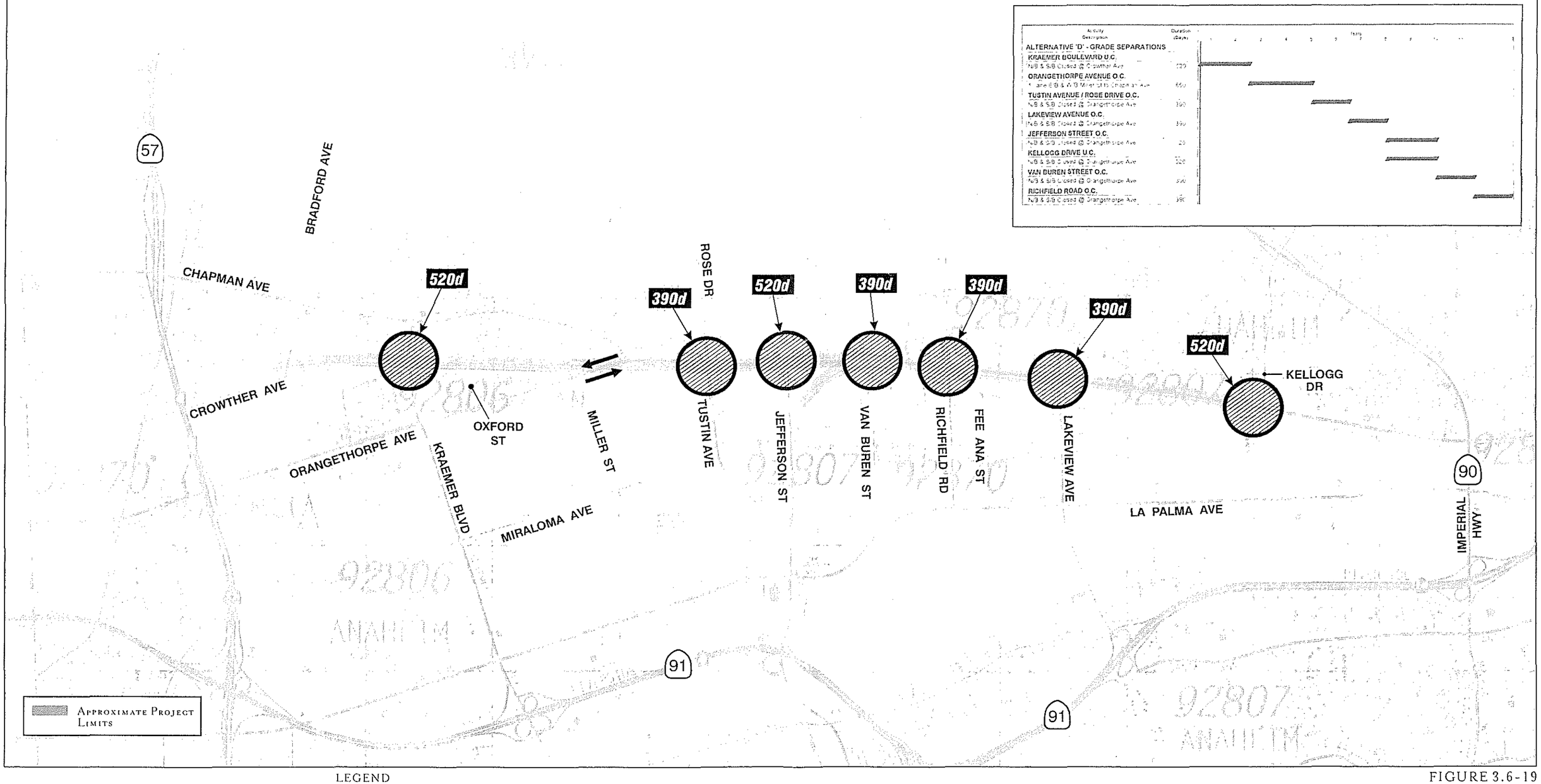
As described earlier for Alternative B, emergency vehicle response times could be adversely affected based on the lane closures under Alternative C. For the closed crossings, the alternate routes selected provide the safest, shortest routes to get to either side of the closures. However, it is acknowledged that during construction, Alternative C would provide only one lane in each direction on Orangethorpe Avenue, Crowther Avenue, Kraemer Boulevard, and Tustin Avenue-Rose Drive. Depending on the time of day and traffic volume along these corridors, it is possible that emergency vehicles could experience some delay as a result of the individual intersection closures and the lane reductions on area streets.

