I-5 HOV/Truck Lanes Project
SR-14 to Parker Road

LOS ANGELES COUNTY, CALIFORNIA
DISTRICT 7 – LA–005, PM R45.4/R59.0
EA 2332E0
EA 2332A0

Final Environmental Impact Report/ Environmental Assessment with Finding of No Significant Impact

Prepared by the
State of California Department of Transportation

The environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried-out by the Department under its assumption of responsibility pursuant to 23 U.S.C. 327.

Caltrans

September 2009

SCH# 2007051028
07-LA-05-PM 45.4/59.0
2332E0
2332A0

Interstate 5, widen existing to include high-occupancy vehicle lanes and truck climbing lanes from State Route 14 in the south to Parker Road in the north, in the City of Santa Clarita and unincorporated Los Angeles County, California

FINAL ENVIRONMENTAL IMPACT REPORT
Submitted Pursuant to: (State) Division 13, California Public Resources Code
California Environmental Quality Act

THE STATE OF CALIFORNIA
Department of Transportation

Sept 1, 2009
Date of Approval

Ron Kosinski
Ron Kosinski
Deputy District Director
Division of Environmental Planning, District 7
California Department of Transportation

CALIFORNIA DEPARTMENT OF TRANSPORTATION
FINDING OF NO SIGNIFICANT IMPACT (FONSI)

FOR

I-5 HOV/TRUCK LANES PROJECT

SR-14 TO PARKER ROAD.

The California Department of Transportation (Caltrans) has determined that Alternative 2 (Reduced Median Alternative), will have no significant impact on the human environment. This FONSI is based on the attached Environmental Assessment (EA), which has been independently evaluated by Caltrans and determined to adequately and accurately discuss the need, environmental issues, and impacts of the proposed project and appropriate Mitigation Measures. It provides sufficient evidence and analysis for determining that an EIS is not required. Caltrans takes full responsibility for the accuracy, scope, and content of the attached EA.

The environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried-out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327.

Notwithstanding any other provision of law, a claim arising under federal law seeking judicial review of a permit, license or approval issued by federal agency for a highway or public transportation project shall be barred unless it is filed within 180 days after publication of a notice in the Federal Register announcing that the permit, license, or approval is final pursuant to the law under which the agency action is taken, unless a shorter time is specified in the federal law pursuant to which judicial review is allowed.

September 1, 2009
Date of Approval

Ron Kosinski
Caltrans Deputy District Director
Division of Environmental Planning, District 7
California Department of Transportation

SCH# 2007051028
07-LA-05-PM 45.4/59.0
EA 2332E0

Interstate 5, widen existing to include high-occupancy vehicle lanes and truck climbing lanes from State Route 14 in the south to Parker Road in the north, in the City of Santa Clarita and unincorporated Los Angeles County, California

DRAFT ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL ASSESSMENT

Submitted Pursuant to: (State) Division 13, California Public Resources Code
and (Federal) 42 U.S.C. 4332(2)(C)

The environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327

THE STATE OF CALIFORNIA
Department of Transportation

Dec 11, 2008
Date of Approval

Ron Kosinski
Deputy District Director
Division of Environmental Planning District 7
California Department of Transportation

I-5 HOV/Truck Lanes Project

SCH Number: 2007051028

Document Type: NOD - Notice of Determination

Alternate Title: Interstate 5 High Occupancy Vehicle/Truck Lane Project

Project Lead Agency: Caltrans #7

Project Description

Proposed widening of existing I-5 to include HOV lanes, truck climbing lanes, and additional auxilary lanes from SR 14 on the south to Parker Rd on the north. The proposed improvements include extending the existing HOV lanes on I-5 from SR 14 to south of Paker Rd, and adding truck climbing lanes form the SR 14 interchange to Calgrove Blvd (northbound) and to Pico Canyon Rd/Lyons avenue (southbound). Also proposed adding and/or extending auxilary lanes in the northbound and southbound direction at several locations.

Contact Information

Primary Contact:
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California Department of
Transportation, District 7
213 897-9116
100 South Main Street, Suite 100
Los Angeles, CA 90012-3712

Project Location

County: Los Angeles
City: Santa Clarita
Region:
Cross Streets: I-5, SR 14, Interchange and Parker Road
Latitude/Longitude: 34° 25' 23.7" / 119° 34' 59.7" Map
Parcel No: various
Township: 5N
Range: 71W
Section: 25
Base: SBB&M
Other Location Info:

Determinations

This is to advise that the ☒ Lead Agency ☐ Responsible Agency Caltrans has approved the project described above on 9/1/2(made the following determinations regarding the project described above.

1. The project ☒ will ☐ will not have a significant effect on the environment.
2. ☒ An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
   ☐ A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures ☒ were ☐ were not made a condition of the approval of the project.
4. A Statement of Overriding Considerations ☒ was ☐ was not adopted for this project.
5. Findings ☒ were ☐ were not made pursuant to the provisions of CEQA.

Final EIR Available at: Caltrans District 7 100 S. Main Street, Suite 100 MS16A Los Angeles, CA 90012

Date Received: 10/7/2009

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Executive Summary

S.1 Overview

The California Department of Transportation (Caltrans) proposes to widen existing Interstate 5 (I-5) to include high-occupancy vehicle (HOV) lanes, truck climbing lanes, and additional auxiliary lanes from State Route 14 (SR-14) on the south to Parker Road on the north, a distance of approximately 13.6 miles (mi) (Figure ES.1). The project is located within the City of Santa Clarita and unincorporated Los Angeles County. The proposed improvements include extending the existing HOV lanes on I-5 from SR-14 to south of Parker Road, a distance of approximately 13 mi, and adding truck climbing lanes from the SR-14 interchange to Calgrove Boulevard (northbound) and to Pico Canyon Road/Lyons Avenue (southbound), a distance of approximately 3 to 4 mi. The proposed I-5 HOV/Truck Lanes project (project) also proposes adding and/or extending auxiliary lanes in the northbound and southbound direction at several locations.

I-5 is a major north/south freeway connecting the states of California, Oregon, and Washington, and a major commuter route from the Santa Clarita Valley into the southern Los Angeles area. The area within the project limits is surrounded by mountainous terrain, and is therefore a geographically constrained area. As such, there is no direct alternative freeway route to I-5 in the city of Santa Clarita. A local arterial, The Old Road, runs parallel and adjacent to the I-5 freeway within the study limits.

In addition to serving as a major commuter facility, it is also the region's primary goods movement artery. It is part of the Interstate System of highways and is used as a major local and regional truck route. I-5 is listed as a "high-priority corridor" on the National Highway System (NHS), serving inter-regional commodities and vehicular travel in the north-south direction from California's most southern border with Mexico to its most northern border with Oregon. It is also listed on the State Highway Extra Legal Load (SHELL) Route system. These systems list those highways that have been constructed to accommodate the high volume and weight of inter- and intrastate truck traffic. Within the project limits, I-5 is classified as an urban freeway, and it functions as the gateway to and from the Los Angeles Basin to central and northern California. As a result of this unique characteristic of spanning the entire

state, the interstate in the north Los Angeles County area experiences high volumes of traffic, including truck traffic.

The existing I-5 facility within the project limits currently provides generally four mixed-flow lanes in each direction with the exception of through the midpoint of the I-5/SR-14 interchange, where there are three mixed-flow lanes in each direction. Two truck lanes in each direction pass through the I-5/SR-14 interchange area, separated from the mainline freeway. Within the project limits, this truck bypass route begins (southbound)/ends (northbound) just north of the I-5/SR-14 interchange consisting of ±5 percent grade.

Changes have been made to this environmental document since the circulation of the draft environmental document. Public and agency comments received during the circulation of the Draft Environmental Impact Report/Environmental Assessment (EIR/EA) and Public Hearing have resulted in refinements that have been incorporated in this final environmental document. A vertical line in the outside margin indicates changes in the document.

S.2 Purpose and Need

S.2.1 Need

I-5 is experiencing greater automobile and truck congestion as a result of population growth in north Los Angeles County and goods movement into and out of the Ports of Los Angeles and Long Beach. Freeway traffic volumes are expected to approximately double by 2030, which will continue to cause substantial delays.

S.2.2 Purpose

The purpose of the project is to achieve the following objectives:

- Reduce delays to vehicles caused by slower-moving trucks through the hilly southern portion of this segment of I-5.
- Improve operational and safety design features to facilitate the movement of people, freight, and goods on the project segment.
- Reduce existing and forecast traffic congestion on the project segment of I-5 to accommodate planned growth within the study area.

S.3 Project Description

This section describes the Proposed Action and the design alternatives that were developed by a multidisciplinary team to achieve the proposed project purpose and need while avoiding or minimizing environmental impacts. The alternatives are Alternative 1 (No Build Alternative), Alternative 2 (Reduced Median Alternative), and Alternative 3 (Full Median Alternative).

The project is being evaluated in three segments. Segment 1 extends from the I-5/SR-14 interchange to north of the Pico Canyon Road/Lyons Avenue/I-5 interchange. Segment 2 extends from north of the Pico Canyon Road/Lyons Avenue/I-5 interchange to north of the State Route 126 (SR-126) interchange. Segment 3 extends from north of SR-126 to south of Parker Road.

S.3.1 No Build Alternative (Alternative 1)

The No Build Alternative would maintain the current configuration of the existing freeway. There would be no improvements to the mainline freeway, only approved/ pending local interchange improvements. Some of the known projects include the following:

- **Hasley Canyon Road/I-5 Interchange Improvements:** Construction ongoing; anticipated to be completed in 2011.
- **Rye Canyon Road/I-5 Southbound Ramp Improvements:** Construction is anticipated to begin in 2009/2010 fiscal year.
- **Rye Canyon Road Widening:** Construction is anticipated to begin in 2009/ 2010.
- **Magic Mountain Parkway/I-5 Interchange Improvements:** Phase 1 was completed in April 2006. Phase 2 construction is ongoing and expected to be complete in 2009. Phase 3 currently has no funding.
- **The Old Road Improvement Projects (Widening of The Old Road from Magic Mountain Parkway to Turnberry Lane):** The Draft EIR anticipated for public review in early 2011. Phase I (Magic Mountain Parkway to Rye Canyon Road and replacement of the Santa Clara River Bridge) construction is anticipated to begin in 2013. Phase II (Rye Canyon Road to Turnberry Lane) construction is anticipated to begin as early as 2013.
- **The Old Road Widening (Parker Road to Hillcrest Parkway):** The Project Study Report (PSR) equivalent was approved on January 25, 2007. Los Angeles

County is currently performing environmental studies. Public review of the environmental document is tentatively scheduled for early 2010. The schedule is contingent upon securing additional funding for the project.

- **I-5/SR-14 HOV Direct Connector Project:** Construction is anticipated from 2008 to 2011.
- **I-5 HOV Lanes from SR-118 to SR-14:** Construction has been completed. The HOV lanes were opened in April 2008.
- **I-5 Pavement Rehabilitation:** One project is programmed, with construction to begin in 2012/2013. Other projects are to follow as funding becomes available.
- **Upgrade I-5 Median Barrier from South of Weldon Canyon Road to 530 Feet (ft) north of Weldon Canyon:** Construction is anticipated to begin in 2011.
- **Corridor Intelligent Transportation System (ITS) Improvements:** No project is currently programmed. These improvements are to be implemented with projects as appropriate until complete.
- **I-5 at Castaic Weight Station; Upgrade Weight Station Facility:** The Final Project Report/Environmental Document (PR/ED) was approved October 2008. Construction is expected to begin October 2010.

Under the No Build Alternative, the HOV and truck lanes would not be added and the congestion and operational problems in this segment would not be alleviated.

The No Build Alternative provides a baseline for comparing the impacts associated with the Build Alternatives since environmental reviews must consider the effects of not implementing the project.

S.3.2 Build Alternatives

Both Build Alternatives (Alternatives 2 and 3) propose to widen the center median and the outside shoulder of the northbound and southbound lanes between SR-14 and south of Parker Road to accommodate HOV, additional auxiliary, and truck lanes. Both Build Alternatives would provide one HOV lane in each direction from the I-5/ SR-14 interchange to south of the Parker Road interchange. Both Build Alternatives would extend one northbound truck lane from where the truck lanes currently merge with northbound I-5 near the Weldon Canyon Road/I-5 overcrossing to the Calgrove Boulevard/I-5 interchange. Southbound truck climbing lanes are proposed between the Weldon Canyon Road overcrossing and Calgrove Boulevard interchange (two

truck lanes) and from Calgrove Boulevard to south of the Pico Canyon Road/Lyons Avenue interchange (one truck lane).

Both Build Alternatives propose adding and/or extending auxiliary lanes in the northbound direction from SR-14 to the northbound truck lane merge, Calgrove Boulevard to Pico Canyon Road/Lyons Avenue, and Valencia Boulevard to Magic Mountain Parkway, and in the southbound direction between SR-126 and Rye Canyon Road, Rye Canyon Road, and Magic Mountain Parkway, and Valencia Boulevard and McBean Parkway.

S.3.2.1 Alternative 2 (Reduced Median Alternative) – Preferred Alternative

Alternative 2 proposes median and inside shoulder widths that are less than the Caltrans standard (48 ft median and less than 10 ft inside shoulders at median structure columns) within a maximum 210 ft cross section. The reduced median width of 48 ft is measured from the inside the Mixed Flow Lane (MFL), Edge of Travel Way (ETW), to inside the MFL ETW. Additional widening beyond the 48 ft minimum in the median area would be provided when necessary for horizontal stopping sight distance requirements. A 48 ft median would accommodate a 1 ft buffer, a 12 ft HOV lane, and a 10 ft inside shoulder. Shoulder widths along freeway ramps would be 8 ft. Alternative 2 would not provide for a 10 ft continuous inside shoulder (at column locations) or a 4 ft buffer between HOV and adjacent mixed-flow lanes. The HOV buffer would be 1 ft. The maximum cross section width under Alternative 2 (210 ft) is intended to accommodate the proposed HOV and truck climbing lanes within the existing Caltrans right of way to the extent feasible to limit the number of right of way acquisitions.

Per Caltrans HOV lane guidelines, California Highway Patrol (CHP) enforcement areas are recommended every 2 mi. Based on Caltrans criteria, approximately five enforcement areas would be required within the 13.6 mi project limit. Additional width in the median (beyond the proposed 48 ft) is required to provide for those CHP enforcement areas and has been included in the design of the Reduced Median Alternative.

S.3.2.2 Alternative 3 (Full Median Alternative)

The Full Median Alternative (Alternative 3) proposes construction of the truck climbing and HOV lanes consistent with Caltrans standards. The standard full median width of 62 ft is measured from inside the MFL ETW to inside the MFL ETW. The only exception to the 62 ft median width occurs in two areas north of the Pico Canyon Road/Lyons Avenue interchange, where the existing median is 60 ft wide. The typical cross section for this alternative is a maximum of 245 ft, which includes 12 ft travel lanes, a 10 ft outside shoulder, and a continuous CHP enforcement area in the median. The standard median width of 62 ft would accommodate a 4 ft buffer, a 12 ft HOV lane, a 10 ft inside shoulder, and an additional 4 ft inside shoulder for continuous CHP enforcement. The only exception to the 62 ft median width would be in two areas north of the Pico Canyon Road/Lyons Avenue interchange, where the median width would be 60 ft. The additional width for the continuous enforcement area provides for continuous 10 ft inside shoulders at the structure column locations.

Early Implementation Project (EIP)

Construction of the truck lane improvements has been identified as the EIP due to partial funding of the truck lanes component. The EIP consists of construction of truck lanes from the SR-14 interchange to south of the Pico Canyon Road/Lyons Avenue interchange.

The EIP improvements in the northbound direction would include widening into the existing median to maintain five northbound lanes after the merge of the separated truck lanes just north of the Weldon Canyon Road/I-5 overcrossing to the Calgrove Boulevard interchange. The outside lane would become the truck climbing lane as the general-purpose lanes would be shifted toward the median.

The EIP improvements in the southbound direction would include widening into the existing median to maintain five southbound lanes from south of the Pico Canyon Road/Lyons Avenue interchange to Calgrove Boulevard. The truck lanes would become the truck climbing lane and the general-purpose lanes would be shifted toward the median.

At the Calgrove Boulevard southbound on-ramp, a sixth lane would be added on southbound I-5. Two of the six southbound lanes would be dropped at the existing SR-14 interchange truck bypass lanes, while four lanes would join the existing I-5 lanes before the SR-14 general-purpose lane connector.

The EIP would be constructed within the limits analyzed for the ultimate improvements.

S.4 Joint CEQA/NEPA Document

The proposed project is a joint project by Caltrans and the Federal Highway Administration (FHWA) and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). Caltrans is the lead agency under CEQA. In addition, FHWA's responsibility for environmental review, consultation, and any other action required in accordance with applicable federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327(a)(2)(a).

The Draft EIR/EA was circulated for public review from December 17, 2008, to February 17, 2009. Comments have been received and addressed from the public and reviewing agencies. The Final EIR/EA includes responses to comments received on the Draft EIR/EA, and identifies the selection of Alternative 2 as the Preferred Alternative. Following the distribution of the Final EIR/EA, if the decision is made to approve the project, a Notice of Determination (NOD) will be published for compliance with CEQA and a Finding of No Significant Impact (FONSI) will be issued for compliance with NEPA.

S.5 Coordination with Public and Other Agencies

S.5.1 Permits and Approvals Needed

Table S.1 identifies the permits and/or approvals that are or may be required prior to or during construction of the project.

S.5.2 Unresolved Issues

There are no unresolved issues at this time. Coordination with regulatory agencies is ongoing.

Table S.1 Permits and/or Approvals Needed

Permit/Approval	Agency	Status
Encroachment Permit-Roadway	County of Los Angeles-Public Works	Coordination will occur after environmental document approval.
Streambed Alteration Agreement (Section 1602)	California Department of Fish and Game (CDFG)	Application will be submitted after environmental document approval.
Section 402 NPDES (Construction Activity)	Los Angeles Regional Water Quality Control Board	Application will be submitted prior to construction.
Section 402 NPDES (Groundwater Dewatering)	Los Angeles Regional Water Quality Control Board	Application will be submitted prior to construction.
Section 401 Permit	Los Angeles Regional Water Quality Control Board	Application will be submitted after environmental document approval.
Section 404 Permit (Individual or Nationwide[1])	United States Army Corps of Engineers (ACOE)	Application will be submitted after environmental document approval.
Section 7 Informal Consultation for Threatened and Endangered Species	United States Fish and Wildlife Service	Completed
Encroachment Permit-Flood Control	County of Los Angeles-Public Works	Coordination will occur after environmental document approval.

[1] After receipt of the Section 404 Permit application, the ACOE will determine whether an Individual or Nationwide Permit is applicable.

S.6 Project Impacts

Table S.2 provides a summary of the impacts that are summarized from the environmental analysis contained in Chapter 2. The environmental commitments and measures to minimize harm are listed in the Environmental Commitments Record in Appendix E.

Table S.2 Summary of Impacts

Environmental Resource		Alternative 1 (No Build)	Alternative 2 (Reduced Median) – Preferred Alternative	Alternative 3 (Full Median)
Land Use		No impact.	Temporary construction impacts and permanent acquisition of one full parcel and three partial parcels for additional right of way.	Temporary construction impacts and permanent acquisition of eight partial parcels and one full parcel for additional right of way.
Growth		No impact.	Temporary noise impacts would include construction crew commuting of construction equipment and materials to the project site and excavation/grading/roadway construction. Permanent impacts are solely from traffic noise.	Temporary noise impacts would include construction crew commuting of construction equipment and materials to the project site and excavation/grading/roadway construction Permanent impacts are solely from traffic noise.
Farmlands		No impact.	No temporary or permanent impacts to Farmlands.	Permanent loss of 3.02 acres (ac) of Prime Farmland and 1.024 ac of Farmland of Statewide Importance.
Community Impacts	**Community Character and Cohesion**	No impact.	Temporary impacts would include construction-related impacts such as traffic disruptions/congestion/detours/ increasing of noise/vibration/light and glare/increasing of emissions. No negative permanent impacts to the regional and local community.	Temporary impacts would include construction-related impacts such as traffic disruptions/congestion/detours/ increasing of noise/vibration/light and glare/increasing of emissions. No negative permanent impacts to the regional and local community.
	Relocation	No impact.	Temporary loss of parking spaces and unpaved field roads. No permanent impacts related to acquisitions or relocation of residential or commercial buildings.	Temporary loss of parking spaces and unpaved field roads. No permanent impacts related to acquisitions or relocation of residential or commercial buildings.
	Environmental Justice	No Impact.	No disproportionately high and adverse impacts on any minority or low-income populations.	No disproportionately high and adverse impacts on any minority or low-income populations.
Utilities and Emergency Services		No impact.	Temporary construction impacts. Permanent beneficial impacts from replacement/upgrade/addition of the Intelligent Transportation System (ITS) facilities.	Temporary construction impacts. Permanent beneficial impacts from replacement/upgrade/addition of the ITS facilities.
Traffic and Transportation/Pedestrian and Bicycle Facilities		Increased traffic congestion; degradation of LOS	Temporary construction impacts, closures, detours. Permanent beneficial impacts from improvement in existing and future level of service (LOS) and reduced traffic congestion.	Temporary construction impacts, closures, detours. Permanent beneficial impacts from improvement in existing and future LOS and reduced traffic congestion.
Visual and Aesthetics		No impact.	Temporary visual effects during construction. Permanent change in appearance of freeway facility.	Temporary visual effects during construction. Permanent change in appearance of freeway facility.
Cultural Resources		No impact.	No impact to known resources. Potential impact to unknown resources/burials.	No impact to known resources. Potential impact to unknown resources/burials.

Table S.2 Summary of Impacts

Environmental Resource	Alternative 1 (No Build)	Alternative 2 (Reduced Median) – Preferred Alternative	Alternative 3 (Full Median)
Hydrology and Floodplains	No impact.	Temporary construction impact. Permanent minor increase in 100-year base flood elevation.	Temporary construction impact. Permanent minor increase in 100-year base flood elevation.
Water Quality and Storm Water Runoff	No impact.	Permanent and temporary increase in pollutant loading from freeway during storm events. Permanent increase in volume of storm water runoff.	Permanent and temporary increase in pollutant loading from freeway during storm events. Permanent increase in volume of storm water runoff.
Geology and Soils	No impact.	Temporary disturbance and compaction of soil and increased soil erosion during construction. Permanent alteration of existing landforms during construction grading and construction of cut and fill slopes.	Temporary disturbance and compaction of soil and increased soil erosion during construction. Permanent alteration of existing landforms during construction grading and construction of cut and fill slopes.
Paleontology	No impact.	Potential permanent loss due to ground-disturbing activities; Paleontological Mitigation Plan required.	Potential permanent loss due to ground-disturbing activities; Paleontological Mitigation Plan required.
Hazardous Waste and Materials	No impact.	Likelihood of encountering aerially deposited lead, asbestos-containing materials, lead-based paint, and lead- and chromium-containing paint and pavement markings during construction. Potential to encounter petroleum hydrocarbon contamination, naturally occurring petroleum gas or natural gas, and polychlorinated biphenyls during construction.	Likelihood of encountering aerially deposited lead, asbestos-containing materials, lead-based paint, and lead- and chromium-containing paint and pavement markings during construction. Potential to encounter petroleum hydrocarbon contamination, naturally occurring petroleum gas or natural gas, and polychlorinated biphenyls during construction.
Air Quality	Continued degradation of air quality.	Temporary fugitive dust and diesel engine emissions during construction. Decreased air pollutant emissions during operation.	Temporary fugitive dust and diesel engine emissions during construction Decreased air pollutant emissions during operation.
Noise	No impact.	Temporary increase in noise levels during construction; permanent increase in noise levels during operation.	Temporary increase in noise levels during construction; permanent increase in noise levels during operation.
Energy	No impact.	One-time expenditure of energy to construct improvements.	One-time expenditure of energy to construct improvements.
Natural Communities	No impact.	Temporary impacts from grading and construction activities and trimming and pruning oak trees. Temporary impacts to of 4.96 ac of oak woodland habitat, 2.65 ac of Riparian Communities, 23.49 ac of Coastal Sage Scrub Communities, and 73 oak trees (including 14 heritage oaks). Permanent removal of vegetation, including mature trees;	Temporary impacts from grading and construction activities and trimming and pruning oak trees. Temporary impacts to 5.01 ac of oak woodland habitat, 2.43 ac of Riparian Communities, 26.38 ac of Coastal Sage Scrub Communities, and 80 oak trees (including 27 heritage oaks). Permanent removal of vegetation, including mature trees.

Table S.2 Summary of Impacts

Environmental Resource	Alternative 1 (No Build)	Alternative 2 (Reduced Median) – Preferred Alternative	Alternative 3 (Full Median)
		Permanent impacts to 3.27 ac of Oak Woodland Communities, 1.60 ac of Riparian Communities, 18.51 ac of Coastal Sage Scrub Communities, and 109 oak trees (including 20 heritage oaks).	Permanent impacts to 4.98 ac of Oak Woodland Communities, 1.92 ac of Riparian Communities, 22.25 ac of Coastal Sage Scrub Communities, and 120 oak trees (including 12 heritage oaks).
Wetlands and Other Waters	No impact.	4.01 ac temporary impacts to California Department of Fish and Game (CDFG) jurisdictional areas. 3.55 ac temporary impacts to United States Army Corps of Engineers (ACOE) and Regional Water Quality Control Board (RWQCB) jurisdictional areas. 1.65 ac permanent impacts to CDFG jurisdictional areas. 1.84 ac permanent impacts to ACOE and RWQCB jurisdictional areas.	4.04 ac temporary impacts to CDFG jurisdictional areas. 3.52 ac temporary impacts to ACOE and RWQCB jurisdictional areas. 2.01 ac permanent impacts to CDFG jurisdictional areas. 2.32 ac permanent impacts to ACOE and RWQCB jurisdictional areas.
Plant Species	No impact.	No impact.	No impact.
Animal Species	No impact.	Temporary construction impacts and permanent loss of habitat for Santa Ana sucker; arroyo chub; bat species; and special-status coastal sage scrub and chaparral, riparian, woodland and montane, and grassland and open space animal species.	Temporary construction impacts and permanent loss of habitat for Santa Ana sucker; arroyo chub; bat species; and special-status coastal sage scrub and chaparral, riparian, woodland and montane, and grassland and open space animal species.
Threatened and Endangered Species	No impact.	Temporary construction impacts and permanent loss of habitat for unarmored threespine stickleback, least Bell's vireo, southwestern willow flycatcher, western yellow-billed cuckoo, California gnatcatcher, and, potentially, arroyo toad.	Temporary construction impacts and permanent loss of habitat for unarmored threespine stickleback, least Bell's vireo, southwestern willow flycatcher, western yellow-billed cuckoo, California gnatcatcher, and, potentially, arroyo toad.
Invasive Species	No impact.	Potential permanent spread of invasive species.	Potential permanent spread of invasive species.
Cumulative Impacts	No impact	Cumulative loss of oak woodland.	Cumulative loss of oak woodland.

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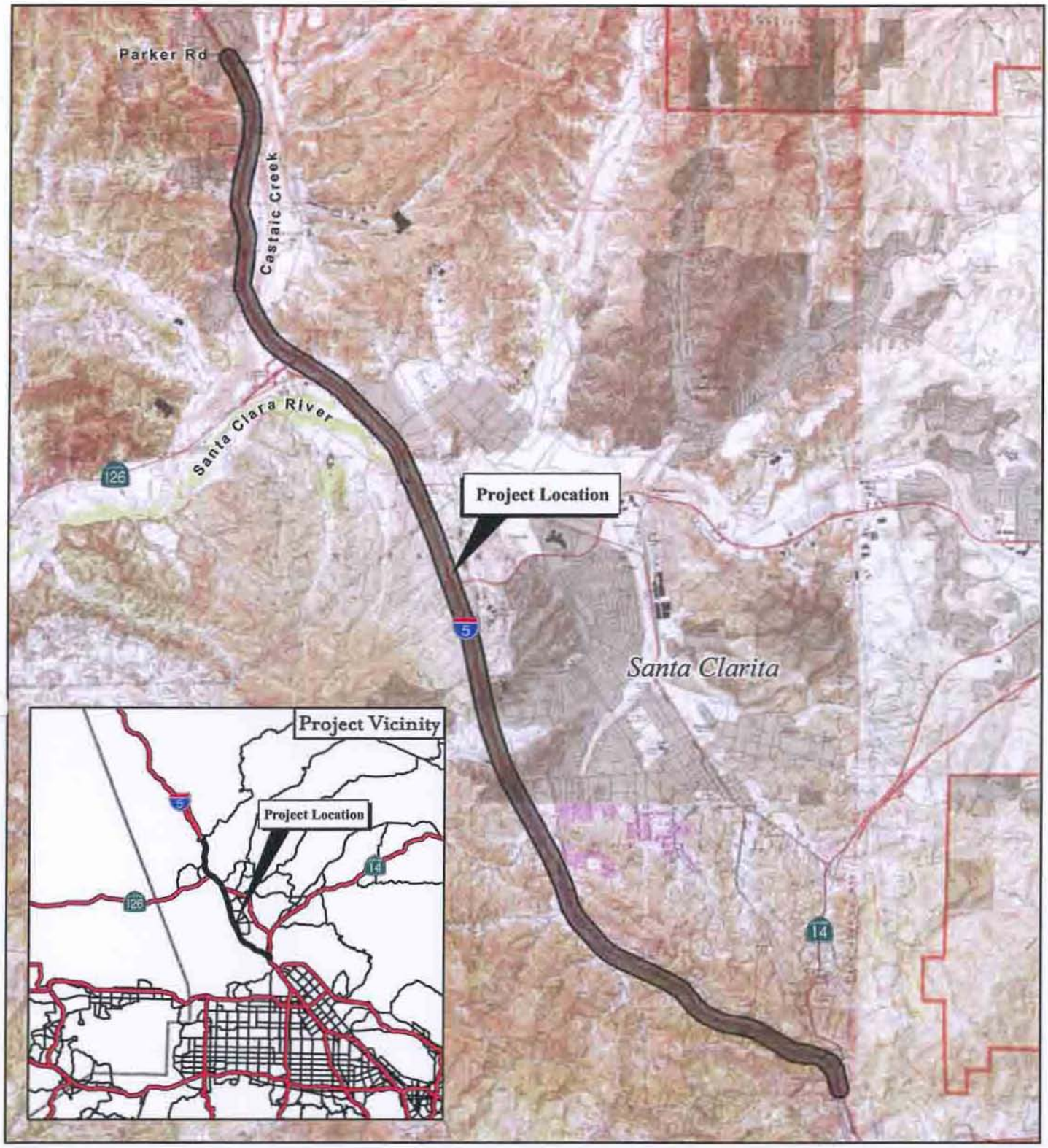

FIGURE ES.1

LEGEND

Project Location

N

0 3,750 7,500 Feet

I-5 HOV / Truck Lanes Project

Project Location

07-LA-5 PM R45.4/R59.0

EA 2332E0

SOURCE: USGS 7.5' QUAD, CALIF.