Indirect Impacts. There would be no indirect temporary adverse traffic impacts under Alternative C.

Alternative D

The proposed construction staging plan for Alternative D is illustrated in Figure 3.6-19. This preliminary construction staging is based on current project planning and engineering and is subject to refinement during final design if Alternative D is selected for implementation. As shown, construction activity for Alternative D is estimated to be approximately 13 years 6 months, in total, with each grade separation requiring about 2 years to construct.

Direct Impacts. Seven roadway closures under Alternative D would result in direct, temporary adverse impacts during construction at:



LEGEND

- ONE LANE OPEN EACH DIRECTION AT ALL TIMES
- FULL STREET CLOSURE
- 110d - NUMBER OF WORKING DAYS REQUIRED TO CONSTRUCT

0 1000 2000 FEET

SOURCE: KFM Engineering, May 2002

I:\OTG\130 G Traffic Const. Staging - Alt D.cdr (4 27 04)

FIGURE 3.6-19

Orange County Gateway
Alternative D
Proposed Construction Staging

1. Kraemer Boulevard
2. Tustin Avenue-Rose Drive
3. Lakeview Avenue
4. Jefferson Street
5. Kellogg Drive
6. Van Buren Street
7. Richfield Road

Orangethorpe Avenue (between Miller Street and Chapman Avenue) will provide one open lane in each direction during construction of its railroad crossings. Otherwise for Alternative D, Orangethorpe Avenue (between Chapman Avenue and Imperial Highway) would provide four lanes of travel for the duration of construction. Crowther Avenue would not be affected during construction of Alternative D.

Figures 3.6-20 through 3.6-23 illustrate the alternate routes selected for the roadway closures under Alternative D, with the exception of the Richfield and Van Buren closures. The conditions under Alternative D would be similar to Alternative B at these two locations and, therefore, the selection process for the alternative routes around these roadway closures would be the same in Alternatives B and D, as shown earlier on Figures 3.6-15 and 3.6-16.

As described in Alternatives B and C, emergency vehicle response times could be adversely affected based on the lane closures for Alternative D. For the closed crossings, the alternate routes selected provide the safest, shortest routes to get to either side of the closures. However, it is acknowledged that during construction, Alternative D would provide only one lane in each direction on Orangethorpe Avenue (between Miller Street and Chapman Avenue). Depending on the time of day and traffic volume along this roadway section, it is possible that emergency vehicles could experience some delay as a result of individual intersection closures and lane reductions on area streets.

Indirect Impacts. There would be no temporary indirect adverse traffic impacts under Alternative D.

3.6.4 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

3.6.4.1 Permanent Impacts

Should Alternative D be implemented, the following mitigation measure shall be required to address the adverse impacts of this alternative on Richfield Road/Orangethorpe Avenue.

TRA-1 Prior to approval of the Plans, Specifications and Estimates (PS&E) for the preferred project, the OCTA Project Engineer will design the ramp/intersection at Richfield Road/ Orangethorpe Avenue with the geometrics presented below. These plans will be submitted to and approved by the City of Placentia prior to implementation.