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Chapter 1 Proposed Project

1.1 Introduction

The California Department of Transportation (Caltrans) proposes to widen existing Interstate 5 (I-5) to include high-occupancy vehicle (HOV) lanes, truck climbing lanes, and additional auxiliary lanes from State Route 14 (SR-14) on the south to Parker Road on the north, a distance of approximately 13.6 miles (mi) (Figure 1.1). The project is located within the City of Santa Clarita and within unincorporated Los Angeles County. The proposed improvements include extending the existing HOV lanes on I-5 from SR-14 to south of Parker Road, a distance of approximately 13 mi, and adding truck climbing lanes from the SR-14 interchange at Calgrove Boulevard (northbound) and to Pico Canyon Road/Lyons Avenue (southbound), a distance of approximately 3 to 4 mi. The proposed I-5 HOV/Truck Lanes project (project or proposed project) also includes additional auxiliary lanes in the northbound and southbound directions at several locations.

I-5 is a major north/south freeway connecting the States of California, Oregon, and Washington, and a major commuter route from the Santa Clarita Valley into the southern Los Angeles area. The area within the proposed project limits is surrounded by mountainous terrain, and is therefore a geographically constrained area. As such, there is no direct alternative freeway route to I-5 in Santa Clarita Valley. A local arterial, The Old Road, runs parallel and adjacent to I-5 within the study limits.

In addition to serving as a major commuter facility, it is also the region's primary goods movement artery. It is part of the Interstate System of highways and is used as a major local and regional truck route. I-5 is listed as a "high-priority corridor" on the National Highway System (NHS), serving inter-regional commodities and vehicular travel in the north-south direction from California's most southern border with Mexico to its most northern border with Oregon. It is also listed on the State Highway Extra Legal Load (SHELL) Route system. These systems list those highways that have been constructed to accommodate the high volume and weight of inter- and intrastate truck traffic. Within the project limits, I-5 is classified as an urban freeway, and it functions as the gateway to and from the Los Angeles Basin to central and northern California. As a result of this unique characteristic of spanning the entire state, the interstate in the north Los Angeles County area experiences high volumes of traffic, including truck traffic.

The existing I-5 facility within the project limits currently provides generally four mixed-flow lanes in each direction with the exception of through the midpoint of the I-5/SR-14 interchange, where there are three mixed-flow lanes in each direction. Two truck lanes in each direction pass through the I-5/SR-14 interchange area, separated from the mainline freeway. Within the project limits, this truck bypass route begins (southbound)/ends (northbound) just north of the I-5/SR-14 interchange consisting of ±5 percent grade.

Two studies preceded development of the project. The *Transportation Concept Report* (November 1998) for I-5, prepared by Caltrans, suggested improvements to achieve or maintain a Level of Service (LOS) of D during the peak hours. Specifically, the *Transportation Concept Report* recommended four mixed-flow lanes, two HOV lanes, and one truck lane in each direction.

The Los Angeles County Metropolitan Transportation Authority (Metro) prepared the *North County Combined Highway Corridors Study (North County Study)* (June 24, 2004) to develop feasible and cost-effective solutions for alleviating traffic congestion in the north Los Angeles County area. Both short- and long-range improvements for the project corridor were identified in the *North County Study*. As part of the Short Term Plan, the addition of an HOV lane and a truck lane in each direction from the I-5/SR-14 interchange to Calgrove Boulevard and addition of an HOV lane in each direction from Calgrove Boulevard to I-5/SR-126 was identified. The Long Range Plan identified the addition of one truck lane and one HOV lane from SR-14 to Calgrove Boulevard, two truck lanes and one HOV lane from Calgrove Boulevard to SR-126 and one truck lane and one HOV lane from SR-126 to Lake Hughes. Both studies acknowledge the existing and projected population growth within the Santa Clarita Valley and identified freeway improvements that respond to this growth.

The proposed project is fully funded and is in the 2008 Regional Transportation Plan (RTP), which was found to conform by the Southern California Association of Governments (SCAG) on May 8, 2008, and the Federal Highway Administration/ Federal Transit Administration (FHWA/FTA) adopted the air quality conformity finding on June 5, 2008. The project is also included in 2008 Regional Transportation Improvement Program (RTIP) (RTIP Project ID: LAE0465, In L.A./Santa Clarita on Route 5 from State Route 14 to Parker Road, HOV, Truck and Auxiliary Lane Improvement, page 4). The 2008 RTIP was found to conform by FHWA/FTA on November 17, 2008. The design concept and scope of the proposed project are

consistent with the project description in the 2008 RTP, the 2008 RTIP, and the assumptions in the SCAG regional emissions analysis.

1.2 Purpose and Need

1.2.1 Need for the Proposed Project

I-5 is experiencing greater automobile and truck congestion as a result of population growth in north Los Angeles County and goods movement into and out of the Ports of Los Angeles and Long Beach. Freeway traffic volumes are expected to approximately double by 2030, which will continue to cause substantial delays.

1.2.1.1 Capacity, Transportation Demand, and Safety

Level of Service

The quality of traffic flow can be defined in terms of level of service (LOS). The measure used to provide an estimate of LOS is density. There are six LOS, ranging from LOS A (free traffic flow with low volumes and high speeds, resulting in low densities) to LOS F (traffic volumes exceed capacity and result in forced flow operations at low speeds, resulting in high densities). LOS thresholds for a basic freeway segment are summarized in Table 1.A.

Existing Traffic Volumes

Existing (2006) traffic volumes are shown in Table 1.B. Within the project limits, in the southbound direction, I-5 is experiencing a.m. and p.m. peak-hour traffic that ranges from 2,210 to 6,610 vehicles per hour (vph) and from 2,420 to 6,460 vph, respectively. In the northbound direction, the a.m. and p.m. peak-hour traffic volumes range from 1,570 to 5,620 vph and from 2,790 to 7,020 vph, respectively. The percentage of truck traffic along this stretch of I-5 varies from 9.4 percent to 20.8 percent of the total traffic volume. Average Daily Traffic (ADT)[1] ranges from 83,000 to 202,000 in the project segment of I-5.

[1] Average Daily Traffic is an estimate of the average number of vehicles passing a point or segment of a roadway facility, in both directions, during a 24-hour period.

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Table 1.A LOS Thresholds for a Basic Freeway Segment

LEVELS OF SERVICE
for Freeways

Level of Service	Flow Conditions	Operating Speed (mph)	Technical Descriptions
A		70	Highest quality of service. Traffic flows freely with little or no restrictions on speed or maneuverability. **No delays**
B		70	Traffic is stable and flows freely. The ability to maneuver in traffic is only slightly restricted. **No delays**
C		67	Few restrictions on speed. Freedom to maneuver is restricted. Drivers must be more careful making lane changes. **Minimal delays**
D		62	Speeds decline slightly and density increases. Freedom to maneuver is noticeably limited. **Minimal delays**
E		53	Vehicles are closely spaced, with little room to maneuver. Driver comfort is poor. **Significant delays**
F		<53	Very congested traffic with traffic jams, especially in areas where vehicles have to merge. **Considerable delays**

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Table 1.B Existing (2006) Traffic Volumes

I-5 Segment	% Trucks (Daily)	AM Peak Hour		PM Peak Hour		ADT
		SB	NB	SB	NB	
North of Parker Road[1]	26.6	1,600	1,190	2,040	2,250	65,000
Between Parker Road and Hasley Canyon Road	20.8	2,210	1,570	2,420	2,790	83,000
Between Hasley Canyon Road and SR-126	17.3	3,110	2,170	3,010	3,620	100,000
Between SR-126 and Rye Canyon Road	15.3	3,420	3,340	4,150	4,080	124,000
Between Rye Canyon Road and Magic Mountain Parkway	14.2	4,200	3,340	5,350	4,080	134,000
Between Magic Mountain Parkway and Valencia Boulevard	12.2	4,490	4,490	5,600	5,270	156,000
Between Valencia Boulevard and McBean Parkway	10.6	5,310	5,430	6,420	6,050	179,000
Between McBean Parkway and Pico Canyon Road/Lyons Avenue	10.1	5,730	5,560	6,450	6,610	189,000
Between Pico Canyon Road/ Lyons Avenue and Calgrove Boulevard	9.5	6,320	5,620	6,460	7,020	199,000
Between Calgrove Boulevard and SR-14	9.4	6,610	5,600	6,410	6,970	202,000
South of SR-14[2]	8.6	13,270	7,390	9,180	13,710	325,000

Source: Traffic Study, October 2007.
[1] This segment of I-5 is north of the project limits.
[2] This segment of I-5 is south of the project limits.
ADT = average daily traffic
NB = northbound
SB = southbound

The existing LOS during the a.m. and p.m. peak hours for the project segment of I-5 are summarized in Table 1.C. From this table, it can be seen that northbound I-5 from SR-14 to Magic Mountain Parkway operates at LOS C during the a.m. peak hour and at LOS C and D during the p.m. peak hour. Traffic conditions along southbound I-5 during the a.m. and p.m. peak hours operate at LOS E between Calgrove Boulevard and Pico Canyon Road/Lyons Avenue and at LOS F between the Truck Route Bypass and Calgrove Boulevard. During the p.m. peak hour, Pico Canyon Road/Lyons Avenue to Valencia Boulevard in the northbound direction operates at LOS D.

Table 1.C LOS Summary–Existing Conditions

I-5 Segment	AM Peak Hour LOS	PM Peak Hour LOS
Northbound		
Lake Hughes Road to Parker Road	A	A
Parker Road to Hasley Canyon Road	A	B
Hasley Canyon Road to SR-126	B	B
SR-126 to Rye Canyon Road	B	B
Rye Canyon Road to Magic Mountain Parkway	B	B
Magic Mountain Parkway to Valencia Boulevard	C	C
Valencia Boulevard to McBean Parkway	C	C
McBean Parkway to Pico Canyon Road	C	D
Pico Canyon Road/Lyons Avenue to Calgrove Boulevard	C	D
Calgrove Boulevard to Truck Route Bypass	C	D
Truck Route Bypass to SR-14 on-Ramp	C	D
SR-14 on-Ramp to SR-14 off-Ramp	C	D
Southbound		
Lake Hughes Road to Parker Road	A	A
Parker Road to Hasley Canyon Road	A	A
Hasley Canyon Road to SR-126	A	B
SR-126 to Rye Canyon Road	B	B
Rye Canyon Road to Magic Mountain Parkway	B	C
Magic Mountain Parkway to Valencia Boulevard	C	C
Valencia Boulevard to McBean Parkway	C	D
McBean Parkway to Pico Canyon Road/Lyons Avenue	C	D
Pico Canyon Road/Lyons Avenue to Calgrove Boulevard	E	E
Calgrove Boulevard to Truck Route Bypass	F	F
Truck Route Bypass to SR-14 on-Ramp	C	C
SR-14 on-Ramp to Balboa Road	C	C

Source: Traffic Study, October 2007.

Observation of the four-lane southbound segment of I-5 between Pico Canyon Road/ Lyons Avenue and the start of the Truck Route Bypass at SR-14 indicates that the outside lane is used exclusively by trucks. This segment was evaluated as a three-lane segment, with the fourth lane serving as the truck climbing lane for approximately 80 percent of trucks. The method indicates LOS E for each peak-hour time period for the segment between Pico Canyon Road/Lyons Avenue and Calgrove Boulevard, and LOS F between Calgrove Boulevard and SR-14.

1.2.1.2 Future Traffic Projections

The Santa Clarita Valley is a rapidly growing portion of the southern California area and is likely to continue due to the ongoing new land use development that is anticipated to continue as the valley builds out over the next 25 years. This growth

would increase both truck and general automobile traffic on I-5. Table 1.D summarizes land use and vehicle trip generation statistics for 2004 and buildout (2030) conditions. Table 1.D shows that ADT generation within the Santa Clarita Valley is forecast to increase by 99 percent between the present day and valley-wide buildout.

Table 1.D Land Use and Trip Generation Projections–Santa Clarita Valley

Land Use Type	Units	2004		2030	
		Amount	ADT	Amount	ADT
Single-Family Residential	DU	51,300	501,000	92,000	903,000
Multifamily Residential	DU	25,600	203,000	54,800	423,000
Commercial, Retail, Office, and Industrial	MSF	31.8	696,000	81.9	1,539,000
Other	–	–	170,000	–	256,000
Total	–	–	1,570,000	-	3,121,000 (+99%)

Source: Traffic Study, October 2007.
DU = Dwelling Unit
MSF = Million Square Feet
ADT = Average Daily Traffic

The daily number of vehicles traveling the project segment of I-5 is forecast to increase over time, which will increase traffic congestion in the project area under the existing lane configuration. As discussed below, without any improvements to the existing facility, traffic volumes in the project area are forecast to increase by 2030, resulting in a decrease in LOS.

1.2.1.3 Future Traffic Volumes

Future traffic demand was forecast using the Santa Clarita Valley Consolidated Traffic Model prepared to reflect the actual flow of traffic volumes south of the I-5/ SR-14 interchange, which is constrained by the available (existing and planned) capacity for that heavily traveled section of freeway. The Constrained Flow Model provides a realistic peak-hour volume for the freeway segments north of the I-5/ SR-14 interchange by taking into account the constraints that determine the flow rates south of the interchange. The predicted future traffic conditions using both models are shown in Tables 1.E and 1.F for the project segment of I-5.

Table 1.E 2030 (Santa Clarita Valley Buildout) Peak-Hour Traffic Volumes–Constrained Flow Model

I-5 Segment	AM Peak Hour		PM Peak Hour		ADT
	SB	NB	SB	NB	
North of Parker Road[1]	5,200	4,100	6,500	6,800	207,000
Between Parker Road and Hasley Canyon Road	6,700	4,900	7,600	8,200	240,000
Between Hasley Canyon Road and SR-126	7,200	6,500	9,100	8,700	251,000
Between SR-126 and Rye Canyon Road	7,000	6,900	9,200	7,700	234,000
Between Rye Canyon Road and Magic Mountain Parkway	7,200	6,900	10,100	7,700	255,000
Between Magic Mountain Parkway and Valencia Boulevard	7,300	7,100	9,800	7,900	263,000
Between Valencia Boulevard and McBean Parkway	8,100	7,600	10,000	8,300	268,000
Between McBean Parkway and Pico Canyon Road/Lyons Avenue	7,800	7,500	9,600	8,400	283,000
Between Pico Canyon Road/ Lyons Avenue and Calgrove Boulevard	7,300	7,000	8,900	8,400	281,000
Between Calgrove Boulevard and SR-14	7,400	6,400	8,800	8,200	290,000
South of SR-14[2]	17,700	9,200	11,500	16,700	617,000

Source: Traffic Study, October 2007.
[1] This segment of I-5 is north of the project limits.
[2] This segment of I-5 is south of the project limits.

Table 1.F LOS Summary–2030 No-Build Conditions (Constrained Flow Model)

I-5 Segment	AM Peak Hour (LOS)	PM Peak Hour (LOS)
Northbound		
Lake Hughes Road to Parker Road	B	D
Parker Road to Hasley Canyon Road	C	E
Hasley Canyon Road to SR-126	D	F
SR-126 to Rye Canyon Road	D	E
Rye Canyon Road to Magic Mountain Parkway	D	E
Magic Mountain Parkway to Valencia Boulevard	D	E
Valencia Boulevard to McBean Parkway	E	E
McBean Parkway to Pico Canyon Road/Lyons	E	F
Pico Canyon Road/Lyons Avenue to Calgrove	D	E
Calgrove Boulevard to Truck Route Bypass	D	E
Truck Route Bypass to SR-14 Ramp (On)	C	E
SR-14 Ramp (On) to SR-14 Ramp (Off)	C	D
Southbound		
Lake Hughes Road to Parker Road	C	D
Parker Road to Hasley Canyon Road	D	E
Hasley Canyon Road to SR-126	D	F
SR-126 to Rye Canyon Road	D	F
Rye Canyon Road to Magic Mountain Parkway	D	F
Magic Mountain Parkway to Valencia Boulevard	E	F
Valencia Boulevard to McBean Parkway	F	F
McBean Parkway to Pico Canyon Road/Lyons	E	F
Pico Canyon Road/Lyons Avenue to Calgrove	F	F
Calgrove Boulevard to Truck Route Bypass	F	F
Truck Route Bypass to SR-14 Ramp (On)	C	D
SR-14 Ramp (On) to Balboa Road	D	E

Source: Traffic Study, October 2007.

As shown in Tables 1.E and 1.F, without the project, the southbound a.m. and p.m. peak-hour traffic volumes are expected to range from 6,700 to 8,100 vph and 7,600 to 10,100 vph, respectively. The northbound a.m. and p.m. peak-hour traffic volumes are expected to range from 4,900 to 7,600 vph and 7,700 and 8,700 vph, respectively. ADT is expected to range from approximately 234,000 to 290,000 vehicles in the project segment of I-5. The corresponding LOS for the northbound direction ranges from C to E in the a.m. peak hour and from D to F in the p.m. peak hour. Similarly, the corresponding LOS for the southbound direction ranges from D to F in the a.m. peak hour and from E to F in the p.m. peak hour (with the exception of the Truck Route Bypass to the SR-14 ramp, which is projected to operate at LOS C in the a.m. peak hour and LOS D in the p.m. peak hour). As shown from Tables 1.B and 1.E, the average daily traffic (ADT) volumes are expected to increase from approximately one and a half times to more than triple from the existing (2006) to the 2030 forecast

volumes. As shown in Tables 1.C and 1.F, the existing (2006) LOS of A, B, C, and D would be degraded to LOS E and F in many locations if no action is taken.

1.2.1.4 Safety

A summary of accident rates for the project area is provided in Table 1.G with a comparison to the statewide average. This data, which is for the 36-month period of June 2005 through May 2008, indicates that the study area has a total accident rate lower than the statewide average, with the exception of the northbound direction, which has a fatality rate equal to the statewide average.

Table 1.G Accident Rate Summary–June 2005 through May 2008

Post Mile	Name	Segment Accident Rates*			Statewide Accident Rates		
		Fatal Accidents	Fatal + Injury	Total Accidents	Fatal Accidents	Fatal + Injury	Total Accidents
Northbound							
R45.500–R59.299	Junction Route 14 to Lake Hughes Road	0.009	0.18	0.60	0.009	0.28	0.90
Southbound							
R45.500–R59.299	Junction Route 14 to Lake Hughes Road	0.008	0.20	0.68	0.009	0.28	0.09

Source: Transportation Systems Network Report, Traffic Accident Surveillance and Analysis System (TSN - TASAS), June 2009.
* Note: Accidents per million vehicle miles traveled.

The causes for most of the accidents were speeding and improper turning movements. These accidents occurred at various times of the day and resulted mostly in rear-end collisions (over 37 percent). Hitting objects (over 25 percent) and sideswiping (over 21 percent) were the second and third most common collision results.

Over the 36-month accident review period, 22 fatalities occurred within the limits of the proposed project. This section of roadway is generally an eight-lane freeway. A review of the accidents indicate the following: (1) over 34 percent of the accidents occur during congested periods when slower-moving vehicles are present, and (2) over 48 percent of the accidents involve trucks.

1.2.1.5 Operational Deficiencies

The topography in the project area is mountainous or hilly, which, when combined with the large volume of trucks and passenger vehicles, results in conflicts and inefficient operations along the project segment of I-5. Due to the grades within the

project area, slow-moving trucks and vehicles must share existing travel lanes with other vehicles and can obstruct the flow of traffic, thereby increasing congestion and reducing mobility. According to the Traffic Study (October 2007), the greatest grade occurs between Calgrove Boulevard and SR-14 and through the SR-14 interchange, with ±5 percent and ±4.5 percent northbound/southbound, respectively. These areas also experience the greatest speed reduction, to less than 50 miles per hour (mph).

As described in Table 1.B, the percentage of truck traffic along this stretch of I-5 ranges from 9.4 percent to 20.8 percent of the total traffic volume. Truck percentages along the study area are higher than other freeway facilities, which generally average between 5 and 8 percent. With this level of truck traffic, delays and accidents can be attributed to slower-moving vehicles, especially in sustained grades south of the Pico Canyon Road/Lyons Avenue interchange.

Given the high percentage of trucks and the conflict and inefficient operations as mentioned above, there is a need to separate trucks from passenger vehicles to improve congestion and delay associated with the interaction of these vehicle types.

1.2.1.6 Modal Interrelationships and System Linkages

As the greater metropolitan area of Los Angeles County continues to grow to the north, the freeways will continue to be more and more congested. HOV lanes are an effective method of increasing the capacity of the freeway system. In the city of Santa Clarita, annual ridership of the Metrolink commuter rail service has more than doubled in the past 10 years. During this time, annual ridership on the local fixed bus route network grew from 1.1 million annual riders to 3.3 million annual riders, while annual ridership on the express buses increased from 107,000 to 314,000.

1.2.1.7 District 7 HOV Lane Program

Caltrans District 7 has a district-wide HOV Lane Program in place to provide HOV lanes on most of the freeways in Los Angeles County. An HOV project on I-5 from State Route 118 (SR-118) to SR-14 has recently been opened to traffic. The proposed HOV projects on I-5 from State Route 170 (SR-170) to SR-118 and from State Route 134 (SR-134) to SR-170 are currently in the design stage. The SR-14/I-5 HOV Direct Connector project is currently under construction.

According to the *North County Combined Highway Corridors Study* (June 24, 2004), long-distance trips of 25 mi or more make up a high percentage of the trips on this

segment of I-5. Trips of this length are very suitable for ridesharing if HOV lanes are available to be utilized for significant travel time advantage.

1.2.1.8 Goods Movement

SCAG has identified goods movement as a critical component of transportation system planning within southern California. In March 2005, SCAG adopted the Southern California Strategy for Goods Movement: A Plan for Action, which identified the existing and projected volume of goods being transported through the Ports of Los Angeles and Long Beach and identified strategies to address movement of these goods through both rail and surface transportation facilities. According to SCAG's Action Plan, over one-third of waterborne freight containers traffic at United States ports are handled by the Ports of Los Angeles and Long Beach, with 50 to 60 percent of this freight then transported to destinations outside the Southern California region.

Provision of truck lanes on this portion of I-5 to facilitate goods movements is currently under further review as part of the Multi-County Goods Movement Action Plan (MCGMP). Metro, in partnership with the County Transportation Commissions; SCAG; and Caltrans Districts 7, 8, 11, and 12, is developing a plan that would address the multi-county goods movement challenges and identify solutions. The goal of the MCGMP is to identify a program of planned improvements/strategies to facilitate goods movement throughout the southern California region.

1.2.2 Purpose of the Proposed Project

The purpose of the project is to achieve the following objectives:

- Reduce delays to vehicles caused by slower-moving trucks through the hilly southern portion of this segment of I-5.
- Improve operational and safety design features to facilitate the movement of people, freight, and goods on the project segment.
- Reduce existing and forecast traffic congestion on the project segment of I-5 to accommodate planned growth within the study area.

1.3 Project Description

This section describes the Proposed Action and the design alternatives that were developed by a multidisciplinary team to achieve the proposed Interstate 5 (I-5) High-Occupancy Vehicle (HOV)/Truck Lanes project (project) purpose and need while avoiding or minimizing environmental impacts. The alternatives are Alternative 1 (No Build Alternative), Alternative 2 (Reduced Median Alternative), and Alternative 3 (Full Median Alternative).

The project is located in Los Angeles County on I-5 from State Route 14 (SR-14) on the south to Parker Road on the north and covers a distance of approximately 13.6 mi (PM R45.4/R59.0). Within the limits of the project, I-5 currently provides generally four mixed-flow lanes in each direction, with the exception of three mixed-flow lanes in each direction at the I-5/SR-14 interchange. In the project area, two truck lanes are separated from the mainline freeway south of Weldon Canyon Overcrossing. This truck bypass route begins/ends just north of the I-5/SR-14 interchange. As stated in Section 1.2, the purpose of the project is to reduce delays to other vehicles caused by slower-moving trucks through the hilly southern portion of the project area, improve persons and goods throughput, and reduce existing and forecast traffic congestion.

The project is being evaluated in three segments. Segment One extends from the I-5/ SR-14 interchange to north of the Pico Canyon Road/Lyons Avenue/I-5 interchange. Segment Two extends from north of the Pico Canyon Road/Lyons Avenue/I-5 interchange to north of the State Route 126 (SR-126) interchange. Segment Three extends from north of SR-126 to south of Parker Road.

Extending the proposed HOV lanes from SR-14 to Parker Road will maximize the HOV potential in this portion of the I-5 corridor, consistent with the existing planned development in north Los Angeles County, and are logical termini for the proposed project. For optimum HOV operations, it is preferable to end or begin HOV lanes in a lane that enables the HOV traffic to continue their travel without forcing those vehicles to exit an HOV lane and merge into a general-purpose lane. Connection to the existing HOV lanes at the I-5/State Route 24 (SR-24) interchange will maintain continuous flow of traffic north into the Santa Clarita Valley. Extending the HOV lanes through the I-5/SR-126 interchange will allow traffic to merge with the mainline without interfering with the HOV traffic.

1.4 Project Alternatives

1.4.1 Build Alternatives

Both Build Alternatives (Alternatives 2 and 3) propose to widen the center median and the outside shoulder of the northbound and southbound lanes between SR-14 and south of Parker Road to accommodate HOV, additional auxiliary, and truck lanes. Both Build Alternatives would provide one HOV lane in each direction from the I-5/ SR-14 interchange to south of the Parker Road interchange. Both Build Alternatives would extend one northbound truck lane from where the truck lanes currently merge with northbound I-5 near the Weldon Canyon Road/I-5 overcrossing to the Calgrove Boulevard/I-5 interchange. Southbound truck climbing lanes are proposed between the Weldon Canyon Road overcrossing and Calgrove Boulevard interchange (two truck lanes) and from Calgrove Boulevard to south of the Pico Canyon Road/Lyons Avenue interchange (one truck lane).

Both Build Alternatives propose adding and/or extending auxiliary lanes in the northbound direction from SR-14 to the northbound truck lane merge, Calgrove Boulevard to Pico Canyon Road/Lyons Avenue, and Valencia Boulevard to Magic Mountain Parkway, and in the southbound direction between SR-126 and Rye Canyon Road, Rye Canyon Road and Magic Mountain Parkway, and Valencia Boulevard and McBean Parkway.

1.4.1.1 Alternative 2 (Reduced Median Alternative) – Preferred Alternative

Alternative 2 proposes median and inside shoulder widths that are less than the California Department of Transportation (Caltrans) standard (48-foot [ft] median and less than 10 ft inside shoulders at median structure columns) within a maximum 210 ft cross section. The reduced minimum median width of 48 ft is measured from inside the Mixed Flow Lane (MFL), Edge of the Traveled Way (ETW), to inside the MFL ETW. Additional widening beyond the 48 ft minimum in the median area would be provided when necessary for horizontal stopping sight distance requirements. See Figure 1.2 for a typical cross section of Alternative 2. A 48 ft median would accommodate a 1 ft buffer, a 12 ft HOV lane, and a 10 ft inside shoulder. Shoulder widths along freeway ramps would be 8 ft. Alternative 2 would not provide for a 10 ft continuous inside shoulder (at column locations) or a 4 ft buffer between HOV and adjacent mixed-flow lanes. The HOV buffer would be 1 ft. The maximum cross

section width under Alternative 2 (210 ft) is intended to accommodate the proposed HOV and truck climbing lanes within the existing Caltrans right of way to the extent feasible to limit the number of right of way acquisitions.

Per Caltrans HOV lane guidelines, California Highway Patrol (CHP) enforcement areas are recommended every 2 mi. Based on Caltrans criteria, approximately five enforcement areas would be required within the 13.6 mi project limit. Additional width in the median (beyond the proposed 48 ft) is required to provide for those CHP enforcement areas and has been included in the design of the Reduced Median Alternative.

1.4.1.2 Alternative 3 (Full Median Alternative)

The Full Median Alternative (Alternative 3) proposes construction of the truck climbing and HOV lanes consistent with Caltrans standards. The standard full median width of 62 ft is measured from inside MFL ETW to inside MFL ETW. The only exception to the 62 ft median width occurs in two areas north of the Pico Canyon Road/Lyons Avenue interchange, where the existing median is 60 ft wide. Previous improvements in this area were constructed based on a previous standard of 60 ft. The typical cross section for this alternative is a maximum of 245 ft, which includes 12 ft travel lanes, a 10 ft outside shoulder, and a continuous CHP enforcement area in the median. See the typical cross section provided in Figure 1.3 for an example of this design. The standard median width of 62 ft would accommodate a 4 ft buffer, a 12 ft HOV lane, a 10 ft inside shoulder, and an additional 4 ft inside shoulder for continuous CHP enforcement. The only exception to the 62 ft median width would be in two areas north of the Pico Canyon Road/Lyons Avenue interchange where the median width would be 60 ft. The additional width for the continuous enforcement area provides for continuous 10 ft inside shoulders at the structure column locations.

1.4.1.3 Common Design Features of the Build Alternatives

Project features are shown in Figures 1.4, Alternative 2, and 1.5, Alternative 3, respectively. Common design features of both alternatives are described below.

Permanent Project Components

Mainline Improvements (HOV, Truck, and Auxiliary Lanes)

Both Build Alternatives propose:

- One HOV lane in the median in each direction from the I-5/SR-14 interchange (southern project limit) to south of the Parker Road interchange (northern project limit).
- One southbound truck lane south of Pico Canyon Road/Lyons Avenue and Calgrove Boulevard, and two southbound truck lanes from Calgrove Boulevard to just south of Weldon Canyon Road, where the truck bypass lanes (2) begin.
- Addition of one northbound truck lane from the I-5/SR-14 interchange to Calgrove Boulevard. All truck lanes would be built along the outside edge of the freeway.
- Auxiliary lanes in the northbound direction from SR-14 to Weldon Canyon Road, Calgrove Boulevard to Pico Canyon Road/Lyons Avenue, McBean Parkway to Valencia Boulevard, and Valencia Boulevard to Magic Mountain Parkway.
- Auxiliary lanes in the southbound direction between SR-126 and Rye Canyon Road, Rye Canyon Road and Magic Mountain Parkway, and Valencia Boulevard and McBean Parkway.
- Additional widening to provide standard horizontal stopping sight distance (SSD) (70 mph) on all 13 mainline horizontal curves.

Bridges

Several bridge structures require widening and/or replacement under both Build Alternatives. Both Alternatives would require the replacement of Weldon Canyon Bridge. In addition, both Build Alternatives would require the widening of the following seven bridges: Gavin Canyon undercrossing, Calgrove Boulevard undercrossing, Butte Canyon Bridge, I-5/SR-26 Separation (Magic Mountain Parkway overcrossing), Santa Clara Overhead, Rye Canyon undercrossing, and Castaic Creek Bridge.

Both Build Alternatives propose to improve the vertical clearance and provide SSD (70 mph) for the southbound I-5 lanes at the Pico Canyon Road/Lyons Avenue overcrossing structure.

Major Drainage Facilities

Drainage facilities are proposed at locations identified in the Preliminary Drainage Report to provide additional capacity for the existing drainage facilities based on the design flows established for the crossings. These facilities include the upsizing or replacement of existing culverts.

Water quality treatment devices include numerous vegetated swales to provide biofiltration, three detention basins, one gross solids removal device, and two Austin sand media filters. Depending on actual groundwater elevations, the detention basins may be able to function as infiltration basins. The locations of water quality treatment facilities will continue to be refined during final design.

Retaining Walls

Retaining walls are required to retain fill or cut slopes to avoid impacts and additional right of way throughout the corridor.

Retaining walls are required in the median where the elevation differences between the northbound and southbound lanes exceed 2 ft. Median retaining walls are generally required between SR-14 and Valencia Boulevard and between SR-126 and Parker Road. The heights of the median retaining walls vary from 2 ft to 18 ft.

Retaining walls are also required along the outside shoulder in many locations throughout the project to reduce impacts and minimize additional right of way requirements. These wall locations for Alternative 2 are shown in Figure 1.4, and the wall locations for Alternative 3 are shown on Figure 1.5. The outside shoulder retaining walls' heights range from 2 ft to 39 ft.

Sound Barriers

The project includes construction of sound barriers (SB) to reduce traffic noise associated with the proposed project. The following sound walls are considered reasonable and feasible on the basis of cost and effectiveness for both Alternatives 2 and 3:

- 10 ft sound barrier outside of Caltrans right of way adjacent to homes along Foxtail Court (SB No. 1-2).
- 6 ft sound barrier outside of Caltrans right of way adjacent to homes along The Old Road (SB No. 1-6).
- 10 ft sound barrier outside of Caltrans right of way, adjacent to homes along Los Arqueros and Playa Serena Drive (SB No. 2-1).
- 8 ft sound barrier for Alternative 2 and 12 ft sound wall for Alternative 3 outside of Caltrans right of way, adjacent to homes along Baviera Way (SB No. 2-2).
- 12 ft sound barrier outside of Caltrans right of way, adjacent to homes along Sycamore Meadow Drive (SB No. 2-3) for Alternative 2, and 14 to 16 ft for Alternative 3.

- 12 ft sound barrier outside of Caltrans right of way, adjacent to homes along Silver Aspen Way (SB No. 2-4).
- 16 ft sound barrier along the edge of shoulder within Caltrans right of way, adjacent to homes on Sandwedge Lane (SB No. 2-5)
- 6 ft sound barrier outside of Caltrans right of way, adjacent to homes along Altos Drive (SB No. 2-6).
- 6 ft sound barrier outside of Caltrans right of way, adjacent to the homes along Romeo Canyon Road (SB No. 3-3).
- 12 ft sound barrier outside of Caltrans right of way for Alternative 2, and 10 ft barrier for Alternative 3, adjacent to homes along Holmby Court (SB No. 3-7).
- 16 ft sound barrier along the edge of Caltrans right of way, adjacent to homes along Daisy Court (SB No. 3-11a).

Additional input from affected property owners would be obtained before the start of final design to confirm whether the walls would be constructed.

On- and Off-Ramps

Modifications to all the on- and off-ramps in the project limits are required to transition to the mainline widening.

Utilities

Utility relocations would be required in local roadways primarily at the transverse crossing of the mainline and, in some cases, adjacent to the Caltrans right of way to allow widening of the mainline. In general, the utility relocations are limited to areas where the local roadways cross I-5 at the interchanges and other structures and adjacent to the I-5 right of way where the widening encroaches onto the local roadway. Utilities to be relocated include general telephone cable, water lines, communication conduits, sewer lines, gas pipes, electrical lines, and oil transmission pipes.

Intelligent Transportation System (ITS) Facilities

Both Build Alternatives would include the addition of the following ITS facilities:

- Five new Closed Circuit Television (CCTV) cameras
- Nine new Ramp Metering Stations/Traffic Monitoring Stations (RMS/TMS)
- A new communication conduit throughout the project from SR-14 to Parker Road
- The upgrading of four CCTV cameras
- The upgrading of 19 RMS/TMS stations

- Upgrading three Changeable Message Signs (CMS)
- Upgrading a Weigh-in-Motion system (WIM)

These elements would provide needed links and fill data gaps in the current ITS system and provide for more comprehensive corridor management.

Landscaping and Irrigation Systems

Landscaping and irrigation systems would be provided where necessary within the corridor to provide aesthetic treatment, replacement planting, or mitigation planting for the project. The areas available for planting would be identified and coordinated with operations and maintenance to ensure consistency with their objectives and requirements. New irrigation systems would be designed to use reclaimed water (if available).

Design Exceptions

Both Build Alternatives would require mandatory design exceptions for the spacing between interchanges from Rye Canyon Road to Magic Mountain Parkway and from Rye Canyon Road to SR-126. The spacing between these interchanges would be less than 1 mi.

The following advisory design exceptions would be required for both Build Alternatives: (1) 2:1 sideslopes instead of the standard 4:1 sideslopes; (2) a 26 ft standard between the outer edge-of-travel-way (ETW) of I-5 and the ETW of the frontage road for both Build Alternatives at various locations; (3) a median width of 22 ft under Alternative 2 and 30 to 36 ft under Alternative 3 rather than the standard 36 ft median; (4) outer separation distance, with guardrails and/or walls proposed where the separation distance is less than 26 ft; and (5) use of the Rye Canyon Interchange as a partial interchange, with all ramps not connecting to a single cross street.

Temporary Project Components

Construction

A preliminary Transportation Management Plan has been developed and included in the Project Report.

Staging of the construction would be required for all ramp reconstruction, freeway widening, and profile adjustments. The number of through lanes would be maintained by restriping and shifting traffic on the existing lanes to maintain the existing

capacity. Closure of I-5 is not anticipated; however, temporary ramp closures are expected at various interchanges within the corridor.

The majority of the project involves widening the median area and the outside shoulder area of I-5 in two stages. Stage 1 involves placing temporary railing in the median area, constructing the median retaining walls and widening the median. Stage 2 involves placing temporary railing near the outside edge of traveled way, constructing outer retaining walls, and widening the proposed outside pavement. Widening of existing structures would be constructed in a similar sequence, with interior widening completed first, followed by exterior widening. Late-night closures in each direction may also be necessary for removal of the existing and construction of the new Weldon and Biscailuz Drive Overcrossings. Reconstruction at the ramp exit and entrances may require short-term closures.

The southbound lanes at the westbound to southbound loop on-ramp at the Pico Canyon Road/Lyons Avenue interchange would be closed for three to five months during the reconstruction of the profile of southbound I-5 to provide standard vertical clearance and improved SSD. The ramp provides access from westbound Pico Canyon Road to southbound I-5. The reconstruction of the profile would require shifting of the mainline travel lanes to the east to allow for the removal of material to lower the profile. During the closure period, the existing southbound on-ramp that serves eastbound Pico Canyon Road would be temporarily reconfigured to also allow left turns from westbound Pico Canyon Road to maintain the vehicle movement affected by the ramp closure. To allow left turns from westbound Pico Canyon Road onto the ramp, the westbound approach would require temporary restriping and a temporary two-phase traffic signal would be required to control the left turns and conflicting eastbound traffic.

All construction activities would be closely coordinated with other construction projects that are occurring. Existing state facilities such as changeable message signs, traffic cameras, and traffic count stations would also be protected during construction. Close coordination would also be needed with the City, the County, Caltrans, and the public to ensure that traffic along I-5 and surrounding streets remains at an acceptable level of operation during construction.

Construction activities are anticipated to occur between 2011 and 2015.

Construction Vehicle Access and Material Staging

Construction vehicle access and staging of construction materials would occur within disturbed or developed areas inside the existing right of way or the proposed additional right of way. Vehicle access and materials staging during construction of walls adjacent to Caltrans right of way would occur in approved designated areas. All construction vehicle access, materials staging and storage, and other construction activities would occur within the defined disturbance limits for the project.

Construction Lighting

The project would require nighttime construction activities in some parts of the project area, which would require use of portable equipment to light up the work areas.

Temporary Construction Easements

Temporary construction easements (TCEs) would be necessary for constructing walls along the right of way, for the extension of major drainage facilities, for widening bridges, and for water quality improvements that extend outside of the existing right of way. Alternative 2 would require 18 TCEs and Alternative 3 would require 26 TCEs.

Early Implementation Project (EIP)

Partial funding of the truck lanes component allows these lanes to be constructed as an early phase of the project. Construction of these truck lane improvements have been identified as the Early Implementation Project (EIP). The EIP consists of construction of truck lanes from the SR-14 Interchange to south of the Pico Canyon Road/Lyons Avenue (Pico/Lyons) overcrossing. The construction of the truck lanes would be accomplished generally through widening into the existing median and shifting lanes to utilize the available width in the median and defer the major outside widening until the construction of the HOV lanes. Minor outside widening would be required to accommodate retaining walls or drainage features in some locations.

There are currently five lanes on northbound I-5 north of the State Route 14 (SR-14) interchange. Two are separated truck lanes. After the merge of the truck lanes to the I-5 mainline, the existing outside lane drops approximately 1,600 feet (ft) north of the Weldon Canyon/I-5 overcrossing. The EIP improvements in the northbound direction would include widening into the existing median to maintain five northbound lanes after the merge of the separated truck lanes just north of the Weldon Canyon Road/I-5 overcrossing to the Calgrove Boulevard interchange. The outside lane would become

the truck climbing lane as the general-purpose lanes would be shifted toward the median. The inside lane would be dropped south of the Calgrove Boulevard undercrossing structure to join the existing four northbound lanes. Dropping the inside lane rather than the outside lane is proposed to avoid weaving conflicts in advance of the northbound off-ramp to Calgrove Boulevard between exiting vehicles and slower trucks in the outside lanes.

On southbound I-5, there are currently five lanes south of the Pico/Lyons interchange. The existing outside lane drops immediately after the southbound on-ramp from the Pico/Lyons interchange. The EIP improvements in the southbound direction would include widening into the existing median to maintain five southbound lanes from south of the Pico/Lyons interchange to Calgrove Boulevard. The truck lanes would become the truck climbing lane and the general-purpose lanes would be shifted toward the median.

At the Calgrove Boulevard southbound on-ramp, a sixth lane would be added on southbound I-5. Six southbound lanes would continue over The Old Road on the Gavin Canyon undercrossing structures, which would also be widened. Two of the six southbound lanes would be dropped at the existing SR-14 interchange truck bypass lanes, while four lanes would join the existing I-5 lanes before the SR-14 general-purpose lane connector.

For the EIP, retaining walls would be constructed along the centerline of I-5, from north of Weldon Canyon Road to approximately 1,600 ft south of the Pico Canyon/Lyons interchange, to accommodate the grade difference between the northbound and southbound inside median widening. The wall heights would range from 5.9 to 18.3 ft, with an average height of 11 ft.

Minor outside widening is proposed along southbound I-5, north of Weldon Canyon Road overcrossing, which will require reconstruction of an existing retaining wall along an existing cut slope. Reconstruction of this retaining wall would also be required for the Build Alternatives.

Drainage improvements identified for the full project would be constructed with the EIP unless alternative analysis and justification is provided to defer the improvements until the full project is constructed. These drainage improvements would include an additional 12 ft by 12 ft box culvert (or alternative with equal capacity) at Drainage 39 (located east of I-5 just north of Calgrove Boulevard that receives flows from Drainage 40 via two 11 ft wide box culverts and a 4 ft diameter concrete pipe, as

well as several small corrugated metal pipes) and a 30-inch reinforced concrete pipe (RCP) at Drainage 53 (a series of earthen drainages and v-ditches located where The Old Road passes under I-5, south of Calgrove Boulevard). These drainage improvements would also be required for the Build Alternatives. All of the proposed improvements would be constructed within the grading limits previously identified for the Build Alternatives in the EIR/EA.

1.4.1.4 Unique Features of the Build Alternatives

The following text discusses additional features to those discussed above that are unique to the two Build Alternatives.

Permanent Project Components

Mainline Improvements

Alternative 2 would have a reduced median width of 48 ft, no continuous CHP enforcement area, and nonstandard interchange ramp tapers.

Alternative 3 would have a standard median width of 62 ft (except in two areas north of the Pico/Lyons interchange where the existing median is 60 ft), a continuous CHP enforcement area, and standard interchange ramp tapers.

Improvements to Adjacent Roadways

Alternative 2 would not require the realignment of any adjacent roadways.

Alternative 3 would require the realignment of a portion of Coltrane Avenue and the restriping of a portion of The Old Road.

Bridges

In addition to modifications to the bridges discussed in Section 1.4.1, under Alternative 3 the Santa Clara River Bridge would be widened and Biscailuz Drive Overcrossing would be replaced.

Sound Barriers

In addition to the sound barriers discussed above under Section 1.4.1, the additional sound barriers are proposed to reduce traffic noise associated with either Alternative 2 or 3 only.

The following sound barrier is considered reasonable and feasible on the basis of cost and effectiveness for Alternative 2 only:

- A 10 ft sound barrier outside of Caltrans right-of-way, adjacent to homes along Desert Rose Drive (SB No. 3-8).

The following sound barrier is considered reasonable and feasible on the basis of cost and effectiveness for Alternative 3 only:

- A 16 ft sound barrier outside of Caltrans right of way, adjacent to homes along Saguaro Street and Apache Court (SB No. 3-9).

Additional input from affected property owners would be obtained before the start of final design to confirm whether the walls would be constructed.

Right-of-Way Acquisition

Alternative 2 would require acquisition of two parcels for additional right of way. The acquisition would be limited to one partial parcel take and one full parcel take.

Alternative 3 would require acquisition of four parcels for additional right of way. The acquisition would be limited to three partial parcel takes and one full parcel take.

Both alternatives would require TCEs to provide access to construct the improvements.

Castaic Commercial Vehicle Enforcement Facility

Alternative 3 would permanently remove one of three lanes at the Castaic Commercial Vehicle Enforcement Facility (Castaic CVEF) that is used to inspect vehicles/trucks, reducing the total number of lanes available to two. Modifications to the exiting facility would be needed to restore the existing available truck inspection capacity. Improvements would include expansion to the east to generate more usable area for the facility. This expansion would require conversion of the existing open channel into a covered pipe system to provide room for the ramps to be widened. Retaining walls would also be necessary.

Design Exceptions

In addition to the design exceptions discussed in Section 1.4.1, Alternative 2 would require a mandatory design exception to the standard 10 ft inside shoulder at structure columns (a minimum 7.4 ft shoulder is proposed) and the standard 8 ft outside shoulder at the Magic Mountain Parkway northbound on-ramp (a 4 to 8 ft shoulder is proposed).

In addition, an advisory design exception is required where the entrance and exit convergence/divergence geometry is not met under Alternative 2 at ramps at SR-14, Calgrove Boulevard, Pico Canyon Road/Lyons Avenue, and Hasley Canyon. This design exception is needed to avoid reverse curves along ramps to tie back into existing ramps, realignment of frontage roads, higher or increased retaining walls and/or existing ditch reconstruction.

Soil Balance

Alternative 2 would result in approximately 216,000 cubic yards (cy) of excess soil material that would require disposal.

Alternative 3 would result in approximately 296,000 cy of excess soil material that would require disposal.

The preference is that the contractor would be responsible for determining where the soil would be exported/imported. Excess material would be recycled into the project as feasible. In the worst case, the soil would be exported to a landfill. The nearest two landfills that accept construction material are in Sun Valley, California.

Cost

The estimated cost for Alternative 2 is $456 million and the estimated cost for Alternative 3 is $590 million.

Temporary Project Components

Construction

Under Alternative 3, the Biscailuz Drive/Honor Ranch Overcrossing would be constructed using a half width construction to maintain traffic flow on the overcrossing during construction. The three phases of a half width construction would be as follows: (1) Half of the new bridge would be constructed just north of the existing structure. Because the existing bridge structure is not impacted during this stage; it remains open to traffic. (2) The existing bridge would be removed and the remaining half of the proposed bridge would be constructed. Traffic would be shifted to the portion of the new bridge that was previously constructed. (3) The two halves of the newly constructed bridge would be joined.

1.4.2 No Build Alternative (Alternative 1)

The No Build Alternative would maintain the current configuration of the existing freeway. There would be no improvements to the mainline freeway, only approved/

pending local interchange improvements. Some of the known projects include the following:

- **Hasley Canyon Road/I-5 Interchange Improvements:** Construction ongoing, anticipated completion in 2009.
- **Rye Canyon Road/I-5 Southbound Ramp Improvements:** Construction anticipated to begin in 2009/2010 Fiscal Year.
- **Rye Canyon Road Widening:** Construction anticipated to begin in 2009/2010.
- **Magic Mountain Parkway/I-5 Interchange Improvements:** Phase 1 completed in April 2006. Phase 2 construction is ongoing and expected to be complete in 2009. Phase 3 currently has no funding.
- **The Old Road improvement projects (Widening of The Old Road from Magic Mountain Parkway to Turnberry Lane):** Draft Environmental Impact Report (EIR) anticipated for public review in early 2011. Phase I (Magic Mountain Parkway to Rye Canyon Road and replacement of the Santa Clara River Bridge) construction anticipated to begin in 2013. Phase II (Rye Canyon Road to Turnberry Lane) construction anticipated to begin as early as 2013.
- **The Old Road Widening (Parker Road to Hillcrest Parkway):** Project Study Report (PSR) equivalent approved January 25, 2007. Los Angeles County is currently performing environmental studies. Public review of the environmental document is tentatively scheduled for early 2010 . Schedule is contingent upon securing additional funding for the project.
- **I-5/SR-14 HOV Direct Connector Project:** Construction anticipated from 2008 to 2011.
- **I-5 HOV lanes from SR-118 to SR-14:** Construction completed. HOV lanes opened in April 2008.
- **I-5 Pavement Rehabilitation:** One project programmed with construction to begin in 2012/2013. Other projects to follow as funding becomes available.
- **Upgrade I-5 Median Barrier from South of Weldon Canyon Road to 530 ft north of Weldon Canyon:** Construction to begin in 2011.
- **Corridor ITS Improvements:** No project currently programmed. To be implemented with projects as appropriate until complete.
- **I-5 at Castaic Weight Station; Upgrade Weigh Station Facility:** Final Project Report/Environmental Document (PR/ED) approved in October 2008. Construction to begin in October 2010.

Under the No Build Alternative, the HOV and truck lanes would not be added and the congestion and operational problems in this segment would not be alleviated.

The No Build Alternative provides a baseline for comparing the impacts associated with the Build Alternatives since environmental reviews must consider the effects of not implementing the project.

1.4.3 TSM and Mass-Transit Alternatives

The Build Alternatives are part of a comprehensive strategy to address existing and forecast traffic congestion within north Los Angeles County. In June 2004, the North County Combined Highway Corridors Study was completed and provided a multimodal transportation plan for the northern portion of Los Angeles County, addressing both short- (2010) and long-range (2025) requirements to accommodate a variety of trip purposes, including travel (highways and transit) and goods movement (trucks) within and through the Study Area. This study was conducted by the Los Angeles Metropolitan Transportation Authority (Metro) in cooperation with the Cities of Lancaster, Los Angeles, Palmdale, and Santa Clarita and the County of Los Angeles.

The study developed a list of 11 conceptual alternatives for I-5 and SR-14 based on the results of a comprehensive scoping process conducted between October 2001 and March 2002. The process involved the study team, several dozen key study stakeholders, representatives from participating agencies, and a Technical Advisory Committee (TAC) composed of representatives of the sponsoring agencies, Caltrans, SCAG, and the FHWA and FTA.

The North County Transportation Coalition, composed of elected officials from Los Angeles County, north Los Angeles County cities, and the California State Legislature, provided policy oversight for the study.

Through a comprehensive public outreach process, the study identified and screened 11 conceptual scenarios to a short list of six feasible alternatives.

A locally preferred corridor strategy was developed through this process and includes both short-term and long-term recommendations.

The recommended short-term locally preferred strategy consists of:

- Adding an initial HOV lane in each direction between SR-14 and SR-126 and extending truck lanes north of SR-14 to Calgrove Avenue. This strategy increases capacity just north of the I-5/SR-14 interchange by nearly 50 percent.
- Increased Metrolink commuter rail and express bus services will be made available for I-5 travelers. The short-term strategy would triple the existing peak-hour express bus service and increase Metrolink commuter rail service from two peak-hour trains with a total of eight cars to three peak-hour trains with a total of 18 cars, more than doubling Metrolink commuter rail capacity in the corridor.

The recommended long-term locally preferred strategy as modified for corridor integration includes:

- Doubling the current four lanes to eight lanes in each direction between SR-14 and SR-126. This would provide two lanes for HOV use, two lanes for trucks and four lanes for general use. The increase in the number of lanes would accommodate the forecast for a doubling of I-5 travel demand by 2025.
- North of SR-126, one new HOV lane would be extended to Lake Hughes and a new truck lane would be added to the existing four lanes in each direction. Sizing of I-5 north of Lake Hughes was largely governed by anticipated through traffic rather than suburban development, and includes four general-purpose lanes and one truck climbing lane in each direction north to the Kern County Line.
- Transit service in the I-5 corridor would be tripled, with twice the number of Metrolink train departures and three times the number of commuter rail cars. Express bus departures in the peak period would increase fourfold over current levels.

This project proposes to complete portions of the identified highway improvements of the short- and long-range strategies consistent with other improvements in the corridor. The Transportation System Management (TSM) and transit elements of the locally preferred strategy within the corridor are being pursued and developed separately by Metro and other local agencies as part of the North County Combined Highway Corridor Study multimodal transportation plan.

Existing and Future Transit Opportunities

The study area contains a variety of public transit options, including fixed-route and express bus services, park-and-ride lots, dial-a-ride, paratransit services, and Metrolink commuter rail, to address existing demand for public transit. Amtrak bus service links the Antelope Valley to the rail system in Bakersfield, where the

Southwest Chief line leaves for Victorville, and eastward through Las Vegas, Kansas City, and Chicago.

Transit operators in North County are aggressively expanding services and facilities to meet short-term demand, especially for north/south commuter express service. However, funded improvements are insufficient to address transit's emerging long-range role (which could be significantly greater if increased transit capacity receives priority) as a cost-effective remedy to some of the regional mobility challenges. Congestion will continue, requiring public transportation to carry more of the burden. A comprehensive multimodal transit framework that is an appropriate mix of rail and bus services is needed to support future urban growth, provide a backup to travel by automobile, and support a lifestyle less dependent on the automobile.

Various rail and bus services currently serve the north Los Angeles County area and many short- and long-term improvements are planned and programmed. The transit infrastructure includes transit centers, maintenance facilities, park-and-ride facilities, and transportation coordination. Many improvements to facilities and the service are proposed. The following discussion identified existing and programmed/proposed transit facilities within the north Los Angeles County area.

Passenger Rail

The Southern California Regional Rail Authority (SCRRA) operates Metrolink, a five-county commuter rail network of over 400 mi. In the vicinity of the project area, Metrolink operates the Antelope Valley Line, which connects Palmdale/Lancaster and Santa Clarita to the Los Angeles Union Station and points in between, including San Fernando Valley, Burbank, and Glendale. Twelve weekday trains operate in each direction on the Antelope Valley Line. There are three Metrolink stations within the City of Santa Clarita: the Jan Heidt Newhall Metrolink Station, Santa Clarita Metrolink Station and Princessa Metrolink Station.

Metrolink's Short Range Plan includes improvements to the Antelope Valley line, which will allow more trains to serve the Newhall Metrolink Station and will also allow faster train travel (included in the 2008 RTIP). The Santa Clarita Transportation Development Plan indicates that Metrolink anticipates increasing the 24-train weekday schedule to 28 trains by 2010 and 32 trains by 2015. In addition, the number of cars and seats per trip will also expand. Track and facility improvements are proposed at the Sylmar, Santa Clarita, Vincent Grade, and Lancaster Metrolink stations. Signal upgrades are also proposed for the Antelope Valley Line. SCAG's

2008 RTP includes funding for the right of way procurement for additional land at the Santa Clarita Metrolink station and purchase of land and construction of a regional park-and-ride lot adjacent to the McBean Regional Transit Center park-and-ride.

Bus Services

Within the project area, various agencies provide regional express service and local bus service. The City of Santa Clarita operates 10 regional express routes between Santa Clarita and the San Fernando Valley, West Los Angeles, and Downtown Los Angeles. In addition to the Santa Clarita and Newhall Metrolink Stations, the McBean Transfer Station (MTS) was recently developed to provide a transfer point. Antelope Valley Transit operates three commuter routes and a commuter service to Los Angeles International Airport (LAX). Nine park-and-ride lots are provided within the study area.

Santa Clarita operates seven local routes connecting various attractors in the City. Metrolink Station Link Series 500 Feeder buses operate between the Metrolink Stations and Magic Mountain, Central Valencia, Valencia Industrial Center, and Valencia Commerce Center. In addition to the local service routes, a Commuter Express Service is available Monday through Friday. The Commuter Express Service operates between Santa Clarita, downtown Los Angeles, various cities within northern Los Angeles County, Lancaster, and Palmdale.

Transit use has greatly increased in the north Los Angeles County area, and thus a number of improvements are planned. Several buses would be purchased for Santa Clarita. Additions to the University of California at Los Angeles (UCLA)/Century City and Downtown service are proposed. Additionally, the City is considering a North Hollywood and Universal City route, which would connect Santa Clarita to Metro's Red and Orange Line Stations. New routes between Canyon Country and Castaic and Downtown Los Angeles are also proposed.

In Antelope Valley, there are proposals to expand the existing passenger service as well as add new routes to Universal City where riders could connect to the Metro Red Line or Metro Rapid and to Pasadena that would connect to the Metro Gold Line. An additional route to serve Westwood and Wilshire only and reserve the existing route to serve only Century City and West Hollywood have been identified..

In addition to providing additional service and coaches, a number of system improvements are planned, including bus maintenance facilities, advanced

communications and monitoring systems, a Universal Fare System, ITS enhancements, transit priority strategies, and computer-aided dispatching.