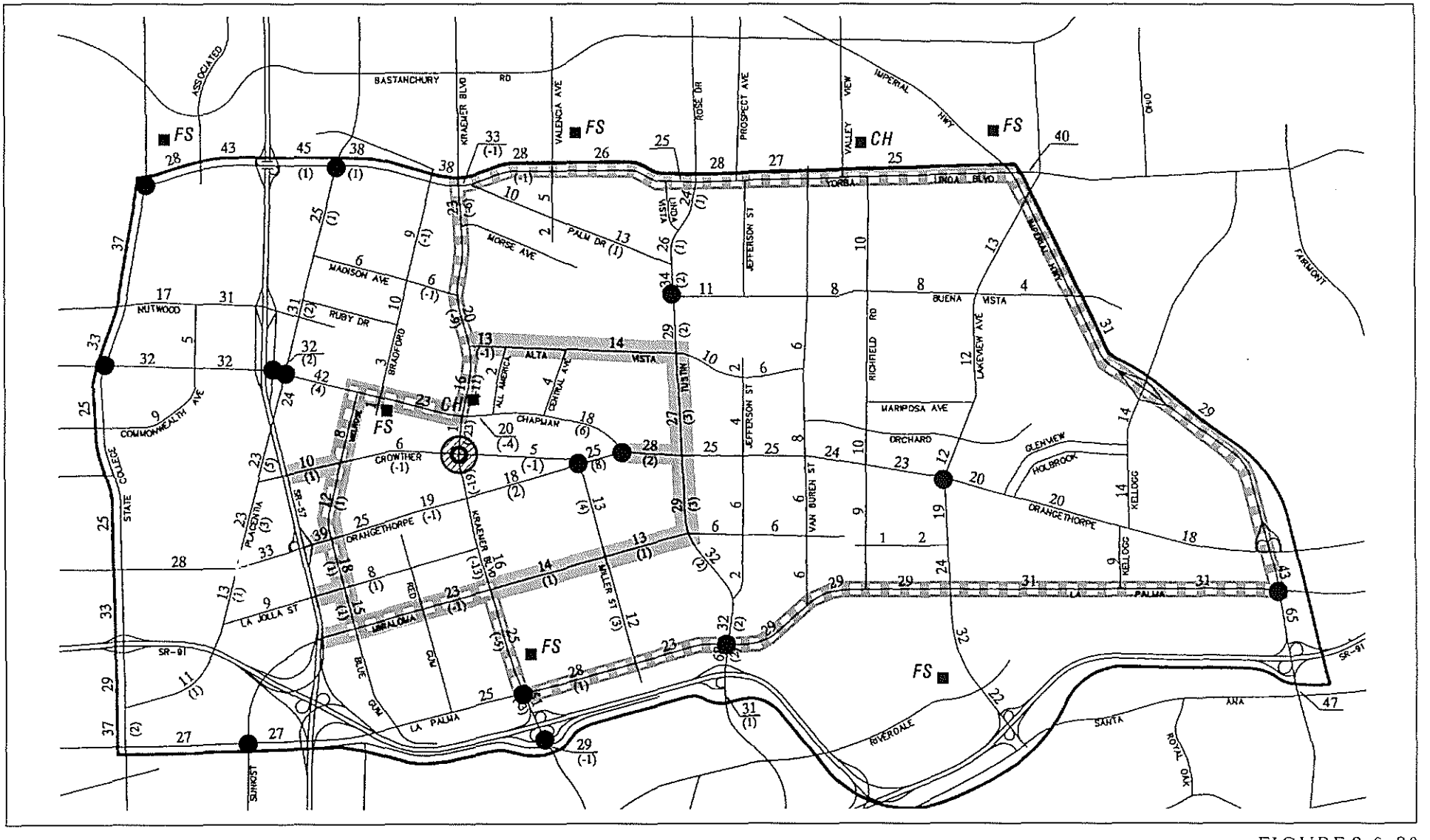


FIGURE 3.6-20

LEGEND

- STUDY AREA BOUNDARY
- INTERSECTION CLOSED FOR CONSTRUCTION (ORANGETHORPE = 2 LANES DURING CONSTRUCTION)
- XX ADT VOLUME (THOUSANDS)
- (YY) CHANGE DUE TO ALTERNATIVE
- LEVEL OF SERVICE E/F INTERSECTION
- REGIONAL ALTERNATE ROUTE
- PRIMARY ALTERNATE ROUTE BY PHASE
- FS FIRE STATION
- CH CITY HALL

N

NO SCALE

Orange County Gateway

Alternative D

Kraemer Boulevard Closure

SOURCE: Revised Traffic Impact Analysis (LSA 2004)

I:\OTG130 G Traffic Appendix F Alt D-Kraemer.cdr (9 26-05)