The City of Santa Clarita is proposing to expand the existing park-and-ride lots and to consider a new park-and-ride lot in the Castaic area.

Other TSM/TDM Improvements

Currently, there is existing ramp metering at the on-ramps at Valencia Boulevard and on the northbound ramps at Pico Canyon Road/Lyons Avenue. With construction of the approved/pending projects listed in Section 1.4.1.5, ramp metering would be added at Magic Mountain Parkway, Hasley Canyon Road, and the southbound ramp at Rye Canyon Road. The project would maintain the existing and planned ramp metering.

As described above, the proposed project is a component of an integrated strategy for addressing long-term transportation issues in north Los Angeles County that includes commuter rail, regional and local bus, and roadway/freeway improvements. The proposed HOV lane would enhance the existing, programmed, and planned transit service within the north Los Angeles County, consistent with the overall transportation plan for this portion of the County. Upon completion of the project, a continuous HOV lane in each direction would extend from Parker Road to SR-134. Commuter buses would be able to access these lanes, speeding their commute and reducing auto trips as they continue to attract more riders. HOV lanes enhance the commuter bus experience by reducing travel time and providing more reliability in meeting their schedules. Given that the Build Alternatives are part of an integrated transportation program that includes passenger rail, and regional and local bus service improvements to address projected travel demand within north Los Angeles County, evaluation of TSM/TDM improvements beyond those identified in the North County Study and the local planning efforts of METRO and City of Santa Clarita Transit are not appropriate.

1.4.4 Comparison of the Alternatives

Table 1.H provides a summary/comparison of the design features of the project alternatives.

Table 1.H Comparison of Alternatives

Feature	Alternative 1 (No Build)	Alternative 2 (Reduced Median Alternative) – Preferred Alternative	Alternative 3 (Full Median Alternative)
HOV Lanes	No addition of HOV lanes	One HOV lane in each direction from the I-5/SR-14 interchange to south of the Parker Road interchange	One HOV lane in each direction from the I-5/SR-14 interchange to south of the Parker Road interchange
Truck Lanes	No addition of truck lanes	One truck lane northbound from where the truck lanes currently merge with northbound I-5 near the Weldon Canyon Road/I-5 interchange to the Calgrove Boulevard/I-5 interchange. Southbound truck climbing lanes are proposed between the Weldon Canyon Road and Calgrove Boulevard interchanges (two truck lanes) and from Calgrove Boulevard to the Pico Canyon Road/Lyons Avenue interchange (one truck lane).	One truck lane northbound from where the truck lanes currently merge with northbound I-5 near the Weldon Canyon Road/I-5 interchange to the Calgrove Boulevard/I-5 interchange. Southbound climbing lanes are proposed between Weldon Canyon Road and Calgrove Boulevard interchanges (two truck lanes) and Calgrove Boulevard to the Pico/Lyons interchange (one truck lane).
Auxiliary Lanes	No additional auxiliary lanes	Northbound: • SR-14 to the northbound truck lane merge • Calgrove Boulevard to Pico Canyon Road/Lyons Avenue • Valencia Boulevard to Magic Mountain Parkway Southbound • SR-126 to Rye Canyon Road • Rye Canyon Road to Magic Mountain Parkway • Valencia Boulevard to McBean Parkway	Northbound: • SR-14 to the northbound truck lane merge • Calgrove Boulevard to Pico Canyon Road/Lyons Avenue • Valencia Boulevard to Magic Mountain Parkway Southbound: • SR-126 to Rye Canyon Road • Rye Canyon Road to Magic Mountain Parkway • Valencia Boulevard to McBean Parkway
Median and inside shoulder widths	No improvements	48 ft; less than 10 ft at structure columns	62 ft; 10 ft
CHP enforcement area	No improvements	Five individual enforcement areas within the median	One continuous enforcement area in the median
Stopping site distance	No improvements	Standard horizontal SSD on all mainline curves	Standard horizontal SSD on all mainline curves

Table 1.H Comparison of Alternatives

Feature	Alternative 1 (No Build)	Alternative 2 (Reduced Median Alternative) – Preferred Alternative	Alternative 3 (Full Median Alternative)
Bridges	No bridge replacement or widening	Replacement: • Weldon Canyon Bridge Widening: • Gavin Canyon • Calgrove • Butte Canyon • Magic Mountain (Route 5/126 Separation) • Santa Clara Overhead • Rye Canyon • Castaic Creek Standard vertical clearance at Pico/Lyons	Replacement: • Weldon Canyon Bridge • Biscailuz Drive Overcrossing Widening: • Gavin Canyon • Calgrove • Butte Canyon • Magic Mountain (Route 5/126 Separation) • Santa Clara Overhead • Rye Canyon • Castaic Creek • Santa Clara River Bridge Standard vertical clearance at Pico/Lyons
Drainage facilities	No modification of drainage facilities	• Gavin Canyon Tributary: Replace 30 in CMP with 30 in RCP • Gavin Canyon Culvert : Add one 12 x 12 ft RCB or three 36 in RCP • South Fork Santa Clara River Tributary: Add two 3 x 8 ft RCB or three 36 in RCP • Tributary to Santa Clara River: Add 48 in reinforced concrete pipe (RCP) • Tributary to Santa Clara River: Add 42 in RCP • Tributary to Santa Clara River: Add 42 in RCP • Tributary to Santa Clara River: Add two 8 x 6 ft RCB • Tributary to Castaic Creek: Replace 30 in RCP with 42 in RCP • Tributary to Castaic Creek: Replace 30 in RCP with	• Gavin Canyon Tributary: Replace 30 in CMP with 30 in RCP • Gavin Canyon Culvert : Add one 12 x 12 ft RCB or three 36 in RCP • S. Fork Santa Clara River Tributary: Add two 3 x 8 ft RCB or three 36 in RCP • Tributary to Santa Clara River: Add 48 in RCP • Tributary to Santa Clara River: Add 42 in RCP • Tributary to Santa Clara River: Add 42 in RCP • Tributary to Santa Clara River: Add two 8 x 6 ft RCB • Tributary to Castaic Creek: Replace 30 in RCP with 42 in RCP • Tributary to Castaic Creek: Replace 30 in RCP with

Table 1.H Comparison of Alternatives

Feature	Alternative 1 (No Build)	Alternative 2 (Reduced Median Alternative) – Preferred Alternative	Alternative 3 (Full Median Alternative)
		42 in RCP	42 in RCP
Water quality treatment	No water quality treatment	Vegetated swales, detention basins, gross solids removal device, Austin sand media filters, and possibly infiltration basins	Vegetated swales, detention basins, gross solids removal device, Austin sand media filters, and possibly infiltration basins
Retaining walls	No additional retaining walls	Median retaining walls between SR-14 and Valencia Boulevard and between SR-126 and Parker Road Retaining walls along outside shoulder (shown in Figure 2.1); height ranging from 2 ft to 39 ft	Median retaining walls between SR-14 and Valencia Boulevard and between SR-126 and Parker Road Retaining walls along outside shoulder (shown in Figure 2.1); height ranging from 2 ft to 39 ft
Sound walls	No additional soundwalls	Sound walls outside of Caltrans right-of-way adjacent to homes along Foxtail Court, Old Road, Los Arqueros and Playa Serena Drive, Baviera Way, Sycamore Meadow Drive, Silver Aspen Way, Altos Drive, Holmby Court, and Romeo Canyon Road. For Alt. 2 only, Desert Rose Drive.	Sound walls outside of Caltrans right-of-way adjacent to homes along Foxtail Court, Old Road, Los Arqueros and Playa Serena Drive, Baviera Way, Sycamore Meadow Drive, Silver Aspen Way, , Altos Drive, Holmby Court, and Romeo Canyon Road. For Alt. 3 only, Saquaro Street and Apache Court
Ramps	No improvements	Modification of all on- and off-ramps	Modification of all on- and off-ramps
Utilities	No utility relocation	Relocation of general telephone cable, water lines, communication conduits, sewer lines, gas pipes, electrical lines, and oil transmission pipes.	Relocation of general telephone cable, water lines, communication conduits, sewer lines, gas pipes, electrical lines, and oil transmission pipes.
ITS Facilities	No ITS facilities proposed	• 5 new Closed Circuit Television (CCTV) cameras • 9 new Traffic Monitoring Stations/Ramp Metering Stations (TMS/RMS) • New communication conduit throughout the project from SR-14 to Parker Road • Upgrading of 4 CCTV cameras • Upgrading of 19 TMS/RMS stations • Upgrading of 3 Changeable Message Signs (CMS)	• 5 new Closed Circuit Television (CCTV) cameras • 9 new Traffic Monitoring Stations/Ramp Metering Stations (TMS/RMS) • New communication conduit throughout the project from SR-14 to Parker Road • Upgrading of 4 CCTV cameras • Upgrading of 19 TMS/RMS stations • Upgrading of 3 Changeable Message Signs (CMS)
Landscaping and irrigation systems	No improvements	Landscaping and irrigation systems would be provided where necessary within the corridor to provide aesthetic treatment, replacement planting, or mitigation	Landscaping and irrigation systems would be provided where necessary within the corridor to provide aesthetic treatment, replacement planting, or

Table 1.H Comparison of Alternatives

Feature	Alternative 1 (No Build)	Alternative 2 (Reduced Median Alternative) – Preferred Alternative	Alternative 3 (Full Median Alternative)
		planting for the project.	mitigation planting for the project.
Construction	No construction activities	• Closure of southbound lanes at the westbound to southbound loop on-ramp at Pico Canyon Road/Lyons Avenue interchange • Construction staging areas • Nighttime construction lighting	• Closure of southbound lanes at the westbound to southbound loop on-ramp at Pico Canyon Road/Lyons Avenue interchange • Construction staging areas • Nighttime construction lighting
Temporary construction easements	No temporary construction easements	18 temporary construction easements for: • Construction of walls along the right of way • Extension of major drainage facilities • Bridge widening • Water quality improvements that extend outside the right of way	26 temporary construction easements for: • Construction walls along the right of way • Extension of major drainage facilities • Bridge widening • Water quality improvements that extend outside the right of way
Right of way acquisition	No right of way acquisition	• 1 partial parcel takes • 1 full parcel take	• 3 partial parcel takes • 1 full parcel take
Soil balance	No change in soil balance	Approximately 216,000 cy of exported material	Approximately 296,000 cy of exported material

1.4.5 Identification of the Preferred Alternative

The Draft EIR/EA was circulated for public review between December 17, 2008, and February 17, 2009. A public hearing was held on February 5, 2009. All comments from the public hearing and those received during the public review period were reviewed by Caltrans.

After comparing and weighing the benefits and impacts of all of the feasible alternatives, as summarized in Summary Table S.2, the project development team has identified Alternative 2 (Reduced Median Alternative) as the Preferred Alternative for the I-5 HOV/Truck Lanes project. Caltrans has made the final determination of the project's impact on the environment based on the comments and concerns expressed during the public review period and the results of the engineering and environmental technical analysis, and the Preferred Alternative would attain the purpose of the project.

Alternative 2 would achieve the project's purpose by providing the same operational benefits to the freeway as Alternative 3, but it would have fewer impacts because of its smaller environmental footprint. The design of Alternative 2 does not include widening of the Santa Clarita River Bridge, encroachment into the Castaic CVEF, or reconstruction of the Biscailuz Drive/Honor Ranch Overcrossing. All three of these components are part of Alternative 3 and would result in greater environmental and/or community impacts than Alternative 2.

With the construction of Alternative 2, the proposed truck climbing lanes would reduce the delays to vehicles caused by the slower-moving trucks; improve the operational and safety design features with the addition of the HOV lanes, which would allow traffic to use the lanes more efficiently; and facilitate the movement of people, freight, and goods in the project area. Alternative 2 would reduce traffic congestion because of the improved traffic flow and would accommodate the planned growth within the project area. The HOV lanes provided in Alternative 2 would also lead to other enhanced transit options, such as an express bus facility.

As shown in Table S.2, Summary of Impacts, Alternative 2 would have fewer impacts to environmental resources than Alternative 3 since it has a smaller footprint design. Substantial difference in impacts between Alternatives 2 and 3 are highlighted below:

- Reduced number of partial acquisitions (one parcel for Alternative 2 versus three parcels for Alternative 3).
- No impacts occurring to Farmlands with Alternative 2. Alternative 3 affects 3.02 ac of Prime Farmland or Farmland of Statewide Importance.
- Reduced community and law enforcement impacts, as Alternative 2 maintains the CVEF, operated by the CHP, in its existing configuration and does not include reconstruction of the Biscailuz Drive overcrossing (which provides access to the Pitchess Detention Center).
- Reduced permanent impacts to oak woodland and individual oaks with Alternative 2 compared to Alternative 3.
- Reduced permanent impacts to jurisdictional waters/wetlands with Alternative 2 compared to Alternative 3.
- Reduced cumulative impacts associated with the temporal loss of oak trees.

After careful consideration of all the aforementioned concerns, and in further consideration of all other environmental analyses contained in the EIR/EA, Alternative 2 (Reduced Median Alternative) has been selected as the Preferred Alternative.

1.4.6 Alternatives Considered but Eliminated from Further Discussion

During preliminary studies, four project alternatives were identified and studied in the Project Study Report/Project Development Support (PSR/PDS) and Preliminary Environmental Assessment Report (PEAR). The four alternatives included Alternative 1 (No Build Alternative), Alternative 2 (Reduced Median Alternative), Alternative 3 (Full Median Alternative), and Alternative 4 (Transportation Concept Report [TCR] Alternative). As discussed below, the TCR Alternative (Alternative 4) was considered but dropped from consideration.

TCR Alternative (Alternative 4)

Alternative 4 would build out this roadway section to full buildout as considered in the TCR approved by Caltrans in November of 1998. Alternative 4 proposed adding two HOV lanes in each direction from the I-5/SR-14 interchange to a transition point north of Valencia Boulevard and south of Magic Mountain Parkway. From there, up to the northern project limit at the Parker Road interchange, it proposed the addition of one HOV lane. Alternative 4 also proposed extending the existing truck lanes in each direction from the I-5/SR-14 interchange to the northern project limit at the

Parker Road interchange. Alternative 4 proposed standard median and shoulder widths and CHP enforcement areas. This widening would require substantially more property acquisitions than the other Build Alternatives, resulting in greater disruption to the local community.

Given the larger footprint, impacts to biological resources and jurisdictional waters would be greater than the other Build Alternatives due to the larger roadway width, grading requirements, structure widening, and utility extensions. As the two Build Alternatives can be implemented with minimal additional right of way, Alternative 4 would require additional right of way and have major impacts beyond the two Build Alternatives brought forward for review.

In addition to the community and resource impacts described above, Alternative 4 is inconsistent with the segment of I-5 to the south. Currently, HOV lanes are being constructed south and through the SR-14 interchange. The current I-5 HOV lane project, immediately south of SR-14, is constructing only one HOV lane in each direction. Without two HOV lanes in each direction south of the I-5/SR-14 interchange, the double HOV lanes to the north would be inconsistent with the corridor improvements and cause operational issues at the transitions.

Given the greater level of environmental impacts and inconsistency with corridor improvements to the south of the project study area, the TCR Alternative has been withdrawn from further consideration.

Truck Lanes Only

This alternative includes construction of one northbound and one southbound truck lane within the study corridor. These truck lanes would connect to the existing truck lanes located south of the project area. Implementation of this alternative would reduce the existing congestion that currently results from truck/vehicle conflicts (i.e., slow-moving vehicles and weaving limitations). Although congestion would be improved through the separation of trucks from mixed-flow traffic, construction of the truck lanes only would not completely address existing and forecast congestion within the study corridor previously described in Section 1.4.1, since the majority of vehicles are passenger cars, not trucks. As this alternative does not reduce congestion, it does not meet the purpose and need for the proposed project.

HOV Lanes Only

This alternative includes construction of one northbound and one southbound HOV lane within the study corridor. These HOV lanes would connect to the HOV lanes

currently under construction south of the I-5/SR-14 interchange. Implementation of this alternative would address existing and forecast traffic congestion by reducing the number of vehicles using the facility. Congestion associated with truck/vehicle conflicts (i.e., slow-moving vehicles and weaving limitations) would not be addressed by this alternative. Construction of the HOV lanes only would address existing and forecast congestion within the study corridor but not the truck/vehicle conflicts previously described in Section 1.4.1. As this alternative does not improve goods movement in the corridor, it does not meet the purpose and need for the proposed project.

HOV Lanes with One Northbound and Southbound Truck Lane

This alternative would construct two HOV lanes (one northbound and one southbound) and two truck lanes (one northbound and one southbound) within the project study area. Construction of the second truck lane from Calgrove Boulevard to SR-14 would be eliminated from the project. The construction of one versus two truck lanes was evaluated in the Traffic Analysis (October 2007).

As described in the Traffic Analysis, the operation of the truck lanes would be reduced by one Level of Service (LOS) (A to B) with the provision of one truck lane instead of two. Conversely, by providing two truck lanes, the LOS of the truck lanes improves by one LOS (from B to A).

A single truck lane in the uphill grade section is only able to accommodate the slowest trucks since the faster (e.g., unloaded) trucks, will use the outside mixed-flow lane to pass the slower trucks. Observed conditions indicate that due to the grade the faster trucks travel at a speed slower than the free-flow speed of passenger vehicles, thus reducing the average speeds in the mixed-flow lanes. Providing two truck lanes would allow the faster trucks to pass the slower trucks without impacting the adjacent mixed-flow lanes, and improved LOS for both the trucks and the vehicles in the mixed-flow lanes would result. The analysis indicates that providing two truck lanes improves the LOS of the mixed-flow lanes by one LOS from D to C. Since provision of one truck lane did not provide the same operational improvements identified for the Build Alternatives, it was determined to be less effective at achieving the purpose and need and was withdrawn from further consideration.

Mixed-Flow Lanes

This alternative would construct one northbound and one southbound mixed-flow lane within the study corridor. Construction of the mixed-flow lanes would result in a

cross section consisting of five mixed-flow lanes in each direction. South of the project area, I-5 has four mixed-flow lanes in each direction. North of the study area, I-5 has four mixed-flow lanes in each direction. Thus, construction of the mixed-flow lanes would result in bottlenecks at the northerly and southerly ends of the project area, where the widened mainline would have to merge with the smaller facility width. Currently, there are no plans to widen I-5 north and south of the project area. Given that chokepoints would be generated at the northern and southern termini of the project area due to the lane limitations, construction of mixed-flow lanes within the study corridor was determined not feasible.

Directional-Flow HOV Lane

This alternative provides for one HOV lane in the median of the freeway, which would allow traffic use in a southerly direction during the a.m. peak hour and a northerly direction in the p.m. peak hour, the general commuting pattern out of and into the Santa Clarita Valley. Provision of a directional-flow HOV lane would not be feasible given the topographic constraints within the existing median and the design of the existing bridge structures within the study corridor. Currently, the existing median is in a split-grade configuration in several areas, which would not be conducive to construction of a single HOV lane. Additionally, all of the bridges in the study area have center columns located in the median. To provide for a single HOV lane, these bridges would need to be redesigned to remove/alter the center column or the lane would have to weave through the bridges to avoid the columns. Given the existing topographic and structural constraints in the corridor, construction of a directional-flow HOV lane was determined not to be feasible.

1.5 Anticipated Permits and Approvals Needed

Table 1.I identifies the permits and/or approvals that are or may be required prior to or during construction of the project.

Table 1.I Permits and/or Approvals Needed

Permit/Approval	Agency	Status
Encroachment Permit	County of Los Angeles	Coordination will occur after environmental document approval.
Streambed Alteration Agreement (Section 1600)	California Department of Fish and Game (CDFG)	Application will be submitted after environmental document approval.
Section 402 NPDES (Construction Activity)	Los Angeles Regional Water Quality Control Board	Application will be submitted prior to construction.
Section 402 NPDES (Groundwater Dewatering)	Los Angeles Regional Water Quality Control Board	Application will be submitted prior to construction.
Section 401 Permit	Los Angeles Regional Water Quality Control Board	Application will be submitted after environmental document approval.
Section 404 Permit (Individual or Nationwide[1])	United States Army Corps of Engineers (ACOE)	Application will be submitted after environmental document approval.
Section 7 Informal Consultation for Threatened and Endangered Species	United States Fish and Wildlife Service	Completed
Flood Control Permit	County of Los Angeles	Coordination will occur after environmental document approval.

[1] After receipt of the Section 404 Permit application, the ACOE will determine whether an Individual or Nationwide Permit is applicable.

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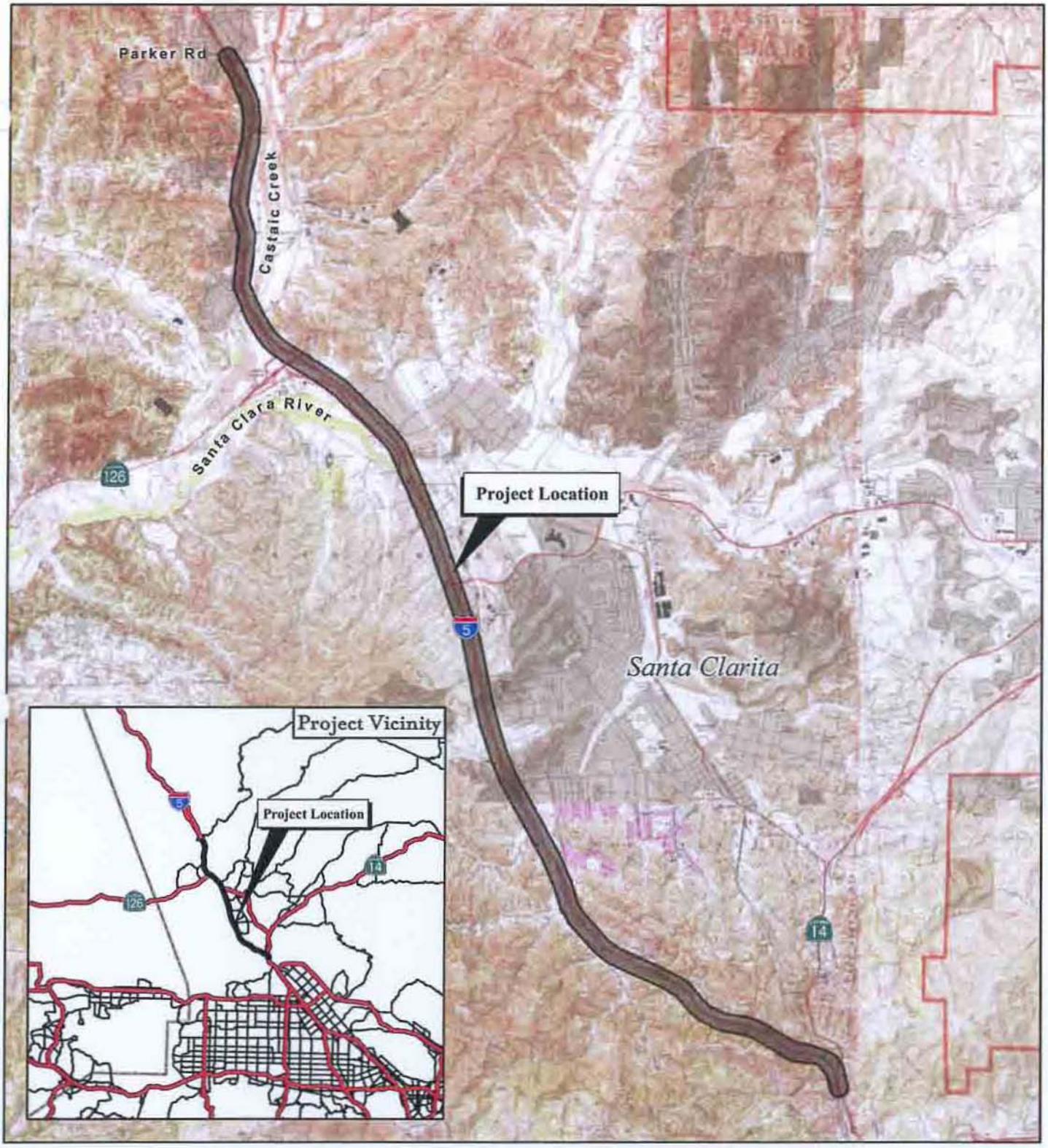

FIGURE 1.1

LEGEND

Project Location

N

0 3,750 7,500 Feet

I-5 HOV / Truck Lanes Project

Project Location

07-LA-5 PM R45.4/R59.0

EA 2332E0

SOURCE: USGS 7.5' QUAD, CALIF.

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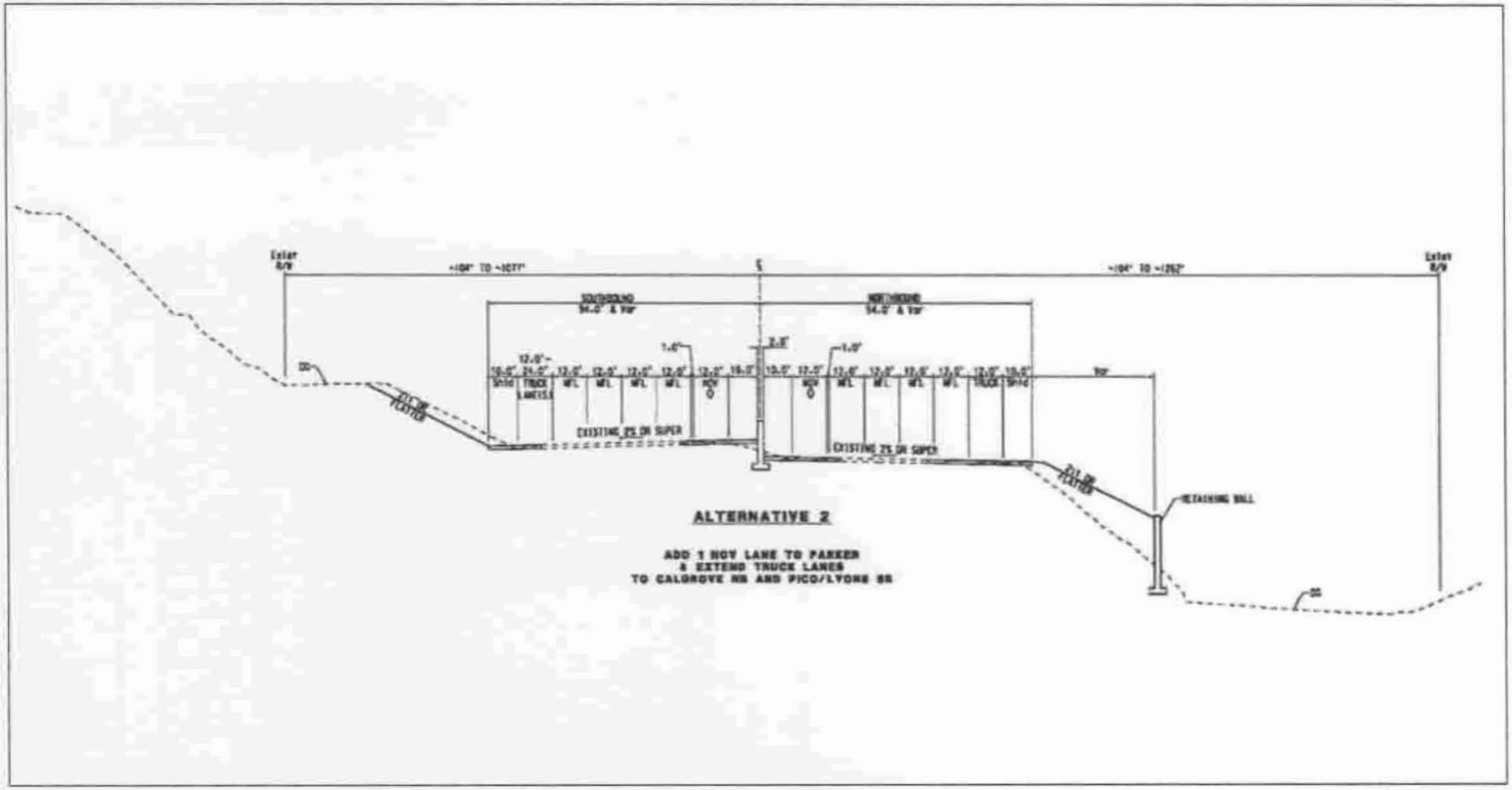