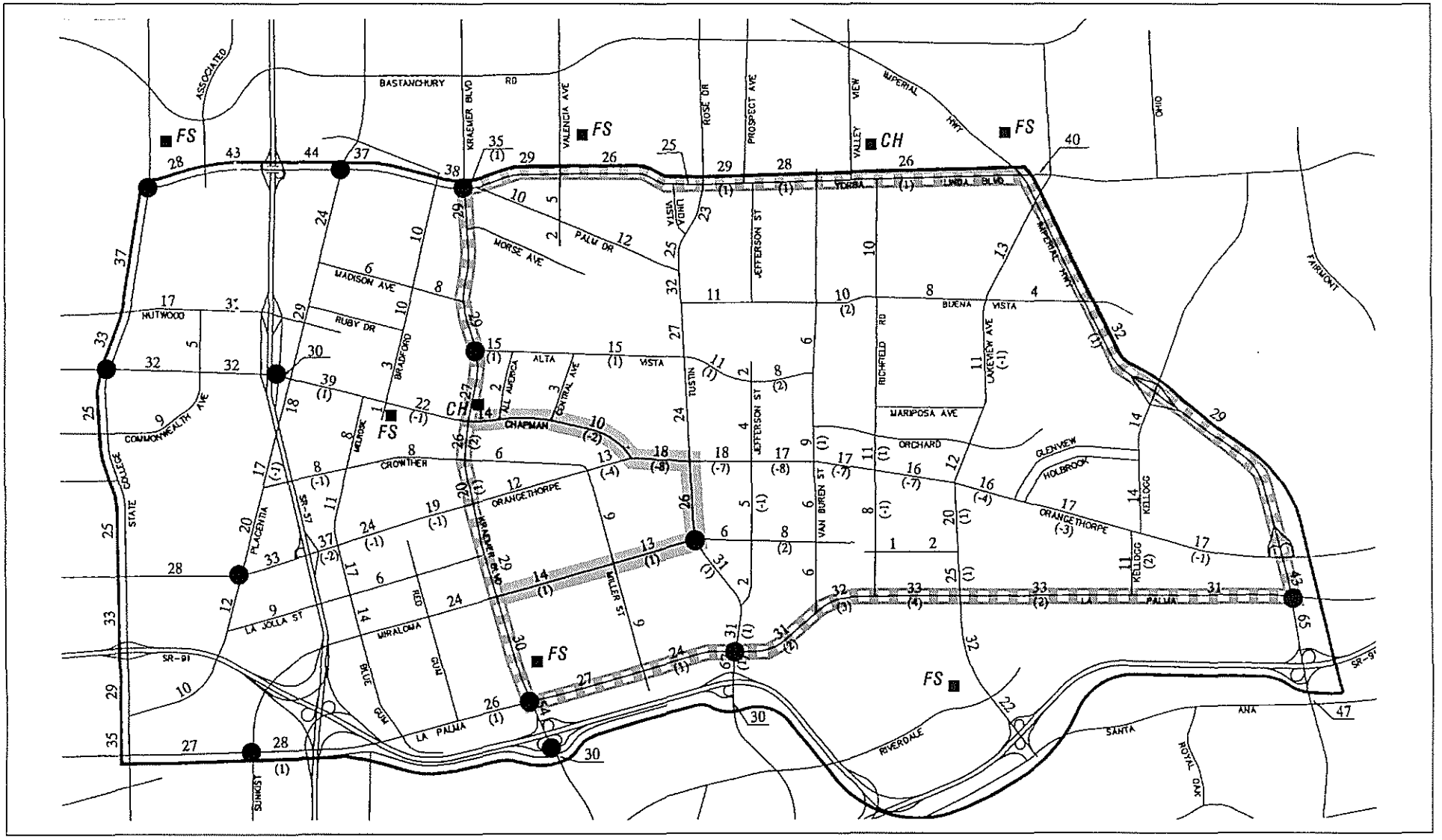


FIGURE 3.6-21

LEGEND

- STUDY AREA BOUNDARY
- XX ADT VOLUME (THOUSANDS)
- (YY) CHANGE DUE TO ALTERNATIVE
- LEVEL OF SERVICE E/F INTERSECTION
- REGIONAL ALTERNATE ROUTE
- PRIMARY ALTERNATE ROUTE BY PHASE
- FS FIRE STATION
- CH CITY HALL

NO SCALE

Orange County Gateway

Alternative D

Orangethorpe Avenue Reduced Lanes

SOURCE: Revised Traffic Impact Analysis (LSA 2004)

I: OTG130 G Traffic Appendix E Alt D-Orangethorpe.cdr (9/26/05)

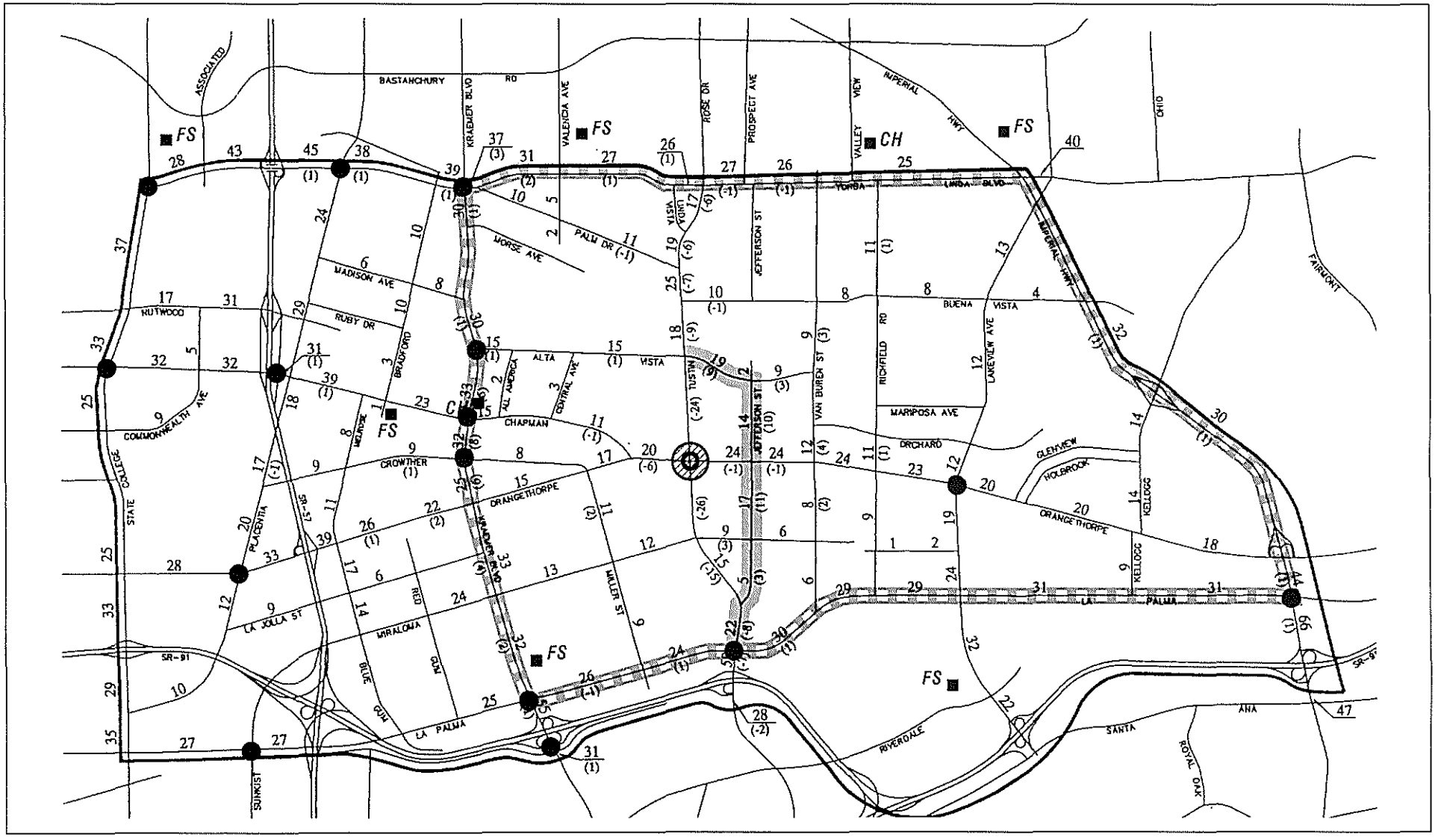


FIGURE 3.6-22

LEGEND

- STUDY AREA BOUNDARY
- INTERSECTION CLOSED FOR CONSTRUCTION
- XX / (YY) ADT VOLUME (THOUSANDS) / CHANGE DUE TO ALTERNATIVE
- LEVEL OF SERVICE E/F INTERSECTION
- REGIONAL ALTERNATE ROUTE
- PRIMARY ALTERNATE ROUTE BY PHASE
- FS FIRE STATION
- CH CITY HALL