FIGURE I.2

I-5 HOV / Truck Lanes Project

Alternative 2 Typical Cross Section

07-LA-5 PM R45.4/R59.0
EA 2332E0

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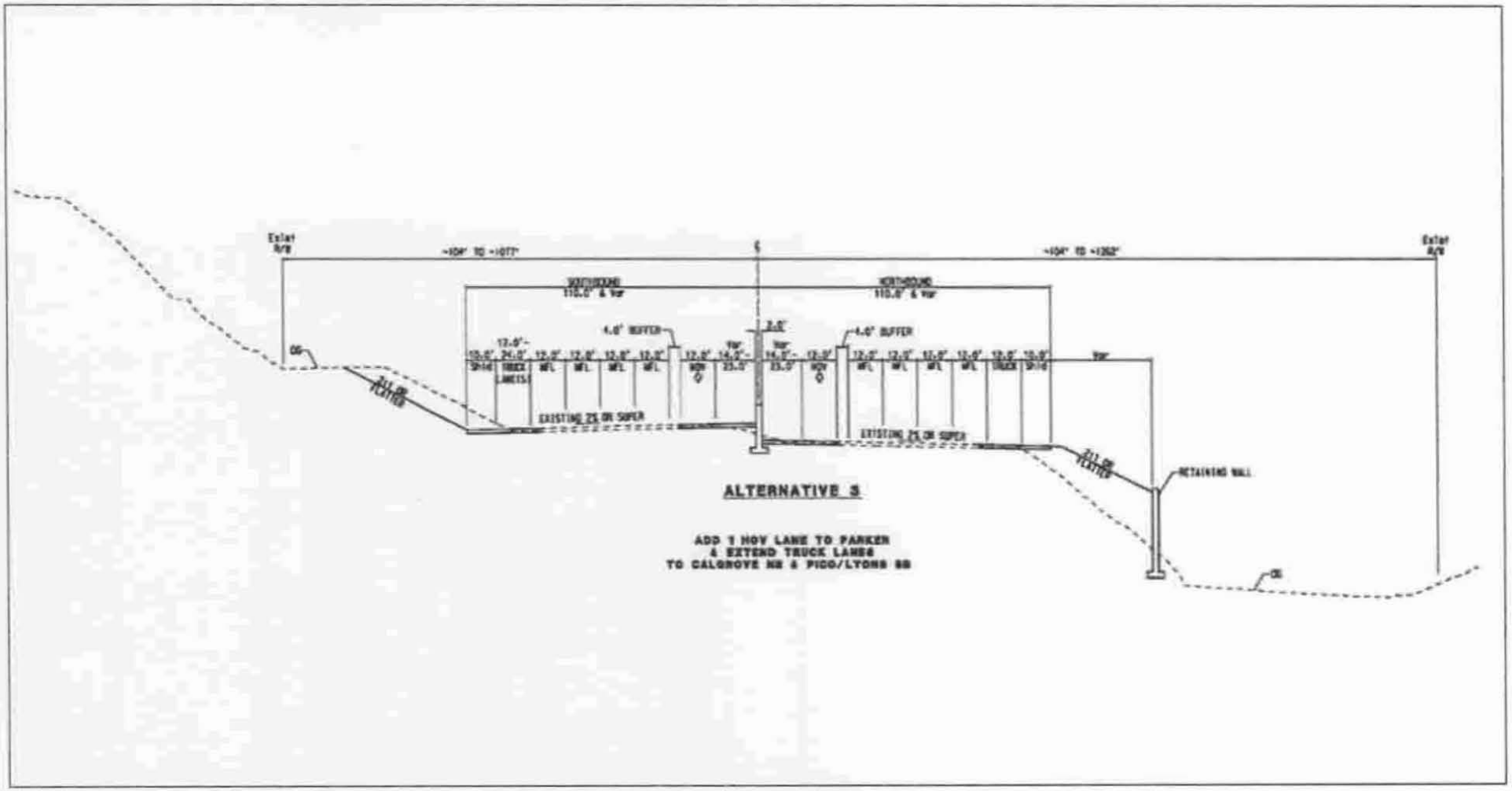

FIGURE 1.3

I-5 HOV / Truck Lane Project
Alternative 3 Typical Cross Section
07-LA-5 PM R45.4/R59.0
EA 2332E0

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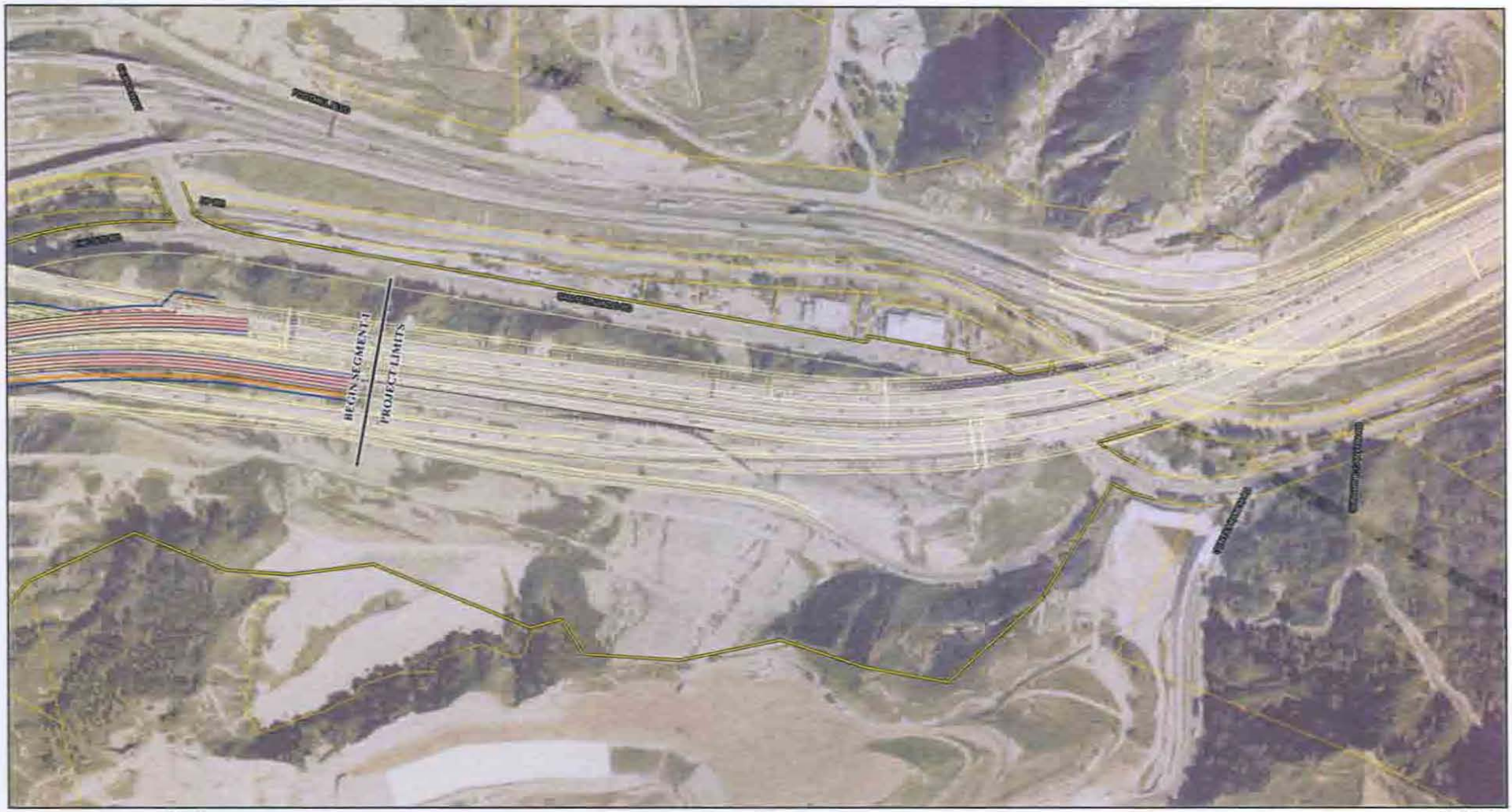

Potential Water Treatment Basin
Potential Construction Staging Area
Proposed Alignment
Existing Right-of-Way
Proposed Right-of-Way
Parcel Boundary
Disturbance Line
Temporary Construction Easement (TCE)
Structure to be Widened or Replaced
Toe of Fill
Top of Cut
Potential Retaining Wall
Existing Retaining Wall
Proposed Drainage Improvements
Improvements by Others
Existing Length of AUX Lane/ Extend Ramp
HOV Lanes
MFL Lanes
Proposed AUX Lanes
Truck Lanes
Unimproved Lanes/No Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

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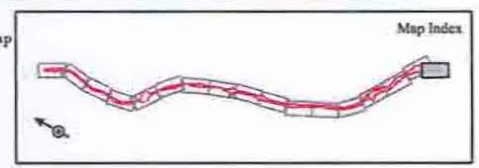
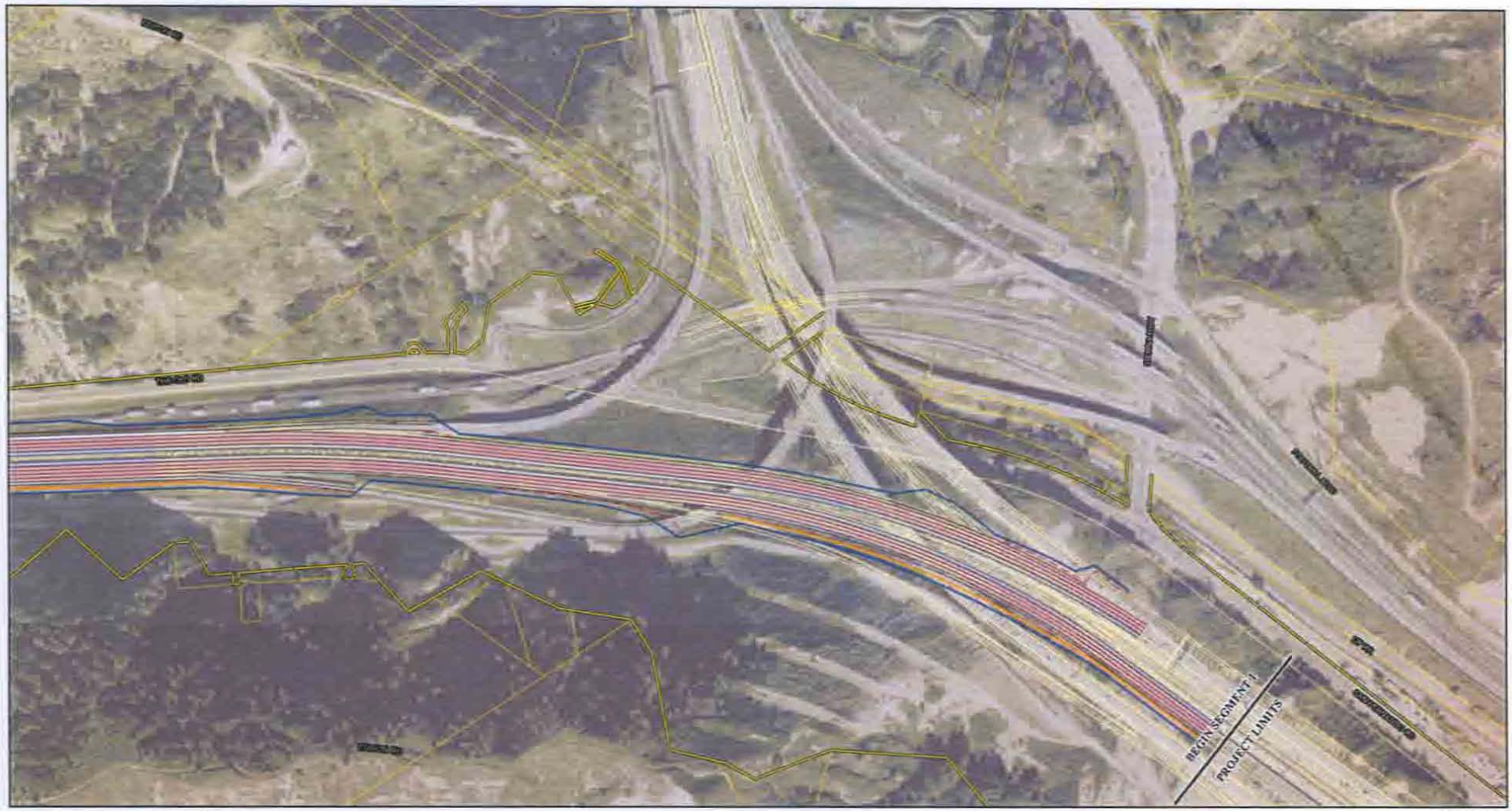


FIGURE 1.4
Sheet 1 of 17

I-5 HOV/Truck Lanes Project
Alternative 2 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0



Potential Water Treatment Basin
Potential Construction Staging Area
Proposed Alignment
Existing Right-of-Way
Proposed Right-of-Way
Parcel Boundary
Disturbance Line
Temporary Construction Easement (TCE)
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Existing Length of AUX Lane/ Extend Ramp
HOV Lanes
MFL Lanes
Proposed AUX Lanes
Truck Lanes
Unimproved Lanes/No Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

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FIGURE 1.4
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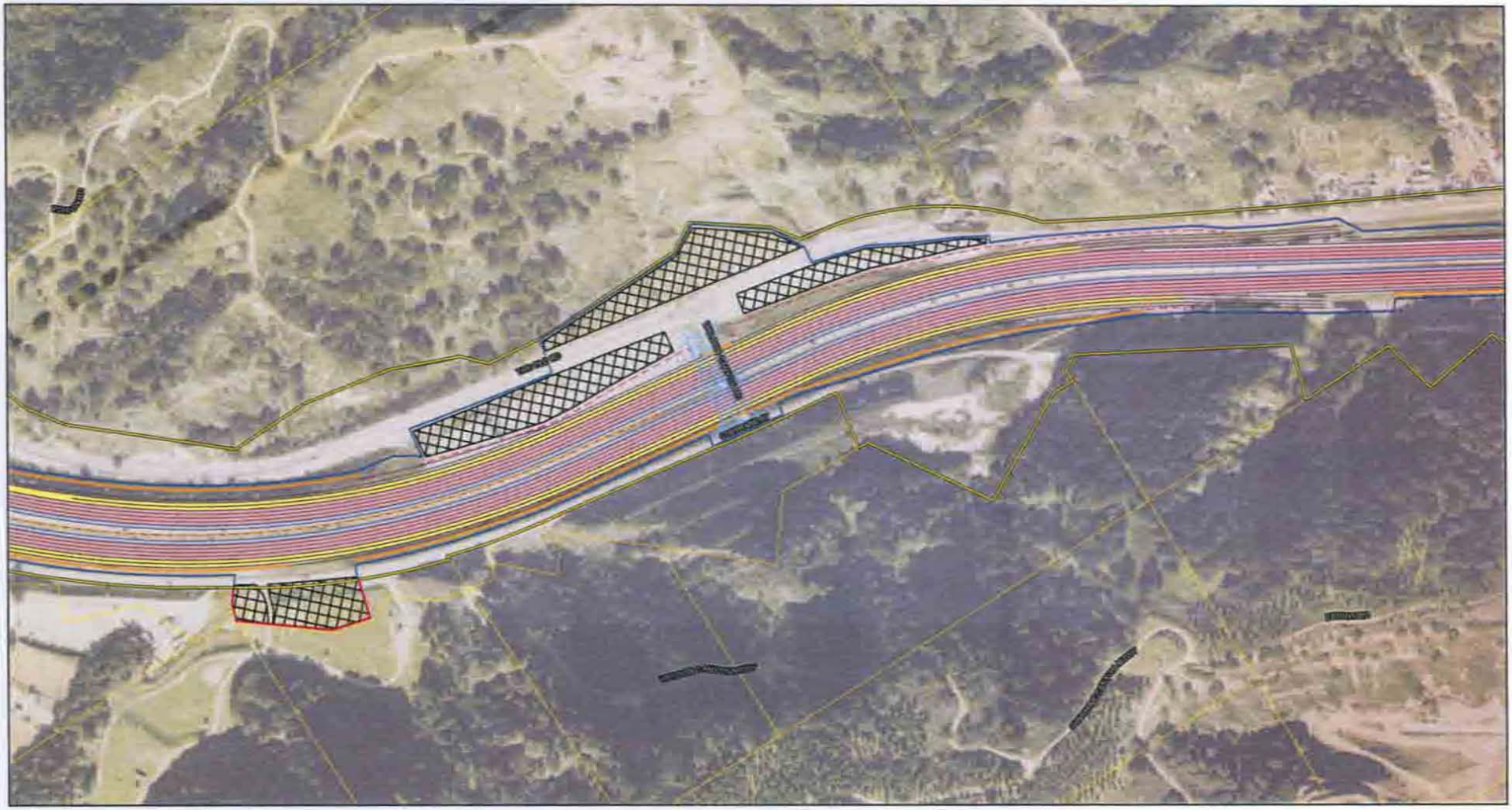
I-5 HOV/Truck Lanes Project
Alternative 2 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0



Potential Water Treatment Basin
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Proposed Right-of-Way
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HOV Lanes
MFL Lanes
Proposed AUX Lanes
Truck Lanes
Unimproved Lanes/No Improvements

0 150 300 Feet

SOURCE: Parsons (2008).

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FIGURE 1.4
Sheet 3 of 17

I-5 HOV/Truck Lanes Project
Alternative 2 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0

SOURCE: Psomas (2008).

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FIGURE 1.4
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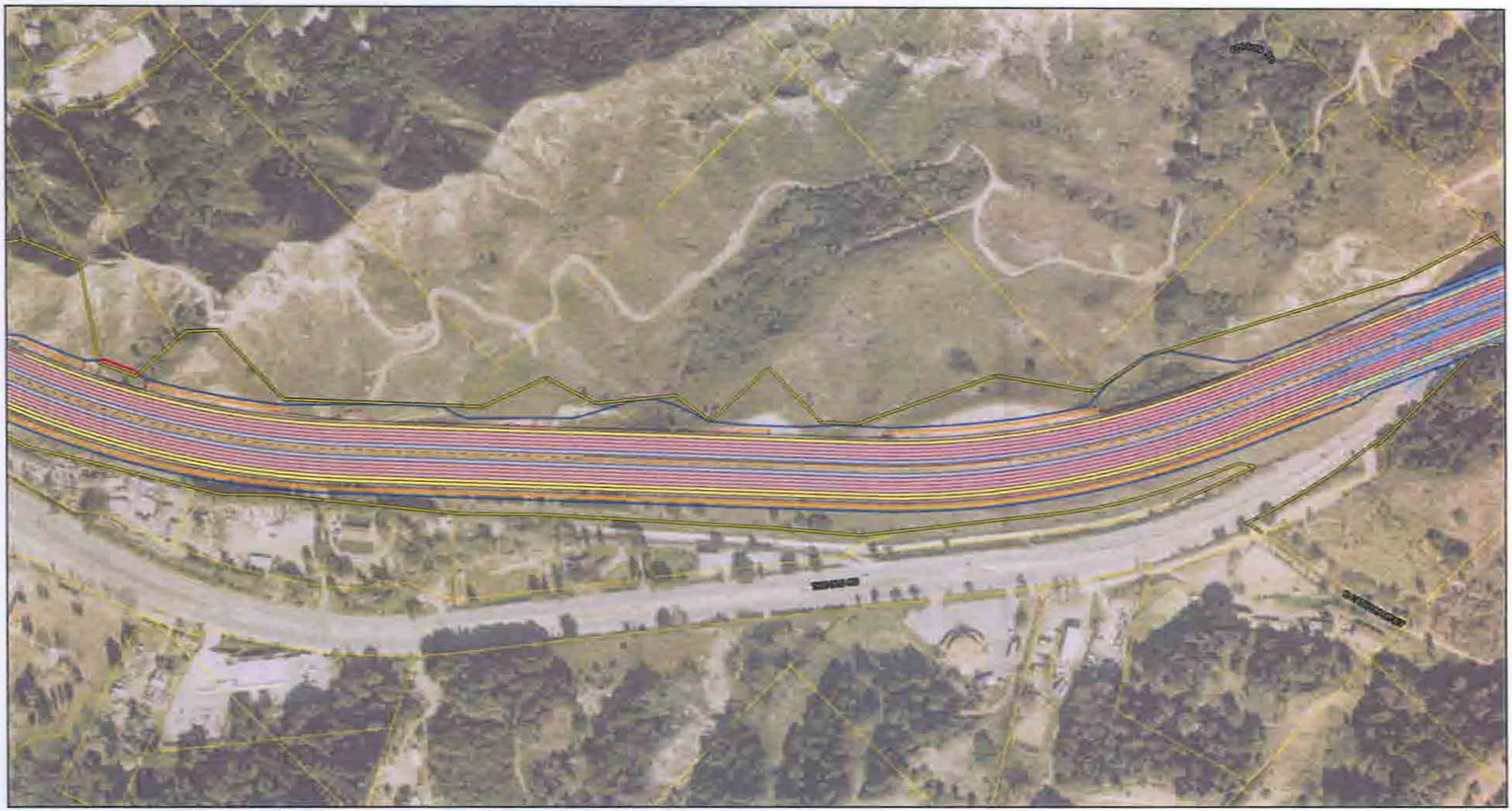
I-5 HOV/Truck Lanes Project

Alternative 2 - Project Features

07-LA-5 PM R45.4/R59.0

EA 2332E0



Potential Water Treatment Basin
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Proposed Alignment
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Proposed Right-of-Way
Parcel Boundary
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HOV Lanes
MFL Lanes
Proposed AUX Lanes
Truck Lanes
Unimproved Lanes/No Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

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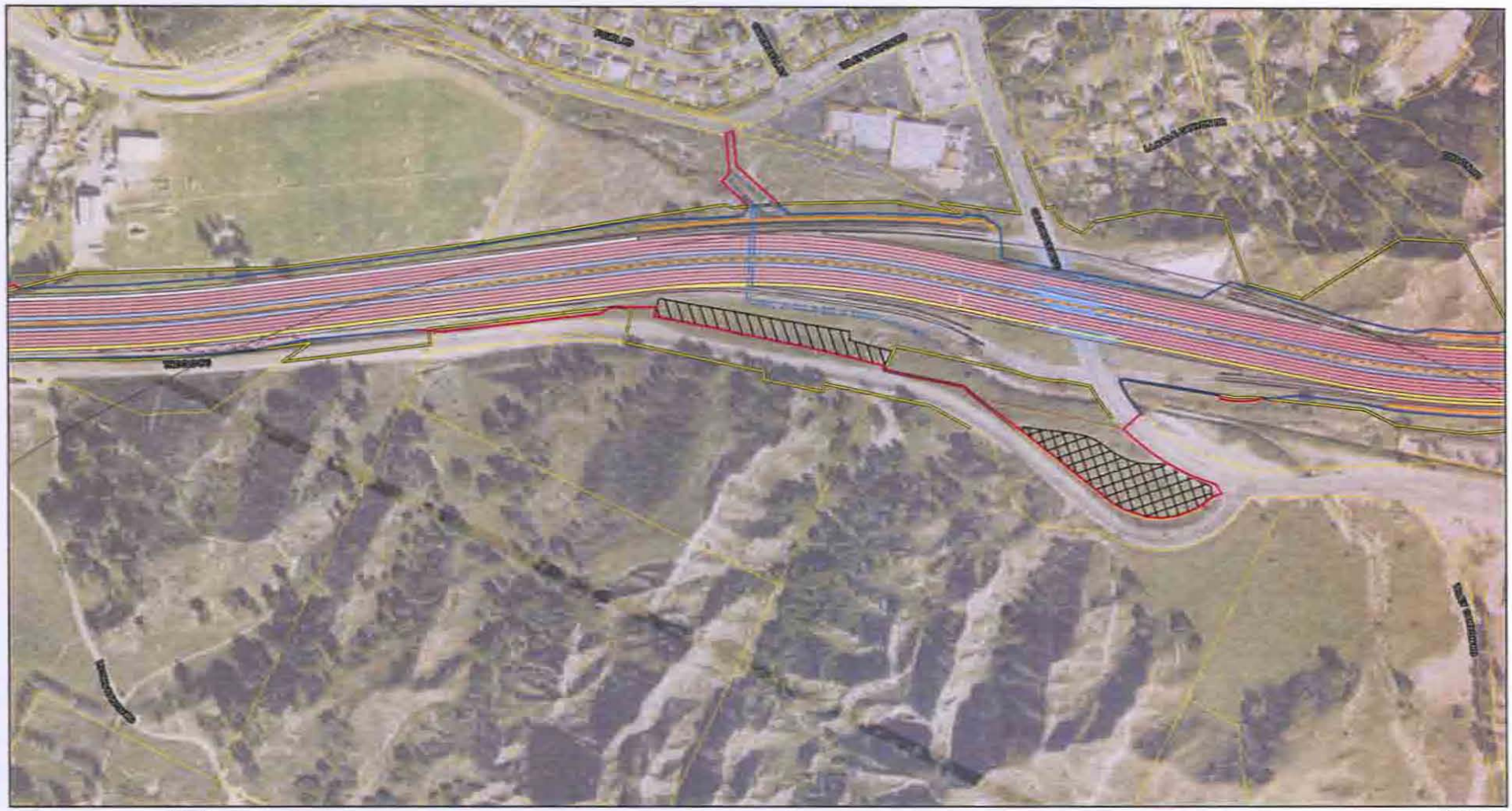
FIGURE 1.4
Sheet 5 of 17

I-5 HOV/Truck Lanes Project
Alternative 2 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0



Potential Water Treatment Basin
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MFL Lanes
Proposed AUX Lanes
Truck Lanes
Unimproved Lanes/No Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

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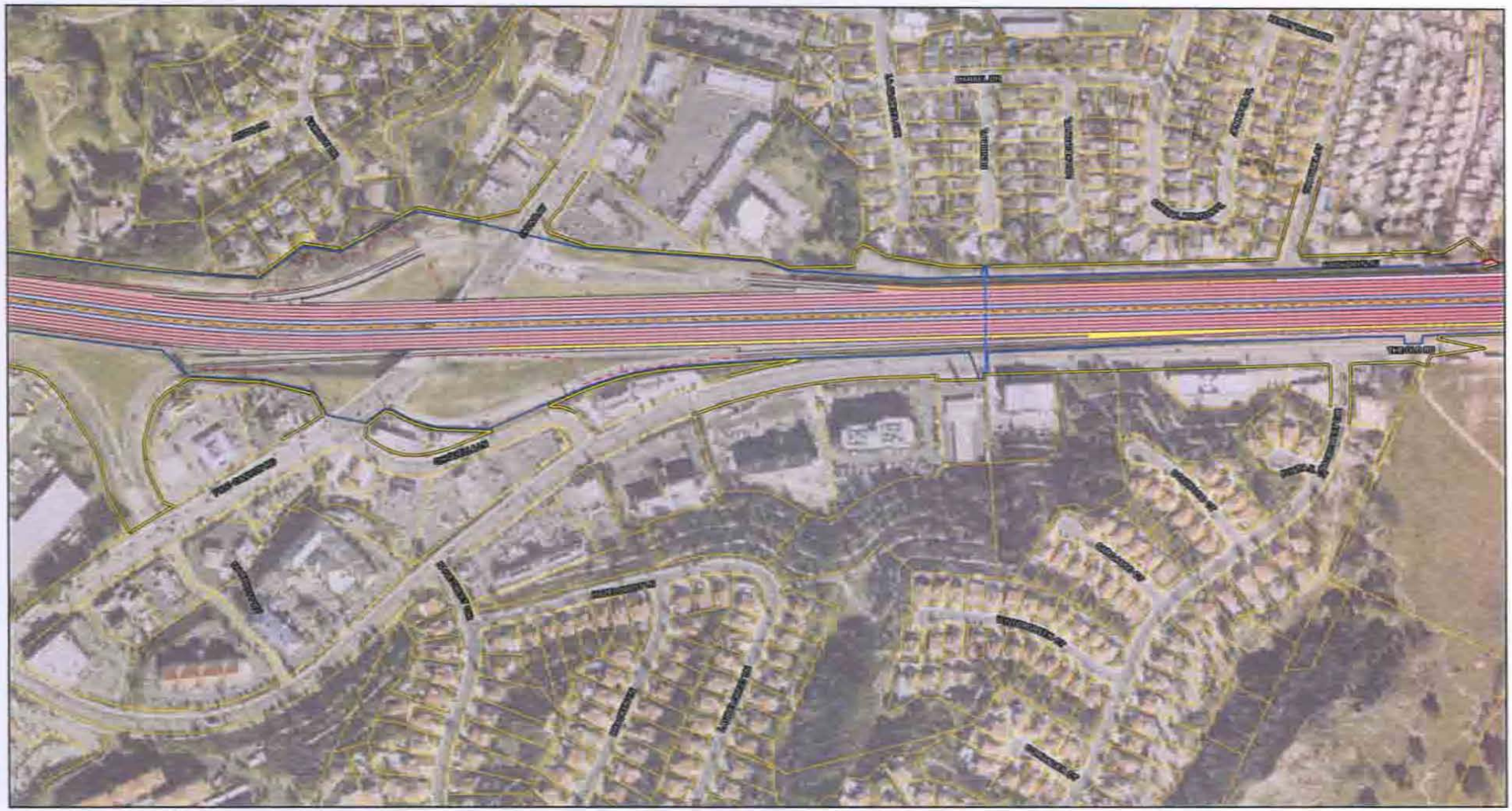
Map Index

FIGURE 1.4
Sheet 6 of 17

I-5 HOV/Truck Lanes Project
Alternative 2 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0



SOURCE: Psomas (2008).

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FIGURE 1.4
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I-5 HOV/Truck Lanes Project
Alternative 2 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0

Potential Water Treatment Basin
Potential Construction Staging Area
Proposed Alignment
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HOV Lanes
MFL Lanes
Proposed AUX Lanes
Truck Lanes
Unimproved Lanes/No Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

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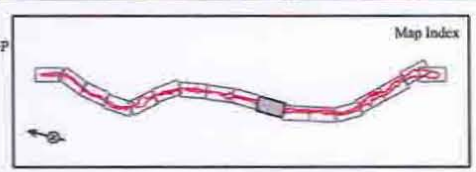

FIGURE 1.4
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I-5 HOV/Truck Lanes Project
Alternative 2 - Project Features
07-LA-5 PM R45.4/R59.0
EA 233250

Potential Water Treatment Basin
Potential Construction Staging Area
Proposed Alignment
Existing Right-of-Way
Proposed Right-of-Way
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MFL Lanes
Proposed AUX Lanes
Truck Lanes
Unimproved Lanes/No Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

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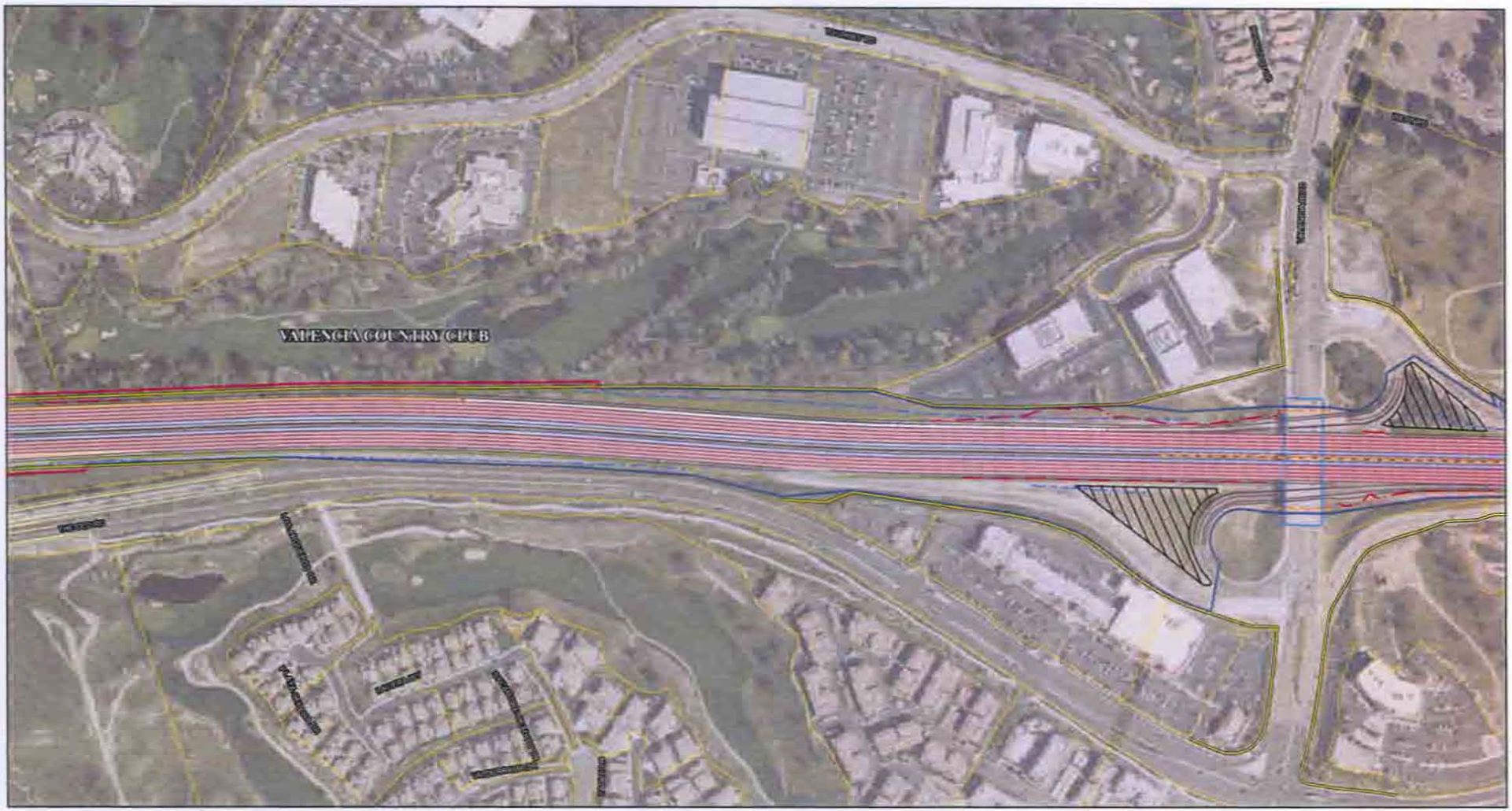
FIGURE 1.4
Sheet 9 of 17

I-5 HOV/Truck Lanes Project
Alternative 2 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0



Potential Water Treatment Basin
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Proposed AUX Lanes
Truck Lanes
Unimproved Lanes/No Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

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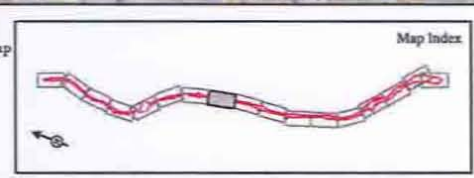
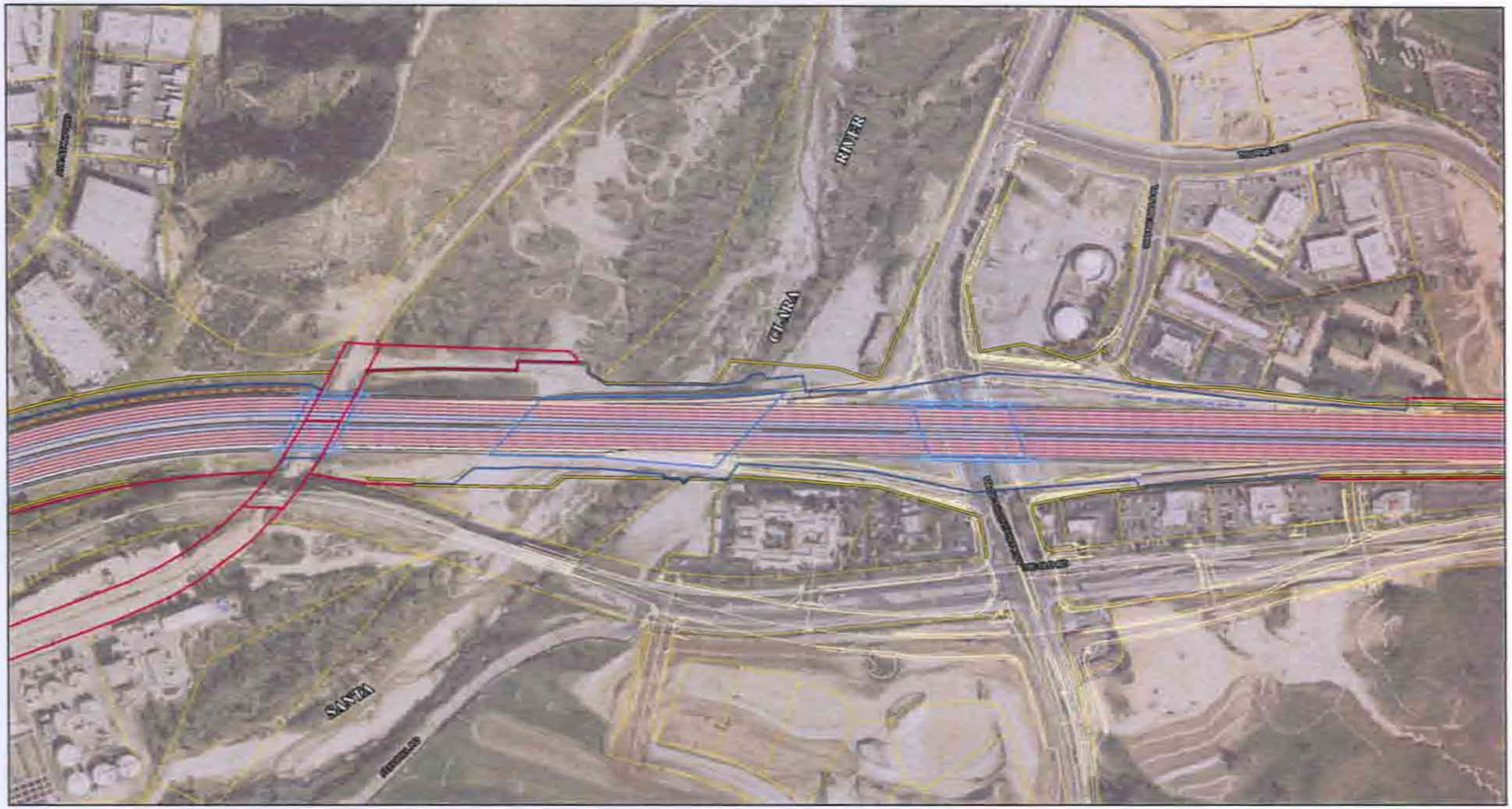


FIGURE 1.4
Sheet 10 of 17

I-5 HOV/Truck Lanes Project
Alternative 2 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0



Potential Water Treatment Basin
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Proposed Right-of-Way
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MFL Lanes
Proposed AUX Lanes
Truck Lanes
Unimproved Lanes/No Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

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FIGURE 1.4
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I-5 HOV/Truck Lanes Project
Alternative 2 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0

Potential Water Treatment Basin
Potential Construction Staging Area
Proposed Alignment
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Truck Lanes
Unimproved Lanes/No Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

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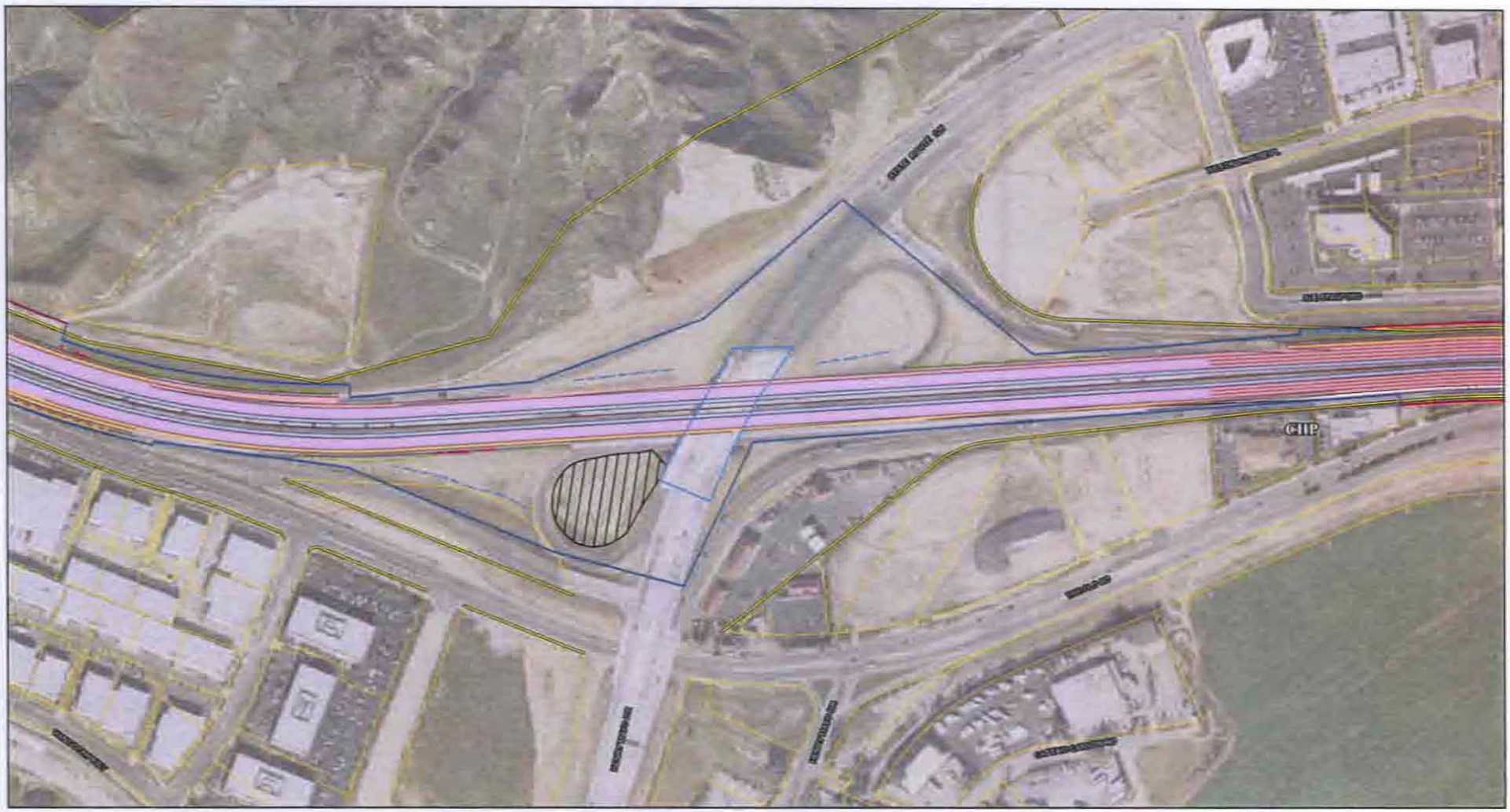
FIGURE 1.4
Sheet 12 of 17

I-5 HOV/Truck Lanes Project
Alternative 2 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0



Potential Water Treatment Basin
Potential Construction Staging Area
Proposed Alignment
Existing Right-of-Way
Proposed Right-of-Way
Parcel Boundary
Disturbance Line
Temporary Construction Easement (TCE)
Structure to be Widened or Replaced
Toe of Fill
Top of Cut
Potential Retaining Wall
Existing Retaining Wall
Proposed Drainage Improvements
Improvements by Others
Existing Length of AUX Lane/ Extend Ramp
HOV Lanes
MFL Lanes
Proposed AUX Lanes
Truck Lanes
Unimproved Lanes/No Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

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FIGURE 1.4
Sheet 13 of 17

I-5 HOV/Truck Lanes Project
Alternative 2 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0

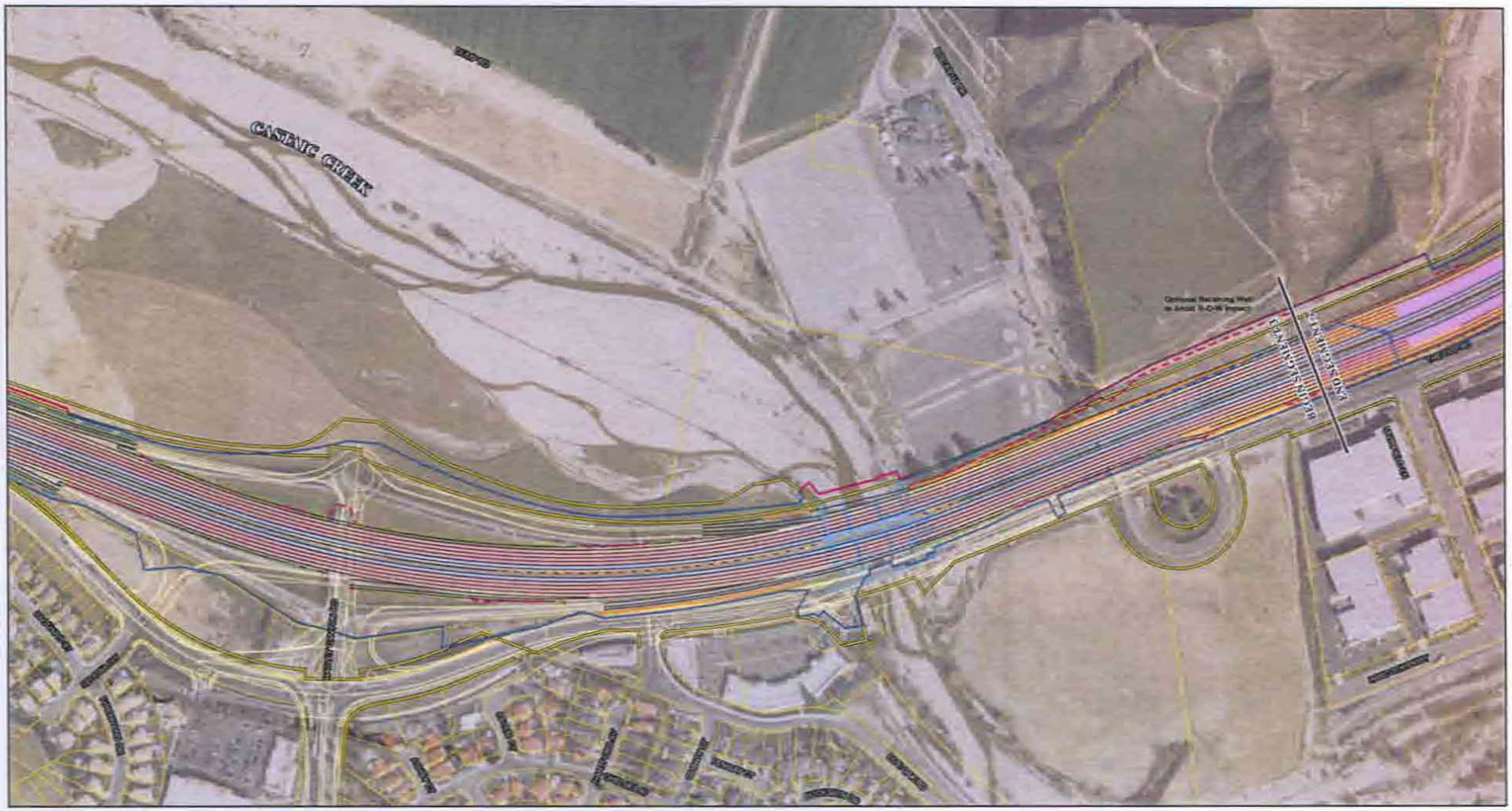
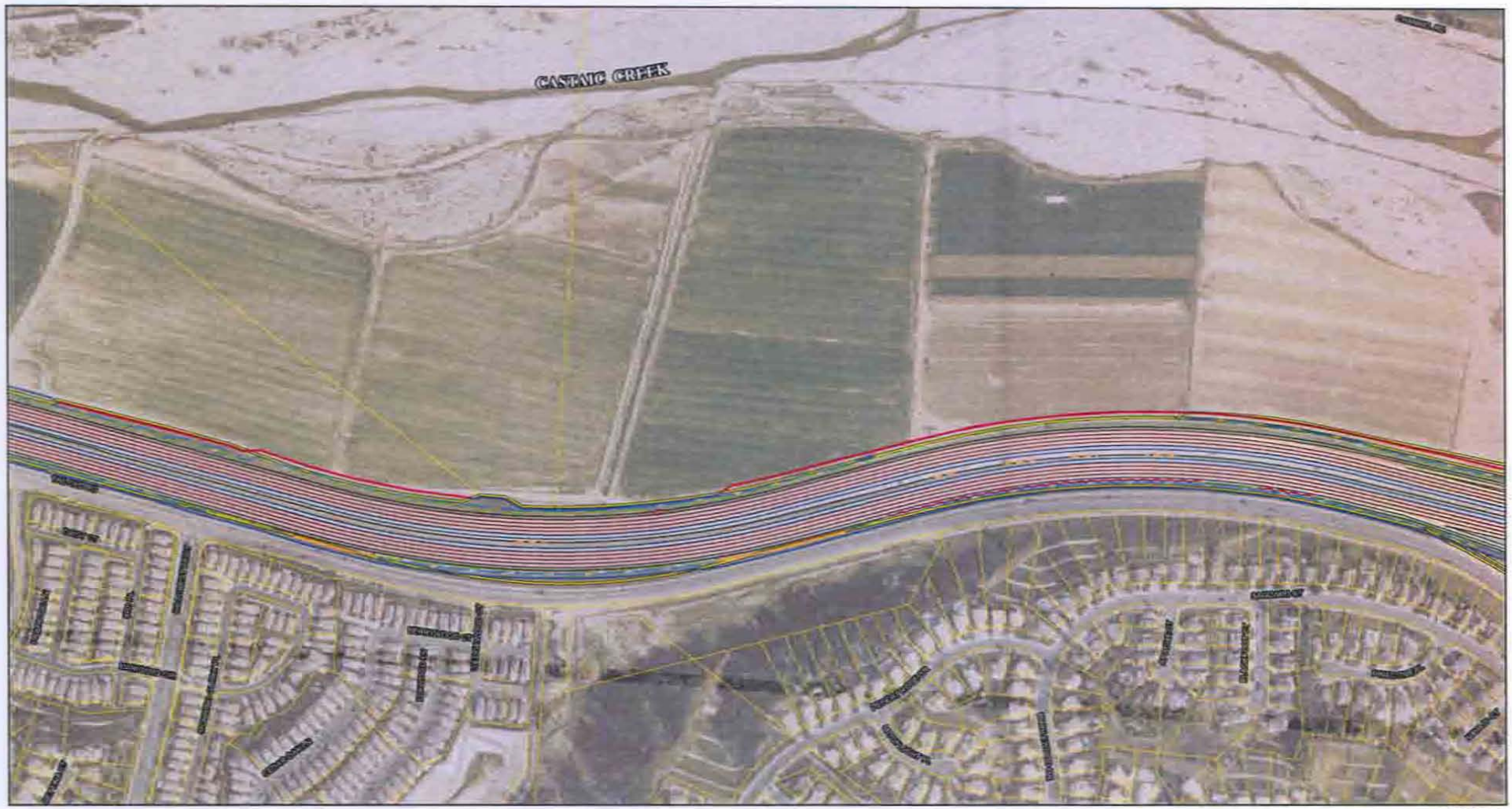


FIGURE 1.4
Sheet 14 of 17

I-5 HOV/Truck Lanes Project
Alternative 2 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0



Potential Water Treatment Basin
Potential Construction Staging Area
Proposed Alignment
Existing Right-of-Way
Proposed Right-of-Way
Parcel Boundary
Disturbance Line
Temporary Construction Easement (TCE)
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Improvements by Others
Existing Length of AUX Lane/ Extend Ramp
HOV Lanes
MFL Lanes
Proposed AUX Lanes
Truck Lanes
Unimproved Lanes/No Improvements

0 150 300 Feet

Map Index

SOURCE: Psomas (2008).

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FIGURE 1.4
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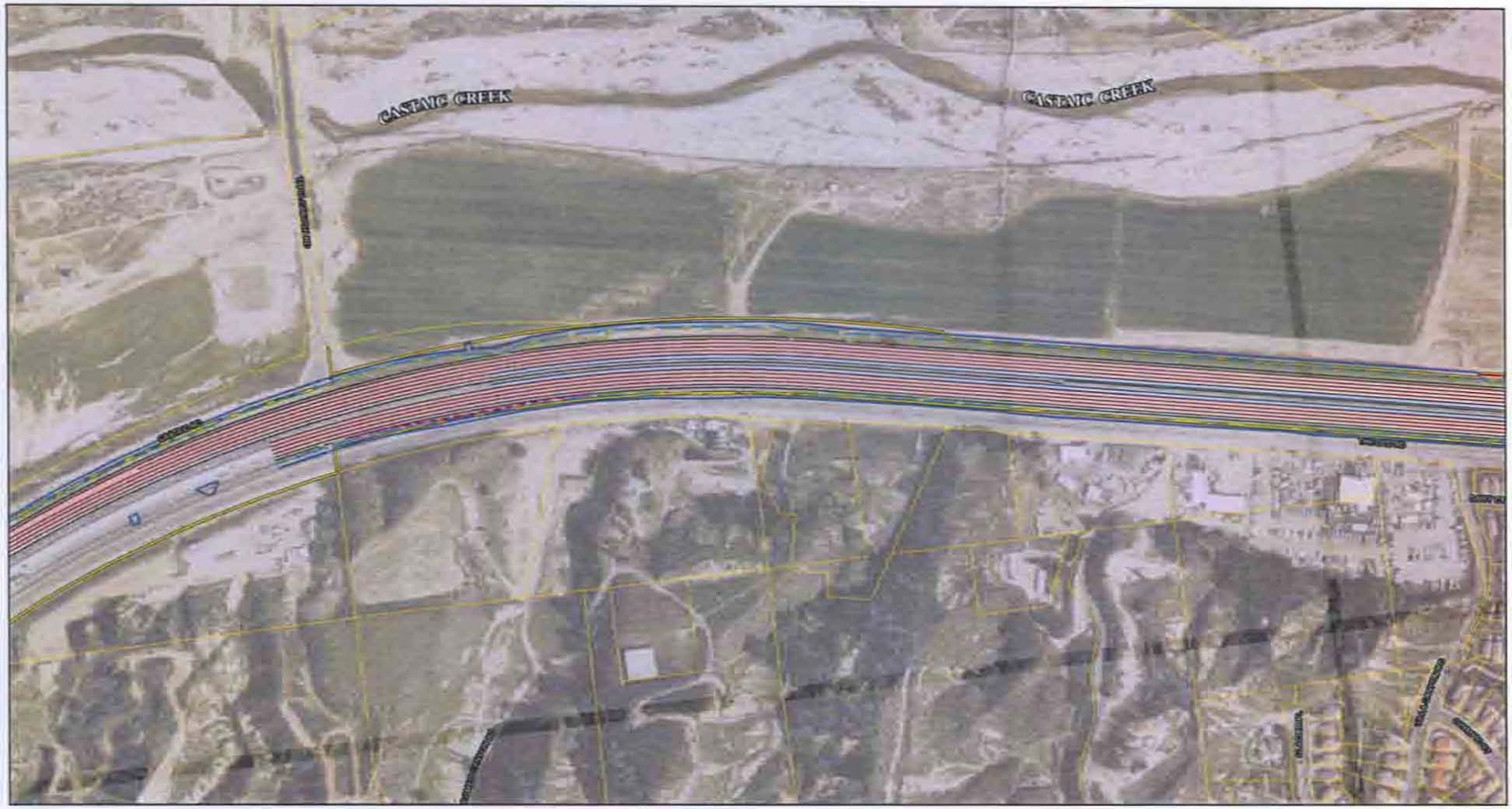
I-5 HOV/Truck Lanes Project
Alternative 2 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0



Potential Water Treatment Basin
Potential Construction Staging Area
Proposed Alignment
Existing Right-of-Way
Proposed Right-of-Way
Parcel Boundary
Disturbance Line
Temporary Construction Easement (TCE)
Structure to be Widened or Replaced
Toe of Fill
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Improvements by Others
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HOV Lanes
MFL Lanes
Proposed AUX Lanes
Truck Lanes
Unimproved Lanes/No Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

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FIGURE 1.4
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I-5 HOV/Truck Lanes Project
Alternative 2 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0

Potential Water Treatment Basin
Potential Construction Staging Area
Proposed Alignment
Existing Right-of-Way
Proposed Right-of-Way
Parcel Boundary
Disturbance Line
Temporary Construction Easement (TCE)
Structure to be Widened or Replaced
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Potential Retaining Wall
Existing Retaining Wall
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Improvements by Others
Existing Length of AUX Lane/ Extend Ramp
HOV Lanes
MFL Lanes
Proposed AUX Lanes
Truck Lanes
Unimproved Lanes/No Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

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FIGURE 1.4
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I-5 HOV/Truck Lanes Project
Alternative 2 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0

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Potential Water Treatment Basin
Potential Construction Staging Area
Proposed Alignment
Existing Right-of-Way
Proposed Right-of-Way
Parcel Boundary
Disturbance Line
Temporary Construction Easement (TCE)
Structure to be Widened or Replaced
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Proposed Retaining Wall
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Improvements by Others
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HOV Lanes
MFL Lanes
Proposed AUX Lanes
Truck Lanes
Unimproved Lanes/No Improvements
Frontage Road Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

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FIGURE 1.5
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I-5 HOV/Truck Lanes Project
Alternative 3 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0

Potential Water Treatment Basin
Potential Construction Staging Area
Proposed Alignment
Existing Right-of-Way
Proposed Right-of-Way
Parcel Boundary
Disturbance Line
Temporary Construction Easement (TCE)
Structure to be Widened or Replaced
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HOV Lanes
MFL Lanes
Proposed AUX Lanes
Truck Lanes
Unimproved Lanes/No Improvements
Frontage Road Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

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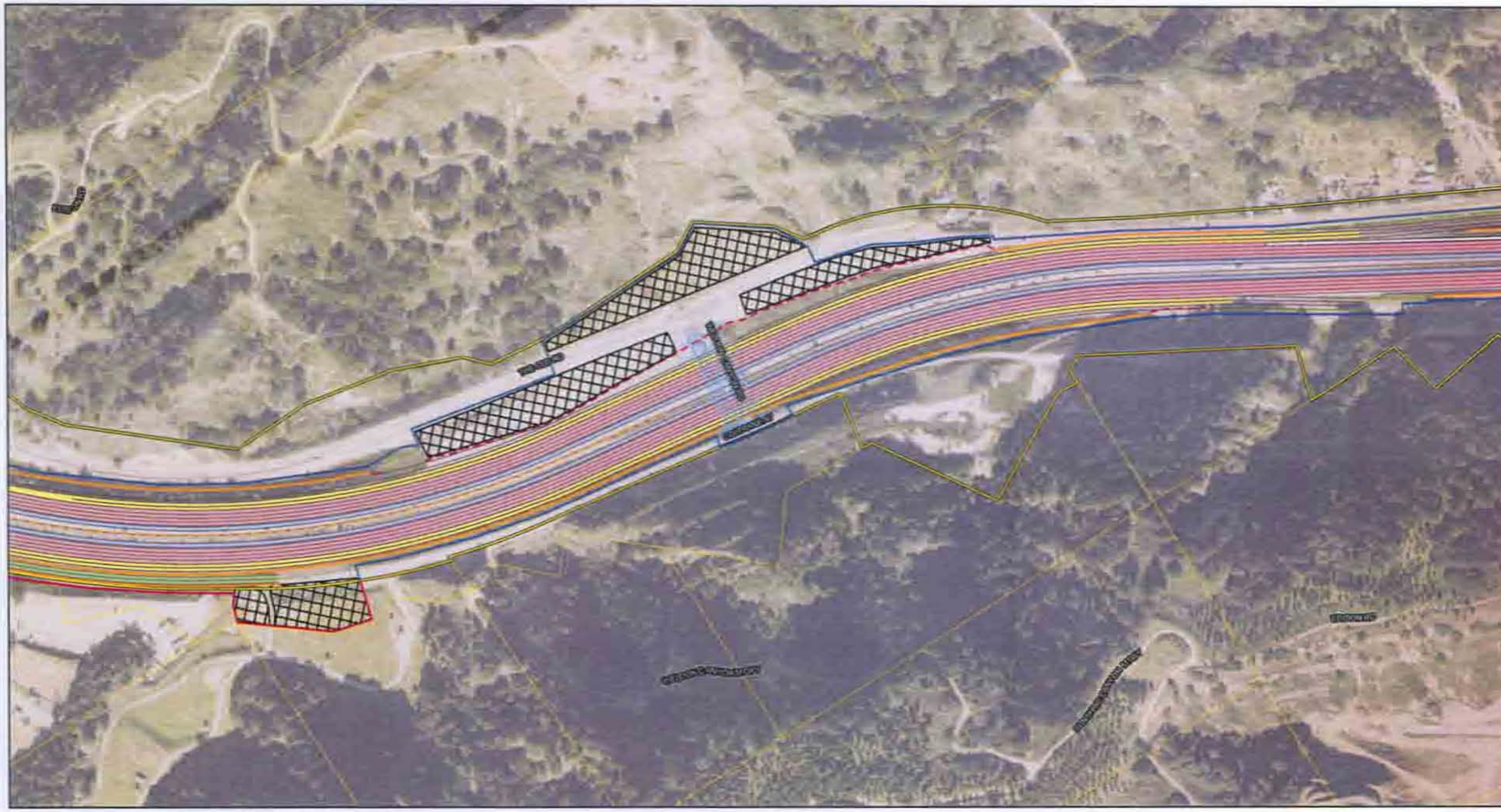
FIGURE 1.5
Sheet 2 of 17

I-5 HOV/Truck Lanes Project
Alternative 3 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0



SOURCE: Parsons (2008).