NO SCALE

SOURCE: Revised Traffic Impact Analysis (LSA 2004)

I: OTG130 G Traffic Appendix F Alt D-Tustin-Rose.cdr (9/26/05)

Orange County Gateway

Alternative D

Tustin - Rose Drive Closure

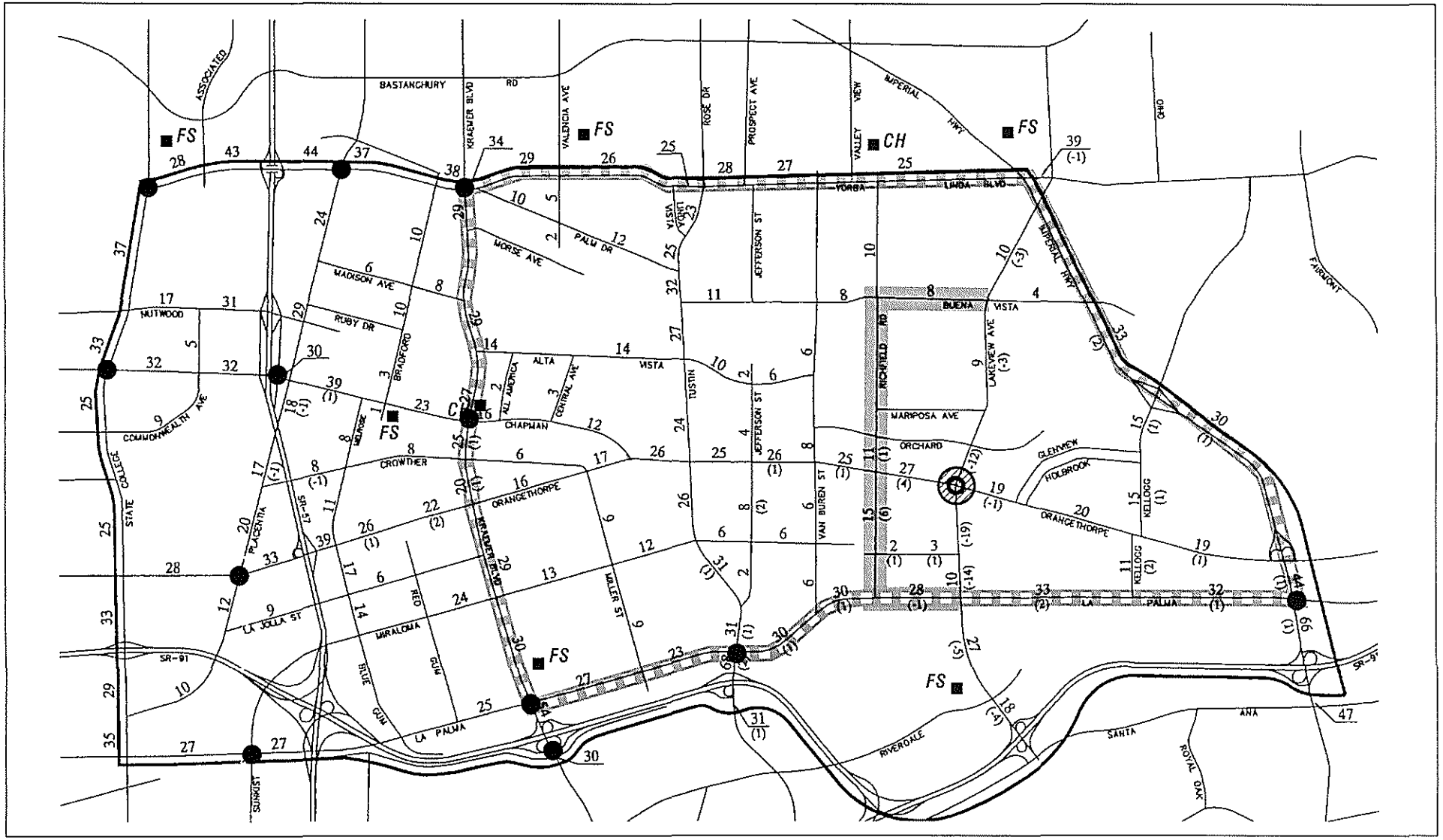


FIGURE 3.6-23

LEGEND

- STUDY AREA BOUNDARY
- INTERSECTION CLOSED FOR CONSTRUCTION (ORANGETHORPE = 4 LANES DURING CONSTRUCTION)
- XX ADT VOLUME (THOUSANDS)
- (YY) CHANGE DUE TO ALTERNATIVE
- LEVEL OF SERVICE E/F INTERSECTION
- REGIONAL ALTERNATE ROUTE
- PRIMARY ALTERNATE ROUTE BY PHASE
- FS FIRE STATION
- CH CITY HALL