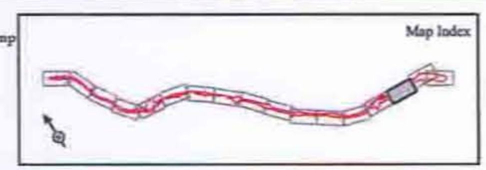


FIGURE 1.5
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I-5 HOV/Truck Lanes Project

Alternative 3 - Project Features

07-LA-5 PM R45.4/R59.6

EA 2332E0

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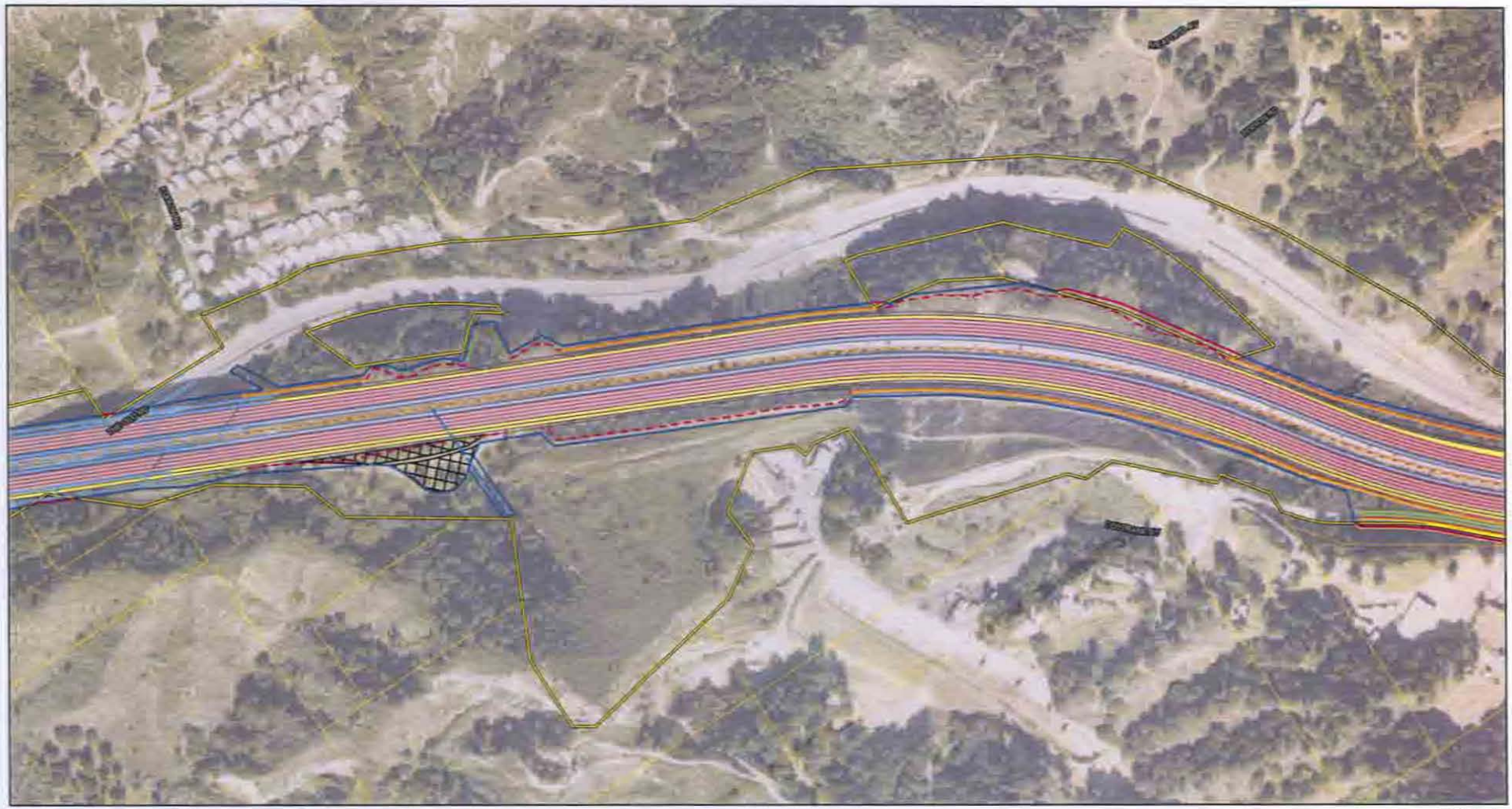

FIGURE 1.5
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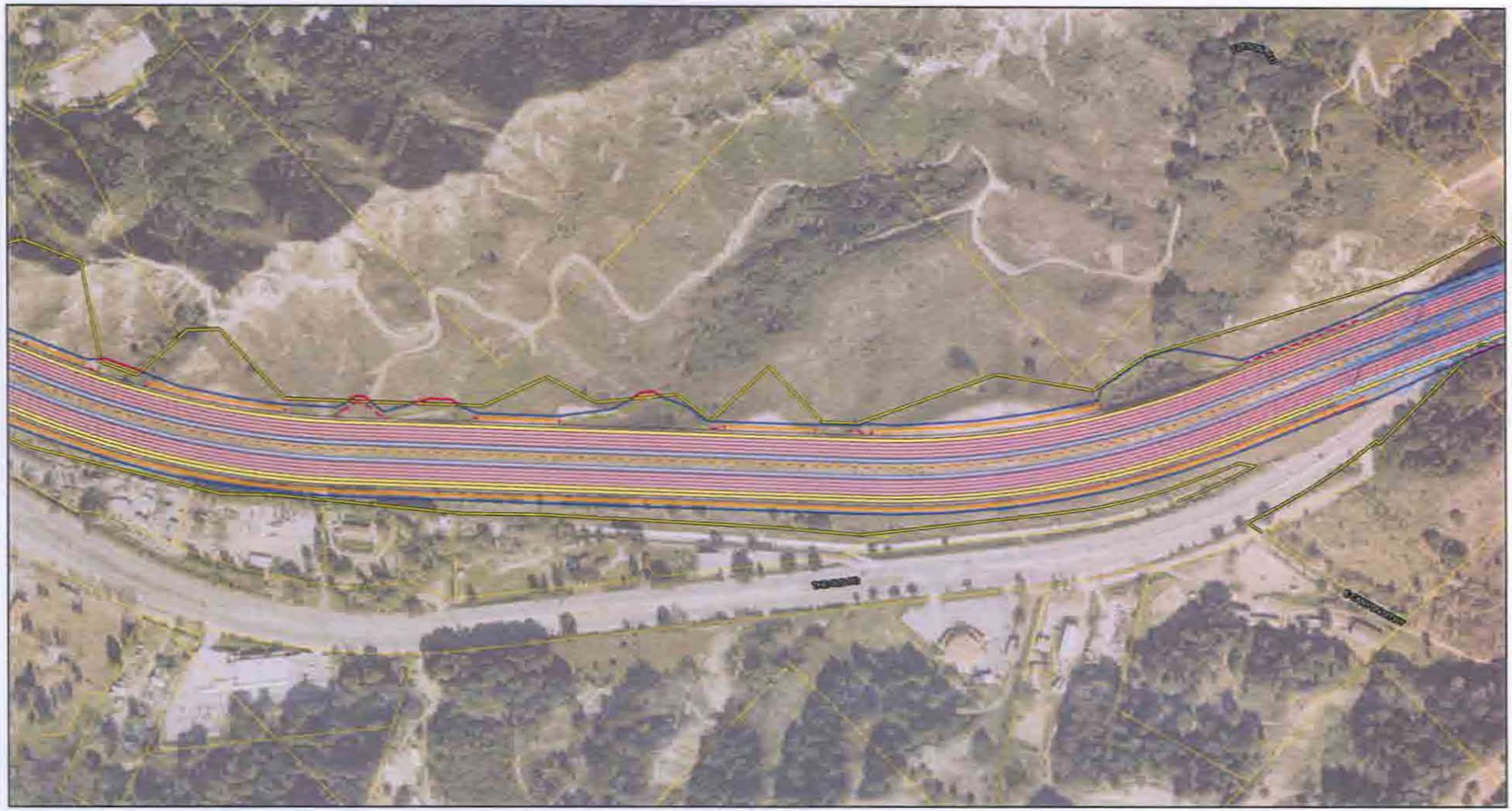
I-5 HOV/Truck Lanes Project
Alternative 3 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0



Potential Water Treatment Basin
Potential Construction Staging Area
Proposed Alignment
Existing Right-of-Way
Proposed Right-of-Way
Parcel Boundary
Disturbance Line
Temporary Construction Easement (TCE)
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Improvements by Others
Existing Length of AUX Lane/ Extend Ramp
HOV Lanes
MFL Lanes
Proposed AUX Lanes
Truck Lanes
Unimproved Lanes/No Improvements
Frontage Road Improvements

0 150 300 Feet

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SOURCE: Psomas (2008).

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FIGURE 1.5
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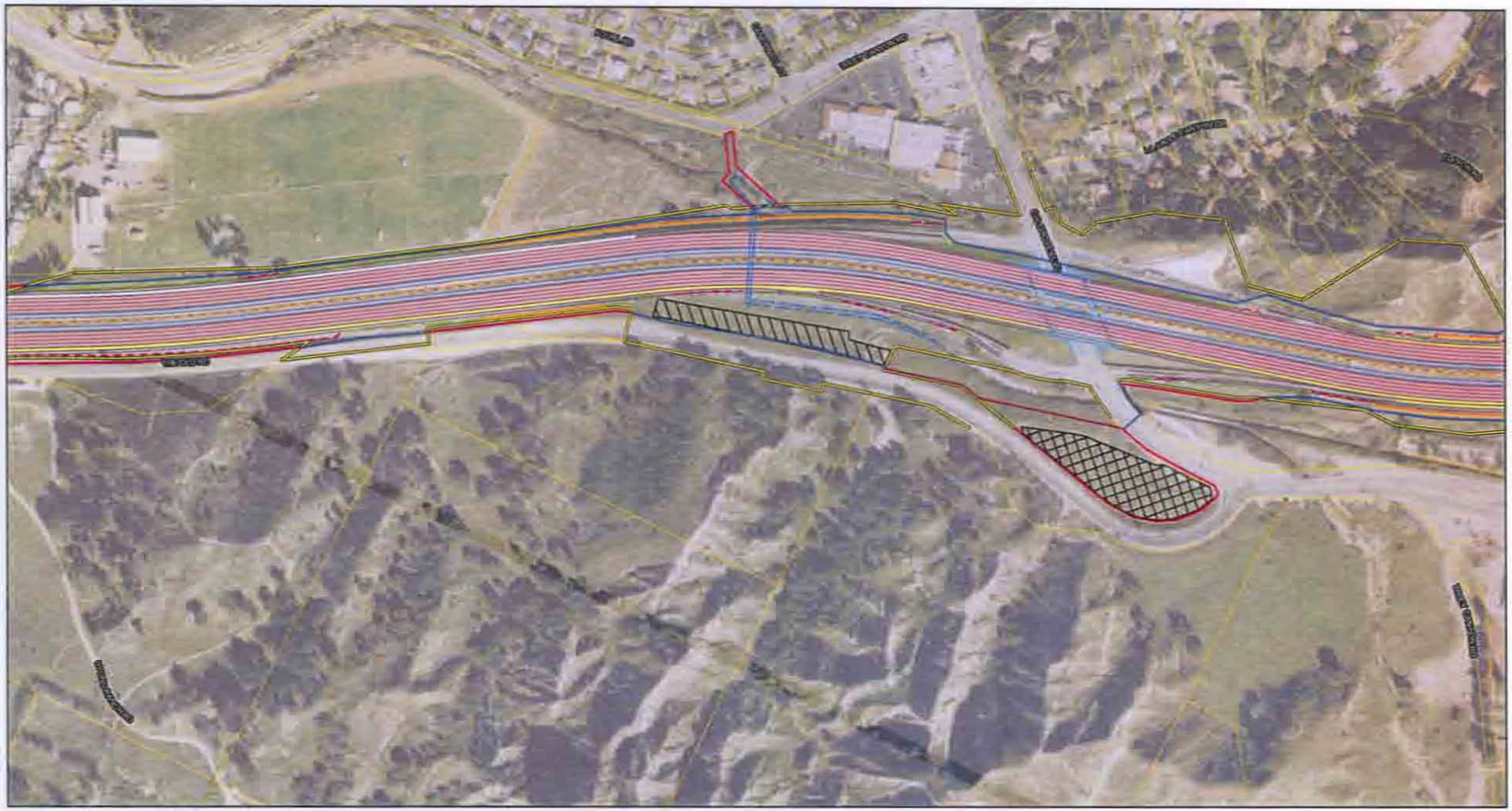
I-5 HOV/Truck Lanes Project
Alternative 3 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0



Potential Water Treatment Basin
Potential Construction Staging Area
Proposed Alignment
Existing Right-of-Way
Proposed Right-of-Way
Parcel Boundary
Disturbance Line
Temporary Construction Easement (TCE)
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Improvements by Others
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HOV Lanes
MFL Lanes
Proposed AUX Lanes
Truck Lanes
Unimproved Lanes/No Improvements
Frontage Road Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

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FIGURE 1.5
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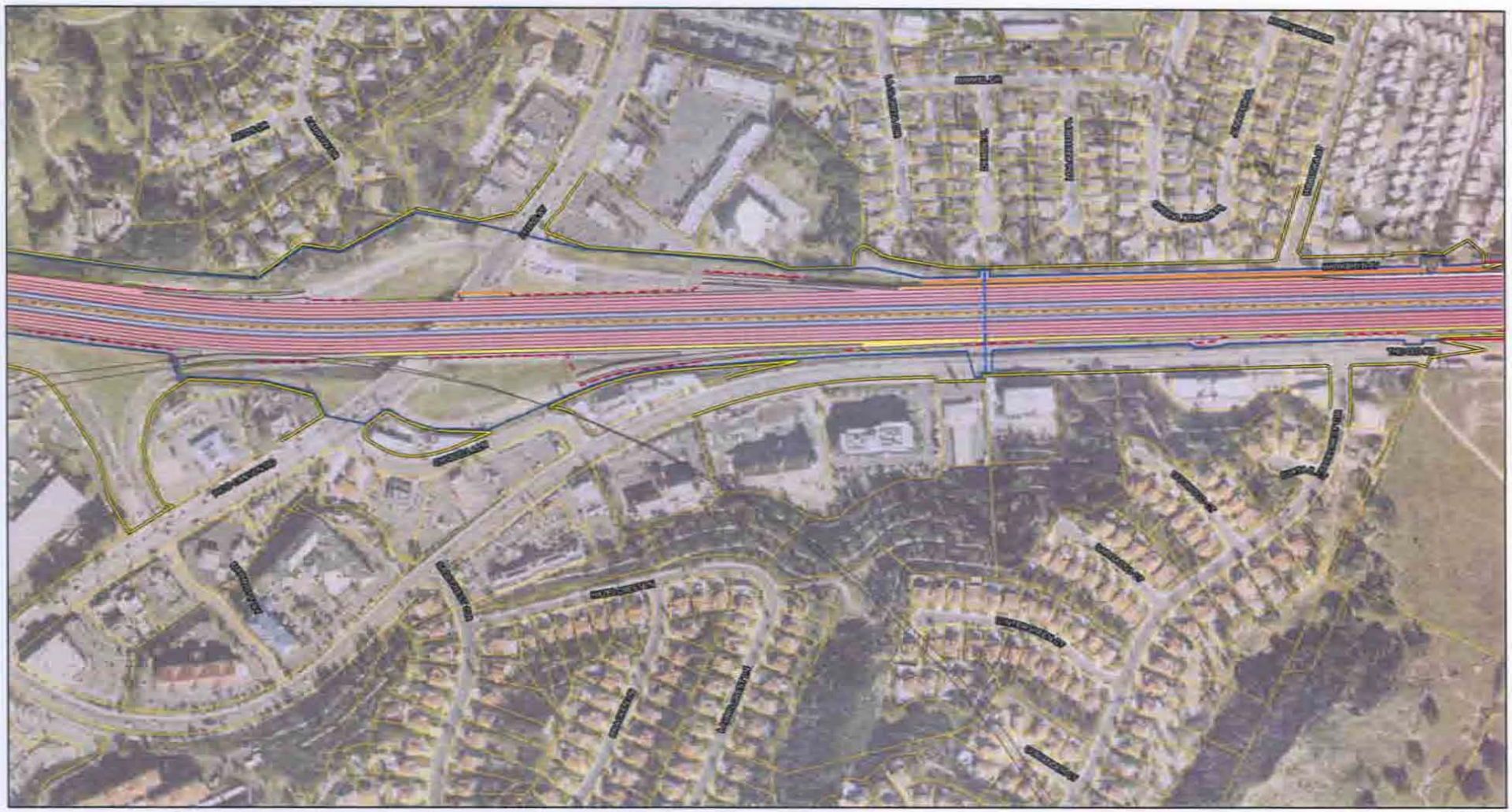
I-5 HOV/Truck Lanes Project
Alternative 3 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0



Potential Water Treatment Basin
Potential Construction Staging Area
Proposed Alignment
Existing Right-of-Way
Proposed Right-of-Way
Parcel Boundary
Disturbance Line
Temporary Construction Easement (TCE)
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Existing Retaining Wall
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Improvements by Others
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HOV Lanes
MFL Lanes
Proposed AUX Lanes
Truck Lanes
Unimproved Lanes/No Improvements
Frontage Road Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

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FIGURE 1.5
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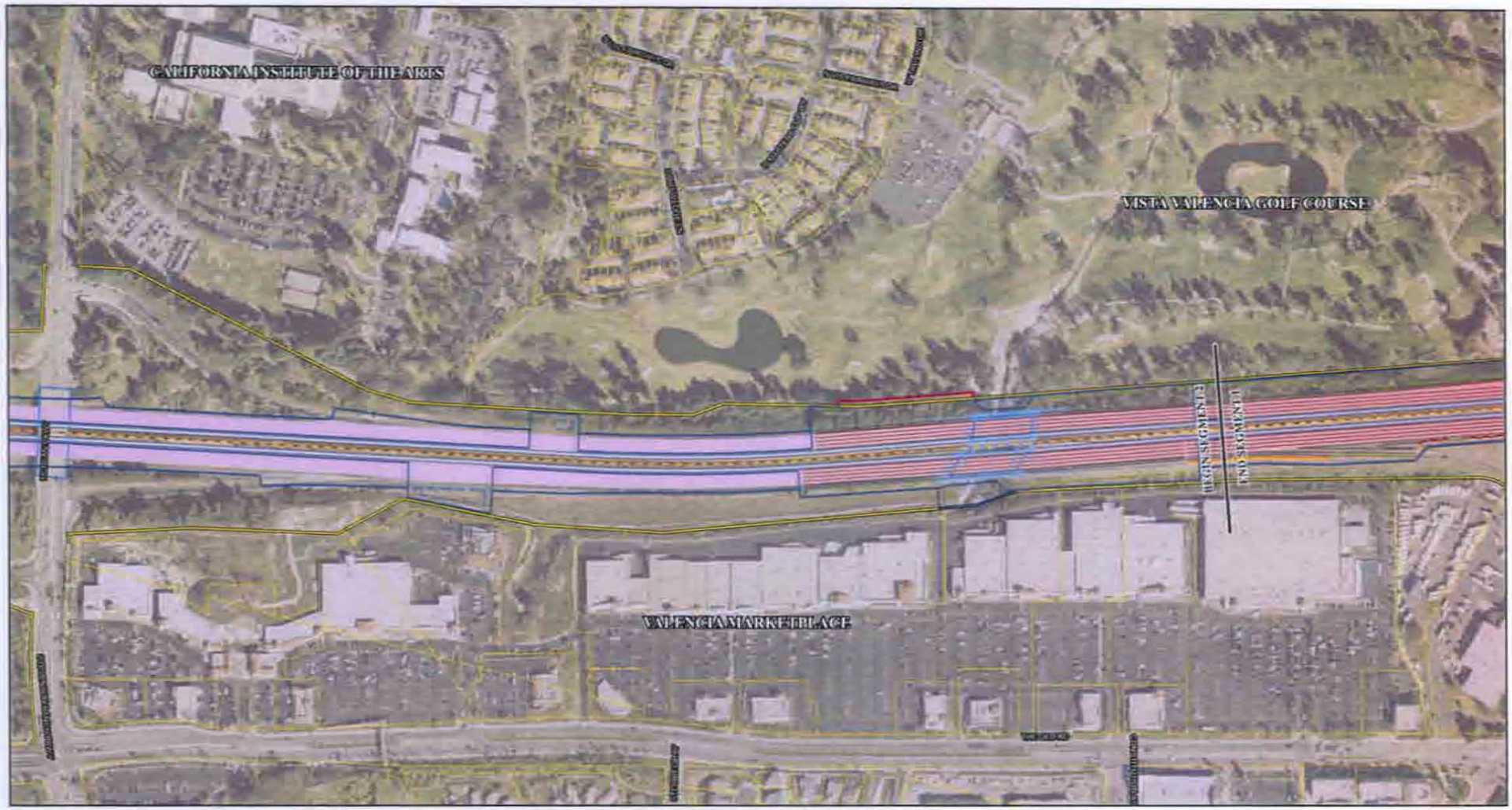
I-5 HOV/Truck Lanes Project
Alternative 3 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0



Potential Water Treatment Basin
Potential Construction Staging Area
Proposed Alignment
Existing Right-of-Way
Proposed Right-of-Way
Parcel Boundary
Disturbance Line
Temporary Construction Easement (TCE)
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HOV Lanes
MFL Lanes
Proposed AUX Lanes
Truck Lanes
Unimproved Lanes/No Improvements
Frontage Road Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

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FIGURE 1.5
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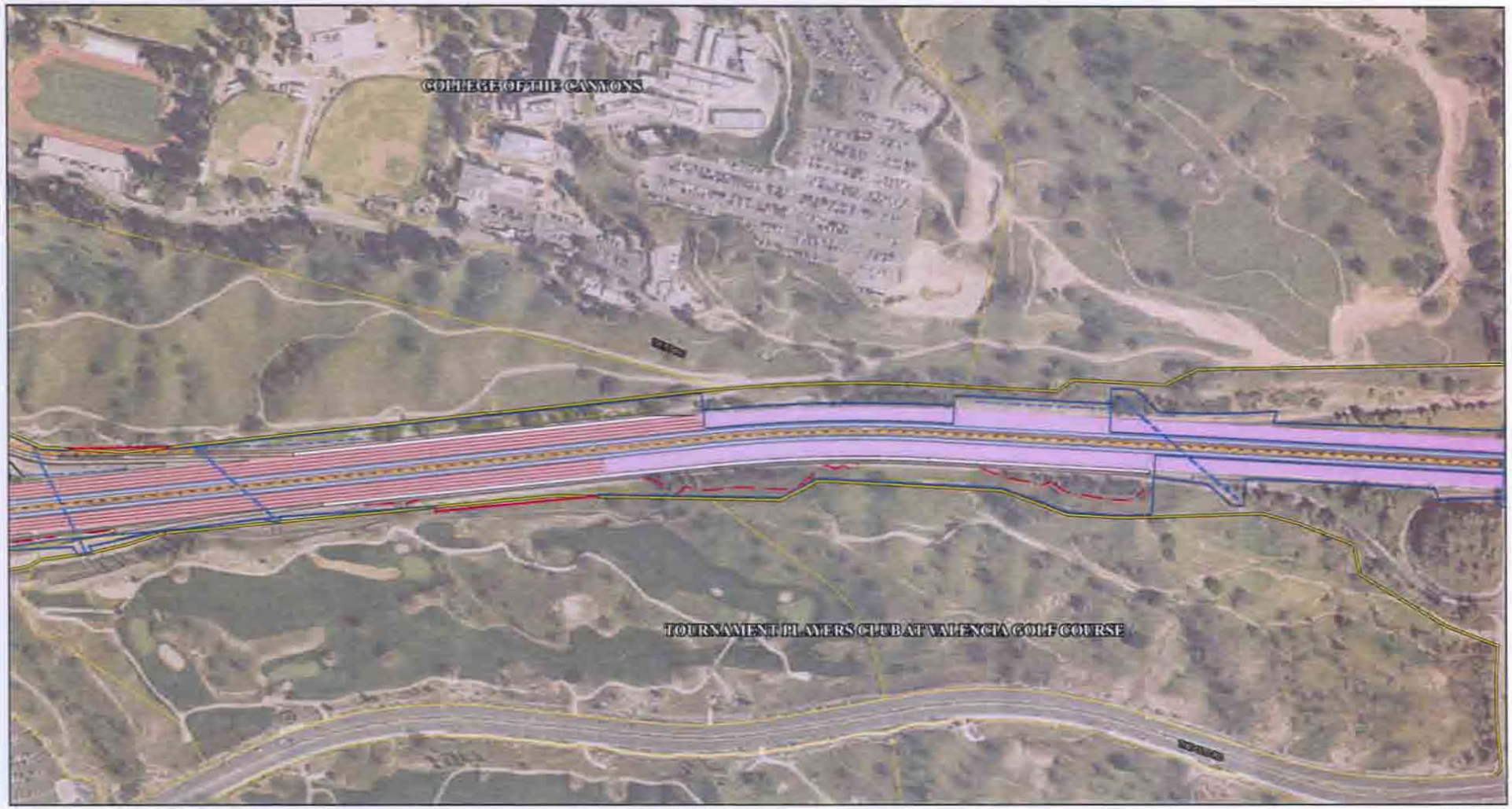
I-5 HOV/Truck Lanes Project
Alternative 3 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0



Potential Water Treatment Basin
Potential Construction Staging Area
Proposed Alignment
Existing Right-of-Way
Proposed Right-of-Way
Parcel Boundary
Disturbance Line
Temporary Construction Easement (TCE)
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HOV Lanes
MFL Lanes
Proposed AUX Lanes
Truck Lanes
Unimproved Lanes/No Improvements
Frontage Road Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

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FIGURE 1.5
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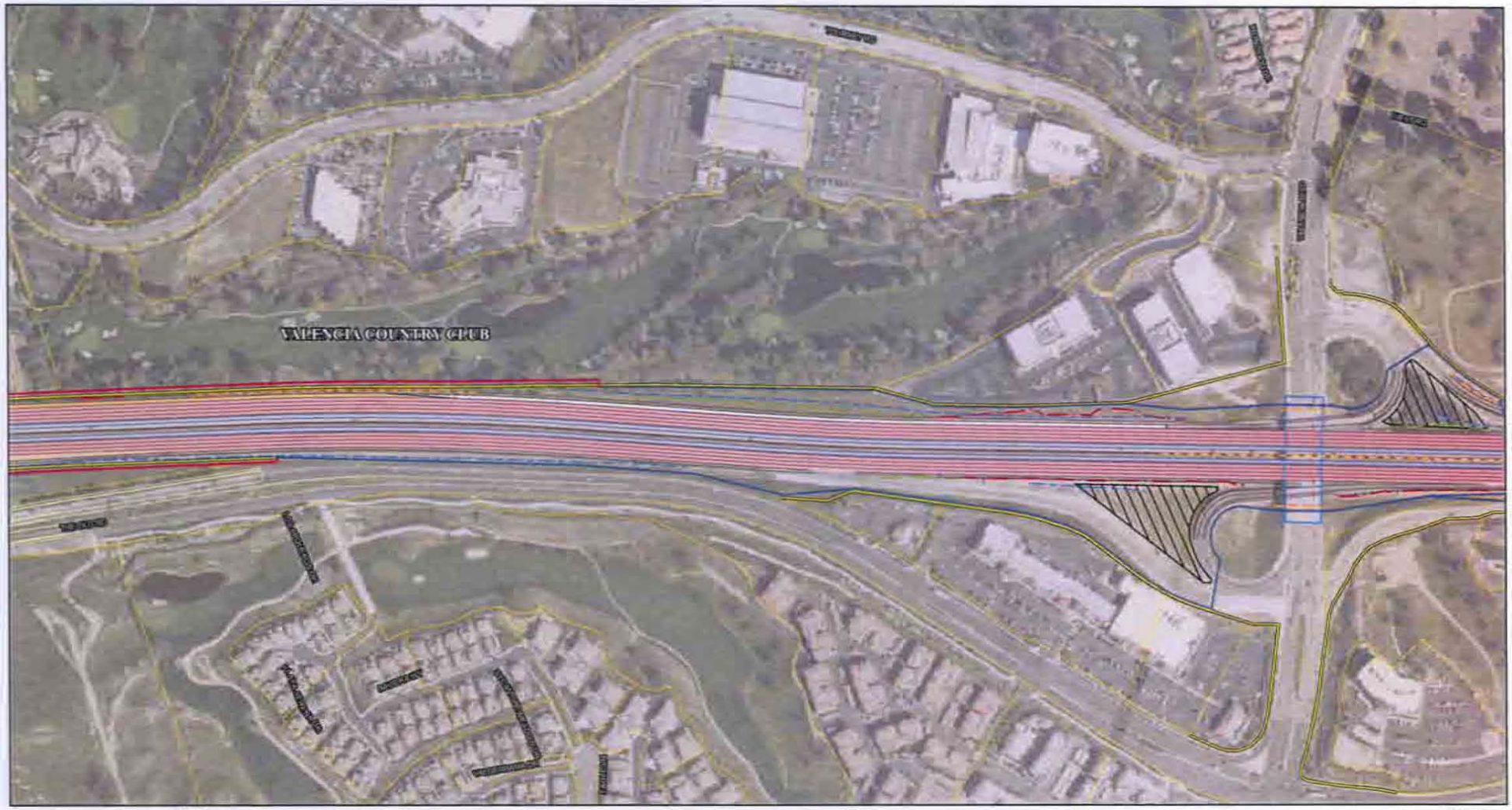
I-5 HOV/Truck Lanes Project
Alternative 3 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0



Potential Water Treatment Basin
Potential Construction Staging Area
Proposed Alignment
Existing Right-of-Way
Proposed Right-of-Way
Parcel Boundary
Disturbance Line
Temporary Construction Easement (TCE)
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Proposed Retaining Wall
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HOV Lanes
MFL Lanes
Proposed AUX Lanes
Truck Lanes
Unimproved Lanes/No Improvements
Frontage Road Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

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FIGURE 1.5
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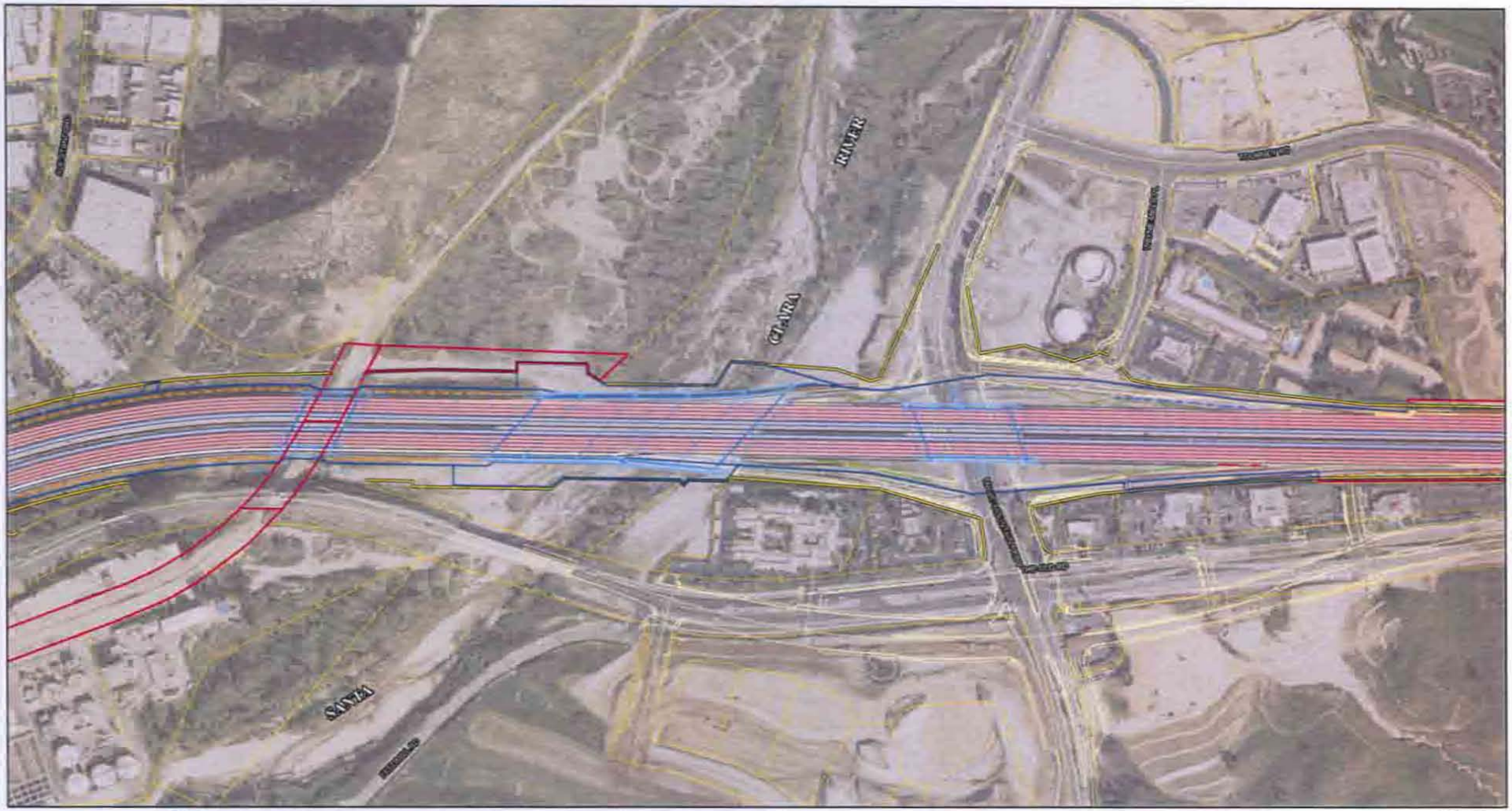
I-5 HOV/Truck Lanes Project
Alternative 3 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0



Potential Water Treatment Basin
Potential Construction Staging Area
Proposed Alignment
Existing Right-of-Way
Proposed Right-of-Way
Parcel Boundary
Disturbance Line
Temporary Construction Easement (TCE)
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HOV Lanes
MFL Lanes
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Truck Lanes
Unimproved Lanes/No Improvements
Frontage Road Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

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FIGURE 1.5
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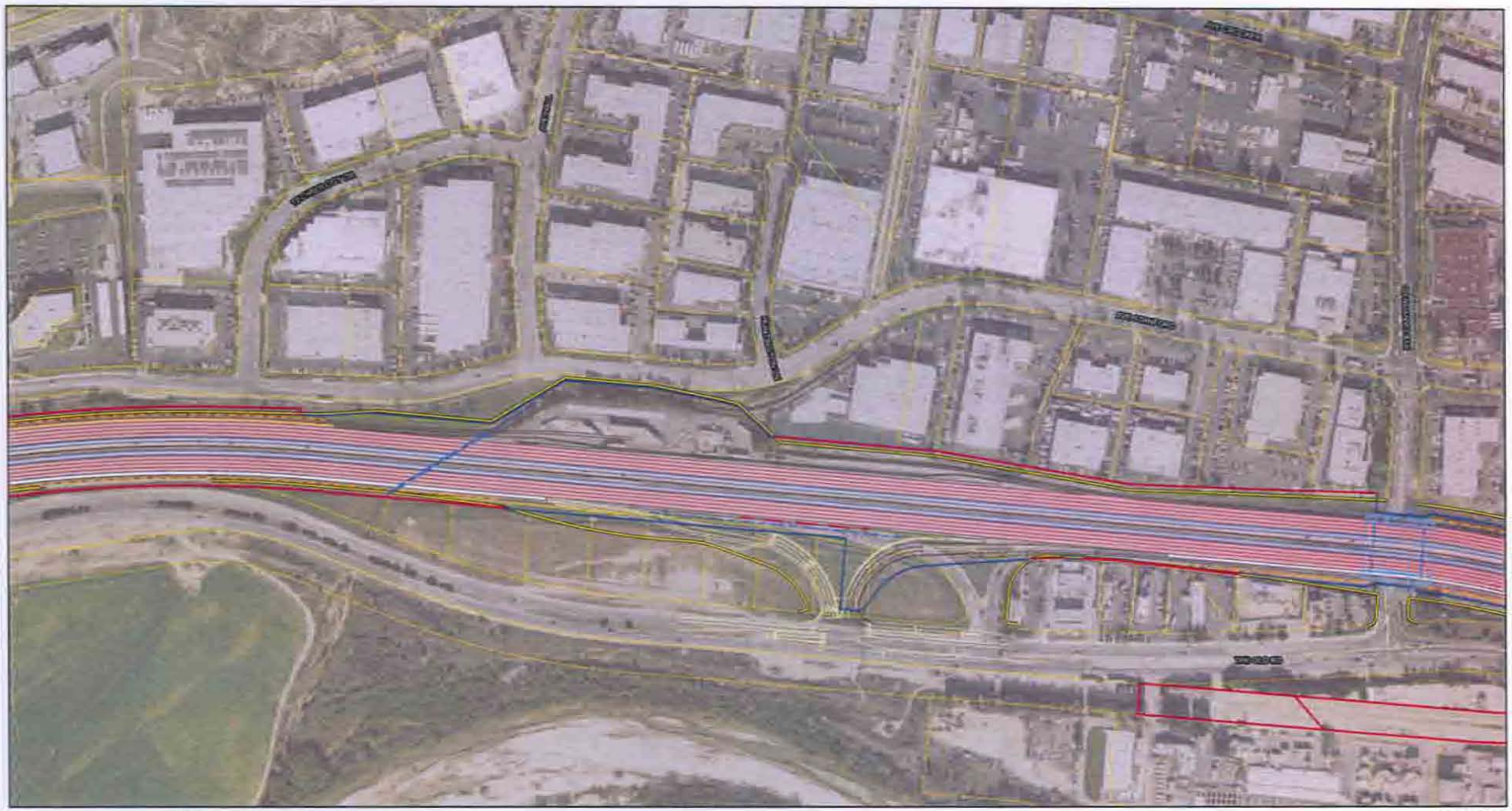
I-5 HOV/Truck Lanes Project
Alternative 3 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0



Potential Water Treatment Basin
Potential Construction Staging Area
Proposed Alignment
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Proposed Right-of-Way
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MFL Lanes
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Truck Lanes
Unimproved Lanes/No Improvements
Frontage Road Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

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FIGURE 1.5
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I-5 HOV/Truck Lanes Project
Alternative 3 - Project Features
07-LA-5 PM R45.4/R59.0
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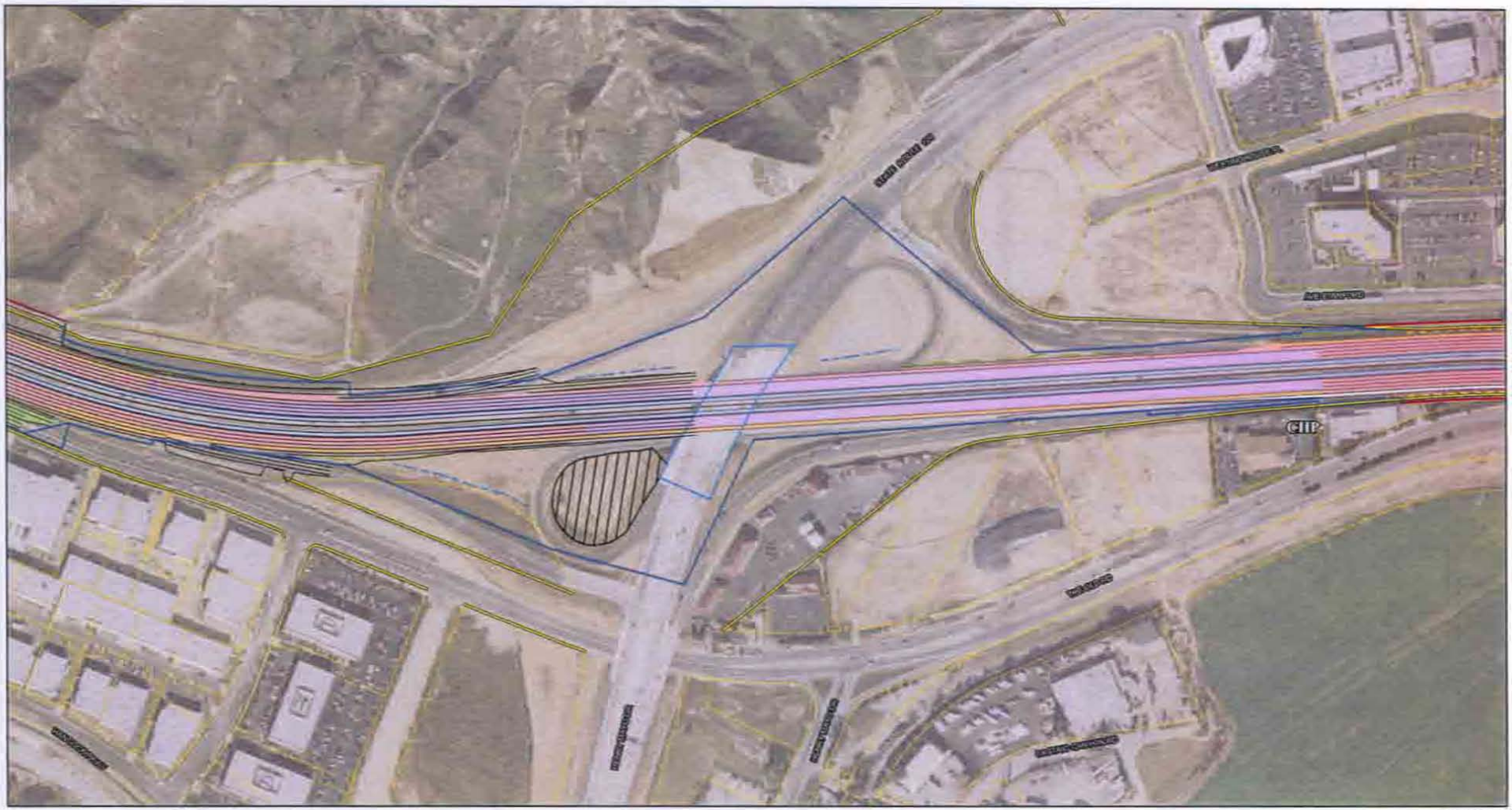

Potential Water Treatment Basin
Potential Construction Staging Area
Proposed Alignment
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Proposed Right-of-Way
Parcel Boundary
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MFL Lanes
Proposed AUX Lanes
Truck Lanes
Unimproved Lanes/No Improvements
Frontage Road Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

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FIGURE 1.5
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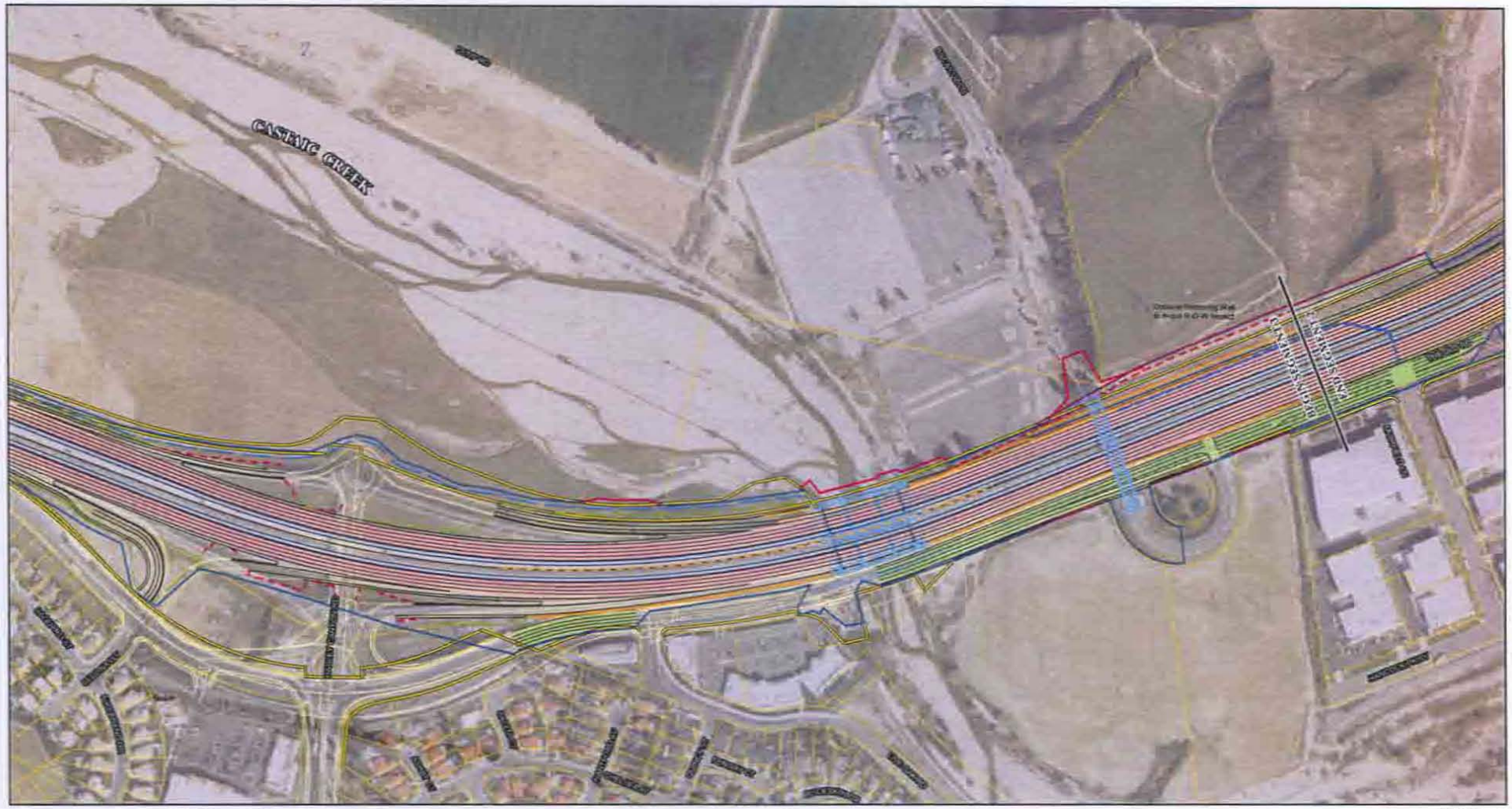
I-5 HOV/Truck Lanes Project
Alternative 3 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0



Potential Water Treatment Basin
Potential Construction Staging Area
Proposed Alignment
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Proposed Right-of-Way
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MFL Lanes
Proposed AUX Lanes
Truck Lanes
Unimproved Lanes/No Improvements
Frontage Road Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

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FIGURE 1.5
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I-5 HOV/Truck Lanes Project
Alternative 3 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0

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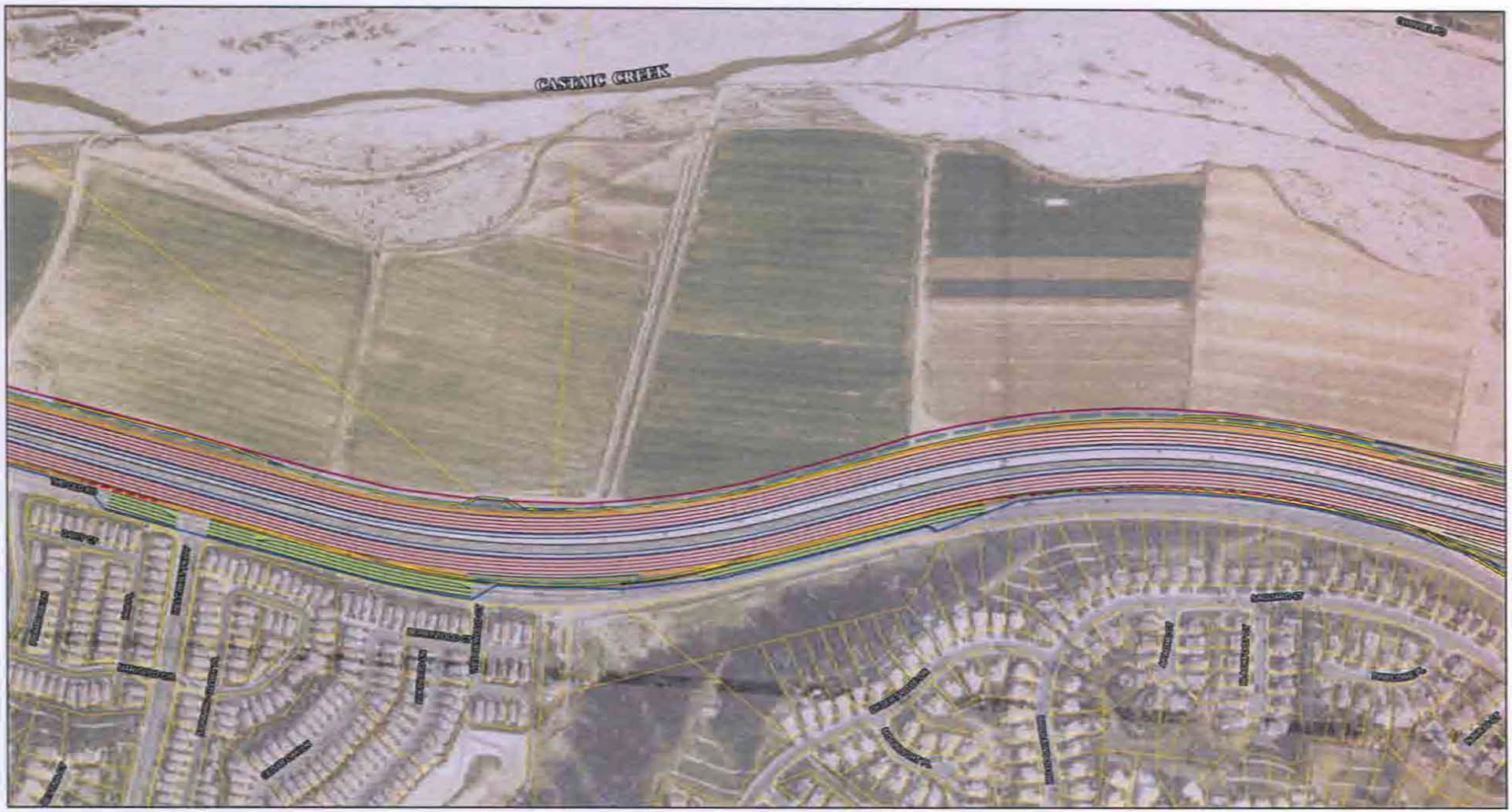

Potential Water Treatment Basin
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Frontage Road Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

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FIGURE 1.5
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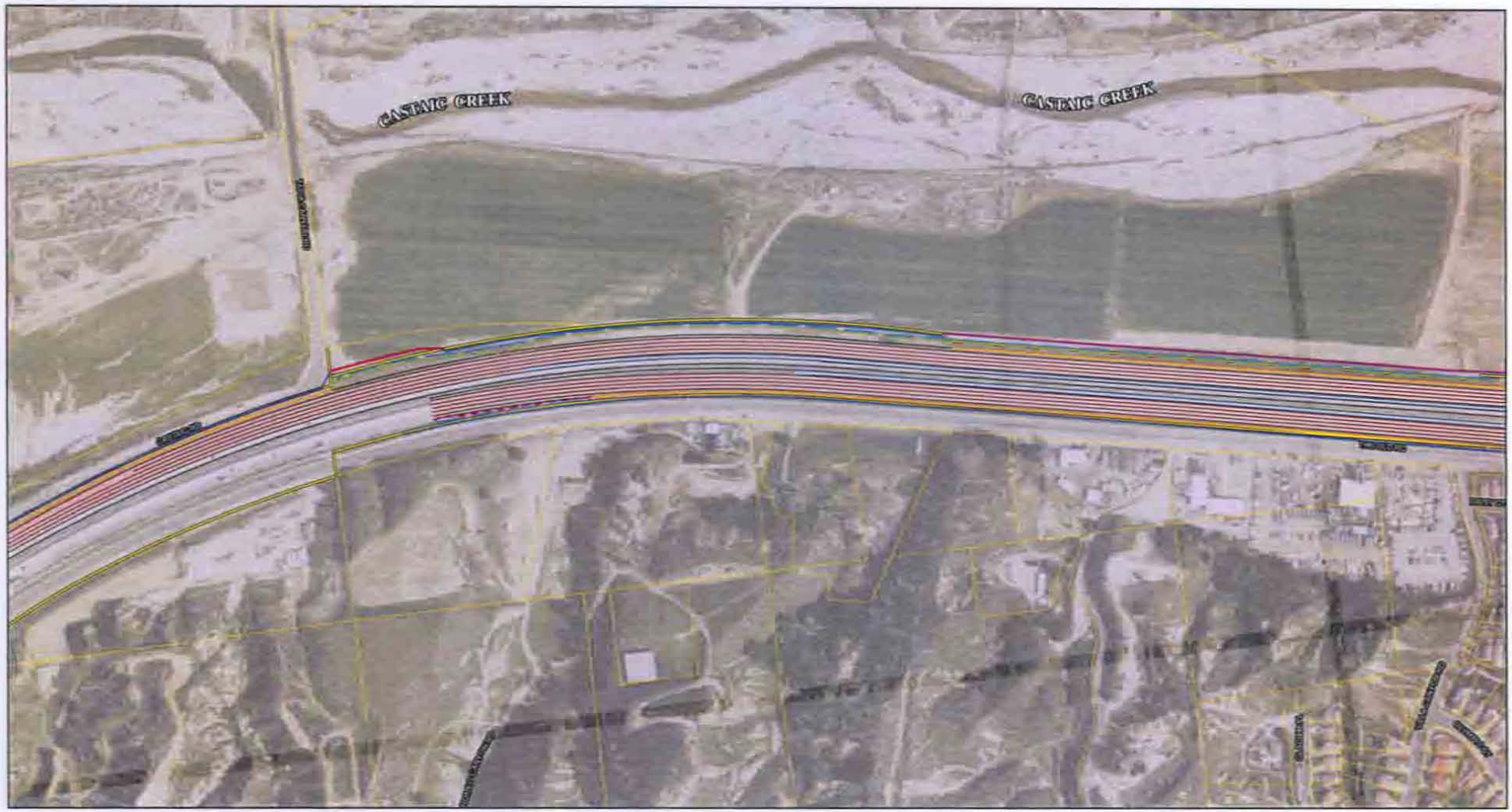
I-5 HOV/Truck Lanes Project
Alternative 3 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0



Potential Water Treatment Basin
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HOV Lanes
MFL Lanes
Proposed AUX Lanes
Truck Lanes
Unimproved Lanes/No Improvements
Frontage Road Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

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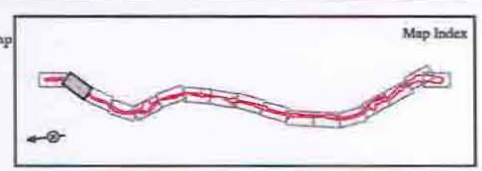

FIGURE 1.5
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I-5 HOV/Truck Lanes Project
Alternative 3 - Project Features
07-LA-5 PM R45.4/R59.0
EA 2332E0

Potential Water Treatment Basin
Potential Construction Staging Area
Proposed Alignment
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Proposed Right-of-Way
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MFL Lanes
Proposed AUX Lanes
Truck Lanes
Unimproved Lanes/No Improvements
Frontage Road Improvements

0 150 300 Feet

SOURCE: Psomas (2008).

I:\SIB060\GIS\Project_Features_Alt3_Fig1-5.mxd (12/11/2008)

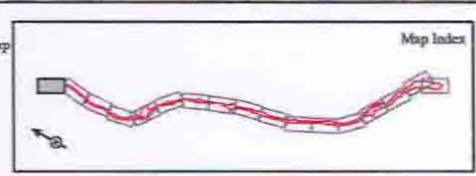

FIGURE 1.5
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