NO SCALE

Orange County Gateway

Alternative D

Lakeview Avenue Closure

SOURCE: Revised Traffic Impact Analysis (LSA 2004)

I: OTG130\G Traffic Appendix E Alt D-Lakeview.cdr (9/26/05)

Movement	Richfield/Orangethorpe (south side)
Northbound Left	0
Northbound Through	0
Northbound Right	0
Southbound Left	1
Southbound Through	0
Southbound Right	1
Eastbound Left	1
Eastbound Through	2
Eastbound Right	0
Westbound Left	0
Westbound Through	3
Westbound Right	0

3.6.4.2 Temporary Impacts

Temporary impacts that are attributable to construction activity, its phasing, and scheduling are identified for all the Build Alternatives. These impacts can not be fully avoided. However, the construction-related impacts will end when the project is fully operational. Mitigation to address the temporary capacity constraints and physical closures during construction of Alternatives B, C, and D is required as follows:

TRA-2 Prior to approval of the Plans, Specifications and Estimates (PS&E) for the preferred Orange County Gateway (OCG) Build Alternative, a detailed construction phasing and detour plan will be submitted to and approved by the Cities of Placentia and Anaheim. This phased construction and detour plan will allow for the construction of local circulation through the project area during construction of the project. The plan must also consider public transit and PYLUSD routes and schedules and the access needs of emergency service providers and of agencies to public facilities in the immediate project vicinity. The plan must also include provision of access to adjoining properties. The detour plan will be presented in a format consistent with all applicable local, State, and federal guidelines and will consider signing, staging, delineation, traffic control, and the route selection analysis presented in this section. All construction activity will be performed in accordance with the construction phasing plan and the route detour plans approved by the Cities of Placentia and Anaheim.

TRA-3 During construction, existing roads may be narrowed to one lane in each direction on Orangethorpe Avenue, Crowther Avenue, Kraemer Boulevard, Tustin Avenue-Rose Drive, and Lakeview Avenue, depending on the construction phasing for the preferred project. Depending on the time of day and traffic volumes along these corridors, it is possible that

emergency vehicles could experience some delays. Therefore, the OCTA Resident Engineer will require that the construction contractor provide adequate shoulder widths at all times along these corridors to accommodate emergency vehicles required to bypass a congested travel lane.

TRA-4 Prior to construction of Alternatives B, C, and D, the construction phasing and detour traffic management plans will be reviewed with the PYLUSD, emergency service providers, the Cities of Placentia and Anaheim, and the OCTA Bus Operations Division. The PYLUSD, emergency service providers, the Cities of Placentia and Anaheim, and the OCTA Bus Operations Division will be notified prior to the initiation of construction and prior to the initiation of lane closures and detours.

3.6.5 CONCLUSIONS

No permanent direct adverse traffic impacts would occur under Alternatives B and C; therefore, no mitigation measures are required those Alternatives. A permanent direct adverse traffic impact would occur under Alternative D. Compared to Alternative A, the LOS grade separation project under Alternative D, using the currently proposed design, would result in an unsatisfactory LOS condition at Richfield Road/Orangethorpe Avenue. In Alternative D, this intersection is planned as a set of ramp intersections with signalized intersections at the ramp terminals and Orangethorpe Avenue. The south intersection is forecast to operate at LOS E during the a.m. peak hour. Mitigation for this condition includes a redesign of these ramp intersections to include greater lane capacity at the intersections as required in Mitigation Measure TRA-1.

Measures are also required for temporary adverse traffic construction impacts under Alternatives B, C, and D. These impacts would be minimized through the implementation of Mitigation Measures TRA-2 and TRA-3.